

THE ABSTRACTS OF
KREI REPORTS

2005

FOREWORD

The purpose of this book is to present abstracts or short summaries of the research reports which have been produced by the Korea Rural Economic Institute (KREI) during 2005.

In total, 117 reports are summarized and classified into eight categories; agribusiness, rural development, agricultural outlook, agricultural policy, forest policy, international agricultural trade, agricultural information and others.

The abstracts give you the overview of full texts. Most reports are available only in Korean language. We hope you get a glimpse of research results through this book.

When performing the researches, so many persons have kindly assisted the KREI researchers including farmers and officials all over the country. I would like to express my sincere gratitude to them as well as the KREI researchers.

Jung-Sup Choi, Ph.D.
President
Korea Rural Economic Institute

CONTENTS

1. AGRIBUSINESS RESEARCH

- | | |
|--|----|
| 1.1. A Study on the Analysis of the Milk Demand and Supply Management System in Korea | 3 |
| 1.2. Current Status and Issues of Mushroom Industry | 5 |
| 1.3. A Study on Evaluating and Improving Food Away From Home Statistics | 6 |
| 1.4. An Analysis of Consumer Preferences and Purchasing Behaviors towards Environmentally Friendly Agricultural Products | 7 |
| 1.5. Hypermarket's Purchase Behavior of Agricultural Products and Future Outlook | 10 |
| 1.6. A Study on Korean Agricultural Export Organizations and Supporting Programs | 12 |
| 1.7. Comparison of Production Costs and World Market Adjustments In Line With Changes in Japonica Rice Trade Policy | 13 |
| 1.8. A Basic Study on Environmentally Friendly Restructuring of Highland Agriculture | 16 |
| 1.9. Improving Safety of Imported Foods From China | 18 |
| 1.10. Policy Directions and Strategies for the Better Implementation of Food Labeling System to Enhance Quality Competitiveness of Korean Agro-Food Products | 20 |
| 1.11. Strategies for Value-added Production of Germinated Hulled Rice and Advance into Chinese Market | 24 |
| 1.12. A Study on Establishing Traceability System in Livestock Production and Marketing Channels | 27 |

1.13. Strategies for Advance into Foreign Markets and Green Tea Products Development	29
1.14. A Study on Production, Distribution, Consumption and Competitiveness of Environmentally-Friendly Rice	33
1.15. An Economic Analysis of Producing Bio Internal Organs from Germ-free Minipigs for Xeno-transplantation (2nd Year)	35
1.16. An Economic Analysis of Environmentally Friendly Agriculture and Measures for Further Development	37
1.17 A Study of Storage and Processing Sector of Government Rice, and Private RPC	41
1.18. The Optimal Allocation of the Large-Scale Agricultural Products Processing Center by Major Fruit Production Region	42
1.19. A Master Plan for Construction of Agricultural Marketing Complex(AMC) in Taean County	43
1.20. Strategies for Structural Improvement of Spicy Vegetables' Main Producing Areas	44
1.21. Agriculture and Rural Community Development Plan for Ulju-gun	46
1.22. Farm Mechanization Policy Goal for Securing Agricultural Competitiveness and the Development Direction of Farm Machinery Industry	49
1.23. Innovative Green Tea Industrial Cluster Development Plan for Hadong-gun	52
1.24. A Feasibility Study on Commercial Utilization of Thermal Effluents from Nuclear Power Plants	54
1.25. Strategies for Construction and Management Plan of Yangsan Agricultural Product Composite Marketing Center	55

1.26. Evaluation of Construction and Management Plan of Marketing & Distribution Center for Agricultural Products in Yongin, Korea	56
1.27. Evaluation and Improvement of Set-Aside Program for Rice	58
1.28. A Study on Fostering Herb Industry in Namwon	60
1.29. Basic Construction Plan and Validity Evaluation of Facility Modernization Project: Garak-dong Agriculture & Marine Wholesale Market	61
1.30. Agro-Industry and Agro-Enterprise Cluster Development in Selected Transition Economies	63
1.31. Evaluation on Pilot Project of Direct Payment for Environment-Friendly Livestock Farming in Korea	65
1.32. Policy Requirements for the Country of Origin Labeling of Processed Foods	67
1.33. Implementation Program for Introducing Region-Based Maximum Nutrients Loading System	70
1.34. Standardization of Logistical & Packing System for Agricultural Products in Korea	75
 2. RURAL DEVELOPMENT RESEARCH	
2.1 Building Infrastructure for Regional Innovation System	79
2.2 Prospect of Changes in the Farmland Utilization Pattern after Rice Market Opening Negotiations and Countermeasures	81
2.3 A Study on the Ways to Boost Rural Tourism Demand	83
2.4. A Study on the Disparities in Economic Opportunities between Rural Areas	87
2.5. Current Status of Uncultivated Farmland and Appropriate Policy Direction	90

2.6. A Comparative Study between Korea and Japan on Endogenous Rural Vitalization Policy	93
2.7. Impacts of Direct Payment Program on Agricultural Production and Structural Change in Korea	97
2.8. Current Status and Development Strategy of Agriculture and the Rural Society of ASEAN: With a Focus on Vietnam, Cambodia, and Laos	98
2.9. Strategies to Improve Educational and Training Programs for Farmers	99
2.10. A Study on Decentralization of Rural Policy: Centered on the Case Study of the England's Rural Development Policy	101
2.11. A Study on Rural Landscape Management and Policy Directions	103
2.12. An Analysis of Vertical Coordination in Agri-business	105
2.13. Strategies of Successful Agri-Business CEOs	107
2.14. A Study of Agricultural and Rural Development Plan in Chongwon County	109
2.15. A Agricultural and Rural Development Plan for the Spatial Specialization in Hwa-Cheon County	112
2.16. Strategies for the Development of Black Raspberry in Gochang County	114
2.17. Improving Assistance Scheme for Private Property Damage Caused by Natural Disasters	117
2.18. Evaluation of and Recommendations for Korean Official Development Assistance(ODA) in Agricultural and Rural Sector	119
2.19. A Study on the Jecheon's Five-Year Basic Plan to Improve Rural Residents' Quality of Life	123

2.20. Agricultural and Rural Development Plan for Jincheon-gun	124
2.21. Construction of Integrated Agricultural Water Management System in Korea	126
2.22. A Study on Assessment and Management for Selecting the First Industrial City Model	128
2.23. Configuring Agri-Business Models through Multiple Case Studies	129
2.24. A Study on Measuring Urban and Rural Residents' Quality of Living Indices.	130

3. AGRICULTURAL OUTLOOK AND INFORMATION

3.1. A Study on Determinants of Seasonal Supply and Price of Produce in Korea: With Special Emphasis on Weather Conditions	133
3.2. Quarterly Livestock Model	135
3.3. Development of an Integrated Agricultural Outlook Information System	137
3.4. A Study on Improved Apple Production Forecasting Methods ..	138
3.5. An Analysis on the Impact of US Beef Re-entry to Korean Market	139
3.6. Strategies of Developing State-run Trade for Spicy Vegetables	140
3.7. Agricultural Outlook for 2006	141
3.8. Quarterly Report on Agricultural and Rural Economy	142
3.9. Monthly Outlook for Fruit-bearing Vegetables	143
3.10. Monthly Fruits Outlook	145
3.11. Monthly Vegetable Outlook	146
3.12. Livestock Outlook	147

4. AGRICULTURAL POLICY RESEARCH

- 4.1. An Analysis of Facilitating HR Inflow to Farming and Their Settlement 151
- 4.2. Agriculture in Korea 153
- 4.3. An Analysis of Regional Agricultural Capability by Using Agricultural Census Data 155
- 4.4. An Analysis on Lower-Income Earning Farm Households' Economy 156
- 4.5. A Research on the Farm Household Debt and Development of Farm Bankruptcy and Workout Program 158
- 4.6. Development & Policy Simulation of Macro- econometric Model With Emphasis on Agricultural Sector 161
- 4.7. Consulting Report on Agricultural Marketing for Agricultural Cooperatives in Damyang County 163
- 4.8. A Study on Database System Construction for Supporting the Market Opening-driven Agricultural Restructuring 164
- 4.9. Evaluation on "2004 Agricultural Public Finance Management Planning" 166
- 4.10 Revised Direction of Basic Act on Agriculture and Rural Communities 168
- 4.11 A Study on Introduction of Direct Payment Measures for Upland Field 169
- 4.12 A Study on Development Strategies of Regional Agricultural Clusters 171
- 4.13. Improving the Evaluation System for the Local Government's Agricultural Policy 173
- 4.14. A Study on Modelling and Management of Korea Agricultural Outlook Model (KREI-ASMO 2005) 174
- 4.15. A Study on Performance Evaluation of Korea Agricultural Outlook Model (KREI-ASMO) 175

- 4.16. A Study on Modelling and Management of OECD World
Agricultural Outlook Model (Aglink 2005) 176

5. FOREST POLICY RESEARCH

- 5.1. Direction for Direct Payment Program Introduction to
Forestry Sector 179
- 5.2. Economic Analysis on Heat Energy Development with Woody
Biomass and Measures to Supply Forest Residues
for Energy 180
- 5.3. A Scheme for Developing Agroforestry Policy 182
- 5.4. A Study of Compliance Survey and Measures
for Improving Forestry Regulations 184
- 5.5. Monitoring Financial Performance of Major Forest Projects 185
- 5.6. A Basic Study of Hosting 2010 Forest Expo 186
- 5.7. Status of Non-Tariff Barriers and Market Survey for
Developing Strategic Export Items Among Non-Timber
Forest Products 187
- 5.8. A Study on the Aggregation Realities of Statistics of
Forest Products and Proposals for Improvement 188
- 5.9. A Study on Standard Chestnut Yield Calculation for
Insurance Program 190
- 5.10. A Basic Study on Fostering Forest and Mountain
Village Cluster 192
- 5.11. Monthly Outlook for Chestnut 193
- 5.12. Monthly Outlook for Oak-mushroomt 194

6. INTERNATIONAL AGRICULTURAL TRADE RESEARCH

- 6.1. Mid- and Long-term Outlook for Chinese Agriculture
Until 2014 197

6.2. Establishment of Northeast Asian Economic Cooperation and Strategies for Korean Agriculture	199
6.3. Strategies for Local Agricultural Sector To Cope With Free Trade Agreements	202
6.4. A Study on the Strategies for 2005 DDA Agricultural Negotiation	204
6.5. Evolution and Evaluation of WTO Negotiations on Agriculture	206
6.6. The Situation of Livestock Farming in North Korea and Cooperation between the North and South	207
6.7. 2005 FANEA Annual Report	209
6.8. The Meaning of Granting Market Economy Status(MES) to China and Its Impacts on Korean Agriculture	211
6.9. A Study of Developing Comprehensive Agricultural Assistance Plan for North Korea	213
6.10 The Strategy of Establishing and Developing South and North Korean Model Farm Co-Operation	214
6.11 Contingency Plan to Consolidate Agricultural Sectors against Unexpected Urgent Unification of Two Koreae ...	215
6.12. Impact of Korea-US FTA on the Korean Agricultural Sector	219
6.13. China-Japan-Korea FTA: Effects on and Policy Implications for the Korean Agricultural Sector	221
6.14. KREI Quarterly Report on North Korean Agricultural Trends ...	223
6.15. Online Report on World Agriculture	225
 7. INFORMATION SERVICE	
7.1. 2004 Poll Result on Farmers' Attitude Changes and Pending Problems	229

8. SPECIAL RESEARCH

8.1. Shipping-point Marketing of Agricultural Producer
Corporations and Related Policies of Local Government
in Japan 233

8.2. Current Situation and Prospect of Kiwifruit Industry
in New Zealand 235

AGRIBUSINESS RESEARCH

1

A Study on the Analysis of the Milk Demand and Supply Management System in Korea

In 1999, Korea Dairy Committee (KDC) was established with an aim to stabilize the supply/demand and the price of raw milk. However, as the committee collects only 27 percent of the entire milk production, it is less capable of adjusting the supply and demand of milk. Against the backdrop, there have been active discussions on reforming the overall milk supply and demand management system.

The problem of the milk supply and demand policy in Korea is that the system for flexible milk price and production volume adjustment is lacking. Previously, milk price increased when production costs increased, but not vice versa, and the market situation has not been taken into account in determining the price. The current two-tier milk collection structure composed of the indirect milk collection by the KDC and the direct collection by dairy product manufacturers makes flexible response to demand and supply changes more difficult.

This study has suggested the dairy products demand function and the milk supply function. To build the mid- to short-term milk supply reaction model, the number of dairy cows model and the milk production volume per head model were separated. In addition, the effects of the expanded market liberation under the DDA were analyzed by milk components (fat and solid-non-fat). As a result, it was found that if the tariff is cut down 50 percent from the current level, the local milk production volume is expected to drop 2.1 percent compared with the production volume under the current tariff system (base volume), and the price for processed milk will fall 7.5 percent. If the tariff is 100 percent waived, the production volume is expected to drop 6.5 percent compared with the base volume and the price for processed milk is forecast to fall 23 percent. Likewise, the tariff reduction or waiver is projected to have a huge impact on the income of dairy farm households, and therefore income support policy is required.

With the milk oversupply unabated, the KDC has introduced the differentiated pricing system for surplus milk from October 2002. Under the system, the committee classifies the milk collected above contracted amount as surplus milk and pays dairy farmers lower price for the surplus than the normal price. In this system, "Reference Amount of Milk" by farm household plays the same role as a quota. A quota system has brought about market distortion and quota rent, so it was criticized as lowering competitiveness over the long run by causing additional costs. However, over the short term, the quota system is believed to contribute to reducing the government's expenditure and stabilizing farm household income by striking a balance between demand and supply. Since introduced, the differentiated pricing system for surplus milk has reduced the surplus milk volume from 310,000 tones in 2002 to 120,000 tones at the end of 2004. However, farm households continue to demand the increase of the quota, making it instrumental to work out fundamental solutions.

The study took a look at the measures to adjust supply and demand of milk while maintaining the basic framework of the current quota system. To enable price to function to adjust supply and demand, the current milk pricing system should be reformed. To this end, dairy farms should initiate the establishment of their organizations by region and make them negotiate over price with dairy product manufacturers. The government should also guarantee the minimum price. Besides, as in foreign countries, differentiated prices should be applied to milk used for different purposes, and the system of paying the blended prices to farm households should be adopted. Furthermore, the price support system should be implemented for milk processing in order to nurture the domestic milk processing industry.

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Current Status and Issues of Mushroom Industry

As it is natural and functional food, the demand for mushroom has been rising, and the growth of the mushroom industry has been accelerated accordingly. Mushroom is consumed more at restaurants rather than home. Therefore, the mushroom industry is affected by the economic situation. So far, the growth of the mushroom industry has been driven by the increasing number of farmers and the expanded cultivating area, not by technical innovation. Mushroom cultivation is more labor-intensive than other crops. As the yield of mushroom increases, the price decreases and the farmers' income declines. For sustainable development of the mushroom industry in the days to come, the market expansion, technical innovation in cultivation, the improvement of distribution structure for price stabilization, and the export promotion should be achieved.

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A Study on Evaluating and Improving Food Away From Home Statistics

The main purpose of the study is to evaluate the existing food away from home statistics and suggest ways to improve the statistics. To this end, the study performed an expert survey regarding the demand on food away from home statistics and reviewed the cases of foreign countries.

From the result of the expert survey regarding the demand on food away from home statistics, the study has found that experts mostly demand company's food material purchasing statistics, and management and industry related statistics. The result also suggests that the items in statistics should be as specific as possible pertaining to business conditions and types. In case of Japan, business conditions and types are included in the food away from home statistics. In the United States, the statistics has realistic classification by type and service level based on business conditions. In the two countries, the Japanese Food Service Industry Research Center and the American National Restaurant Association are in charge of producing the food away from home statistics respectively.

In response to the changes in the food service industry, the market scale will expand to include the food and drink sales in lodging, transportation centers and the HMR (Home Meal Replacement) industry. Also, it is necessary to develop new statistics and found a new organization to manage the food away from home statistics. The project of information system construction aimed to expand the survey infrastructure should be planned. This will shorten the announcement term to increase usefulness of existing statistics. It is also essential to build cooperation systems between food away from home related organizations.

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An Analysis of Consumer Preferences and Purchasing Behaviors towards Environmentally Friendly Agricultural Products

The purpose of this study is to systematically analyze the consumer preferences and purchasing behaviors toward environmentally friendly agricultural products (EFAPs) in order to facilitate the sound development of the environmentally friendly agriculture. To this end, a survey was conducted for quantitative and qualitative analyses regarding consumer purchasing behaviors. The analytical results were used to suggest policies aimed at boosting the EFAP consumption.

Chapter 1 elaborates on the need of the study, and reviews the previous studies. In Chapter 2, the features and consumption structure of the EFAPs are briefly described. The concept of EFAP, product features, and market characteristics are taken a look at, and the consumption status and the market size are explained as well. In Chapter 3, the survey results on consumer preferences to EFAPs are summarized and presented. In Chapter 4, the EFAP consumption patterns and attributes are analyzed. In Chapter 5, the forecast for potential EFAP demand and the plan to promote EFAP consumption are presented. Lastly, Chapter 6 makes summaries and comes to a conclusion.

The consumer survey was conducted for 991 housewives living in Seoul and Gyeonggi Areas using the online or offline face-to-face interview. Among the respondents, those in their 20s amounted to 176 (17.8 percent), followed by those in their 30s with 433 (43.7 percent), those in their 40s with 274 (27.6 percent), and those in their 50s or above with 108 (10.9 percent). From the education perspective, 61.5 percent of the respondents were college graduates, while the remaining 38.5 percent had education of high school or below.

The consumer survey conducted regarding safety of the EFAP has found that the majority of domestic consumers trust the safety of domestically cultivated organic agricultural products. In detail, 78.3 percent of those responded said that "they more trust

domestically grown organic agricultural products. " It was only 4.9 percent of the respondents, who said that "they more trust imported organic agricultural products".

Among those who had the experience of purchasing EFAPs, 41 percent of the respondents pointed out "high price" as the obstacle to EFAP consumption. 32.5 percent mentioned "lower trust in the production and distribution process" as the barrier, followed by 10.3 percent for "inappropriate packaging size or inconsistent supply," and 9.2 percent for "inconvenience to find the appropriate place to purchase".

The study found that the consumers' monthly expenses for EFAPs vary depending on the household's income level. The households earning two million to three million won in monthly income spend an average of 69,000 won for EFAPs, while those earning five million won in monthly income spend an average of 154,000 won. The average EFAP expense of the households surveyed was 108,000 won, which accounts for 20.3 percent of their overall monthly expenditure for food.

The EFAP consumers were found to pay 100 to 120 percent more for organic agricultural products, 70 to 85 percent more for no-pesticide agricultural products and 44 to 53 percent more for low-pesticide agricultural products compared with the regular agricultural products' market price. Meanwhile, the price level for consumers to be willing to pay extra was found to be 74 to 85 percent for organic products, 49 to 57 percent for no-pesticide products, and 28 to 34 percent for low-pesticide products. These levels show that the current level of market premium for EFAPs is 15 to 20 percent higher than their desired level.

In relation to the consumer behaviors toward EFAPs, the Logit model was applied for analysis. The finding was that the younger consumers with higher income and higher education are more likely to purchase EFAPs.

The fuzzy multi-criteria decision making method was applied to find out consumers' EFAP purchasing behaviors under uncertainty and ambiguity. The analytical result showed that in case of organic vegetables, "safety" affected 26.7 percent of the EFAP purchase decision making, followed by "environmental

friendliness" with 23.1 percent, "taste" with 18.9 percent, "nutritional value" with 18.1 percent, and "appearance/freshness" with 13.3 percent.

On the assumption that regular agricultural products are priced at 1,000 won, it was found that consumers pay 2,135 won to purchase organic "vegetables" at maximum. It means that they pay extra 1,135 won to purchase EFAPs. In case of "grains", the consumers were found to pay 2,212 won to purchase environmentally friendly grains at maximum, paying 1,212 won more than regular grain price.

The price premium of organic products was calculated by value attribute. It was found that the price premium of "vegetables" is 1,135 won, which is divided into 506 won for safety, 414 won for environmental friendliness, 205 won for nutritional value, 142 won for better taste, and - 132 won for appearance/freshness.

The potential demand for EFAPs was estimated to be 975.2 billion to 1,933.3 billion won according to the scenario. This is 1.7 to 3.3 times higher than the current EFAP distribution size of 577.7 billion won as of 2005.

The EFAP consumption promotion can be regarded as the blue ocean strategy in the agricultural sector. To transform the potential demand for EFAPs into reality, it is necessary to strengthen consumer education and promotional efforts. The strict EFAP certification management system should be established to enhance consumer credibility in EFAP products, and the appropriate sales strategy is needed to respond to consumer needs. In particular, in order to reduce price premium for EFAPs, which is the biggest obstacle to boost purchase by non-EFAP consumers, effective policy programs should be developed and consistently pursued.

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Hypermarket's Purchase Behavior of Agricultural Products and Future Outlook

In Korea, the number of hypermarket's (large discount retail stores) has exceeded 300 as of 2005. Also, based on the report published by Shinsegae Trade Research Institute, the total sales amount of the discount retail industry is estimated to be almost 24.4 trillion won in 2005. Due to the large scale purchase and sales volume of agricultural products by hypermarket's, the hypermarket industry in Korea has had a huge impact on both retail and producers' shipping-point markets. In this context, this study was carried out with a focus on identifying the procurement and sales behavior of agricultural products by major hypermarket's in Korea. After extracting several meaningful implications from the study, efforts were made to convey the key viewpoints of buyers to farmers in order to help them take some proper actions to enable successful trade with the hypermarket industry.

As the beginning step, both questionnaire-based survey and in-depth interviews with several people in charge of purchase & sales management of agricultural products in the seven largest hypermarket's (E-Mart, Homeplus, Lotte-Mart, Wal-Mart, Dongbang-Mart, Top-Mart, and Big-Mart) in Korea.

Given the characteristics of agricultural products, the risk associated with retail sales of agricultural products is much higher than the general manufacturing products due to high managing cost to preserve the freshness of products and handle overstock issues by the slow turnover. However, as the management know-how is getting piled up and sophisticated via advanced IT (Information Technology) and buyers' management expertise, it will be under the control rather than out of control. Furthermore, the problem is on the track of diminishing. Thus, the role of agricultural products in the hypermarket has been shifted from a kind of bate (loss leader) alluring shoppers visiting the shopping center more often to the profit generator maximizing consumers' satisfaction by purchasing both fresh agricultural products and other manufacturing products at the same time through one-stop

shopping. The sales activity of fresh and good agricultural products is linked to upgrade store image and total profit of discount retailers.

In the hypermarket industry, the estimated sales amount of agricultural products excluding fishery and livestock products is around 3.22 trillion won. It is forecasted to be extended in the near future because consumers exhibit a shopping trend to choose hypermarket as top priority shopping place when purchasing fresh agricultural goods. They are also more sensitive to the food safety and the sellers' credibility while putting high preference to hypermarket. Also, in relation to the procurement of agricultural products by hypermarket's, as the transaction volume is getting much bigger, their level of requirements regarding lower unit price and higher product quality will rise higher than before.

To suggest the proper reaction of individual farm household or farm corporations, buyers' key requirements for the successful trade with hypermarket's are summarized. Producers must be clearly aware of two aspects of product sales in hypermarket. First, high quality and safety of products are key. However, this is the only necessary condition to fulfill the buyers' requirements. Second, the producers should make the goods look attractive to potential consumers in terms of shape of products and package. The latter condition is also linked to the development of producers' brand. As in-depth requirement, producers should be more proactive on the matter of meeting shopping consumers' needs and preference. To achieve the economy of scale and lower production cost, the volume of farm production should be increased.

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A Study on Korean Agricultural Export Organizations and Supporting Programs

This study was conducted to find out the current management status of agricultural product exporting agencies. In particular, via the probe into government support programs for export promotion and associated problems, key issues were derived, and actionable suggestions were made.

Additional data on 104 horticultural export complexes (or areas) designated by the Ministry of Agriculture and Forestry were analyzed. And the detailed information about individual exporter's management and business performance were studied and analyzed. The agricultural product exporting companies can be classified into three groups: 1) companies invested & owned by farmers' organization, 2) companies invested by regional governments, and 3) private companies. A total of 18 companies of the three groups were studied in the form of in-depth interview and questionnaire-based survey. As a supplementary investigation, Korea Agricultural & Fishery Marketing Corporation and the agricultural product export offices of eight provincial governments were visited.

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Comparison of Production Costs and World Market Adjustments In Line With Changes in Japonica Rice Trade Policy

Rice remains the dominant agricultural commodity in Korea, and surrounding rice, the international trade issues remain unresolved. Two closely related international issues are comparisons of costs across countries and how the international market for rice would be likely to evolve when trade policies change in accordance with multilateral reductions in trade barriers and subsidies under a new World Trade Organization (WTO) agreement. In this study, we focus exclusively on the japonica rice, which is the type of rice mainly grown and consumed in Korea.

Part 1 of the study deals with the competitiveness of rice production in three leading producers of Japonica rice: the United States, China, and Korea. The United States and China are the most important Japonica rice exporters. Korea domestically produces and consumes rice, and imports the amount of rice equal to four percent of domestic consumption. China also consumes most of its large production of Japonica rice domestically. The objective of this part of the study is to analyze the cost structures of Japonica rice production in these three countries, and identify underlying factors or constraints that affect the cost structures. We also consider cost competitiveness of rice production in these countries from a broad perspective.

This part of the study is divided into three sections. In the first section, we present a country specific analysis from the historical perspective using rice production and cost data of the United States and China. Using historical data, country analysis provides a general background of each country's rice production and the cost structure. Japonica rice production in the US is concentrated in the Sacramento Valley located in the Northern part of the Central Valley. During the last decade, japonica rice acreage has been fluctuating between 450 thousand and 550 thousand acres with yields of about 3.6 to 4.0 tons per acre on a paddy basis. Export markets have been important for the

California rice industry. California exports, on average, about 30-40 percent of its two million tons of rice production. Since the Uruguay Round Agreement (URA) was signed in 1994, Japan has been an important importer of California rice. Total cost per unit of output fluctuates by yield but have trended down in real terms in California and were about \$220 per ton on a paddy basis in recent years. In China, Japonica rice is cultivated in two regions, the three northeastern provinces and the broad north and central coastal provinces. Production and consumption of Japonica rice both grew rapidly in the 1990s to more than 40 million tons. Net export volume is only a small fraction of production, which is less than five percent. Rice production cost in China rose in the 1990s, but it declined recently. They were about 40 yuan per jin in 2002 or about \$110 per ton.

Once country specific analyses are presented, we provide the comparative analysis of cost competitiveness of the three countries, including the United States, China, and Korea. Total costs in Korea are about \$660 per ton. We provide comparisons across countries that break these total cost differences into elements that account for the differences. Land cost is clearly the largest difference. The rents in Korea are four times as high as those in California, but the land rents in China are almost zero.

China is by far the largest Japonica rice producer, and the recent emerging trend deserves attention. As incomes in urban China grow, the demand for higher quality Japonica rice has also grown. As income growth spreads further inland and to rural areas, the demand for quality Japonica rice will rise relative to lower quality and to Indica rice. Against this backdrop, people tend to consume more meat, vegetables and fruits while consuming less rice overall. With rapid consumption growth matching or exceeding future production growth, China's export potential is limited. However, given its very large production and relatively low costs of production, China will have available supplies for the high priced markets in Korea and Japan unless access expands very rapidly in those countries.

Part 2 of the report reviews the market and policy situation and outlook for japonica rice on a global basis. We describe briefly the most important current policies that affect international

trade of Japonica rice. We also examine some alternative policy scenarios that reflect potential outcomes of the Doha Development Agenda negotiations in the WTO and the negotiations for additional access that Korea recently completed with its trading partners. In particular, we consider likely global market effects of expansion of access into the market in Japan and reduced subsidy for Japonica rice (among other crops) in the United States.

We use an equilibrium displacement model, specified in log linear terms to ask how market prices, quantities and other aggregates change when trade barriers are relaxed and production subsidies are reduced. This is applied to a baseline of what would obtain with no such policy changes. The model includes Japan, Korea and the United States as individual countries with policy changes. China plays a major role. Other exporters and other importers are placed into two aggregates in the model. Long run demand and supply elasticities are drawn from the empirical literature.

Results show that when U.S. subsidies decrease by 50 percent in addition to the full implementation of quota expansion in Korea and Japan, U.S. production decreases by more than 30 percent, and the U.S. is no longer an exporter. Instead, China increases its exports by 53 percent and the rest of the world increases exports by 14 percent. The world price rises by only 0.7 percent.

The Korean market has changed little despite expanded imports. Although Korea imports rice solely on the basis of the quota schedule, the Korean rice market does not move in synch with the world market in terms of price during this period. Furthermore, this quota remains small enough relative to the size of the Korean market, such that any long-run price effects are moderate. The rice price in Korea has decreased by about one percent and production fell by a maximum of 3.9 percent.

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Report No: M64/Feb. 2005

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A Basic Study on Environmentally Friendly Restructuring of Highland Agriculture

Highland agriculture, which supplies fresh vegetables to consumers in summer, plays an important role as a potential food production source amid the rapidly progressing global warming. However, in order to increase the acreage of highland agriculture, farmers need to cultivate on steep mountainous areas. This could cause soil erosion, but the lack of the methods to prevent soil erosion could cause environmental problems including nutrient (such as nitrogen and phosphorus) runoffs to rivers. Soil erosion decreases agricultural productivity and becomes an important cause of "non-point source pollution" in downstream rivers. Recently, the increased volume of the imported fresh vegetables has a negative effect not only on the profitability of highland agriculture, but also on the farming operation through the request to highland agriculture for improving environmental loading.

The purposes of this study are to investigate the status of environmental loading and farming management of highland agriculture and to suggest the directions to reorganize environmentally friendly highland agriculture.

The structure of this study can be summarized as follows:

In Chapter 1, problem statement, study objectives, and previous literature review are briefly discussed. Chapter 2 outlines current features of highland agriculture using the SWOT (Strength, Weakness, Opportunities, and Threats) analysis and discusses circumstance changes including farming income reduction and related policy programs. Chapter 3 assesses the environmental loading of highland agriculture and presents the best management practices for soil loss control. Chapter 4 suggests directions for environmentally friendly reorganization of highland agriculture and future tasks. Finally, Chapter 5 makes a brief summary and draws to a conclusion.

The results of the study show that highland agriculture needs to be reshaped in consideration of both agricultural

production and environmental preservation. Thus, it is required to analyze the environmental effects of highland agriculture and formulate a model for environmental loading assessment. After that, the study needs to consider the synthetic and systematic reorganization methods for sustainable highland agriculture through supplementary facilities, substitute crops, and farming practice change. In addition, programs for sustainable highland agriculture, which is socially, technically, and economically acceptable, should be developed based on the estimation of costs and benefits using a new agri-environmental measure.

Finally, in order to proceed with environmentally friendly restructuring of highland agriculture, further studies should be carried out to develop policy mixes composed of environmental regulations and economic incentives. Detailed action programs should be prepared, and relevant entities should share the responsibility.

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Improving Safety of Imported Foods From China

The purpose of the study is to improve the safety of food products imported from China. It takes a look at the current food safety systems of China and Korea for exported and imported foods respectively. Since there are a lot of small-scale food companies, China has confronted difficulty in effectively managing the safety of exported foods.

Presently, Korea lacks the precautionary food safety control system for imported foods. Most Korean food importers put priority to profits over food safety. The Korean food safety authorities have not set appropriate Maximum Residue Limit (MRL) for hazardous materials, such as heavy metals and pesticides. At the custom clearance level, the effective inspection system is not in place, because the inspection is conducted on appearance and color, not on the level of hazardous materials.

Some effective policy measures to improve the imported food safety from China are suggested as follows:

First, the current food safety management system for imported foods should be transformed into the precautionary management system. To this end, the pre-inspection service for agricultural products and processed foods should be conducted in China. In order to assure the safety of imported foods to Korea, the Korea Food Industry Association (KFIA) may run an institute in Shandong. Food processing companies should be enrolled and monitored to improve the exported food safety.

Second, in order to hold the exporting country responsible for food safety, it is necessary to sign an MOU between Korea and China. Two countries could exchange information on hazardous materials to assist efficient inspection at the custom clearance level.

Third, the MRL for hazardous materials, such as heavy metals, should be set for the main imported foods, such as Kimchi and soybean pastes.

Fourth, it is essential to impose a heavy penalty on the importers and food processing companies, which have violated

food safety regulations.

Fifth, the Korean food safety authorities should cooperate to trace and monitor the safety of imported foods "from farm to table" along the food chain.

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Policy Directions and Strategies for the Better Implementation of Food Labeling System to Enhance Quality Competitiveness of Korean Agro-Food Products

I. Objective

The objectives of this study are to suggest policy directions and strategies for the better implementation of food labeling system to respond to the changing consumer's preferences and world trade orders in the domestic and world market.

II. Results and Suggestions

The Korean food labeling system was established based on "Agricultural Products Quality Control Act(APQCA)", "Livestock Product Processing Act(LPPA)", "Fisheries Products Quality Control Act(FPQCA)", "Environmentally Friendly Agriculture Promotion Act(EFAPA)", and "Food Sanitation Act"(FSA). Each act is related to individual food commodities. It has resulted in inefficiencies in terms of implementing related policies. Most regulations for specific issues overlap because Acts associated with food labeling are interrelated each other.

Some inconsistency exists in regulations and procedures. Regarding general labeling criteria, there are no legal standards for the quality of bulk types of products. Certification system lacks for consistency across the related regulation system. For example, certification of organic agricultural products is ruled by the EFAPA while certification of processed food and organic food, which contain organic materials, is ruled by "Agricultural Processing Industry Promotion Acts(APIPA)" and "FSA" respectively.

Food labeling on bulk products and processed food are exceptionally integrated and consistent with Commodity Origin of Labeling(COOL) and Geographical Identifications(GI). However, COOL has also some contradictions across the food items on criteria of commodity classification because the classification

follows "the Code of Food" rather than APQCA. Regulation regarding a false description and an exaggerative advertisement, there are some prohibition regulations on the FSA and LPPA while there are no specific regulations on the APQCA and FPQCA.

Monitoring and post management is conducted on the regular basis only for the COOL, while other food labeling is conducted irregularly based on the food safety survey.

Current issues on the post management of food labeling can be summarized with lack of experts, sharing managerial information between agencies, and linkages between regulations. Results for consumer survey showed that COOL is highly recognized compared to quality certification, organic food certification, GI, and HACCP. Most consumers thought that the country origin should not become "made in Korea" if cabbage of Kimchi is from China although Kimchi is made in Korea using the imported cabbage. Consumers were not comfortable due to the lack of labeled information, location of the labeling, and size and shape of the labeling. Expert survey shows that the labeling associated with COOL and GMO were successfully implemented compared to KS, ISO and GI.

Generally, regulation and acts associated with food labeling in developed countries such Japan, EU and the United States are integrated and consistent with food commodities. Certification system is run by the third sectors or private organization. These countries focused on preparation of guide lines and post management system. COOL, GI and GMO labeling is not successfully implemented in the U.S., but it is successfully implemented in the EU. For most developed countries, such as the EU, the US, and Japan, organic food certification of agricultural products were consistent with processed food in terms of criteria of applied regulations.

The basic idea for the improvement of food labeling include following four aspects: consumer oriented labeling scheme, harmonization with international standards, improving efficiency of management system and support of producer's quality assurance program.

It is recommended that Acts associated with food labeling should be integrated into one to keep consistencies and clear cuts

on regulations, labeling and classification. For instance, Japan has integrated related acts by enacting the legislation of JAS.

Ideas for the integrated act were reviewed through three scenarios following the relevant acts, administrative and monitoring organization.

Scenario 1 is associated with legislation of the integrated acts and the merger of administrative and monitoring organization.

In scenario 2, the administrative and monitoring organization maintains current system although the integrated act is legislated. In scenario 3, the organization of "Food Labeling Coordination Committee(FLCC)" is suggested under current acts and management system. FLCC could discuss direction of the integrated acts as concerned, especially for the COOL and Organic Food Labeling. In the short term, scenario 3 is preferred, however, scenario 1 and 2 are preferred in the long term.

It is desirable to establish " Food Labeling and Standard Acts" in the future.

Future directions for the regulations of food labeling and enforcement procedure can be summarized as follows:

First, goal and nature of the related acts should be clearly identified through the harmonization of food classification criteria. Second, it is important to provide the legal evidence and guide lines for bulk products labeling. Third, regarding COOL, the labeling food items should be expanded on agricultural products basis to increase the relevance between agricultural products and processed foods. Fourth, the acts associated with environmentally friendly agriculture certification should be integrated as the unified Act.

Food labeling formulas should be integrated within "Agricultural Products Quality Acts" in the near future. The existing environmentally friendly agricultural products labeling system should be divided into two schemes such as organic labeling. Reduced chemicals farming and no chemicals farming should be certified by the self quality control system rather than government certification system. Organic labeling for fresh products should be integrated with organic processed food labeling scheme. In order to consolidate liability of the private certification, it is needed to enforce drastic post management and to increase experts.

To establish the food labeling infrastructure, it is necessary to strengthen monitoring system, to improve the labeling description, and to increase consumer awareness and promotion.

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Strategies for Value-added Production of Germinated Hulled Rice and Advance into Chinese Market

I. Background and Objective

With rapid industrialization, the interest in adult diseases stemming from unbalanced nutrient intakes and pollution is getting higher. Recently, the consumption of functional and healthy food is growing, but the benefit is questionable. In the circumstance of pursuing well-being, consumption of health-oriented value-added processed rice is anticipated. The technical development of value-added rice is required in the rice industry.

Germinated hulled rice provides more nutrients such as vitamins and inorganic matters, and dietary fiber produced during germinating. It is a healthy food and good for dementia, fatness, growth promotion, melancholia and so on.

Korean market for germinated hulled rice is in the early stage. It depends on the domestic market and no export is conducted. To export the commodity, various value-added products should be developed.

Especially, during the WTO/DDA negotiations, the development of value-added products of domestic rice is the one way to elevate competitiveness of Korean rice industry. Even though the foreign countries try to develop products using hulled rice, the domestic efforts to carry out nationwide systematic research are meager. In consequence, there is no study to cultivate foreign markets. So the study for products development and opening up a market is necessary.

The main objective of this study is to secure competitiveness of domestic rice industry under globalization by developing various export products targeting the Chinese market.

II. Contents and Scope

This study consists of the followings. First, the domestic hulled rice market and foundation for export are surveyed. Second,

Chinese market for hulled rice is surveyed. In particular, production, distribution and consumption of hulled rice in China are predicted. Also, through field survey, distribution system, purchasing behavior of consumers, and importing company are analyzed. Third, competing conditions in the Chinese market are investigated by examining import system and R&D for products. Fourth, the direction for product development is established via comparing characteristics of domestic and foreign products. Fifth, the development of specific products and panel test of Chinese people are implemented. Sixth, export strategy is formed based on SWOT analysis of domestic hulled rice and considerations on the institutes of making an export industry.

III. Suggestions and Study Results

To cope with the market open, making the rice industry competitive and establishing export foundation by developing high value-added products are needed. In 2004, rice market was about 1,100 billion won worth, and the germinated hulled rice market account for 30-50 billion won.

Germinated hulled rice is known as a very healthy food, and several firms are competing fiercely to meet consumer demand. As the functions of germinated hulled rice become generally known, a variety of products using it are introduced into market in the form of rice cake, beverage, noodle, and cookie.

So far, goods exported to China include raw materials and processed products. Food market in China is very diverse. Based upon region and class, there are different needs and lifestyle of consumers. So there should be detailed strategy for germinated hulled rice to enter the Chinese market.

Germinated hulled rice market in China is in the beginning stage. The producers and sales area are very limited. The production and distribution of germinated hulled rice is being formed recently. General hulled rice has been sold in market, but the awareness of consumer for germinated hulled rice market is very low, and only a few high class people know the function of germinated hulled rice market. However, the recognition of the germinated hulled rice market is getting higher.

The new products for Chinese market include cooked rice, gruel, cake, cookie, and cosmetics. The survey of Chinese consumers shows that the knowledge about germinated hulled rice is low. However, low price and the product development will be helpful for market growth.

For Korean germinated hulled rice producers to enter Chinese market and raise their market share, high-end brand marketing and niche marketing are necessary. To mark the successful market entry, market positioning should be conducted in the early stage, and product awareness should be raised. For that, market segmentation and target marketing is needed. Marketing strategies for market finding, maintenance, demand elevation have to be effectively used in various ways and simultaneously.

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A Study on Establishing Traceability System in Livestock Production and Marketing Channels

The objective of this study is to establish plans on adopting the traceability system in domestic livestock production and marketing channels. This study will examine the pilot project of beef the traceability system and investigate the problem and factor in domestic livestock production and marketing channels, and also to examine the international standard in the traceability system of goods production and distribution and foreign traceability system. Using the method such as previous literature review, evaluation of pilot project on beef the traceability system and econo-metrical approach.

In this study, the traceability system of livestock products is defined as an ability to follow and trace the information about livestock products in the stage of production, processing, manufacturing, distribution, and marketing.

The trend of establishing the traceability system was regularized in late 1990. EU introduced the new trend of the traceability system in early 1990 and U.S. and Canada recently adopted this system and applied it to their policy.

Results from the survey of pilot project of beef, the traceability system presents that consumers require the livestock product safety and assurance for their health, and the survey also shows that there are problems in the traceability system such as individual identification system, the choice of brands who participated in pilot project and strategy of public information about consumers.

To guarantee clarity in livestock production and marketing channels and to ensure food safety, it is essential to establish the traceability system in livestock production and marketing channels.

First of all, constructing the traceability system requires improvement of individual identification system. Second, in case of expanding the beef traceability system, it demands gradual expansion of pilot project that is performed by the brand selling

the livestock product. Third, leading farmer who raise livestock and trader distributing livestock product to participate is required to educate the necessity and main idea of the traceability system. Forth, establishing the traceability system is necessary for to combine individual identification system which is following international standard and to construct the database that records the information about goods. Fifth, preventing illegal distribution and improving national awareness about the confidence of livestock products requires the monitoring system and the enforcement of penalty based on monitoring results. Finally, to establish the traceability system, the previous sample test system should be built in order to trace the origin of diseases.

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Strategies for Advance into Foreign Markets and Green Tea Products Development

I. Objective

The objective of this research is to establish the export market penetration strategy for green tea and to suggest appropriate export items (leaf tea, tea-bag green tea and powdered green tea) for the local needs in the face of extensive international market liberalization. Recently, with a wide recognition as a healthy food, the growing interest and consumption for green tea promise bright market opportunity. It is projected that the future of green tea is very promising. In addition, the green tea is a highly value-added economic crop that plays an important role in promoting local economies with the development of various processed products and provides opportunity for production site tourism. However, the Korean green tea industry is still at the initial stage of industrialization and future trade liberalization poses a serious threat of the market share erosion.

In this context, this research attempts to set up an export market penetration strategy by delving into problems of domestic green tea industry, the current status of major green tea exporters and importers. Further, this research suggests the directions of export product development by developing green tea cultivation and process technologies targeting foreign consumers' preference.

II. Results

First of all, comparing with major green tea producing countries such as China and Japan, the Korean green tea industry stays behind in terms of price, quality and product varieties. The tea breeding is still in an early stage and the production per acreage is comparatively lower than that of China or Japan due to slope cultivation. In terms of cost of production, China is 27% of that of Korea, while Japanese major producing centers such as Shizuoka and Kagoshima are producing green tea at 65% and 35% of the cost incurred to Korean farmers respectively. The

Korean green tea industry is mostly composed of small businesses, which means that they tend not to secure sufficient capital and technologies. As a result, the Korean industry has dull competitive edge in processing efficiency and quality control. In particular, the manufacturing process based on small scale roasting methods is disadvantageous in terms of the cost of production and product quality such as hygienic product management.

Secondly, international market structure shows that China, one of the major exporters, exports 70% of its green tea products to Asian and Islamic countries and also exports oolong teas to Japan and Southeast Asia. Since the Chinese tea makers rarely export tea leaves under brand names, their competitive edge lies in price competitiveness. This implies that Chinese tea industry has inadequate investment in science, technologies, and high value added products.

Japan dominates international green tea market with its outstanding manufacturing system, which has a large scale and is machinized and automated. The Korean tea industry would face serious competition if Japanese makers export tea products from their large tea plants in China and Vietnam to Korea via Japan. However, the food safety issues from pesticide residuals and others act as a barrier to the Japanese green tea export.

One of the major exporters, Vietnam is becoming a key tea exporting country with foreign joint ventures and investments. As the country has quality natural resources and cheap labor, it is expected that the country has a promising place for direct investment and development.

The U.S. and Europe have been major green tea importing countries. With a growing interest in green tea, their consumption of tea leaves will increase in the near future. Especially, the U.S. green tea market has a great potential. The U.S. market prefers convenient products such as soft drinks and tea bags. Therefore it is necessary to improve container designs of teas for better appearance and easy handling of local consumers. Furthermore, it is required to carry out various promotional activities such as Korean tea ceremonies, regular sample tasting sites(tea house) and so on for boosting local awareness on the Korean green tea.

Thirdly, according to the survey on consumers in Japan and the U.S., the Japanese market is a traditional tea leaf market that prefers teas in the common price range. The Japanese market tends to favor green tea with strong taste and vivid green colors. The consumer awareness of the Korean green tea was very low, indicating more systematic promotional activities are essential in the market.

On the other hand, the U.S. market still prefers soft drinks to tea and its consumers prefer tea bag to tea leaves. Also, the U.S. consumers generally like the scant of green tea, but they tend to have negative opinions on its colors and tastes.

Fourthly, for a successful introduction of the Korean green tea into international market, it is necessary to establish an export base to develop various products and package designs that would meet local demands and secure specialty shops of the Korean green tea. At the same time, it is required to build export and information support systems, which concentrate on promising green tea importing countries and support product promotion with cultural activities.

Fifthly, the results of lab experiments for developing green teas that meet global consumers' tastes are as follows: To improve the green tea quality, it is recommended to expose green teas to sunlight so as to increase both quality and quantities. During the tea processing, it is better to dry the tea leaves after steaming than traditional drying and heating processing as it enhances the form, color, fragrance and taste. In addition, to produce high quality tea bags for export, it is ideal to mix 30~50 percent of unpolished rice in green tea for adding savory flavor of the unpolished rice. Mixing rice also mitigates and smooths the bitter taste of green teas. For the filter paper, high quality gauze was better than non-woven fabric tea bags. For the high quality powdered green tea, it is better to screen the sunlight than the exposure. During the second period, screening the light for 20 to 30 days increases the quantity of chlorophyll and produces better leaves in terms of form, color, and tastes. The processing method of high quality powdered teas is steaming tea leaves for 40 seconds in 100°C and then drying them for 90 minutes in 80°C.

III. Suggestions

Currently, as the Korean green tea industry is at the initial stage of international market penetration, it is recommended to seek a niche market rather than pursuing its own market expansion. With high-price & high-quality export strategy, the Korean green tea makers should focus on the establishment of specialty shops targeting middle or higher income consumer groups and induce quantitatively small but high price sales of the quality Korean green teas so as to create the premium image.

On the other hand, as there are various ranges of green teas, it is essential to develop products that meet the international consumers' preference while retaining our unique characteristics as Korean products and to accelerate global marketing efforts by continuous promotional activities. At the same time, to make an inroad into overseas mass markets of lower quality green teas, it is necessary to consider direct investments in countries like Vietnam and China where the costs of production for green tea is cheap.

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A Study on Production, Distribution, Consumption and Competitiveness of Environmentally-Friendly Rice

The study mainly consists of the analysis on the production, distribution, and consumption structure of environmentally-friendly rice, and the ways to promote its competitiveness.

The structure of this paper is as follows: In Section II, various technologies which were adopted to produce the environmentally-friendly rice are compared. In Section III, production cost and benefits are analyzed. In Section IV, a research was conducted about the producer and distributor's marketing activity and especially the four P(4P) framework. In Section V, a survey was conducted for consumers about their purchase pattern and preference of environmentally-friendly rice. In Section VI, we conclude the paper.

The major results of this study are as follows:

- 1) The plant breeding only for the environmentally-friendly rice shall be developed
- 2) The Environmentally-Friendly Agriculture R&D Center shall be built
- 3) Local National Agricultural Cooperative Federation or producer's organization shall be used or existing small-scale organizations shall be integrated for improving farmer's bargaining power
- 4) Direct marketing between farmers and consumers through empirical marketing shall be stimulated
- 5) Distribution channel shall be diversified and the labelling system shall be adopted
- 6) The price and cost of the environmentally-friendly rice shall be reduced
- 7) The image of distributors or distribution organizations shall be promoted while considering that consumers are favorable to the suppliers(or region)
- 8) The number of labels under the current four labelling system

of the environmentally-friendly agricultural products shall be decreased. In the long term, it is useful to apply only two grades

- 9) Public relations shall be strengthened at the national level and consumers shall be educated.

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An Economic Analysis of Producing Bio Internal Organs from Germ-free Minipigs for Xeno-transplantation (2nd Year)

The main purpose of this study is to analyze the economic aspects of producing internal organs from germ-free minipigs for xeno-transplantation. Under the ten-year plan, the study will be continued until 2013. The objective of the year 2005 study is 1) to develop the methodology of economic analysis, evaluation, and project management, and 2) to analyze the potential demand for bio internal organs.

The results of the study can be summarized as follows:

First, the survey conducted to find out the demand for bio internal organs found that 250 patients and their families spend 27,200 thousands won on average for a surgical operation and hospital charges, and 7,600 thousands won for examination, and 14,000 thousands won for medicines. In addition, their average waiting time for transgenic internal organ surgery was 8.8 months. The survey also shows that the patients and their families' willingness to pay (WTP) for bio internal organ varies depending on durability of organs and income level. The estimated WTP was 28,840 thousands won per bio internal organ if the organs' durability is from six to ten years. Likewise, the durability of organs could be an important factor for selling bio internal organs after development.

Second, based on the survey result regarding the demand for bio internal organs, 50 specialists (doctors) evaluated the highest value for a lung, and it was found that the total value for seven bio internal organs cultivated from a pig is 210,000 thousand won.

Third, when the LOGIT model was used to analyze consumer's preferences, WTP was 40,000 thousands to 50,000 thousands won per organ, if the organs' durability is six to ten years, and 50,000 thousands to 60,000 thousands won per organ, if the organs' durability is semi-permanent.

Fourth, the study classifies all research projects into three or four groups by contents or characteristics. Group 1 touches upon the field of establishing technical standards. Group 2-1 handles new technology development based on old technologies, while Group

2-2 deals with developing high technology. Group 3 touches upon the area of surveying or analyzing researches and its outputs.

Fifth, it is suggested that key factors for successful projects are 1) sufficient budget and stable budget flow and 2) proper human resources and technical assistance.

Sixth, it is pointed out that the main factors for failed projects are 1) the lack of budget and stable budget flow, 2) the lack of cooperation with other research projects and results sharing, and 3) the lack of information distribution and progress imbalance among research results.

Seventh, problems are emerging for studies in this field. For example, in Group 1 and Group 2-1 of studies, researchers complain insufficient budgets and late budget supply. In case of Group 2-2, researchers call for timely budget supply. In case of Group 3, most of emerged problems could be easily solved.

Eighth, a rule was made to evaluate economic performance of twelve specific projects. In case of Group 1, the economic influence of reducing trials and errors was estimated. In case of Group 2, based on the assumption of the same-size germ-free swine, the efficiency between old and new technologies was compared. In case of Group 3, economic performances were estimated by comparing the cost between successful and failed cases.

Ninth, the study suggests a rule for evaluating and managing projects. The most important factor in project results evaluation is how much of the original plan was achieved.

Tenth, to manage the time schedule of entire projects, this study will use the PERT-time methods.

Finally, a survey conducted to evaluate the integrity among projects found that the team working on the enhancement of character converted pig cloning efficiency has earned the highest score, while the management techniques development team has earned the lowest score.

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An Economic Analysis of Environmentally Friendly Agriculture and Measures for Further Development

In order to establish the environmentally friendly agricultural system (EFAS), policy programs should be tailored for each region based on the accurate diagnosis of the environmental loading of region-based agri-ecological system and the economic analysis for managing environmentally friendly agricultural resources. The purpose of this study is to take a look at sample regions and to propose measures to develop the environmentally friendly agriculture (EFA) based on the analysis of the economic effects of the EFA.

Various analytical methodologies were applied to achieve the purpose of the study. In order to analyze the management performance of the farm households, which conduct environmentally friendly agriculture, Data Envelopment Analysis was applied to measure the technological efficiency. Tobit Model was utilized to evaluate the factors, which influence technical efficiency. The farm households' level of acceptance of the direct payment program for the EFA was evaluated by using Contingent Valuation Method (CVM), while bootstrap was applied to assume the significance level. The economic values of the shift toward the environmentally friendly agriculture in terms of environment quality improvement were measured with Utility Difference Model.

In the survey of farm households conducting the EFA, 27 percent of the respondents said that the biggest difficulty they are facing is the lack of sales channels, and 20.6 percent responded that technical problems related to the prevention of diseases and harmful insects and the weeding are the biggest hardship. Therefore, it was found that the lack of distribution channels and the production technology are the most troubling factors to EFA farmers. In the study, the appropriate amount of direct payment to an organic rice cultivating farm household was estimated to be 1.06 million to 1.1 million won (95 percent of the significance level), which is higher than the current direct payment amount of

806,000 won. The average direct payment amount was estimated to be 1.08 million won.

When asked about the proper measures to promote the sales of environmentally friendly agricultural products and to facilitate the market, 29.2 percent said that the active consumer promotion and expanded training are necessary, followed by the increase in the number of merchants and the diversification of sales channels with 25.3 percent and the expansion of exchanges between consumers and producers with 19.9 percent. The joint supply via agricultural cooperatives was the most favored method of supplying environmentally friendly agricultural products by farmer.

In order to achieve material balance, the reduction of the number of livestock raised is required. In the Hongseong region, for example, it was found that the average direct payment per pig (for raised pigs) to a fattening pig farm, which reduces the number of pigs raised to or below a certain level, is estimated to be 46,250 won. If pig farming is completely phased out, the appropriate direct payment per head was estimated to be some 289,062 won (2.5 times the annual income per head).

In relation to the farm management performance, in Hongseong-gun, it was found that the average technical efficiency of environmentally friendly rice farm households was 0.73, indicating that an average of 27 percent of management efficiency should be improved compared with the most efficient farm households. The appropriate input level was calculated for environmentally friendly rice farm households in Hongseong-gun, and it was found that the expense for organic fertilizer was 32,000 won and needs to be cut 31.9 percent on average. The expense for preventing diseases and harmful insects was 3,000 won and needs to be cut 41 percent on average. The expense for environmentally friendly agricultural equipment and supplies was 35,000 won and needs to be cut 40.6 percent on average, while the labor expense was 118,000 won and needs to be cut 40.3 percent on average.

When taking a look at the factors, which influence the technical efficiency of EFA farm households, it was found that younger, more educated, more experienced landlord farmers using a variety of species are more likely to show high efficiency. Also,

the technical efficiency improves when the level of the soil management technology is high.

Hongseong-gun needs 30 percent of reduction in the number of pigs raised to achieve the nutrient balance, if the appropriate number of pigs raised is set at 300,000 to 320,000 heads. In addition, the nutrient generated by 100,000 to 150,000 pigs should be transferred to other regions, and the chemical fertilizer use (nitrogen and phosphorous, by ingredient) should be reduced 30 to 60 percent. Only then could the environmental load be minimized through a material balance.

It was estimated that Hongseong-gun will need to spend some 5.9 billion won in 2005, 15.4 billion won in 2007, 19.9 billion won in 2010, and 23.7 billion won in 2014 respectively to achieve the transformation into the EFAS. In case of Okcheon-gun, it was estimated that it needs to spend some 5.3 billion won in 2005, 8.3 billion won in 2007, 11.3 billion won in 2010, and 14.2 billion won in 2014 respectively. Meanwhile, in Hongseong-gun, the estimated economic value of improved environment quality stemming from the transformation into the EFAS was some 32.9 billion won per year. The value refers to the approximate economic value of the sound Hongseong's EFAS, which is recognized by consumers.

Based on the economic analysis of the sample regions, the study suggests the management consulting aimed to reduce production costs for farm households, the investment expansion for EFA nurturing projects, the year-based differentiation and inflation of direct payment amount and the proper measures to expand sales channels and promote sales of environmentally friendly agricultural products as measures for EFA development.

To help EFA take a firm root, it was found that relevant training should be expanded to induce the voluntary participation of farmers in EFA; tailored technical development should be executed in line with regional farming conditions; and in particular, the technologies for weeding and disease and insect prevention should be developed and widely distributed. Beside, measures should be drafted to encourage private companies to participate in the activities of turning livestock manure into fertilizers by effectively linking cultivating farm households and

livestock farm households. Lastly, all relevant entities, such as farmers, consumers, researchers, policy makers and NGOs, should take their share of responsibility to achieve the sound EFA development.

It will take considerable amount of time to build a sound EFAS in consideration of region-specific environmental loads. Therefore, phased approach should be taken, and the proper policy mix composed of economic analysis-based programs and infrastructure setting programs should be pursued.

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A Study of Storage and Processing Sector of Government Rice, and Private RPC

The purpose of this study is to provide an efficient way of surveying local rice price. The direct payment program on rice was introduced in 2002, and the rice price surveyed by National Agricultural Products Quality Management Service(NAPQMS) is used to measure the amount of income compensation.

This study is composed of five sections. First section reviews the ways of price research. In the second section, the statistics(sample mean, standard deviation, coefficient variance) is analysed. Third section provides the way of stratified random sampling. Five section suggests the desirable ways of survey.

The major findings of this study are as follows: First, among the many ways and institutions, surveying traded price is most appropriate method in Korea to find out price information. Second, NAPQMS surveyed 104 cities and counties, and at least 5 marketers per city and county. So this sample survey is close to population survey, and it is believed that sample mean is near the population mean. But the problem is that it costs very much. The stratified random sampling is a reasonable method to reduce surveying costs and improve the precision. The mean and standard deviation was used as a criterion to stratify. The coefficient of variation by stratified random sampling decreased to 2.1408 from 4.1156. It means that the precision on sampling mean improved significantly.

A few ways of surveying methods were recommended. The national mean price should be a weighted mean rather than a simple mean. And a system should be prepared to check the surveyed data. The price at the day of no trade should be "no - trade" rather than entering the same price of the previous survey day.

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The Optimal Allocation of the Large-Scale Agricultural Products Processing Center by Major Fruit Production Region

The objective of this study is to suggest the optimal allocation scheme of large-scale Agricultural Products Processing Center (LSAPC) by major fruit production region through the projection of fruit production.

The study found that the demand for LSAPC will reach 25 units by 2013: 11 for apple, 6 for pear, 4 for Korean mandarin orange, 3 for persimmon, and 1 for peach. Regarding the efficiency of investment in the LSAPC based on IRR analysis, there exists an economic validity if the LSAPC can keep the operation rate over 70 percent. In view of the LSAPC management group, it is profitable from the beginning of investment year because government subsidizes 50 percent of total investment.

The optimal packing volume will be over 20,000 M/T for 15 sites among 25 LSAPC. Those of the LSAPCs for persimmon and peach will be around 15,000 M/T.

In 2013, the volume packed by the LSAPC will be 420,000M/T, which accounts for 20 percent of the projected total fruits production.

For the better management of the LSAPC, it is necessary to establish independent management system and pooling system, and to diversify packing commodities around year, and to integrate the existing facilities such as cold storages and small packing houses in local area.

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A Master Plan for Construction of Agricultural Marketing Complex(AMC) in Taean County

Objective of this study is to provide a master plan for construction of the agricultural marketing complex(AMC) in Taean County to improve farm income and marketing efficiency in the region. Market situation and perspectives of major agricultural commodities have been reviewed. Based on this market analysis, a master plan for the AMC, which contains optimal facilities of warehouse, cold storage and farmers market. Finally, the economic and feasibility analysis for the construction of the AMC was conducted. It is expected that construction of the AMC in Taean County will benefit farmers and market participants through improved marketing efficiency.

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Strategies for Structural Improvement of Spicy Vegetables' Main Producing Areas

In Korea, vegetables associated with seasoning process in cooking such as red (hot) pepper, garlic, onion, and so on have been an important income source of most rural farm households. However, the scale of individual farm household's crop acreage has been too tiny falling short of attaining the economy of scale, and the implementation of automatic machinery process while planting and harvesting is highly limited. Thus, the average production cost of red pepper is seven-fold that of Chinese red pepper. In case of garlic, the average production cost is four or five times higher than that of Chinese garlic. If the international agricultural product trade agreement (DDA) reaches a certain level of settlement such as large scale of tariff rate reduction or very low level of tariff rate ceiling limit, it's too obvious what negative impact will be made on small-scale farm households' income or rural economy in the future.

The specific problems linked to three major vegetables is that the rural economies harvesting three major crops across all nation are so vulnerable, and there are too many individual households with small crop acreage. Furthermore, the proportion of aged farm households over 60 years is the largest in major production regions of three crops in Korea. In other words, the implementation of the newly devised government renovation program might have coped with severe difficulties due to the mentioned reasons.

Thus it's too obvious we could expect the devastating negative impact on the rural economy if the scale of imported agricultural products (three major crops) from foreign countries is expanded and the level of major three crops' domestic prices are drastically decreased. In order to minimize the expected negative impact due to the expanded scale of imported three major crops, the new government policy program associated with renovation and restructuring of three major crops should be urgently implemented. Also, under the government farm policy program,

some farm households need to be induced to harvest other kinds of crops which have international competitiveness or to shift to other alternative industries.

Main themes of our research focus on the net impact of tariff rate reduction on three major crops after DDA negotiation settlement. In particular, the expected level of domestic production scale and crop acreage based on different domestic market price condition linked to the level of tariff rate and scale of imported volume from foreign countries are estimated. Furthermore, we estimated the tentative financial value of negative impact on rural economy due to the deteriorated market condition of major three crops. Also, the negative impact was classified by different crops or the different scale of farm acreage (large or small farm). In conclusion, we proposed several alternative ways to enhance farm competitiveness and presented a staged road map for the successful implementation of government renovation program.

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Report No: C2005-62/Dec. 2005

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Agriculture and Rural Community Development Plan for Ulju-gun

The changing conditions in the global agriculture, such as the opening of the domestic agricultural market, Free Trade Agreements between countries, and policies with a focus on multilateral functions of agriculture, greatly affect the Korean agriculture and agricultural policies. In particular, in Korea, local governments' investment and interest in agriculture determine the quality of living in rural communities, competitiveness of each agricultural product, and the income level of individual farms. Thus, adopting and implementing agricultural plans by the local autonomous government are very important.

The main purpose of this study is 1) to examine regional, environmental, and socio-economic characteristics of agriculture and rural communities in Ulju-gun, 2) to adopt a comprehensive development plan for agriculture and rural communities in Ulju-gun by assessing their strong and weak points, and the development potential.

With eight Myeons, Ulju-gun is identified simultaneously as a city, a rural composite county, and a suburb area surrounding a metropolitan area. In particular, Ulju-gun has the potential to promote a specialized premium rice brand with its existing eco-friendly rice production complex. However, the area needs to develop superior rice breeds and develop proper rice processing system.

The region has specialized crops such as pear and persimmon. Recently, the production of leek, dropwort, and paprika has increased in the region, but the volume is still limited.

Ulju-gun is famous for Korean native beef product. As such, the region is trying to build a "Special Roasted Native Korean Beef Zone" in the Bonggye and Eonyang area. However, increasing land price makes it difficult to realize the plan and the new entry to the livestock industry.

The region is not good at distributing agricultural products because most of its agricultural products processing centers (APC)

are small-scaled and geographically dispersed. Furthermore, the level of consumers' recognition on its products is still low because brand marketing strategies are not integrated while the focus is given to individual brands only.

In the meantime, Ulju-gun consists of rural communities, mountains, and fishing villages, and is blessed with abundant natural landscapes like the Alps of Youngnam and tourism resources. Nevertheless, only a handful of farm households are participating in tourism projects utilizing these rich tourism resources. The standards of living in the rural communities are higher than the average level of rural communities. In addition, they are actively engaged in building sisterhood relationships with adjacent areas and have many employment opportunities beyond agriculture.

Given the situations, Ulju-gun needs to construct a green park to further develop its agriculture and rural communities in the future. The term "green" stands for establishing the agricultural industry which enables the production of eco-friendly products with superb quality, and the term "park" refers to rest and living space, which offers safe foodstuffs and tourism attractions.

In order to realize the vision of green park, 1) choice and focus on specialized farming, 2) construction of local distribution infrastructure and development of integrated brands with quality goods, 3) creation of the pleasant living environment, and 4) the establishment of mutually beneficial economic models for rural and urban areas to spearhead changes are necessary.

Based on the above mentioned strategies, a comprehensive development plan for Ulju-gun can be suggested as follows:

First, a rice production and distribution system should be established based on Rice Processing Complex (RPC). In detail, introducing eco-friendly and premium brand rice through establishing the processing and distribution infrastructures based on the Dubuk and Ungchon RPC is necessary.

Second, a complex for region's specialized crops including pear, persimmon, and other products should be built.

Third, a premium Korean native beef brand should be developed in consideration of the linkage to the "Special Roasted Korean Native Beef Zone" in the Bonggye and Eonyang area. Also, Ulju-gun needs to promote eco-friendly livestock industry

through natural circular stock breeding.

Fourth, eco-friendly projects applicable to entire Ulju-gun should be introduced. To this end, Dudong is suitable to carry out a pilot project. Using the result from the pilot project, the eco-friendly projects could be conducted across Ulju-gun.

Fifth, the distribution system for producing sites should be enhanced by establishing centralized and integrated APCs in Ulju-gun to enable large scaled, standardized, and premium brand fruit farming. To this end, it is desirable to build a regional APC at Ungchon area, which is a crossroad between Busan and Onyang.

Sixth, environment-friendly living should be promoted to increase farm visits and facilitate interactions between rural and urban areas by capitalizing on the geographical advantages of Ulju-gun. For example, creating an agricultural theme park and various weekend farms, developing candidate sites of Green Farming Experience Towns and enhancing tourism resources in farming and fishing communities are recommended.

Seventh, the region should be developed as a pleasant and convenient place of settlement not only for existing residents but also for city dwellers. To this end, a comprehensive town development project should be drawn up with a focus on improving the quality of living, production, and natural environment.

Lastly, the education system should be established to offer good quality education to elite farmers to prepare them for the upcoming knowledge-based agricultural era.

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Farm Mechanization Policy Goal for Securing Agricultural Competitiveness and the Development Direction of Farm Machinery Industry

I. Objective

This study was carried out to find the way to overcome difficulties in farm machinery industry, which has fallen into depression with national economic downward since the mid-1990s. When compared with the Japan's mechanized farming policy's characteristics and changes, because Japan's condition is similar to Korea's, this study suggests the Korean government's goal of mechanized farming policy hereafter and business' direction of farm machinery industry.

II. Contents and Study Scope

The past farm mechanization policy focused on raising the mechanization rate through supplying more farm machines. However, farm mechanization policy should be set up and put in practice while giving a priority to cutting down expenses of farm machines, developing new farm machines, and assuring stability of agricultural work in order to give practical benefits to the farm household economy. In addition, the mechanization of non-rice crop has been neglected until now, and the enlargement of farm machines including materials of various facilities was started. The range of the research is as follows: ① changes in Korea's farm mechanization policy, ② changes in Japan's farm mechanization policy, ③ mechanization rate in Korea per species and ⑤ the present state of Korean farm machinery industry and research of export possibility.

III. Findings

A. Development of various policies

Providing the support for individual farm machines has been the policy of the central government policy, but now the

total fund system has been introduced. Still, it is important to resolve existing farm mechanization problem. Therefore, the central government's effort to develop various policies for local self-governments are necessary. Local governments and farmers can choose the essential menu in each business plan of investment and loan. For example, business of rent and use farm machines, business of reusing used farm machines, selecting the proper scale and kinds of machines, and so on should be more specific.

B. Government's grants of farm machines as a part of government's investment and loan and the increase of loan rate

In fact, it's difficult to enlarge the size of farm enough to buy the expensive farm machines. Small-sized farm households can't buy farm machines on their own and earn high income. European countries and Japan continue to support the farm households in case of buying farm machines. So the government grants should exist for government's investment and loan program. When a farmer chooses the farm machine, government gives assistance to him. It doesn't mean distortion of market price. In Japan, in most cases of purchasing farm machines, 50 percent of the price is the government grant.

C. Supporting development of small and medium-sized, economical farm machines

There are still many small-sized farm households, although the efforts of enlarging the scale of farm for several decades. For increasing their incomes, it is necessary to develop cheaper small and medium-sized farm machines. The fund for development of farm machines and grants for reducing cost of using farm machines are required together. Development of small and medium-sized farm machines also helps the enterprises as well as buyers of farm machines. Large-sized farm machines could be imported. In Japan, large-sized farm machines are mainly imported instead of being domestically developed. It is because developing cost is very high and demand is very limited.

D. Developing the locally customized machine and the farm

machines in consideration of safety and environment

For local specialized crops, farm machines demand is limited, so support to develop such machine should be offered through cooperation of central and local governments. In Japan, a few necessary farm machines' development is supported by special business (ginpro). It's high time that more environmentally-friendly machines should be developed in preparation for the Kyoto protocol.

E. Others

The following should be considered as well: promoting the reuse of used farm machines, setting the period of supporting tax-free oil, admitting that the youths can work as irrigation engineer instead of serving military duty, operating and mending a recall system, and arranging a farm machine accident insurance(fraternal insurance) system.

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Innovative Green Tea Industrial Cluster Development Plan for Hadong-gun

The objective of this study is to proactively deal with government-driven "Regional Agriculture Cluster Policy" and the changing environment surrounding the green tea industry, which the specialized industry of Hadong-gun, and to develop strategies and action plans for an innovative green tea industrial cluster to strengthen the industry's competitiveness.

The findings of the study indicate that Hadong-gun is best suited for creating the innovative green tea industry cluster in terms of the natural environment, the historical and cultural surroundings, and the industrial and economic environment. However, the survey results of local experts on the regional capability of innovation show that the region lags behind in several areas, such as supporting industries by sector and the innovative capability of the "development council" and farmers.

Meanwhile, in order to accelerate innovation of other industries, development projects linked to eco-friendly tea cultivation, the modernization of processing facilities, and green tourism should be given top priorities.

The development strategies for the Hadong Green Tea Industrial Cluster to enhance its competitiveness are as follows:

First, it is important to produce top quality tea products. To this end, it is essential to develop unique Hadong green tea products with top quality, establish a distinguished tea brand, set up a quality control system covering the entire processes from production to distribution, and put the brand promotion system in place.

Second, the industrialization strategy to turn Hadong into a hub of green tea-related technology should be initiated. For example, Hadong Green Tea Research Center should be established.

Third, the strategy to build the green tea industry complex should be able to vitalize green tourism as well based on the local tourism and cultural resources.

Fourth, the above-mentioned strategies can be implemented in three stages, such as laying groundwork, specialization, and maturing. In the stage of laying groundwork, offering intensive education, establishing pertinent network, setting a stage for production, technology development, processing, distribution, public relations and green tourism, and developing a premium Hadong green tea with its brand can be pursued. In the stage of specialization, it is necessary to form a Green Tea Bio-Tech Industrial Cluster in order to facilitate the industrialization of Hadong green tea and to push ahead with various programs which will strengthen the industrial foundation. In the last maturing stage, the globalization of the Hadong tea industry should be pursued by creating a Green Tea Well-being Valley in main cultivation areas, such as Hwagae and Akyang.

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A Feasibility Study on Commercial Utilization of Thermal Effluents from Nuclear Power Plants

The thermal effluent from nuclear power plant is seawater which is used as cooling water of nuclear reactor. The temperature of thermal effluent is 7°C higher than natural seawater. If thermal effluents from nuclear power plants can be used as heating resource of greenhouses, it will help stabilize farm management by reducing production cost.

This study was conducted to examine the economic appropriateness in using thermal effluents as heating resource of green houses. The study focuses on the economical efficiency and profitability of nuclear power plants in four regions by facility-type, product, and subsidy-conditions.

Currently, as the expected profit is low, greenhouse farming does not get return on the investment. If 50% subsidy in production facility and 100% subsidy in pipe facility are offered with the application of 5% interest, farmers can earn return on their invested capital. In case of rigid-panel house farming, 50% subsidy in production and pipe facilities is necessary to earn higher than the invested capital.

If the result of economic efficiency is considered only, farmer's investment in facilities will be very limited. However, reducing heating costs in the face of high oil prices should be taken into consideration. As a solution, it is necessary to prepare a model project for suitable regions located near a nuclear power plant.

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Strategies for Construction and Management Plan of Yangsan Agricultural Product Composite Marketing Center

The purpose of this study is to establish a basic plan for efficient construction, management and operation of the Yangsan agricultural product composite marketing center. The study describes the concept, function, business model, proper capacity, size and allocation of facilities, and basic design of the center. Also securing buyers of agricultural products, business of each phase, distribution plan are touched upon. To set up a basic plan of construction of the composite marketing center, the surveys for producers, consumers, and merchandisers are carried out. Finally, analysis on similar and foreign merchandisers is conducted.

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Evaluation of Construction and Management Plan of Marketing & Distribution Center for Agricultural Products in Yongin, Korea

In Korea, there are diverse distribution channels of agricultural products between farm and consumers. Historically, the role of agricultural wholesale markets, which are spreaded across the country, has carried out important function on the viewpoints of market efficiency and lucent product distribution over 25 years. However, since 1994, a new type of agricultural product marketing and distribution centers appeared to enlarge market efficiency. Also, the consumers' purchasing behavior of the fresh goods is changing in the metropolitan area. For example, the demand for high-quality and safe agricultural goods and pre-processed and packaged products is growing. There are several affirmative market performance for both producers and consumers. The shortening of the length of distribution channels could improve farm price and lower consumer price. Furthermore, with pre-processed and packaged products, sales value can be boosted in consumer markets.

For Yongin, which is located nearby Seoul, a special research was conducted to establish a basic plan to efficiently construct, manage, and operate the Marketing & Distribution Center of Agricultural Products.

The main outcomes are summarized as followings:

The population of Yongin is growing fast and currently it amounts to six hundred forty thousand. However, there is no agricultural wholesale market at all. Thus, the scale of the proposed Marketing & Distribution Center of Agricultural Product was estimated with a focus on whether it will contribute to the welfare of both producers and consumers in Yongin. Also there exist some risks in managing new & huge facilities due to several matters. Based on additional studies on current problems and issues of other existing Marketing & Distribution Center of Agricultural Products, the areas to be concerned and the areas which need previous preparation are proposed.

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Evaluation and Improvement of Set-Aside Program for Rice

The set-aside program for rice in Korea was conducted as a pilot project for three years from 2003 to 2005 to reduce rice production and to enhance the position at the rice negotiations held in 2004 to extend the exemption period of tariffication in 2004. The program was aimed to reduce 130 thousand tons of rice production at a cost of 81 billion won. Although this program could be considered cheaper than special disposition program like foreign aid which costs 260 billion won to reduce 144 thousand tons annually, it should be evaluated how much land could be decreased naturally without the program.

Most farmers who participated in the project were old and small-scaled peasants at the sub-mountainous area, who were ready to retire from farming in a few years. Most participating land had about 4% lower yield than national average, and their rents were cheaper than the set-aside payment. However, if the project stops in 2006, 42 percent of farmers answered that they will restart rice farming.

The forecasting results using the KREI-ASMO 2002 model which consists of data prior to the set-aside program showed that 46~68 percent of the set-aside acreage would be the pure effect.

The rice supply and demand forecast shows the stock in 2011 would increase up to 2,160 thousand tons without any control programs. Seven control programs will be set to reduce the stock level: 1) deficiency payment for switching rice acreage to soybean, 2) deficiency payment for switching rice acreage to rapeseed, 3) set aside of plain land, 4) set aside of marginal land (current program), 5) land bank system for plain land, 6) land bank system for marginal land, and 7) special disposition including food aid to North Korea. The cost of each program which keeps ending stocks at the level of 1,000 thousand tons every year was estimated. Even though the result depends on the future policy circumstances, the rank of efficiency was 1) the deficiency payment for switching rice acreage to soybean, 2) set

aside program for plain land, 3) deficiency payment for rapeseed, 4) land bank system for plain land, 5) set-aside of marginal land, 6) special disposition, and 7) land bank system for marginal land.

In a short period of time, it is desirable to stop the set-aside program and review it because the government had less stock than the target amount of Public Storage System for Emergency (PSSE) in 2005, and there is still potential policy change in food aid to North Korea. If it is necessary to restart the set-aside program, some restrictions should be introduced to prohibit same fields' consecutive participation to improve the efficiency of the program, and the payment of the program should be decreased to reduce the conflict with the payment for early retirement program.

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A Study on Fostering Herb Industry in Namwon

Herbs have been used as raw materials in processing products such as perfume, sachets, teas, health foods, facial soaps, bath goods, vinegars, dry flowers, candles, alcoholic drinks and body oil, etc. Herb industry has already been settled as a high-tech industry in advanced countries such as the U.S. and Europe. In Korea when it was introduced at the end of the 1980's for the first time, industrial approach has been tried from the 2000's. Recently, as consumer's interest in herb is increasing, the herb industry is recognised as a high value-added industry.

Namwon has abundant native herb resources because Namwon area adjoins Mt. Jiri. So this study aims to make a master plan for fostering herb industry in the Namwon area. The domestic herb market consists of three types which are potted herb market, herb processing goods market and herb tourism market. In this study, these three markets are the subjects of research.

The market size of domestic potted herb is too small and the ratio of import is high in herb processing goods market. On the other hand, herb tourism market is expected to be enlarged continuously. Accordingly, it is desirable that the business priority should be placed on tourism market having a ripple effect on a local economy.

The stimulating strategies of Namwon are as follows:

- 1) Herb industry cluster should be built up.
- 2) All sorts of business for fostering herb industry should be propelled according to priority considering popularity, limitation and the scale of capital investment.
- 3) The investment resources should be secured through private sector as well as public sector.

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Basic Construction Plan and Validity Evaluation of Facility Modernization Project: Garak-dong Agriculture & Marine Wholesale Market

Twenty years have been passed since Garak-Dong Agriculture & Marine Wholesale Market (GAMWM) in Seoul, Korea was established in 1985. It has contributed to the enhancement of agricultural product wholesale distribution system as the foremost leading market. However, most facilities in GAMWM have been severely deteriorated and the issues of logistic congestion, narrow building space, and unsuitable building structure, etc. due to 1.6 times overloaded agricultural & fishery product volume than the pre-planned handling volume, have been raised.

In particular, the specially elaborated cold storage space has been used for preserving the genuine quality of agricultural products: vegetable and fruits. The storage facility also encountered crowdedness and congestion problems incurred into the lowered grade of agricultural product quality. Thus, our government plans to renovate all infra facilities and buildings within the market to boost up the key functions & roles of wholesale market as main hub of agricultural product trade in Korea.

As per the agricultural product market trend in Korea, it copes with a drastic change of market environment such as new type of agricultural product distribution pipeline has been emerged. In particular, the trade volume via hypermarket or third channel (on-line trade) has been growing so fast. They have had a huge impact on both retail and producers' shipping-point market. Furthermore, the volume of imported product passing through GAMWM has been hiked recently. The role and key function of GAMWM are supposed to be more important comparing to twenty years. The role of public service as national distribution hub of agricultural products is to be more fortified.

The detailed contents of this project are divided into two parts: construction planning and validity evaluation of market remodeling. The former is linked to new design of whole market facility infrastructure including interior decoration of each

building to smooth trade volume flow and enhance the capability of packing and assortment. The latter describes the estimated budget analysis, validity evaluation of marketing policy, enhancement of regional environment. Furthermore, we performed extra B/C(Benefit-Cost) analysis to estimate the effectiveness of public investment in the upgraded market functionality. Our result exhibits that the social and financial effectiveness outperforms the estimated budget expenditure about 1.8 times.

Let us mention about the remodeling process. There are three key steps to expedite the whole process. As the first step, even though GAMWM currently contains both retail and wholesale markets, new complex facility will contain three features. It will contain market management headquarters, welfare center, and retail complex market. Also, all scattered markets with retail functionality will be located in the new building.

As a second step, the building for wholesale market of vegetable, fruit, and fishery products is going to be reconstructed. It will enable even smoother flow of goods trade in the market by alleviating volume traffic congestion and improving logistic efficiency.

The last step covers extra service facilities for the enhancement of packing, storage, and logistics: modernized reprocessing & packing center, united logistics system, cold chain system, and so on. It's a sort of complex facility to produce better market service for the market dealers and outbound vendor distributors.

After the whole project is completed, it will display the image which is much differentiated from now, and offer more functionalities. Also, it will consolidate the leading position as a wholesale market leader in Korea.

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Agro-Industry and Agro-Enterprise Cluster Development in Selected Transition Economies

This consultation report is to investigate current development status of the agro-industry sector and agro-enterprise clusters in five selected transition economies including Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan and Uzbekistan, and to provide policy guidelines for effective attraction of investment in the sector.

After the disintegration of the Soviet Union, the countries had been converted into small, segmented market economies with limited growth potentials. They are suffering from relatively high unemployment rate, while agriculture is the industry which provides the largest employment opportunities and takes considerable share of GDP. However, missing of market signals has resulted in inefficiency in agricultural marketing and processing industry. During the economic transition, the lack of investments and serious budget constraints have negatively affected development of agriculture and agro-industry. Although each country has adopted diverse efforts to introduce foreign investments, unsatisfactory institutional settings, the prevalence of bureaucratic corruptions and so forth have hindered the inflow of foreign capital.

Cluster-based economic development is recommended to the countries where it will increase the agricultural productivity and bring about the rural development. Clusters encompass an array of linked industries and other entities, for example, suppliers of specialized inputs such as components, machinery, and services, providers of specialized infrastructure as well as agricultural producers. The agro-industry cluster development in transition economies, if successfully implemented, will bring about poverty reduction, increased job opportunities particularly for women, and improving balance of trade.

However, the existing environment for the development of agro-industry cluster is not favorable to the countries. Basic requirements of agro-industry cluster development are as follows: the establishment of legal and regulatory frameworks, private

sector development, the construction of close relationships among participants of cluster, development of technologies in every value chain such as production, processing, storage, marketing and so on, extensive financial support and investment promotion for the related industry development by constructing banking system, and the construction of necessary infrastructure.

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Evaluation on Pilot Project of Direct Payment for Environment-Friendly Livestock Farming in Korea

Policy program of direct payment is a representative scheme of cross-compliance which means that a farmer's operational management has to meet certain requirements in order for its owner to be eligible for assistance under government support schemes. In reality, cross-compliance is a marvelous idea for ensuring that livestock farmers adhere to minimum standards for protecting society's interests in environmental conservation. Korean government has enforced direct payment for environment friendly livestock farming on a trial basis in 2004 to 2005. It will provide support of 10 million won per farm household for a total of 1,000 livestock farms. In order to receive the payment farmers must participate in mandatory livestock registration and in environmentally friendly livestock farming (EFLF) such as securing appropriate size of a stall and farmland for manure application. The objectives of this study are to evaluate pilot projects of direct payment for EFLF and to suggest ways to improve the formal policy program to establish environmentally friendly livestock operation system.

The organization of this study is summarized as follows:

In Section 1, the problem statement, previous literature review, and the objective and method of the study are briefly discussed. Section 2 outlines the policy objectives and necessity for introducing direct payment program on environmental friendly livestock farming. Section 3 presents analytical results on current situation of the pilot project using the survey on livestock farmers for policy target and government officials related to the projects affairs in the central and regional governments. Section 4 analyzes economic effects of direct payment for environmental friendly livestock farming. Section 5 covers comprehensive evaluation on the pilot projects using the methodology of policy evaluation. Section 6 presents evaluation on appropriateness of the amount of direct payment per livestock including cows, swine, and chicken. Section 7 reviews the foreign cases such as European countries

(i.e., England, Switzerland, France, Germany, Netherlands, and Denmark), the United States, and Japan to benchmark program advantages. Section 8 reviews the disputed points raised from on-the-spot and policy implementation. Finally, Section 9 suggests the directions for developing the policy program on direct payment for environmental friendly livestock farming.

Based on the evaluation of the pilot project, several suggestions were made to establish formal policy program of direct payment for EFLF. The most important thing is to develop the policy program with the step-by-step approach. The most important thing to effectively activate the direct payment scheme is to set out a blueprint for developing environmentally friendly livestock system. Under the blueprint, in order to expand the direct payment program we need to introduce the diverse incentive scheme, clear clarification of policy objectives and goals, increases of unit payment, and establishment of monitoring and evaluating project implementation from the short and midium perspectives. In the long run to establish the direct payment scheme for EFLF, several supplemental policy programs, such as accreditation system for organic livestock operations, the approach to expanding direct payment, and region-based nutrient balance system will be positively reviewed and systematically developed.

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Policy Requirements for the Country of Origin Labeling of Processed Foods

The mandatory Country of Origin labeling(COOL) could benefit consumers, giving them the ability to make an informed choice and the opportunity to buy food produced here in Korea. It would benefit producers, giving them an opportunity to differentiate their products from imported ones. In Korea, the mandatory COOL for the processed food items has been introduced in 1993 under the Agricultural Products Quality Control Act(APQCA).

The objectives of this study are to suggest policy requirements for the better implementation of the mandatory COOL of the processed foods through the amendment of the acts and regulations. In order to define the issues and to identify policy recommendations for the mandatory COOL, consumers, processed food producers and export surveys have been conducted, and the cases of implementing the COOL in Japan, EU and the U.S. have been reviewed.

The mandatory COOL is highly recognized among consumers, and most consumers ask the government to enforce the labeling regulation and to disclose information associated with the COOL as much as possible while food producers want to simplify the labeling standards because the complicated labeling regulation results in higher cost burden to the producers.

Based on the review of the current Acts and regulation, and survey results, the major issues related to the COOL can be summarized as follows:

- 1) the way to define the definition and category of the processed foods to implement the COOL.
- 2) the criteria that must be met for a covered commodity from the COOL: agricultural products or final processed foods, and what is the range of a covered commodity: increase or decrease in the number of covered commodity in the COOL.
- 3) how many ingredients are labeled: the number of ingredients

which are composed of over 50% in terms of quantity or three ingredients as the higher composition order.

- 4) the criteria to identify a Korean processed food, which is made of food components from foreign countries.
- 5) the way to use the name of product origin for domestic products: province, city, county, etc, for the food components from foreign country: " ×× country" or " foreign products".
- 6) the degree of enforcement for a violator, and the way to educate consumers and advertise the COOL system.

The basic idea for improving the COOL includes the following aspects:

- 1) The acts and related regulations should clarify the covered commodities and the people responsible for labeling. The regulation for the domestic or foreign products should be integrated into APQCA
- 2) It is recommended that the number of covered commodities would increase as consumer's interest is getting high for the COOL. The criteria of a covered commodity is based on the food ingredient rather than the final food products.
- 3) It is desirable to cut down the number of mandatory labeling food components: one or two food components. Additional labeling could be implemented as voluntary labeling.
- 4) To use the mark "made in Korea" for the processed food, which is made of foreign food components, if producer wants to label the origin of the final food products for emphasis labeling, the labeling of origin of food component could be separated from origin of processing final products
- 5) Regarding food component labeling, if it is difficult to define the percentage of food ingredient components, it is necessary to declare covered food components by food ingredients instead of the existing criteria, which convert food ingredients into agricultural products.
- 6) Current exceptions, which are allowed for using old labels and "foreign products" instead of " ×× country" when importing countries of food ingredients have changed more

than three times, should be reconsidered because it is not matched to the principle of labeling.

- 7) To strengthen the COOL monitoring, the rigid enforcement of regulations is needed and the list of violators should be disclosed to the public. To improve accessibility and liability of the COOL, it is necessary to develop the appropriate programs and distribute diverse materials to consumers, producers and retailers. Consumer education and advertizement through the mass communications and local government will be effective to consolidate the system.

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Implementation Program for Introducing Region-Based Maximum Nutrients Loading System

Excessive amount of nutrients have been used to farmland since the 1980s, when the intensive farming method called "High-Input, High-Yield" was expanded in earnest. So far a variety of environmentally friendly agricultural policies have been pursued to reduce the amount of chemical fertilizer use and to properly manage livestock manures. However, due to the lack of effective measures taken to reduce nutrient excess, Korea topped the list of nitrogen balance per unit area of land among OECD member countries. The increasing nutrient excess pollutes surface as well as underground water. In addition, it causes soil acidification, deteriorates the ecological system, and increases greenhouse gas emission, thereby generating substantial amount of social costs. As a decisive measure to find out the nutrient balance status by region and properly resolve the nutrient excess problem, the Korean government announced its plan to introduce Region-based Maximum Nutrients Loading System (RMNLS) from 2007. In this note, this study is aimed to map out and suggest detailed plans to implement the RMNLS in a full scale.

This report is divided into six chapters. In Chapter 1, the need and purpose of the study are introduced, and the previous studies are reviewed. Chapter 2 takes a look at the meaning and significance of the maximum nutrients loading system. Chapter 3 explains the maximum nutrients loading system and the theory of nutrient balance analysis. In Chapter 4, the nutrient balance status of farmland is analyzed, and the analytical results of nutrient balance at the country and regional level are investigated. Chapter 5 describes the detailed implementation plan for the RMNLS, including the basic direction, prerequisites, and detailed plans. It also proposes the plan for sustainable development of the RMNLS. Lastly, Chapter 6 summarizes the study and gives the conclusion.

To draw up the detailed implementation plan for the

RMNLS, the review of previous researches, the collection of opinions from agricultural, livestock and academic sectors regarding the new system introduction, the development of the program to calculate region-based nutrient balance, and the establishment of the regional nutrient balance DB were adopted as study methods. To calculate the nutrient balance, Excel Macro program was utilized to develop the Regional Nutrients Accounting System (ReNAS).

When nutrient balance indexes of farmland were calculated, it turns out that while the cultivating land size has been on the continuous decline, the chemical fertilizer consumption was not reduced accordingly. It was also found that because of the increasing number of livestock heads raised, the nutrient balance, which has continued to go down since 1990, turned around and went up again since 2001. The analysis of farmland nutrient balance shows that the nutrient balance is very different by region. When it comes to nitrogen, the nutrient amount per unit area of land in excess of the crop requirement amount was the highest in North Jeolla Province with 157kg/ha, which is 132.4 percent higher than the appropriate level. South Chungcheong Province and Gyeonggi Province came next with 154.4kg/ha (131.7 percent) and 138.3kg/ha (111.3 percent) respectively.

The analysis of nutrient balance of cities and counties in each province has found that regions show a huge difference in nutrient management status. For example, there were some areas where nutrients are managed well below the acceptable nutrient use level, while other areas were subject to special nutrient management, since they use nutrients three to four times higher than the acceptable level. Therefore, it was found that a decisive measure shall be taken to put excess nutrients under control.

The basic direction of the newly introduced RMNLS is to comprehensively manage chemical fertilizers and livestock manures under the prevention principle and takes the three-step measures, including preparation, implementation, and settle-down, until the system takes a firm root. To ensure transparent and fair system operation, the Internet-based information management and the experts' deliberation on effective handling of the issues raised

are suggested.

The study suggests the preconditions for smooth operation of the RMNLS. They include the establishment of relevant statistical DBs for nutrient balance calculation, the setup of a livestock unit to accurately calculate livestock manure sources, the distribution of the ReNAS to understand regional nutrient balance, the establishment & operation of the "Maximum Nutrients Loading System Monitoring Team (tentatively named)" and the preparation of laws and institutions for the RMNLS implementation.

As the first step of the RMNLS implementation plan, the study proposed the calculation of region-based nutrient balance indicator with ReNAS, the selection of materials subject to nutrient management based on nitrogen contents first and then the shift to phosphorous content when the RMNLS settles down to a certain degree. According to the excess amount of materials subject to nutrient management by region, when compared with the national average nutrient demand, if the nutrient excess rate is less than 30 percent, the areas are classified as the "Areas of good nutrient management." If the nutrient excess rate is between 30 percent and 100 percent, the areas are classified as the "Areas for nutrient management motivation". Furthermore, the areas, whose nutrient excess rate is above 100 percent, are classified as the "Areas for special nutrient management". Among the areas for special nutrient management, if the excess rate is between 100 percent and 150 percent, they are classified as "Area I for special nutrient management," and if the excess rate is 150 percent or above, they are classified as "Area II for special nutrient management".

Based on the nutrient balance indicator by region, the reduction target of concerned regions shall be set, and using the evaluation of performance every two years, the maximum nutrients loading reduction goal shall be renewed. For practical operation of the RMNLS, the "Basic Guideline for the RMNLS" shall be prepared under the order of the *Ministry of Agriculture and Forestry* (MAF). The Guideline shall include general rules, definitions of terms, types of materials subject to nutrient management, the management goal of the RMNLS, the method of calculating nutrient balance, the excess nutrient reduction plan, the

basic plan, and the performance report preparation.

In relation to the implementation of the RMNLS, relevant organizations shall divide their roles. The MAF shall prepare and transfer the basic guideline for the RMNLS and designate the areas subject to nutrients management and special areas under management depending on the level of nutrient balance by region. Considering specific conditions by region, mayors and county chiefs of local autonomous governments shall draw up and submit the RMNLS implementation plan by region. The MAF Minister shall approve the implementation plan for the RMNLS submitted by cities and counties after they are reviewed by the "Maximum Nutrients Loading System Monitoring Team".

To make the RMNLS properly work, the data reported for nutrient balance calculation by each region shall be verified. In relation to the operation of the RMNLS, each year a map of nutrient balance status of all cities and counties shall be prepared and made public on the Internet website. This will help policy makers, farmers, and the general public easily understand the level of efforts made by each region to reduce the environmental loads and control excessive nutrients.

Depending on the level of excess nutrient reduction, differentiated incentives shall be provided. Therefore, to the areas which achieve substantial excess nutrient reduction under the excessive nutrient management plan, appropriate incentives, including the prioritized policy fund allocation, shall be provided. To the regions, which are unable to reduce excess nutrients, shall be imposed with punishments such as the end of policy fund support.

Prior to the full-fledged and nationwide implementation of the RMNLS, it would be better to select a few areas which have high nutrient excess rate (1~2 cities or counties per province) for pilot program to maximize the policy results. To be utilized as a valid program to establish the environmentally friendly agricultural system, diverse measures shall be mapped out to properly divide roles among relevant entities and enable local autonomies to properly manage their nutrient balance. In the mid to long term, to make sure that the RMNLS is utilized as a core program for the environmentally friendly agricultural policy, the plan to

establish a new organization dedicated to operating RMNLS shall be thoroughly reviewed.

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Standardization of Logistical & Packing System for Agricultural Products in Korea

The agricultural market in Korea has coped with more open environment due to the settlement of DDA and FTA agreements. Also, the issue of logistical efficiency in the sector of agricultural products' distribution from farm to retail outlet is also needed to be reviewed for the better market performance. Furthermore, the total amount of logistical expense associated with the shipment of agricultural products has been on the track to increase the trend due to the following reasons: small packing volume, non-standardized packing tools and method, manual packing process, information deficiency on retail market trend, and so on.

As a tool for shipping & handling cost reduction, the enhancement of packing and piling efficiency of agricultural products on trucks would also be important. To improve the cost efficiency in agricultural products stocking, the unused space in the luggage zone of a transportation vehicle should be minimized via the standardization of packing boxes and specifications of pallet plate.

We performed the spot field research linked to the issues of better standardized size of a packing box and shipping pallet based on the numerous types of luggage zones of shipping trucks. Furthermore, we tried to contrive new standardized rules and guides in packing & loading specifications on the whole process of agricultural products' logistical flow. The focus of our project is to enhance the logistical flow and the minimization of shipping & handling costs when handling numerous types of agricultural products from farm to retail outlet.

Regarding the research process, first, we contrived new logistical flow system. Second, packaged and processed agricultural products would be more recommended via the rules and regulations: Standardization of the Logistical & Packing System. It will enhance efficiency of the logistical system: overall cost reduction of agricultural products' shipping and handling. Finally, we desire that the newly contrived methods will improve

the current logistic infrastructure of agricultural products.

As the first pilot project, we performed a test and evaluation of the transportation efficiency with ten vegetable items (radish, Chinese cabbage, cabbage, potato, sweet potato, carrot, gallic, onion, water melon, yellow melon) and five fruit items (apple, pear, peach, hard type sweet persimmon, tangerine). We put the main focus on identifying the efficiency of transportation while considering the mentioned items' major regions of production.

In near future, the standardized logistical & packing system will be more important. Thus, we have investigated the current problems and issues associated with the logistical system of agricultural products. Also, alternative methods and tools supported by the government aid program will be provided for the enhancement of the cost efficiency.

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RURAL DEVELOPMENT RESEARCH

2

Building Infrastructure for Regional Innovation System

The aim of this study is to conceptually delineate the regional innovation system (RIS) in rural regions, and to suggest a number of policy directions for the establishment of regional innovation system. Especially, for the first half of this study, various theoretical underpinnings regarding regional innovation system in rural areas are illuminated, and quantitative and qualitative analyses are carried out to capture the RIS infrastructure conditions in rural regions.

First, the RIS infrastructure in rural regions is composed of physical substructure, social substructure and superstructure. Their major components are relations between rural regions and nearby towns and cities for physical substructure, agricultural potentials for social substructure, and villagers' drive and motivation toward innovation and local values and attitudes toward innovation for superstructure. Second, social substructure is found to be an important variable for RIS infrastructure in rural regions. In addition, the role of local government officials is found to be very important for rural peoples' drive and motivation toward innovation, and a negative correlation is also found to exist between external support and villagers' drive and motivation toward innovation. Third, the role and potential contribution of a mobilizer, such as village leader and local government official and head, is indispensable in establishing RIS infrastructure. In addition, mobilization of human resources through education and mutual learning is a very important strategy, and organizing those with common interests and goals is effective in sustaining innovation-related activities. Finally, government policy supports not only motivate but also sustain innovation-related activities, and especially in a short run, both local and outside experts and support agencies can play a major role in initiating regional innovation system.

Based upon these findings, three major policy directions and strategies to establish regional innovation system in rural

regions are suggested. They are openness, comprehensiveness and sustainability. Openness implies a network among both local and external human resources; comprehensiveness indicates an inclusion of space for both production and daily life; and sustainability emphasizes long-term, on-going support for establishing RIS infrastructure. In connection with these three major policy directions and strategies, various strategies for identifying and training local mobilizers, developing and supplying education and training programs, and re-orienting central-local government policy implementation system are also suggested.

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Prospect of Changes in the Farmland Utilization Pattern after Rice Market Opening Negotiations and Countermeasures

The negotiations on rice market opening and the DDA agricultural negotiation under the WTO system have urged the Korean government to further open the domestic agricultural market, especially the rice market. If the wider rice market opening materializes, it will result in decreasing the profitability of rice industry and the decrease in rice field acreage. Rice fields account for about 54.5 percent of entire cultivated farmland and 89.8 percent of paddy fields. The decrease of rice fields will change the pattern of farmland utilization and farmland market (farmland price, rent rate etc.).

The purpose of this study is to prospect the changes in the pattern of farmland utilization and farmland market after negotiations on the rice market opening are closed, and to suggest policy directions related to farmland use and management.

The results can be summarized as follows: First, the farmland utilization will show the pattern of concentration on rice farming, and the problem of rice over-production will continue until 2014. It is forecast that the profitability of other agricultural products will decrease much steeper than rice under the influence of DDA agricultural negotiations, and the government needs to rearrange the farmland use to cope with rice market opening. Second, the acreage of idle paddy fields and uplands will increase, because the former rice fields will not be transformed to the fields growing other agricultural products. Third, the farmland price will decrease smoothly, and the difference among regional land prices will be widened (especially, farmland price of rural areas will decrease more rapidly than that of urban areas in line with the decrease of rice price). Fourth, farmers will respond differently to the changing environments of farmland market by age, farm size, and main products. Fifth, farmland policies have to be reorganized according to the changes in the farmland market and farmers' preference for the type of farmland use and

ownership. In particular, the government needs to take a measure to stabilize the farmland market of rural areas and to increase the existing rice farm size through "farm size enlargement projects" with a focus on younger and large-scale farm managers.

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A Study on the Ways to Boost Rural Tourism Demand

A. Current Status of Rural Tourism

Rural tourism participants can be segmented into two groups based on the purpose of their visit: rural tourists and rural visitors. When their spending during rural trip was examined, it was found that the average trip spending of rural tourists was 239,585 won per tour group and among their spendings, transportation expense was the highest followed by lodging expense, other expense, entertainment expense, and shopping expense. For rural visitors, their average spending was 174,080 won per a group. In case of rural tourists, the average trip spending per person per day was 29,745 won (90.6% of the spending occurs at their primary destination and 9.4% at other places included in the trip), while that of rural visitors was 23,512 won (87.6% of the spending occurs at their primary destination and 12.4% at other places included in the trip).

Travel spending was examined by tour type. It was found that the participants in cultural/heritage tour recorded highest travel spending (256,046 won), followed by the nature/eco tourists (255,674 won), entertainment-oriented tourists (242,833 won), and industrial/social tourists (171,619 won). When all types of tours were considered, the average travel expense was found to be 240,310 won. Regarding per capita spending, the cultural/heritage tourists spent most, followed by pleasure-oriented tourists, industrial/social tourists, and natural/eco tourists. Average trip spending per person was found to be 27,818 won (25,624 won occurred at the primary destination and 2,195 won at other places included in the trip). Travel expenses can be divided into six expense categories. Food expense comprised the largest percentage (30.7%), followed by transportation expense (24.1%), lodging expense (18.0%), entertainment expense (11.1%), other expenses (9.3%) and shopping expense (6.8%). A majority of respondents (89.8%) has the intention to have rural tourism in the future, and 94.4 percent of rural tourism participants showed their intention

to revisit rural areas. When the question on the expected number of rural tours was asked, 60.4 percent of the respondents said "once or twice," while 32.5 percent responded three to five times.

Among the survey respondents, 63.4 percent were raised in urban areas and 61.4 percent have families or relatives engaged in agriculture. 52.2 percent of the respondents were female and 49.8 percent are married. A large majority (69.6%) were either college graduates (58.6%) or above degree holders (11.0%). 36 percent of the respondents earned 2 million to 3.5 million won in monthly household income.

B. Rural Tourism Demand Modeling to Estimate Rural Tourism Volume

The purpose of this study is to develop the rural tourism demand model and find out the determinants of rural tourism demand. The important point of the demand model in the study is to separate rural tourists' tour decision from consumption decision. To build a demand model, two different econometric models were used with a focus on consumers' decision-making. The Poisson-hurdle Model assumes that consumers' participation and consumption decision making occur differently, while the Tobit Model assumes the two decision-making processes occur simultaneously. In case of rural tourists, tourists' decision on participation and frequency of tours were found to be different decision-making processes. Therefore, it is desirable to separate two decisions to find out the determinants of rural tourism demand. On the other hand, the study reveals that it is not necessary to separate participation decision and frequency of visits in case of rural visitors. Comparing two different econometric models, the study has found that the determinants of rural tourism demand were different between rural tourists and rural visitors.

For the participants in rural tourism, the total number of rural tourism per person per year can be estimated by extending the accumulated data collected using the wave survey method from March or October to the end of the year. From the results of applying the logistic function, the average number of rural tourism participation in 2004 was estimated to be 2.77 per person and that of rural visitor was estimated to be 3.59.

The total volume of rural tours per year can be calculated by multiplying the rural tour volume per person by the number of population. The number of rural tour per person can be calculated by multiplying the number of rural trips per person by rural tour participation rate. By using the model, the participation rate was estimated to be 28.07 percent. The results were that the volume for rural tourism per person in 2004 was 0.776 and the annual number of rural tourism trips was estimated to be 37,334,000. The model for participation decision verified the visiting rate for rural areas as 18.26 percent. The results indicated that the frequency of rural visit per person in 2004 was 0.655 times and the total number of rural visit was estimated to be 31,489,000. The total number of visits to rural area, including visits for the purpose of tourism as well as visiting someone, was estimated to be 68,823 per year nationwide.

To identify the relative importance of rural tourism, it is necessary to estimate the national tourism volume. The annual tourism volume per person was estimated by applying the logistic function to the accumulated number of domestic tourism, which was calculated using the wave survey method. The total number of domestic tourism per person in 2004 was estimated to be 5,220 million, and the national total number of domestic rural trips was estimated to be 250.997 million. The ratio of rural tourism to total tourism volume was 14.9 percent.

C. Expenditure Model for Rural Tourism and Estimation of Trip Spending

The purpose of this study is to develop the rural tourism demand model and to identify the determinants of the rural tourism spending. The determinants of trip spending were found to be different between rural tourists and rural visitors, who were segmented by the purpose of their visit. The truncated model, which includes samples with positive consumption only, was used for the study. The independent variables included in the model are rural tourism related variables, trip distance, preference and participation in different types of tourism, demographic variables, and rural tourism trip spending. The data for the study were collected from January to September in 2004 using the wave

survey method to reduce recall bias.

As a result, the study has found five variables which positively affect rural tourism spending. They include residence of the Seoul and Gyeonggi area, the number of participation in different types of tours, monthly household income, male, and family travel group size. In addition, the increase of the number of trip nights, the number of travelers in a group, lodging expenses, and shopping expenses were found to contribute to increasing the total spending on rural tourism. Otherwise, travel expenses negatively affect total spending on rural tourism. It was also verified that the determinants of rural tourism spending were different between rural tourists and rural visitors. The total rural tourism spending was estimated to be 2,400 billion won for rural tourists and 1,900 billion won for rural visitors respectively.

D. Service Quality and Level of Satisfaction by Factor

The choice attributes for rural tourism service quality were examined. The results of the study were that rural tourists consider the quality of natural environment as the most important factor, followed by transportation/accessibility and other facilities (toilet etc.). The rural tourists' satisfaction in relation to rural trip was found the highest in the quality of natural environment. Rural tourists revealed almost same degree of satisfaction and pointed out the importance of residents' kindness, but their satisfaction level was very different in terms of other facilities. For rural tourists, the degree of satisfaction with the quality of natural environment, travel information about a rural area and lodging facilities has a significant effect on overall satisfaction with their rural trip.

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A Study on the Disparities in Economic Opportunities between Rural Areas

This is the second year report of the three-year collaborative research entitled “A study on bridging income gap between urban and rural areas through balanced regional development strategies”, which was initiated by the Korean National Research Council for Economics, Humanities and Social Science. The ultimate purpose of the study is to search an alternative policy approach to reduce the income gap between rural and urban areas.

This year study analyzes current situations and main reasons of economic disparities in rural areas with a focus on the issue of economic opportunities, such as employment, and proposes the strategies to revitalize the declining rural economy.

The following analyses were conducted:

- 1) A theoretical review on regional development theories, and empirical studies on rural development cases of developed countries;
- 2) A quantitative analysis of current economic situations and the reasons of income gaps between rural areas;
- 3) A quantitative analysis of the reasons of employment disparities in rural areas, and a case study on how farm enterprises are locate in a rural area; and
- 4) A case study on the reasons of disparities in economic opportunities among rural areas. Six different areas were compared.

The results of the above analyses can be summarized as follows:

- 1) Rural development is basically facilitated by exogenous advantages. As the results of regression analysis on the factors determining regional income at the rural city or county level, it was found that the exogenous variables influence rural development significantly. The concerned

variables include accessibility to big cities, GDP proportion of manufacturing industry, and so on. There is some evidence that a rural area tries to identify or utilize endogenous resources for self-revitalization. However, the self-effort for regional revitalization was not enough to create new employment opportunities or strengthen the local industrial infrastructure. Instead, the self-help effort will guide the unemployed to support themselves, and this would prevent the local economy from continuous decline.

- 2) The lessons from the empirical case studies of developed countries are partially relevant to the Korean rural context. For example, the regional competitiveness comes from the innovation capacity in the region. However, most rural areas have a very limited number of innovation actors, so that local innovation actors' efforts are not enough to promote regional competitiveness.
- 3) In addition, most economic activities of farm households are not diversified, and industrial linkage effects among economic actors or institutes at the regional level are not clearly shown. Although there are a few areas where business networks have been closely connected within a place, local employment has increased with local organizations' public supports such as the chilly-sauce processing industry of Suchan County. It is not certain that the linkage between front-end and back-end industries naturally occurs, so that the linkage would evolve into the industrial cluster as the industrial cluster strategists claim.

In conclusion, the significance of indigenous resources in substantiating the development of rural areas should not be ignored. The indigenous resources are necessary, but not sufficient for accelerating rural development. The indigenous resources are important, when a rural area tries to induce various exogenous resources to regional development projects. Therefore, rural development plan should be constructed from a comprehensive perspective considering rural reality. Policy makers need to direct spill-over effects of exogenous development centers to targeted rural areas in the first hand. They also need to build niche

markets by capitalizing on region-specific resources to build the complementary basis for rural areas.

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Current Status of Uncultivated Farmland and Appropriate Policy Direction

The purpose of the study is to propose the direction of policy on uncultivated or idle farmland by analyzing its characteristics and current status, and find out the reasons of their existence. According to previous crop growing studies, uncultivated farmland is defined as the farmland not used for more than a year for farming, while idle farmland is defined as the land left idle for more than two years, thus losing the form of farmland and the capability of growing crops. This study regards uncultivated and idle farmland as research subject.

The acreage of uncultivated and idle farmland in 2004 was estimated to be 200 thousand ha, which is composed of 160 thousand ha of the accumulated uncultivated farmland from 1975 to 2004 and 40 thousand ha of the idle farmland in 2004. This is equivalent to 11 percent of the total cultivated acreage, which combines the land owned by absentee landlords (26 percent) and the land owned by residing landlords (74 percent). About 20 percent of residing landlords owns uncultivated or idle farmland. Among them, about 60 percent of their farms own uncultivated farm land smaller than 1 thousand pyeong. In general, the reasons of having uncultivated or idle farmland are ① insufficient labor, ② inappropriate land conditions for cultivating, ③ lower profitability and lack of substitute crops, and ④ land devastation by natural disasters. More than half of inappropriate land conditions for cultivation was caused by the inability to use machinery in farming.

The study focuses on looking at the locations of uncultivated or idle farmland, farming conditions and ownership for Suha 1-ri, Hongcheon-gun, Gangwon Province. The acreage of uncultivated or idle farm land in Suha 1-ri is 21.7 ha where 79.4 percent is rice field and 20.6 percent is other kinds of fields. According to the residence of owners, the ownership by absentee landlords is 19.7 percent, that is much lower than the one for general land or 42.6 percent. The land transaction of uncultivated

or idle farm land is less active than that of general land, and the transaction volume is smaller for the uncultivated or idle farmland. The uncultivated or idle farmland located in Suha 1 Ri is located at very remote valley. Because of the low accessibility, it has remained uncultivated so far, and even now when lots of people from other regions are migrating to the region, the uncultivated or idle farmland is not attractive as the target of speculative investment. It has barely happened that the uncultivated or idle farmland is reused.

Many government programs and systems regarding uncultivated or idle farmland have been developed. For instance, cultivation proxy can be designated under the Agricultural Land Act. The coordination of marginal farmland, rice production control, rice income compensation direct payment, and field farming direct payment for unfavorable land become possible under the Agriculture and Fishery Community Improvement Act. However, these programs and policies are not effective in terms of preventing uncultivated or idle farmland and their reuse.

The acreage of accumulated uncultivated or idle farmland is enormous. Most previous studies suggest solutions for their reuse for farming or non-farming purposes. However, only a small portion of uncultivated or idle farmland can be reused for that purposes. Moreover, the size of land used for farming is getting smaller and the occupancy rate of land is getting lower. It is expected that the farm size will be bigger, the number of big farmer will be greater and their farm land usage will be more. In other words, concentration of farmland for a small number of best practice farmers and the land transfer to them will be more important than the increase or decrease of total cultivating land itself.

Four basic rules regarding the policy direction include ① cost minimization, ② indirect and comprehensive support, ③ priority to farm and business manger, and ④ no question on the purpose of usage. The following is also suggested as right policy direction. First, it is unnecessary to make a separate policy only directed for uncultivated or idle farmland for prevention or reuse. Second, if it is necessary, the policy of uncultivated or idle farmland should be designed based on regional policy, not as the

farm land policy itself. Third, the last but the most important matter in the policy direction is that the local governments should have the authority to customize the policy in line with the regional conditions, and the decisions made by local governments should be supported by the central government.

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A Comparative Study between Korea and Japan on Endogenous Rural Vitalization Policy

This is a comparative study between Korea and Japan on the endogenous rural revitalization policy. This study is designed to review the policy frames for rural development and vitalization in the two countries and to survey the policy implementation mechanism at the grass root level. Both research teams conducted separate researches, and the final results will be synthesized at the end.

The main objective of the study is endogenous rural development with specific sub-theme as follows: the industrialization condition and the endogenous rural development, urban and rural exchange program and rural vitalization policy, and agricultural restructuring and the change of farming unit at the grass root level. The time frame of this study is three years starting from 2005 to 2007, and this report is the result of the first year.

Korea and Japan have been successfully transformed from a peasant-oriented agrarian society to an industrialized one. However, both countries ended up with adjustment problems in the agricultural sector in the course of transformation such as depopulation, aging of rural population and devitalization of socio-economic activities in rural areas.

Both governments have invested a large amount of funds to overcome agrarian problems and in particular boost agricultural competitiveness and rural vitalization. However, such government-led agricultural and rural development, which is a kind of exogenous development, is criticized that it has increased the dependancy of farmers on the government and may negatively affect competitiveness and sustainability. Therefore, endogenous rural and agricultural development strategy is requested to be introduced into the agricultural and rural development policy.

Endogenous rural development is a kind of bottom-up approach, which addresses the role of local entity as a subject of development and brings sustainable development by using local resources, opportunities through networking of socio-economic

activities in the region. Followings are the first year research result of the Korean research team.

A. Industrialization condition, migration pattern and the condition for endogenous rural development

Japan has achieved industrialization by internal industrial capital, which was formed based on the agrarian base during the Daimyo period in the mid-17~19th century. Under the leadership of Daimyo, who was the ruler of local feudalistic territory in Japan, rice productivity increased, and the cottage industry and local markets were fostered and developed into local cities.

During the industrialization in the 20th century, rural migration occurred in Japan, but the rural population settled down mostly near cities because local cities were the important base for Japanese industrialization. The rural population has migrated to industrial cities in the eastern coast of Japan after the world war II when Japan achieved a rapid economic growth. Therefore, Japanese rural problems occurred since the 1960s when rural population of mid-mountainous areas began to decrease.

Korean industrialization begin from 1962 when the government initiated the first 5 year economic development plan. However, Korean industrialization started with foreign capital and technology under the export-driven economic development strategy. Since Korea had no local industrial base for industry development, the industrialization base was built mainly at Capital city and near big port cities. Therefore, most people in rural areas migrated into the capital city and its surrounding areas and port cities.

Japanese rural migration proceeded slowly from the early 20th century and settled down at local cities. However, Korean rural migration proceeded immediately after the first economic development plan, and rural population migrated to the capital city areas. The issues of rural depopulation in Japan occurred only after 1960 when rural people migrated to the eastern industrial areas.

The depopulation problem of Japan is limited to mid-mountainous area while the issue in Korea occurs across the country. The industrialization condition, and the migration pattern

of Korea and Japan affect the conditions of endogenous rural development and vitalization policy through affecting the human resources and community system at the local level. Japan has a long history of local autonomy and experiences of endogenous rural development from the Daimyo period, while Korea has no experience such local autonomy until 1997. The shock of rural depopulation in Korea is more profound than that of Japan, and the base of human resources for endogenous development in Korea is much weaker than Japan.

B. Japanese Agricultural Restructuring and Community Farming Practice

Community farming has emerged in Japan to tackle the problems of farm population decrease and aging, the fragmentation of farming scale, the decrease of farm productivity, the deterioration of farm resources, and the devitalization of rural communities.

Community farming in Japan has been developed through three stages: village group farming, particular farming entity, and farming corporation. From the standpoint of endogenous development, community farming has following six components: 1) subject for decision making, 2) resource utilization for production, 3) vitalization of tradition and culture, 4) principles of action, 5) goal setting for development, and 6) decision making process in the course of operation.

Community farming in Japan is now under development in the following ways: 1) from village farming group to a functionary organization of the community, 2) from a partial contract farming to a whole contract farming, or from rice farming to multi-cropping farming, 3) from a mono-functionary group to multi-functionary group connecting, marketing, and processing, and 4) employment of specialized managers for community farming group operation.

C. Urban-Rural Exchange Program(UREP) between Korea and Japan

UREP has emerged earlier in Japan than Korea by more than 20 years. Therefore, the UREP programs in Japan vary and are richer than those of Korea. The background of UREP in both countries

are similar: depopulation in rural areas, aging, and lost vitality in socio-economic activities. Both countries also have common problems of human resources and people's participation for UREP. However, UREP in Korea is different from that of Japan in following points.

- 1) Korean UREP has a strong tendency of supporting rural areas by urban people, while the UREP in Japan has a tendency of equal exchanging between urban and rural areas.
- 2) UREP in Korea is initiated usually by the state government policy and the local autonomy is a body of implementation, while the UREP in Japan is initiated by the local autonomy and asking state government to support finance and institutional arrangement.
- 3) UREP in Korea was initiated by a few local leaders, while the UREP in Japan was initiated by local organizations.
- 4) The ultimate goal of UREP in Korea is income increase through the projects, while the UREP in Japan addresses the importance of human exchange and mutual understanding, and vitalizations of rural areas through utilization of local resources and creating employment opportunity.

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Impacts of Direct Payment Program on Agricultural Production and Structural Change in Korea

The purpose of this study is to measure and analyze the impacts on production and structural change of several direct payment programs which have been introduced in the Korean agriculture. Especially, we focus on the theoretical review of exiting studies which dealt with effects and problems of the direct payment programs and the measurement and analysis of the derived impacts on agricultural production and structure.

The direct payment program for income support and structural adjustment of agricultural sector(including the direct payment program for maintenance of public function of paddy field and encouragement of environment-friendly farming), the direct payment program for income support and induction of decreasing aging farms, and the direct payment for income support and adjustment of production quantity(limited implementation period) are analysed, and several policy implications are suggested in the study.

We utilized Korea Agricultural Simulation Model(KREI-ASMO) to measure the derived impacts according to the implementation of several direct payment programs. The model developed by the Korea Rural Economic Institute(KREI) in 1995 is a partial equilibrium model and a dynamic ex-anti simulation model for the Korean agricultural sector. The model has been applied as a quantitative analysis tool to analyze various policies of the KREI.

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Current Status and Development Strategy of Agriculture and the Rural Society of ASEAN: With a Focus on Vietnam, Cambodia, and Laos

The purpose of this study is to analyze the current status and development capacity of the agricultural industry and rural areas in Vietnam, Cambodia and Laos. With the expectation about increasing cooperation with these countries in the future, population structure, growth contribution ratio by sector, development divide between urban and rural areas, migration and its causes, agricultural productivity, and food feasibility problem of the countries were quantitatively analyzed.

Related to development strategies, the conditional convergence hypothesis of economic growth was tested with econometric models. In addition, long-term growth trend was estimated as well.

To escape the development trap, reduce poverty, and induce the rural development, the role of government was emphasized. In fact, the countries have introduced strategic, complementary, and integrated rural and agricultural development strategies. With respect to the Official Development Assistance (ODA), the focus was put on Vietnam, since it is more efficient and effective to enhance the mutual benefit between Korea and the Indochina Peninsula.

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Strategies to Improve Educational and Training Programs for Farmers

The purpose of this study is to develop strategies to improve educational and training programs designed to enhance Korean farmers' farming skills. For the purpose, literature reviews, a survey, interviews, and experts reviews were carried out. The literature reviews of farmer educational and training policies and the domestic and foreign researches have found the problems of farmers' educational and training programs and suggested some strategic ideas to resolve these. Based on the survey of 773 farmers and 37 HRD (human resources development) staffs of farmer educational and training institutes and the additional interviews of some of them, some specific evidences on the problems in the current farmers' educational and training programs were found. The CIPP (context, input, process, and product) model was applied to this end. Farmers' specific needs were analyzed in terms of program contents, program methods, and program supports. Through agricultural education and training related experts reviews, the validities of survey instruments and study results were proved.

The study suggests strategies to improve farmers' educational and training programs, such as basic direction, short-term strategies, and mid to long-term strategies.

The basic direction of farmer educational and training programs should be customized for every farmer, which means every farmer should have an access to best program contents, anywhere anytime and be allowed to use them with the means that are developed by best experts.

As short-term strategies, the strategies which can be executed by both institutes and the government without large-scale reform of the current system were suggested. Each farmer's educational and training institute should supplement its HRD staffs; plan programs based on right target population and need assessment; develop program contents based on the competence-based method; deliver livestock or crop-specific programs; perform various

on-site learning programs; adjust program opening time; and connect program evaluation to follow-up programs. The Korean Government should establish a network of farmers' educational and training institutes; develop HRD staff's competences and subsidize HRD consulting service of the institutes; support competence-based program development and program public relation(PR) of the institutes; build up the databases of field oriented instruction experts and training facilities; adjust educational and training budget system; and improve program evaluation criteria.

As the mid to long-term strategies, "Blended Learning" was proposed. It means various forms of training including on-line, off-line, and on-site education should be provided, such as the course on national farming ability standards, online learning programs, and internet learning portal site for farmers. Farmer consulting service, the farming human resource development research and the farmer education and training career passport system should be worked out. While implementing the mid to long-term strategies, the government should play a pivotal role to develop an appropriate training system.

Lastly, this study made some proposals for future studies.

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A Study on Decentralization of Rural Policy: Centered on the Case Study of the England's Rural Development Policy

The decentralization of rural policy in England started in 1988 with the reform of the Structural Funds of the EU. Since then, England has carried out several administrative structural reforms for the central and regional organizations in order to improve the effects of rural policies. Thus, the purpose of this study is to find out some implications from the England's experience in decentralizing the implementation processes of rural development policies.

The rural development policy was firstly introduced to England by Objective 5b policy in 1989. This regional development approach not that familiar in England. The traditional approach to regional development has been urban and industry-oriented centralized implementation method. From then on, it has been necessary to reform the administrative structure of the central government and to reorganize local development agencies. Such reform processes were aimed to establish a system to implement rural development policies in a decentralized way, and they have been facilitated by the recent reform of the CAP and the Structural Funds, which were applied to the England Rural Development Programme (ERDP), Objective 1 and LEADER+ programmes.

From the review of government publications and several interviews with those who are responsible for the programme operation, this study has found out characteristics of each rural policy. In the case of the ERDP, the central government still plays an important role in creating and implementing the programmes. However, in case of Objective 1 policy, it is local organizations that are the main players in determining actual local development programmes. Thus, it can be said that while the implementation of the ERDP has been decentralized to local organizations, local groups lead decision making and implementation for Objective 1 policy. LEADER+ programme is another example of decentralized rural development policy. Despite its relatively small amount of

budgetary assistance, the projects initiated by local players are very effective to meet the needs of local residents. Thus, the way of implementing LEADER+ programme could be extended to other areas of regional development policies in the EU and England.

England now considers two different ways of decentralization in the implementation of rural policies. One is to reinforce the role of Government Regional Offices as a regional co-ordination unit to perform rural development programmes. The other one is to establish new elected regional assembly as a responsible body for strategic planning and to integrate other local development groups into the Regional Development Agencies. Since the elected regional assembly can deal with local needs more effectively than the Government Regional Offices, the latter could be a further decentralized system than the former.

From the experience of England in decentralizing rural policy implementation, an important implication can be drawn that it is necessary to establish local development agencies that have an in-depth knowledge on each local area and carry out development projects accordingly. They should have the competence to select practical development projects and take the responsibility for the results. In other words, setting up the local development agencies in each area is the first step to establish a decentralized rural policy system.

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A Study on Rural Landscape Management and Policy Directions

Recently, the interest in rural amenities has been growing in Korea. They are considered as one of the most important local assets. The term "rural amenities" covers a wide range of countryside resources, and rural scenic landscape may be an essential part of it. So many local governments are trying to use their landscape resources in attracting tourists from outside the area and promoting the local economy. But in reality there are many institutional obstacles in making these efforts, and it is not easy to reduce the impact of various development projects, such as house construction, road building, farming activities, and rural tourism developments, on the rural scenic beauty.

In this regard, the purpose of this study is to take a look at the current situation of rural landscape management in Korea, and to find out the problems of related policies, such as local or regional landscape management planning systems, land use control, designation of preservation areas, public participation programs, etc. And it is also designed to suggest desirable policy directions for rural landscape management.

Typical landscapes of countryside consist of various elements, which are in most cases classified into three main categories: agricultural production, everyday-living environment of villagers, and natural surroundings. And they are often regarded as public goods with externality.

While the concern is recently rising on the promotion of rural area development by using amenity resources, such as rural landscape features of certain locale, traditional functions of the countryside, such as agricultural production, often conflict with the consumption of scenic beauty, amenities, and cultural heritages. Therefore, landscape management policies are facing more tough questions than ever before. Many advanced countries in the West have deployed various policy programs, not limited to the restrictive means of policy, to address the complex situations of conserving, improving, and creating rural

landscape simultaneously.

But until now rural landscape policies in Korea haven't had the chance to develop various kinds of programs aimed at promoting activities of cultivating rural landscapes and amenities by rural residents and stakeholders themselves. There may be a few local landscape management plans made by municipal governments or other local authorities, but the current situation is that many of them exist only on paper and their feasibility is very low. Local ordinances for the rural landscape management haven't been widely adopted until now. And in many cases, most of them haven't had any actual effect on local landscape management practices, while the sponsorship from various actors in the area is not available. Direct Payment Scheme to Landscaped Cropping (DPSLC) implemented by the Ministry of Agriculture and Forestry (MAF) from 2005 has had a limited effect on the rural landscape management due to seasonality of the plants, uniformity in cropping support, limited linkages to other activities, and so on.

Therefore, the following measures are proposed in this study to address these kinds of problems:

- 1) Local commitment to ensure the participation of various actors in managing the rural landscape and to strengthen local governance;
- 2) Promoting the brand image of the area based on the landscape resources;
- 3) Adopting cross-compliance measures aimed at managing the rural landscape by residents themselves; and
- 4) Surveying rural landscape resources nationwide and constructing the databases.

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An Analysis of Vertical Coordination in Agri-business

There are various types of vertical coordinations within a value chain including spot market, specification contract, relation-based alliance, equity-based alliance, and vertical integration. In this study, the characteristics of each type are explained and then compared with each other. Depending on the assets possessed, the process of deciding the type of vertical coordination will be different, and the study explains this using technical and agency efficiency. The study also introduces core competence and tacit knowledge as major components for successful strategic innovation in the dynamic market.

The study briefly presents empirical cases of vertical coordination of Doderam, a co-operative, and Harim, a company to raise, process, and market pork and chicken. Through equity investment, Doderam has built vertical coordination in a value chain with slaughters, processing companies, and marketing companies. The relation between cooperatives and union members is classified as equity-based alliance. Aligned with the market needs, the change in organizational structure, and volume increase, farmers' organization should be structured to transform the orientation from production to marketing. To make it happen, consolidation with other cooperatives, independent business unit having professional managers, and designing fair and efficient rule to eliminate cross subsidy and free-rider problems are required. Efficient operation of cooperative facilities and the market power are contingent upon the sufficiency of raw material supply from union members.

Harim has vertically integrated slaughters and processing procedures, and has struck a specification contract with farmers. Under the contract, farmers face production and price risk. Harim takes over certain portion of price risk from farmers through the contract. Meanwhile farmers are still exposed to price risk since they have to adjust the breeding cycle in line with the Harim's demand. Farmers should take responsibility from production risk

from diseases or natural disasters. Considering production risk is the main cause of farm bankruptcy, it is necessary to support them with various programs.

The contracts between farmers and contractors are needed for transparent, stable, and persistent business. It is necessary that without worrying about transaction failure or hidden problems, farmers should be able to put their effort into improving production efficiency, while contractors should be able to get continuous supply of sufficient qualified raw materials. After all, a contract should be transparent so contract parties can have a strong trust in it and don't have to worry about moral hazard and adverse selection.

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Strategies of Successful Agri-Business CEOs

A series of case studies have been conducted to figure out the strategies of successful CEOs in agricultural business. This study presents five case studies among them.

The case studies put a focus on how the agri-business company's CEO manages 1) strategic thinking and entrepreneurship, 2) builds the broad network with other CEOs for learning and sharing information, 3) formulates strategies on human resources, and 4) pioneers the blue ocean in the agricultural business. At the same time, another focus was put on CEO's leadership and company's organization to find out how CEOs develop their strategies, achieve competitive advantages, build an organization, manage internal resources and competencies, avoid various risks, and overcome crises.

The findings of the study are as follows:

First, agri-business CEOs tend to find out new markets, items and resources rather than existing markets, items and resources in the face of competition. They urge themselves to produce something new and make the most of creativity. Their innovative attitude penetrates the organizations' management process and results. They were found to use strategic thinking to align people and internal resources with the organization's vision in a harmonious way. They are substantially open to any changes in the environment, which might be related to their business.

Second, the agri-business CEOs look for ways of strengthening a network with economic entities who play different roles in the industry. The network would help them reduce transaction cost, and avoid risks thanks to shared information and resources among them. They would learn from each other, and compete for better performance at the same time. Therefore, the CEO's ability to build networks is very instrumental.

Third, the CEOs argue that the top strategic priority should be placed on human resources development and

management. They believe that the only way of revitalizing agriculture is to produce creative managers, who are willing to challenge against limits in the agri-business. They think that the companies could remain competitive by developing good human resources.

Finally, the items chosen by the successful CEOs are quite different from the items traditionally chosen in the industry. The innovative agri-business CEOs have a little interest in traditional items or markets in which they are supposed to fiercely compete with others. Such a competitive market is called a red ocean. They realized that they need to look for or create the blue ocean in which they do not need to compete with existing competitors, because the blue ocean is almost limitless. They looked for a different blue ocean in agri-business fields. However, the blue ocean is not automatically found. It is only revealed to the people who have an open mind and innovative attitude.

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A Study of Agricultural and Rural Development Plan in Chongwon County

Various worldwide changes in agriculture have impacted domestic agriculture and agricultural policy. Furthermore, they are expected to influence local agricultural policy. Among the changes, the drastic import increase of agricultural products and the agricultural policies which put a more emphasis on multi functionality of agriculture in relation to the WTO/DDA agricultural negotiation, and proliferation of the FTA agreement, are to be noted. The difference exists between rural areas in terms of quality of life, competitiveness of agricultural products, and farm income level, and this is largely influenced by the interest and investment of local governments. As such, it becomes more important for local governments to establish and drive a reliable agricultural and rural development plan.

Recently, many local governments have adopted the differentiated strategy utilizing local unique characteristics of their regions. And the competition among production regions become more severe, as they are facilitating the branding of agricultural products, various promotions of CI businesses to create better local image, and the opening up of export markets.

In this study, we set out a comprehensive agricultural and rural development framework for Chongwon county, which is near urban area, and located in the middle section of the country. Considering the inner and outside environment surrounding agriculture in the county, we examined regional, environmental, and social-economic features of the county and evaluated the strength and weakness, and the potential of agriculture in the region. Especially, we put a focus on the long term plan to make rice product of the county regarded as the top brand; the plan to make the county being the central area of organic food (environment friendly agricultural products); and the plan to develop amenity and green tour resources.

In summary, we provided the vision of Chongwon's future in agriculture and the rural area, which was based on the setout

of the agricultural and rural vision of Chongwon in the 21st century.

In the study, we divided the county into five sub-regions in order to establish a county-wide development plan. The sub-regions include 1) the eastern mountainous region, 2) the south-eastern mountainous region, 3) the south-western plain region, 4) the western plain region, and 5) the northern plain region. The eastern mountainous region includes Miwon-myeon and Nangsang-myeon, which are divided in terms of administrative districts. Being specialized in glutinous rice, minor grains, and apple, this region is planned to create the specialized area in products being able to generate high income, highland vegetable area, rural recreation area. In addition, as a part of the brand business for Chongwon agricultural products, it is planned to build the APC for gathering, sorting, packing, processing, and marketing minor grains.

For the south-eastern region which covers Namil-myeon, Gaduk-myeon, and Munwei-myeon, it is planned to develop cultural garden city in Munwei-myeon area and to create green tour area near Chungnam National University. In Namil and Gaduk area, the Chongwon county will introduce a terraced rice field ownership rule, make clean agricultural product area near Daechong lake and create wild flower area.

For the south-western region which covers Nami-myeon, Buyong-myeon, and Hyondo-myeon, it is planned to build a typical near city agricultural area and apiculture area. Utilizing a benefit from near Gyeongbu Highway, Chongwon county will build a APC. Buyong-myeon and Hyondo-myeon are specialized in producing peach and pear with best quality. Being connected with the Jangseng park in Hyondo-myeon, Hasuk-ri, the county will put an effort to promote the beauty of the sun-rise of Wolchul mountain recognized to tourists.

For the southern plain region which covers Oksan-myeon, Gangwe-myeon, and Gangne-myeon, it is planned to build the bio agricultural industry area, linked with Ohsong life science complex and expand established horticulture area (vegetables, and flowers). In addition, by utilizing a geographical benefit from belong located near highway, a large-scale processing complex

will be built.

Lastly, the northern plain region is organized by Ohchan-myeon, Buki-myeon, and Naesu-eup. This region will be built as a mecca of organic agricultural products, while creating Chongwon rice specialized area and livestock farming area. Being connected with the house of Unbo, a famous artist and the Chojung mineral spring in Naesu-Eup, the Chongwon county will organize the green tour programs in this region and keep supporting the Chojung mineral spring festival.

In the study, for Chongwon county, we suggested 37 new strategic business plans such as organizing an ever green long life village, building an agriculture cluster, which cares about the natural environment, and constructing an APC, etc. The time horizon of the development plan is from 2005 to 2014 and the estimated total cost of the agriculture and rural development plan for Chongwon county is 138,000 million won.

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A Agricultural and Rural Development Plan for the Spatial Specialization in Hwa-Cheon County

I . Objective

The objective of this plan is to conceive a desirable future image of agricultural sector and rural areas in Hwacheon County, to map out sectoral development strategies, and to visualize efficient schematics to administer these strategies.

II . Goal

The County suffers from dwindling population and its small size, and from shortage of arable land. While these seems to be unsurmountable obstacles to any rural counties, the county has the windows of opportunities for future development only if it will respond to the societal trend, emphasizing eco-friendliness, leisure, and personal and family well-being. Considering its weaknesses and potentials, the future and development strategies must be built upon the over-all goal of environment friendliness. Following this over-all goal, this plan depicts the County as a place for organic farming, for safe crops and produce to consume, for well-preserved, beautiful landscapes, and for first-rated rural tourism.

III . Strategies

For agricultural development, the County must take a look at niche markets, while encouraging farmers to cultivate specialty crops and produce, such as rye, blueberry, cherry and medicinal herbs, and it must expedite and complete the transition to organic farming. In addition, it must pursue for high value-added farming by integrating the processing of local crops and produce and strengthening local distribution channels.

For the development of rural tourism, the County must upgrade and enrich the contents of the existing festivals and programs in order to stay one step ahead of the increasing number

of competitors. In addition, it should develop major tour programs and hub infrastructure, encourage networking among villages, preserve and improve rural landscapes, and train tour guides (the so-called "Tour Meister") and local personnel.

Finally, in order to overcome the aforementioned obstacles of limited supply of arable lands and dwindling population and therefore farmers, the County must pursue to improve in agricultural infrastructure and production base for multi-purpose use in an environmentally friendly and sustainable manner, and infuse farmers, especially females, with entrepreneurship through continuous education and training. In addition, it must set up a support system to attract people returning to farming.

All these strategies must carefully be carried out in connection with programs and projects administered by the central government and the Gangwon Province. What is required in this process is a common will among the County executive, local officials and residents to address the issues and problems the County faces and to come up with common solutions through cooperation and collaboration.

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Strategies for the Development of Black Raspberry in Gochang County

Gochang firstly cultivated black raspberry in Korea and accounts for 46% of the total cultivating acreage, the number of farming households and the production. A company for making black raspberry liquor was also firstly set up in Gochang in 1994 and now there are 5 liquor companies. They take up 60% market share of the liquor in Korea. However, the ratios decreased because the cultivation of black raspberry has been spread throughout Korea. Moreover, the competition between companies for making black raspberry liquor becomes fiercer, because the number of companies increased since 2001. Therefore, it is necessary that Gochang county should set up a specific strategy for the development of black raspberry business in order to maintain the competitiveness of Gochang in the production and processing of the black raspberry and to develop the regional economy based on the black raspberry.

This project aims at providing Gochang county with the comprehensive development strategy for the black raspberry business. This comprises of 6 chapters. Chapter 1 provides general introduction and Chapter 2 depicts regional economy and agriculture of Gochang. Chapter 3 explains the current situation and problems in the black raspberry businesses of Gochang, and Chapter 4 deals with the development and priorities of black raspberry business of Gochang. Chapter 5 proposes development strategies for black raspberry business in Gochang; and Chapter 6 describes budget plan and promoting system.

In Gochang, while the ration of those who are working in the primary industrial sector was 69.9 percent in 2000, three times higher than the average of North Jeolla Province, its financial independency marked 12.2 percent in 2002 that was far lower than both North Jeolla Province and national averages. Nevertheless, it is very hard for Gochang to induce outer capital for the development of manufacturing and service industries on one hand. On the other hand, it has to introduce high-income

earning crops that should be replaced with current low-income ones.

Many farmers in Gochang started to cultivate black raspberry from 1993 in order to generate higher income. The number of farming household growing black raspberry rapidly increased from 210 households in 2000 to 2,154 households in 2004. The size of cultivating area during the same period also increased from 41 ha to 484 ha. The shares in Korea are 46.2% and 46.0%, respectively. Moreover, the black raspberry liquor was firstly made in Gochang and the companies increased to 5 by 2004. As such, the Gochang's blackberry liquor business accounts for over 60% of total blackberry liquors sold in Korea. However, while 30% of black raspberry production in Gochang is sold to the processing companies in Gochang, the rest of them are sold to individuals for illegal home-making black raspberry liquor. Thus, the regional brand 'Gochang black raspberry liquor' has not been in use. According to the result of a consumer survey of the black raspberry liquor, the consumption is expected to grow in the future. However, since the competition for cultivation and liquor production between firms and regions tends to be hard, it is possible for the black raspberry businesses in Gochang to lose its competitiveness. This is because the price of black raspberry liquor of Gochang is higher than others' without any quality differentiation, even though it produces more than others in terms of quantity.

The ultimate objective of the development of black raspberry businesses in Gochang is to make the county become the global top black raspberry business cluster. In order to achieve it, this project sets out three purposes: ① to make a high-qualified and popular black raspberry liquor, ② to achieve comprehensive 6th industrialization of black raspberry businesses, and ③ to establish a network among those who are engaged in black raspberry businesses. The study also sets up six priority actions by two for each purpose: ① the improvement of black raspberry quality and production skills, ② the differentiation and diversification of black raspberry liquor, ③ the development of tourism with black raspberry, ④ the formation and development of the linkage between related businesses, ⑤ the establishment of

hub organization and the promotion of cooperative events and businesses, and ⑥ the establishment of quality management system of the black raspberry liquor.

Lastly, it suggests a budget plan and a promoting system to lead the development strategies.

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Improving Assistance Scheme for Private Property Damage Caused by Natural Disasters

The main purposes of this study are as follows: 1) to select more desirable ones among five ways to improve the current assistance scheme surrounding private properties damaged by natural disasters which were suggested in the preceding study and 2) to prepare the more equitable and efficient assistance scheme by making up for the weak points in the selected ways.

The major research methods of this study are the collection of existing related data, interview, simulation, and others. Descriptive statistics such as frequencies, percentage, and mean were used to organize and summarize the data.

The major ways to improve the current assistance scheme to private property damage caused by natural disasters are: 1) to make up for the weakness in the current assistance scheme in the short term; 2) to expand the natural disaster insurance which makes a substantial loss preservation possible in the long term; and 3) to provide consolation bonus according to the damage rank system in the transitional period.

The ways to make up for the weaknesses in the current assistance scheme include: ① clarification of the characteristics of disaster assistance; ② unification of related terms; ③ simplification of subsidy ratio; ④ abolition of size limitation for disaster assistance; ⑤ exclusion of double assistance; ⑥ guarantee of reasonable damage investigation period; ⑦ overall adjustment of unit assistance price; ⑧ simplification of damage investigation; ⑨ increase of investigation accuracy; ⑩ prevention of moral hazard; ⑪ improvement of special disaster area system; ⑫ settlement of the upper limit for disaster assistance; ⑬ connection of disaster assistance with other policies; and ⑭ application of 'no more than loss' principle.

The way to expand the natural disaster insurance can be adopted as a long term task.

To provide consolation bonus according to the damage rank system, the 100-grade system can be used. The 100 grade

system has two-type grade intervals. That is, the grade intervals of the 100 grade system are 1,000 points and 500 points respectively.

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Evaluation of and Recommendations for Korean Official Development Assistance(ODA) in Agricultural and Rural Sector

This study is aimed to evaluate the Korean Official Development Assistance (ODA) programs in the agricultural and rural sector and to recommend future directions for its further development. For this purpose, this study reviewed the trend of national and international the ODA, and evaluated three main programs under the ODA in the sector.

In particular, this study evaluated three main programs under the Korean ODA, which are development project, experts dispatching, and training in the agricultural and rural sector. This study reviewed the performance of each program implemented during 1999~2003, and conducted overall evaluation on selection process, planning, implementation, and the effects.

For the study, research team reviewed KOICA documents on program implementation, surveyed the impacts of expert dispatching and training through questionnaire, and surveyed the project impacts through field survey in Indonesia, Vietnam and Laos PDR. Development project was evaluated on the following six issues: economic feasibility, rationality of planning, efficiency, effectiveness, impact, and sustainability of project. Expert dispatching was evaluated on the following 4 issues: appropriateness of selection, preparation of dispatch, duty and job description, and performance. Training program was evaluated on the following 4 issues: appropriateness of preparation, trainee selection, training implementation, post evaluation, and trainees management.

Based on the survey, the team evaluated the impacts of ODA programs in the sector, and developed some recommendations for program development and future directions of the ODA in Korea. Followings are some recommendations and future development directions for Korean ODA programs in the agricultural and rural sector.

I . Recommendations

A. Project Development

A feasibility study should be thoroughly conducted by experts and the project must be selected based on the study. The feasibility study must include socio-economic indicators of project site to identify the current situation and to evaluate the impacts of project performances on the impact areas.

The "Committee for Review and Approval on Project Planning" is recommended to be established in KOICA for improving the rationality of project planning. The committee members must be from KOICA experts who are not involving in the planning.

The project period and budget must be decided on the base of the feasibility study, and the ODA budget must be flexible in the process of implementation after the government approval is obtained, since most project must be adjusted to the local situation during the long-term implementation.

This study also emphasizes research and survey activities for developing projects in recipient countries. The experts of recipient countries should be involved in the research and survey to establish partnership between Korea and recipient countries, and for better implementation.

B. Experts Dispatching

It was found that experts dispatched to developing countries as KOICA experts were selected properly, and accomplished duties as expected. However, they were not informed well in advance of being dispatched on job description. Even when they were highly expected to do something, they were powerless since they were not involved in any project.

To improve the expert dispatching program, KOICA should consider more on fostering experts and improving expert dispatching system. Establishment of Database on experts in the agricultural and rural sector is necessary for fostering and managing potential experts in the agricultural and rural sector, and teamwork expert dispatching system is recommended to foster young and prominent KOICA experts in the future.

Dispatching purpose and job description must be clear and informed clearly to dispatching experts, so they could prepare their duty before departure. And expert dispatching programs and development projects is necessary to be merged for improving both expert dispatching and project implementation.

C. Training program

The training conducted by KOICA was evaluated successful in general. The training course, contents and level of training was highly evaluated. However, some recommendations are necessary to improve the training course.

Training program should be more diversified according to the standard of degree and training specialty. The course could be classified as normal training course as HRD, advanced training course, and policy seminar course. On-the-job training is also necessary to expand training opportunities for individuals. Since agriculture has particularity according to each country, the training course is also necessary to be nation-specific. Therefore, more national training course is desirable than general multinational training course. The country-specific training is desirable to be linked to the national ODA program.

A Training Center should be established for improving training program in Korea. International Cooperation for Training Center of KOICA must be developed into professional training institute, and special institutions that implement agricultural science, New Village Movement (*Saemaeul Undong*) and rural development, etc. should be fostered as a special training institute.

II. Future Directions for ODA in Agricultural and Rural Sector

A basic principle and philosophical foundation of ODA program in the agricultural sector is necessary for its sound development in Korea. The principle of the Korean ODA must follow the international rules and guidelines such as OECD/DAC guideline and UN millenium development goals.

ODA programs in the agricultural and rural sector must be developed by country by country in the form of 5 year development plan in the agricultural and rural sector. In this

process, the experts of recipient countries must participate in the formulation of national assistance program for building capacity and partnership.

Considering the limited ODA resources of Korea, the recipient countries must be carefully selected according to the priority of ODA necessity between Korea and recipient countries. Among 127 countries receiving assistance under the Korean ODA program, ten countries were recommended as intensive recipient countries while others are classified as ordinary recipient countries.

For the Korean ODA model in the agricultural sector, the following was recommended: 1) all program or policy should significantly contribute to the Korean economic and agricultural and rural development; 2) programs or policies should contribute to the economic development and poverty reduction for recipient countries; and 3) The assistance by donor should be technically and financially feasible.

Followings were identified as feasible areas by donor.

- 1) Rice breeding and cultivation
- 2) Animal breeding and husbandry
- 3) Sericulture
- 4) Mushroom cultivation
- 5) Saemaul Undong and rural development
- 6) Temperate and tropical fruits and vegetables
- 7) Irrigation, water, and agricultural infrastructure development
- 8) Agricultural Processing and marketing
- 9) Agricultural cooperatives
- 10) R&D in the agricultural sector.

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A Study on the Jecheon's Five-Year Basic Plan to Improve Rural Residents' Quality of Life.

The main purpose of this study is to prepare the Jecheon's five-year(2005~2009) basic plan to improve rural residents' quality of life.

The major research methods of this study were the collection of existing related data, interview, field survey, and so on. Descriptive statistics such as frequencies, percentage, and mean were used to organize and summarize the data.

In this study, the visions and strategies of rural welfare & education, and regional development policies, the major task of basic plan, the structure and process of basic plan, and investment plans were suggested.

The major tasks in the rural welfare area include ① expansion of social security network, ② expansion of public health and medical service, ③ reinforcement of the welfare assistance for women, infants, and the elderly.

The major tasks in the rural education area include ① reinforcement of students' education opportunity, ② reduction of education expenses burden, and ③ expansion of good teachers and improvement of education environment.

The major tasks in the regional development area include ① reinforcement of human capacity, ② sustainable regional development and ③ improvement of basic living environment.

The major tasks in the activation of complex industry area were ① assistance for excavation and industrialization of local resources, ② expansion of rural tour base, and ③ reservation and development of scenic beauty.

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Agricultural and Rural Development Plan for Jincheon-gun

Many changes in agriculture occurring around the world have had impacts on and expectedly continue to influence the agriculture and agricultural policy of Korea. These changes include drastic import increase of agricultural products, more emphasis of agricultural policies on multi functionality, and proliferation of the FTA agreement. Considering the fact that the difference in the quality of living, competitiveness of agricultural products, and farm income level between rural areas is closely related to the interest and investment of local governments, it becomes more important for local governments to establish and drive reliable development plans for the local agricultural sector as well as rural area.

In this study, we set up a comprehensive agricultural and rural development plan for Jincheon-gun, which is located at the center of Korea. Considering the internal and external agricultural environments in Jincheon-gun, we examined regional, environmental, and social-economic features; evaluated strengths and weaknesses; and investigated the potential for agricultural growth in this area with a focus on a long-term agriculture and rural development plan.

The purpose of this study is to provide the visions on desirable agricultural development for Jincheon-gun. For the purpose, we divided the county into four regions in order to establish detailed development plan for Jincheon-gun. The four regions include the northern semi-plain region, the northwestern semi-mountainous region, the central plain region, and the southern semi-mountainous region.

In summary, the northern semi-plain region, including Iwual-myeon and Kwanghye-myeon, should be specialized in the gardening agriculture, such as flowers and greenhouse vegetables (roses, paprika, orchids, etc.). It is also needed to make eco-museum around the country representative athletes' village. The special areas for deers and aquarium fish rearing need to be developed.

For the north-western semi-mountainous region including

Baegkok-myeon, it is planned to establish an area for producing lily, chrysanthemum, and cucumber, utilizing mountainous weather. It is also needed to establish rural green tour area near Baegkok Lake, to expand clean agricultural product area, and to create wild flower cultivating area.

For the central plain region including Jincheon-eup and Deoksan-myeon, it is planned to build a regional complex of environmental-friendly agriculture. It includes the main rice producing area for Saenggeo-Jincheon rice and fruit producing area such as apples, pears, watermelons, and grapes. In particular, Deoksan-myeon and Jincheon-eup need to develop the area for growing honey watermelon and cucumber, as their differentiating products for each area.

The southern semi-mountainous region, including Chopyeong-myeon and Moonbaek-myeon, is needed to establish a bio-agricultural industry complex linked to Ohsong Life Science Complex. Moonbaek-myeon could be built as a complex of environmental-friendly rice (black rice). Chopyeong-myeon could be built as an organic pig farming complex, and the Chopyeong Lake area could be developed as a rural tourism site.

In the study, for Jincheon-gun, 55 strategic business plans were suggested such as the development of regionally specialized products and bio-agricultural industry, the establishment of eco-museum, and the bio-pig industrial cluster. To implement the plans, the total investment needed was estimated to be 125.8 billion won for the period from 2006 to 2015. 61.9 billion won was estimated to be needed for the first period (2006-2010), and 63.9 billion won for the second period (2011-2015). As financial sources, the central and higher-level government need to support 41.2 percent, while the Jincheon-gun government needs to cover support 31.7 percent. Especially, necessary cost to be shared by Jincheon-gun is estimated to be 39.8 billion won for the planned period.

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Construction of Integrated Agricultural Water Management System in Korea

The agricultural water management system (AWMS) in Korea has been guided by two disparate managing subjects: central government-sponsored Korea Agricultural and Rural Infrastructure Corporation (KARICO) and grass-root Irrigation Clubs (ICs) with the support from municipalities. With due respect to the historical contexts, however, the current disconnected system has been criticized for its deficiency in supporting agro-producers' demands and securing valuable natural environment and built irrigation facilities in rural areas. That is mainly because about 150 municipalities have commonly shown insufficient financial resources, inter-regional cooperation and technological expertise integral to the proper management of irrigation facilities and arable land under their auspices. Based on the backgrounds, this study aims to suggest a practical way to overcome various defects in the current AWMS of Korea: the merging of the municipal management into an integrated management guided by KARICO. Main suggestions are as follows:

First, the study identified problems in the current system, especially in the municipal management, and concluded that it was the most practical solution to the problems to institutionalize an integrated system run by KARICO. The proposed integrated AWMS is expected to enhance the quality of service delivery in the old municipal management and to contribute to the specialization of the agricultural water management in Korea.

Second, in spite of KARICO field workers' preference to the partial merging of municipalities' facilities, the merging needs to be done comprehensively given the restrictions on budget, and substantive improvement in the management of the merged facilities is to be attained on an incremental basis.

Third, it is essential to have farmers participate in the new system, individually and through organizations. Although specific measures vary according to socio-political situations, educational measures need to be devised to eventually get farmers' labor,

management knowledge, or monetary share. In addition, labor contracts in the current AWMS of KARICO need to be made more flexible.

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A Study on Assessment and Management for Selecting the First Industrial City Model

The main purpose of this study is to support and manage 「the Industrial City Assessment Team」 to select objectively and impartially the first pilot project for industrial city which is pursued by the central government to balance regional development. In total, eight local governments applied for the first pilot project according to types, and they include Muan (for industrial trade type), Chungju, Wonju (for Knowledge-based type), Taean, Muju, and Haenam · Yungam(for tour and leisure type).

This study was carried out jointly by nine national research institutes including the KREI, and the Korea Research Institute for Human Settlements (KRHIS) led the study.

The main items of assessment are: 1) contribution to nationally balanced development; 2) harmony with environmentally sustainable development; 3) harmony with local character and environment; 4) feasibility, and 5) land price management. Among them, the KREI was in charge of making assessment in two parts such as 1) willingness of local government and residents and 2) easiness in land acquisition, under the main item "feasibility".

In this study, special efforts were made to reflect the problems of farmland destruction in process of assessment because most of local government applying for the first pilot project need a large scale of farmland for development.

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Configuring Agri-Business Models through Multiple Case Studies

This study is designed to figure out the conditions which agricultural firms can make a success in Korea through performing case studies of successful agricultural firms. Ten case-studies are presented. The focuses of these case studies are how the organizations manage 1) financial or accounting matters, 2) human resources and organizational change, 2) production process improvement, 3) enhancing R&D, 4) strengthening competitive advantage, and 5) resolving problems.

Contents of this study's findings are as follows:

First, Korean agricultural firms would remain competitive as they have both appropriate scale of farmland and management skills to cut down farming cost as well as to improve quality of the products.

Second, agricultural firms should be equipped with management systems which could help managers improve their productivity as well as product quality. Acquiring and developing HR becomes an essential part of the management system.

Third, agricultural firms need to invest their resources in R&D in order to make a difference. The outputs of R&D strengthen technological advantages. Agriculture is the industry in which the return of investment in R&D might be colossal.

Fourth, processing raw materials into products is essential to extend agricultural added value. For example, processing puckery persimmons into sweet persimmons by an environmentally friendly way multiplies the added-values.

Fifth, agricultural firms need to strengthen controls over agricultural marketing and sales because over 50 percent of the total added value comes from marketing and sales process.

Sixth, human resources who have management competency and leadership are the most valuable, but scarce in Korea agricultural industry.

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A Study on Measuring Urban and Rural Residents' Quality of Living Indices.

The main purpose of this study is to develop the reliable and valid measurement of quality of living indices, which can indicate overall quality of living gap between urban and rural residents.

The major research methods applied include the collection and analysis of existing related data, the e-mailed survey, field survey, and so on. Descriptive statistics such as frequencies, percentage, and mean were used to organize and summarize the data. Factor analysis was used as a major statistical method in the calculation process of weight values. Z-score calculation was used as a major standardization method for different measurement units.

The quality of living indicator system in 2004 consisted of 3 fields (rural welfare, rural education, regional development and activation of complex industry) and 88 indicators. The quality of living indicator system in 2005 consisted of 3 fields (rural welfare, rural education, regional development and activation of complex industry) and 77 indicators.

The measurement of urban and rural residents' quality of living indices is divided into two parts: subjective and objective ones. The subjective measurement of urban and rural residents' quality of living indices was developed by using quality of living satisfaction questions (8 and 19). The weight values of quality of living satisfaction question items were based on the 40 specialists' opinions. The objective measurement of urban and rural residents' quality of living indices can be divided into individual index method and total index method. The total index method was exemplified by using 11 objective quality of living indicators.

The tentative quality of living indicator system in 2009 will consist of 3 fields (rural welfare, rural education, regional development and activation of complex industry) and 115 indicators.

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AGRICULTURAL OUTLOOK
AND INFORMATION

3

A Study on Determinants of Seasonal Supply and Price of Produce in Korea: With Special Emphasis on Weather Conditions

Production and price of fruits and vegetables not only fluctuate between years but also vary considerably between seasons. The purpose of this study is to investigate the reasons of agricultural production and price fluctuation in Korea and the role of weather in the fluctuation. The study estimates yield function, acreage response function, supply function, and price function, which include a weather variable as well as economic variables like price and income. Estimation is conducted by pooling time-series and cross-sectional data, and fixed effects model was adopted so as to consider differences in level between regions or months. Spring type (which is distributed mainly in spring) Chinese cabbage and radish can be divided into wintering type and field-growing type (in spring), while the cropping type of fruit-bearing vegetables can be classified according to the major type of each region. Statistical data of regional production for each cropping type were utilized for the period from 1980 to 2004, and the monthly trade data of Garak Wholesale Market were used for the period from 1987 to 2005.

The main results of the study can be summarized as follows: Weather conditions were found to be crucial in explaining the yield of each cropping type. While temperature of the seeding period positively affects the yields of the spring and summer cropping type, temperature of the harvest period negatively influences the yield of the same cropping type. Regional effect of yield function is greater in the southern area than in the northern area, and in western part than the eastern part. Cultivation acreage and supply positively respond to the prices of the same crop and its substitutes during the seeding season, which implies that farmers utilize the most recent data upon making a decision on acreage and seeding.

Temperature and solar radiation were found to be determinants of the yield function for fruit-bearing vegetables. Acreage of cucumber and mini-tomato in winter negatively and

proportionally respond to oil price, whereas pumpkin supply in spring positively reacts to it, which suggests their mutual substitutability.

Weather conditions of a metropolitan area were found to affect the summer price of fruit-bearing vegetables. Prices of cucumber and watermelon positively respond to the level of temperature, while pumpkin price moves in the same direction to the amount of precipitation. This finding reflects that demand for produce is influenced not only by physiological factor but also by dietary habits.

The price of fruit like grape is affected by weather conditions as well. Precipitation in May and solar radiation in July positively influence the grape price. Especially the elasticity of radiation to grape price is estimated to be 0.7, which means that demand for grape depends heavily on the quality and thus on the amount of solar radiation.

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Quarterly Livestock Model

The review of each Korean livestock sector provided the background needed to develop an econometric version of the sector. The first step in the process was the estimation of each of the identified behavioral equations. Chapter 3 provides the results of the estimations. Each equation has an identified R-square, Durbin-Watson statistics and t-statistics for each parameter in the equation. A variable definition list can be found near the end of Chapter 3.

The general approach of each sector was to first identify the primary supply point. In case of beef, it is the number of female cows greater than two years of age. For pork, it is the number of sows in the pork herd while for chickens the number of chickens hatched drives the supply side.

Each of these equations has a similar specification. These equations contain a lagged dependent variable to help capture the dynamics of the supply portions of the sectors. A ratio of output to input prices is also contained in the equations that drive the response of these equations to changing economics. The reader can look in the equations sheet of the Excel model to find the short and long run elasticities of each of the equations.

At the other end of the spectrum, each of these sectors contains primary domestic consumption equations. The consumption of each meat product depends on its own price, the price of the other two meats in the system and income. Since these equations are estimated in double-logarithmic form, the coefficients can be interpreted as elasticities. The demand side of this model remains estimated in a single equation approach rather than using a system approach as the lack of precision in gathering the data causes difficulties in making a systematic approach, even though it allows for more demand theory to be imposed on the system.

The other important portion of the model is the interaction with world markets. Trade equations are estimated that include comparisons of world to domestic prices, exchange rates and other trade barriers that limit trade to something less than the free

trade solution.

A beef import and chicken net trade equations are estimated in the system. No trade equations are estimated for pork since trade has been a very small portion of the Korean pork market.

The remaining equations provide two primary functions to the model. First, the remaining supply equations ensure that the biological constraints of each of the sectors are not violated. That is, animals or meat are not created or lost in the system. These equations will ensure that when a calf, pig or chick is born that the animal remains in the system until it is slaughtered, dies or goes back to the breeding herd.

The other set of equations provide the means of translating retail meat prices back to producers. Many of these equations can be classified as derived demand equations that show what an actor is willing to pay for an animal of a particular size and age to turn it into the next stage of the process. The most obvious case is what a meat processor is willing to pay for live animals to turn them into meat.

Although estimation of each of these behavioral equations is important in building the model, the larger objective is to have a system that performs satisfactorily. Tables on the first two pages of appendix 2 provide performance statistics of the entire system over the 1995 to 2002 period. These statistics are dynamic in that errors in one year are allowed to be carried into subsequent years. The far right column of these tables provides the annual percent root mean square error for all endogenous variables. In general, the beef model performs the most poorly of the sectors but that is expected given the number of lags that are contained in the model. Even though it performs the least satisfactorily, many of the errors are below 20 percent. The pork and chicken sectors perform very well over the period. Appendix 2 provides graphics of the actual versus predicted values from the dynamic simulation.

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Development of an Integrated Agricultural Outlook Information System

The Agricultural Outlook Information Center (AOIC) has developed information systems in 2002. However, they were inconvenient to use and take considerable amount of time to produce results.

Facing the need to resolve the problems and improve the systems, in 2004, the AOIC decided to improve the data collection system by adopting a digital method so the system became web-based and PDA-enabled on top of being accessible by previous analog media, such as telephone, facsimile, and so on.

The purpose of this study is to develop an integrated agricultural outlook information system named "Outlook & Agricultural Statistics Information System (OASIS)." The integrated system will collect, process, and distribute agricultural data in a more convenient and intuitive way.

The study is composed of three main sections: first, the OASIS is outlined; second, the improvement of data survey and management function using digital facsimile, Short Message Service (SMS), PDA, and accounting system is described, and lastly, how to produce and distribute intuitive information via On-Line Analytical Processing (OLAP) and Geographic Information System (GIS) is explained.

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A Study on Improved Apple Production Forecasting Methods

Since apple production is greatly affected by weather conditions, the changes of weather conditions must be considered in forecasting the apple yield and quality.

The purpose of this study is to estimate which weather conditions affect the apple yield and quality and to present the improved methods of forecasting apple production.

The assumptions used in this study include 1) the yield is determined by weight, width, and length of an apple; 2) the weight is affected by both width and length of an apple; and 3) the weight, width, and length of an apple are affected by the weather conditions like temperatures, the amount of precipitation and solar radiation, and sunshine duration.

It was found that the yield of apple trees has positive relations to the rainfall in November, the lowest temperatures in March, and the duration of sunshine from June to August, but has negative relations to the highest temperatures in September.

The amount of sugary content has negative relations to the amount of precipitation from July to August, but has positive relations to the temperatures from June to August (except the lowest temperatures in July) and the amount of solar radiation from June to August.

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Report No: M67/Oct. 2005

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An Analysis on the Impact of US Beef Re-entry to Korean Market

The discovery of BSE in the United States in December 2003 substantially disrupted US beef exports to the major pacific rim beef markets of Korea including Japan. Due to further delays in resumption of US trade with Korea and Japan, United States have difficulty in trading beef in the world market.

However it seems likely that mutual re-trade between Korea and the United States is possible in the near future, following the adoption of new OIE rules. This study is to analyze the impact on the Korean beef market in case of re-opening the market to US beef.

A survey was conducted to analyze the farmer's response, if the Korean market is reopened to the US imported beef in 2006. The sample amounts to 762. About 95 percent of respondents thought that Korean cattle industry will be largely impacted by the market opening. According to the KREI Livestock Model, Korean cattle price is estimated to fall by 15.7 per cent a year on average, pig price to fall by 17.8 percent, and broiler price to fall by 33.5%.

To minimize the impact of US beef market re-opening, first, it is vital to pursue high-quality and to enhance beef safety. Second, it is important to clear market channel. Third, promotion activities are very important to enlarge demand for domestic beef.

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Strategies of Developing State-run Trade for Spicy Vegetables

This study aims to develop strategies to operate a state-run trading enterprise which can efficiently import and sell spicy vegetables. It investigates into the optimal importing and selling periods, and introduces efficient sales system based on the proper release criteria.

The major results of this study are summarized as follows.

Firstly, the current situation of spicy vegetables' demand and supply, import and export, and price are examined based on the related statistics.

Secondly, the importing and selling systems currently used by the state trading enterprise are evaluated. In this part, the optimal importing and selling period is proposed by considering the import price, domestic price, and storage costs for each product.

Thirdly, establishing and managing efficient release criteria is discussed by comparing the strength and weakness of two pricing strategies, which are cost-based pricing and demand-supply based pricing.

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Report No: C2005-3/Apr. 2005

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Agricultural Outlook for 2006

“Agricultural Outlook for 2006” provides short and long-run baseline projections for the agricultural sector until 2015. Projections cover agricultural commodities and aggregate indicators of the sector, such as agricultural production, farm income and food prices. The baseline identifies major forces and uncertainties affecting future agricultural market, and the prospects for production, consumption, trade and price.

The projection is a conditional scenario with no shocks and are based on specific assumptions regarding the macro-economy, domestic agricultural policy, and DDA (Doha Development Agenda) negotiations of the WTO.

This annual report has four parts. Part 1 discusses what the DDA and FTA can achieve and what that affects the Korean farm economy. Part 2 discusses the current agricultural policies and their perspectives. Part 3 discusses various issues of food safety, environment-friendly agriculture, regional cluster, green tourism and bio-energy. Part 4 is a forecast for commodity such as grain, livestock, vegetables, fruits, and forestry foods.

Researchers: Myung-Hwan Kim(Ph.D.) et al.

Report No: M74/Jan. 2005

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Quarterly Report on Agricultural and Rural Economy

This report analyzes mid- and long-term agricultural trends using key economic variables of domestic and international such as GDP, oil price, bond rates, exchange rates and price of major agricultural commodities. This quarterly report touches upon domestic and international micro-and macro-economic situation, rural economic trends, international agriculture, agricultural commodities, and special issues.

Researchers: Yong-Sun Lee(Ph.D.), Jae-Bong Chang and
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Report No: M48-8-1~4/Dec. 2005

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Monthly Outlook for Fruit-bearing Vegetables

In Korea, as foreign agricultural products are imported agricultural environment has dramatically been changed. Our farmers cannot be supported any more in terms of agricultural prices. Farmers feel unstable and can not forecast agricultural prices very well.

The purpose of this study is to enhance credibility of information on whether the amounts of production are increasing or decreasing, whether the price of each commodity is increasing or decreasing etc., so that it may lead farmers, consumers, and governments to make reasonable decisions.

Monthly Outlook Report is to announce the information of Fruit-bearing vegetables on situations and demand/supply outlook, and price. The research included six commodities in 2005: cucumber, pumpkin, watermelon, oriental melon, tomato, and strawberry. The main contents of this research is to research and analyze datum on expected cropping acreage, cropping acreage, regional yields, production, export & import, price etc.

Aggregating data and developing demand & supply model including quantity function, yield function, price elasticity function etc., this research forecasted a short term demand-supply, while considering demand changes. It held central adviser committees to examine and research the collected data carefully.

In 2005, monthly outlooks were published 10 times including a quick report. Especially, the farmland of cucumber and pumpkin was replaced with the farmland of tomato, since the price of tomato has increased sharply for last 2~3 years. Tomato production in 2005 increased about 15 percent as compared with in 2004 as the farmland increased. As oil price increased, the farm land of cucumber was a little bit reduced, whereas the farmland of pumpkin was a little bit expanded. The farmland of watermelon in 2005 increased by about 7% as compared with in 2004, for the price of watermelon increased sharply for last two years.

As a result of the outlook for fruit-bearing vegetables,

about 13,000 reports were published and distributed to farmers, marketers, extension workers, businessmen, and policy makers every ten months. They also were published on the web sites of the Korea Rural Economic Institute, and the Ministry of Agriculture and Forestry. The results were published on the newspaper as well.

Researchers: Ki-Hwan Park(Ph.D.), Hak-Kyun Jeong,
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Report No: Monthly Outlook Series/Dec. 2005

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Monthly Fruits Outlook

The fruits dealt with in this study are apple, pear, citrus, sweet persimmon, grape, and peach. This study provides information on the six commodity's prices and quantities. The information is used to improve farm planning and marketing strategies for the fruits.

The information on the supply and demand trends for commodities is crucial to the central and regional governments' planning to stabilize agricultural markets as well as farm household income.

This research contains annual acreage, production volume, price trends, quality level, consumer behaviors and short-term forecasts for the six fruits. Also, information on the import/export quantities and prices is provided.

After surveying the nationwide sample farmers and monitoring and analyzing the results of the survey, monthly outlook was written. The results of the outlook were published and distributed to farmers, marketers, extension workers, businessmen, and policy makers in the form of pamphlet and poster nine times in 2004.

Researchers: Kyung-Phil Kim(Ph.D.), Jae-Hong Park,
Won-Jin Lee and Mi-Sung Park

Report No: Monthly Outlook Series/Dec. 2005

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Monthly Vegetable Outlook

The purpose of the monthly vegetable outlook is to help farmers improve farm planning and marketing strategies by timely providing information on demand and supply trends, prices and short-term forecasts for vegetables which are usually unstable in price. This information is also crucial to the central and regional governments' planning to stabilize agricultural markets.

The major contents of the monthly vegetable outlook include intended and real planting acreage, growth situation and yield, estimated production, inventory, import and export amount, price trend and forecast, and meteorological forecast. The commodities included in the outlook are red pepper, garlic, onion, Chinese cabbage, radish, green onion, carrot, and cabbage.

The vegetable outlook is published on the first day of the month and sent to farmers, nationwide agricultural organizations such as Nonghyup, wholesale markets, agricultural technology centers, etc.

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Report No: Monthly Outlook Series/Dec. 2005

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Livestock Outlook

In Korea, the price of livestock products has been known to fluctuate greatly according to the supply and demand conditions. The rapid price change is harmful to farmers in managing their farms because the output price is the most important factor to decide farms' revenue.

The objective of the livestock outlook is to improve farm planning and marketing strategies for livestock products by reporting the outlook information to farmers. It is also used to help traders to make business plans and policy-makers to establish policy for stabilizing the market.

The contents of the livestock outlook include the number of heads, the number of slaughters, feed production volume, exports and imports, price trends and short-term forecast for the number of heads and price. The short-term price outlook for livestock is dominated by two factors: supply and demand. The main factor of supply side is the number of slaughters, while that of demand side is economic conditions and consumers' behavior.

The livestock outlook is published monthly and quarterly. It includes information on price, supply-demand situation and short-term forecast of livestock products. It consists of 5 commodities, such as Hanwoo (traditional Korean cattle), dairy cow, pig, layer and chicken. The chicken outlook is published monthly and the others quarterly.

Researchers: Min-Kook Jeong(Ph.D.) and Woo-Jin Song,
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AGRICULTURAL POLICY RESEARCH

4

An Analysis of Facilitating HR Inflow to Farming and Their Settlement

The purpose of this study is to probe into the background and process of farm settling and the current status of the farming by prospective and beginning farmers, and to identify incentives to attract new human resources to farming and ways to help their settlement.

For the purpose, this study surveyed 269 prospective farmers and 106 beginning farmers respectively, and interviewed some of them, and reviewed precedent researches and Japanese policies related to the human resources attraction to farming.

The survey analysis shows, first of all, farming attitudes of prospective and beginning farmers are generally positive. Especially, regardless of having a farm origin and currently conducting farming, the respondents showed positive attitude toward farming. It was found that the possession of rural or urban area origin, farming experience in past, and agricultural education experience have no relationship with the expression of positive attitude. Second, the most influential factor in determining farming intention was the farming attitude, and the readiness for farming is contingent on agricultural education experience. Third, in case of beginning farmers, the main factors of affecting the current farming status include agricultural education experience, age, farming career, farming objective, rural area or farm origin, farming succession, and economic farming crop or livestock.

Based on the survey analysis, interviews, and literature reviews, this study suggests some policy strategies to promote the inflow of human resources to farming and help their settlement. First, general agricultural education and training for prospective farmers is necessary. Proper training for K-12 school students and the professional agricultural education and training for beginning farmers at workplace should be provided. Second, the counseling center should be established for

prospective young farmers and citizens migrating to rural area. Third, farmers should be encouraged to work out their family farm succession plan. And lastly, the national farm survey, which includes basic statistics and farming status of new farmers, should be conducted.

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Report No: R504/Dec. 2005

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Agriculture in Korea

The primary purpose of this book is to elaborate on which roles Korean agriculture has played and how Korean agricultural policies have changed in the process of economic growth. The second purpose is to review the current status and problems in each sector of Korean agriculture and to find their solutions. And the third purpose is to help foreign trading partners or Korean people in the non-agricultural sector understand Korean agriculture better by introducing and explaining the internal and external roles and the directions of Korean agriculture in the age of internationalization and globalization.

This book consists of six chapters. The first chapter presents the general outline of Korean agriculture such as natural landscape, agricultural resources, and agriculture in the Korean economy. Also, the first chapter explains changes in rural society and agriculture. The second chapter deals with subjects related to agricultural economy, such as farm economy, marketing, international trade and farmers' organizations. The third chapter handles the current status of and policies for each item. The fourth chapter covers major agricultural policy reforms in Korea since 1945. The fifth chapter explains Korean agriculture from the perspective of the global economy while dealing with the matters related to WTO/DDA and FTA negotiations, and international cooperation. And the sixth chapter discusses prospects and vision for Korea agriculture in the 21st century. This chapter first focuses on very important issues in Korean agriculture such as directions and strategies for Korean agriculture transformations and improvement of agricultural competitiveness, rural tourism, rural social welfare, food safety, multi-functionality, and agricultural cooperation with North Korea.

This book will be useful as an introduction to Korean agriculture for foreign scholars or government officials deeply interested in Korea's agriculture. Since this book is presenting the entire process of changes in Korea's agricultural policies, in particular, it will provide valuable suggestions to developing

countries that are in situations similar to Korea. Correct understanding of Korean agriculture will be a great help in easing frictions with trading partners externally and in drawing an agreement on agricultural policies internally.

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An Analysis of Regional Agricultural Capability by Using Agricultural Census Data

The purposes of this study are to find out several significant policy implications for regional agriculture through analyzing the capability of regional agriculture and to analyze regional agricultural components and the cause-effect relations among them.

Especially, this study suggests the information regarding regional agricultural policy directions through the exploration of component parts of regional agriculture and the development of the capability indexes.

For capability analysis, we chose the main standardized variables regarding agricultural structures and classified the capability indexes into three parts(scale, performance, and efficiency). These indexes were analysed to find out their capability as a component of the regional agricultural structure.

The indexes used are followings: First, scale index displays that Sangju, Gyeongju, Hwaseong, Dangjin, and Iksan have a scale in their farming; Gochang, Andong, Jeongeup, Dangjin, and Haenam show high performance; and Namhae, Gijang, Hanam, Goeje, and Goryeong have high efficiency.

Regarding the total capability aggregation index, the main regions concerned include Andong, Dangjin, Gochang, Hwaseong, Jeongeup, Haenam, Gyeongju, Uiseong, Sangju, Naju and so on.

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An Analysis on Lower-Income Earning Farm Households' Economy

The purpose of this study is to investigate economic situations and income level of lower-income earning farm households based on the Farm Household Economy Survey Data in 1998~2003. In this paper, we analyzed the cross-sectional data in 2003 and the panel data for 2,348 identified farm households, which were collected during 1998~2002.

A lower-income earning farm household can be defined as the farm household whose income is below 120 percent of the minimum living cost annually published by the Ministry of Health & Welfare. In contrast, the high-income group is the top class among the five divided income brackets. According to the above definition, nearly 15 percent of whole farm households are classified into the low-income earning households in 2003.

In order to understand the cause of low income, we categorized the farm households based on farm size, age of farm manager, and farm type, and also divided income and expenditure by means of origin and usage respectively.

The results of this study are summarized as follows:

First, low-income farm households' economy mainly depends on non-farm income and transfer receipts rather than farm income in contrast to the high-income farmer class.

Second, the low-income households' average income is about half of their consumption expenditures. Conversely the high-income farm households' income is 1.6 times higher than their expenditures.

Third, among the low-income farm households, some farms that are managed by relatively young farmers and have over-average farming size must be motivated to increase their profitability by applying the systematic farming scheme and applying accurate information. On the other hand, the other households that are managed by elderly farmers and have below-average farming size must be subsidized with public aids and induced to retire from farming, which can accelerate the

enlargement of farm size.

Finally, the analysis of panel data shows that the rate of farm households which experienced lower-income situation over 4 years during 1998~2002 rose to 5.7 percent. About 67 percent of these households have a small farm size below 1ha and 86 percent are managed by elderly farmers over 60 years old. Besides, during the five years above, 2.3 percent of the whole farm households have continued to be included in the lower-income group.

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A Research on the Farm Household Debt and Development of Farm Bankruptcy and Workout Program

The purpose of this study is to establish farm bankruptcy and workout program that supports the farmers at credit crisis to recover or to exit from farming.

This study suggests a workout program for farm households as an alternative to debt measure. Many experts criticized the existing debt measures as policy failure since they distorted income distribution, caused moral hazard, and showed small effectiveness in handling debts to reconstruct fragile farms. We designed a workout program and a program of land liquidation for farm reconstruction. As a new supporting system for the farms at credit crisis, the workout and exit program must be designed on the basis of four principles including cost minimization, loss apportionment, inducement of self-help efforts and conjunction with overall restructuring in agriculture.

The new workout and exit program must involve some factors: First, an executive committee which screens insolvent farms, signs a memorandum of understanding (MOU) with them for the fulfillment of managerial rationalization, plans their overall financial restructuring schemes and monitors performance of their duties. Second, fund and 'Bad Bank' which are necessary to purchase bad debts of farmers from financial institutions and to manage the loans. Any financial institutions working for agricultural sector can participate in Bad Bank and the workout program related to the loans they provided. The financial facilities should sell the bad loans to 'Bad Bank' at a clearing price beyond normal price to apportion loss. Thirdly, agricultural land bank which takes a role of buying secured land from 'Bad Bank' above the clearing price and managing them. The fund for workout program can be contributed by the central government, local governments, and financial institutions, which are related to the revitalization of farm households. The workout program will design and operate diverse supporting schemes such as lowering

interest rates, postponing repayment schedules, replacing the loans with concessionary interest rate loans, or making other financial restructuring programs. For the farm households with too large debts, it needs to restructure financial structure rather than debt structuring, so that the high debt ratio (debt/assets) should be reduced through asset sales.

Apart from the above financial restructuring, improvement of productivity is also inevitable for farms to revive their household economy as well as to emerge from bankruptcy after eliminating their debt. Also, the land disposal for clearing debt should not be linked the depriving of the opportunity for obtaining income. In spite of restructuring mortgage lands, farmers should be assured to cultivate their land continuously. If farm size decreases because of selling assets, the farm household will face the problem in generating income and revitalization. Thus, it needs that the farm continues to operate the farm land it sold via leasing. This idea is workable when a public institution buys and leases the land if a farmer wants. That is, the farmer should pay interests for debts before selling the land and pay rents of the land after. The key idea is that we need to compare the rents with interest payments. In Korea, rents of farm land are cheaper than interests of loans, so the idea may be feasible. However, the land market should be flexible and maintain stable condition. If land price drops continuously for the long period, this idea will not be workable.

To operate this workout program effectively, call option for the disposed land must be involved in it. Call option is the farmers' right of repurchase for the disposed land in financial restructuring, which disentangles complications between land bank and land owners. The option values must be decided between the market price and the sum of the land bank's purchasing price and administrative costs. With this scheme, the utilization of agricultural fixed assets and resource allocation can be facilitated.

There are some farmers who are not able to repay their debts in the long run but suffering from financial and psychological stress. For them, it is desirable to write off debts after selling their farm land, if they want. In that case, the government should support farmers to carry out restructuring and

exit from farming and should provide job training and moving costs.

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Development & Policy Simulation of Macro-econometric Model With Emphasis on Agricultural Sector

The major contents of the study consist of the construction of the macro-econometric model with an emphasis on the agricultural sector, the estimation of structural equations using the annual data, and the performance of historical and policy simulations to analyze the relationship between agricultural sector and general economy.

The structure of this paper is as follows. In Section II, the literature is reviewed briefly. We present the macro-econometric model in Section III where the results of estimation of structural equations are interpreted and discussed additionally. In Section IV, we perform the historical and policy simulations. Finally Section V concludes the paper.

The constructed model of this paper consists of six blocks-the final demand, labor/supply, prices, fiscals, finances, and foreign sector. Among these blocks, the final demand, labor/supply, and prices blocks were included as agricultural and non-agricultural sectors are divided and influenced mutually in system. The sample period for the empirical study is 34 years between 1970 and 2003. The ordinary least squares(OLS) will be used for estimating each equation. And if needed, Cochrane -Orcutt method will be used to correct autocorrelation in the error terms. The six blocks are composed with 62 equations including 34 of behavioral equations and 28 of identities. The equations defined by 62 of endogenous variables and 32 of exogenous variables.

The policy simulation is basically designed to analyze how the changes in the exogenous variables affect to the endogenous variables in the future. That is to say, it comparatively analyzes the estimated values of endogenous variables calculated by behavioral simulation assuming that ad hoc policy variables or exogenous variables have changed by a certain ratio more than actual values. The policy simulation alternatives were selected on

the assumptions of the following: the rise in the dollar-won exchange rate 10%, increasing M3 by 10%, increase in the agricultural investment expenditures of the government by 10%, downward readjustment of political interests in agriculture by 5%, and increase of agricultural import price by 10%.

This study has provided the basis for establishing the macro-econometric models for analyzing the national economy, focusing on the agricultural sector. The number of previous works for this field has been performed, not including macroeconomic variables in internal system, by descriptive trend analysis, and such a way is confined by intuitive judgements. It resulted in insufficiencies for examining interrelations between macroeconomic variables and agricultural sector. The study has advantages in that it is able to analyze systematically on the whole systems, and explain how the changes in a specific variable of a specific sector affects other sectors.

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Report No: C2005-17/May. 2005

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Consulting Report on Agricultural Marketing for Agricultural Cooperatives in Damyang County

The purpose of this study is to advise on the marketing structure and strategies which can be commonly applicable to the cooperatives in Damyang county.

The current situation in the retail market, such as increasing market concentration at large discount stores, is a risk factor to cooperative marketing of production sites. The changing agricultural marketing environment has pushed agricultural product shippers to seek innovation, and agricultural cooperatives to adapt to changes. The role of agricultural cooperatives at production sites in terms of agricultural marketing is very important.

Main direction was suggested regarding how to establish the joint cooperative marketing agency. In Damyang county, small-scale farmers' groups are well developed. So, it is important for related agencies to share the vision of the market-oriented marketing strategies. To improve cooperation in strawberry marketing, the current product pooling type should be converted into the point pooling scheme.

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A Study on Database System Construction for Supporting the Market Opening-driven Agricultural Restructuring

As a consequence of the rapid globalization and market-opening pressures such as the WTO agricultural negotiations and the FTA treaties, the domestic agricultural sector has suffered from lower price competitiveness and sharp income decline. Compared to the agricultural exporting countries, Korea has inferior circumstances including fast aging labor force and small-size farms. Therefore, the government makes efforts to support this sector with various direct payments and aids for restructuring.

The purpose of this study is to build a specific database which is used in a short term to estimate the ripple effect of the market opening on domestic agriculture and economy, and in a long term to buttress individual farms differently.

It is desirable that the short term database is divided into domestic and foreign parts. The domestic database has to consist of the domestic economic indicators, the details of products vulnerable to market-opening pressures, and overall information on supply, demand, and price of agricultural products. The foreign database should contain detailed agricultural information on foreign countries which could trade agricultural products with Korea. Besides, the basic agricultural information, the macro economic situation, and the items of negotiated agreements should be collected and compiled into the database.

In the long term, agricultural policy will put emphasis on the income stabilization of farmers. Therefore, in order to perform government's programmes effectively, the database ultimately should be built and organized on the basis of individual farm household and be managed systematically. The database construction must be connected to 'Farm Income Stabilization Account' and 'Farm Registration System' being recently pushed by the government.

Finally, this study also reviews a matter of agricultural statistics and suggests some improvements: What is the most efficient classification system of the statistics?; which items in

questionnaire can drive meaningful information?; and who should gather and manage the various kind of statistics?

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Evaluation on "2004 Agricultural Public Finance Management Planning"

It is expected that the rural economy and farmer incomes will become worse than the first stage of agricultural market liberalization which is the period of ten years after the settlement of the UR agreement. The urgent agenda of Korean agricultural policy is, therefore, to enhance the effectiveness of agricultural development programs.

Since the inauguration of the incumbent participatory government, the method of managing the public finance has greatly changed from the input control in operating government budgets to the performance control of major policies financed by the government. Therefore, it is the most important task to design the effective planning in managing agricultural policies and agricultural development programs.

The planning of agricultural public finance management in 2004 is composed of 8 agricultural policy agendas, 30 agricultural policies, and 135 agricultural development programs. And the overall successful performance of agricultural policies depends on the appropriate planning of agricultural public finance management.

The purpose of this study is, thus, to review performance measures of every agricultural programs suggested in "the planning of agricultural public finance management in 2004".

The detailed purposes of this study are as follows:

- 1) To examine the role of planning the agricultural public finance management,
- 2) To evaluate the planning of agricultural public finance management in 2004, and
- 3) To redesign the planning of agricultural public finance management in 2004.

The performance measures of all agricultural development programs has been evaluated for three months from December in

2004 to March in 2005.

The research method applied in this study includes the inquiry/answer method which responds to major criteria of reviewing the planning of agricultural public finance management in 2004. Also the literature review and the field survey were implemented. In addition, the advisory committee is operated to derive appropriate performance measures of each agricultural development programs.

The major problems in designing performance measures of agricultural development programs are as follows:

- 1) The strategic objectives and performance objectives are too much divided;
- 2) Some agricultural development programs, which have similar policy targets, should be consolidated; and
- 3) The output and input measures rather than performance measures are too much used, and some measures should be converted into performance measures which are able to calculate mathematically.

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Report No: C2005-6/Mar. 2005

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Revised Direction of Basic Act on Agriculture and Rural Communities

The Purposes of this study are to draw out revised version of 'Basic Act on Agriculture & Rural Communities.' This act was established in 1999 in order to serve agriculture, rural areas and farms by enforcing the laws related to agricultural sectors and to keep up with the pace of growth and the changes in the international agricultural commodities market. Despite three-times of partial amendment, it is still suggested that the act should be reformed to support the agricultural policy direction under the Participatory government to facilitate the implementation of the integrated agriculture & rural policy.

In order to have the trust of the embodiment of act, following three main conditions are necessary. First of all, character as a parent law must be realigned. Act might be the long-term of agricultural direction, also a compulsory execution. Therefore, act will provide a basic information and a criterion regarding major policies, activities and related laws. Secondly, basic direction must be supplemented. In order to turn over a new transformed features, overall category of concepts and direction should be variously amended. Finally, food & rural policy must be reconsidered thoroughly. The world agriculture policy is being changed into food & rural policy swiftly. In order to cope with this change, reforming articles of food & rural based on the reality might be absolutely necessary.

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A Study on Introduction of Direct Payment Measures for Upland Field

The purposes of this study are to design direct payment system for upland fields through analyzing the structure of Korean upland field industry in the context of the growing agricultural trade liberalization. In addition, this study explores institutes, alternatives to direct payment for upland field policies direction within the following diversity ways to enhance farm household income and to stabilize farm management.

Generally, the Direct Payment is the earnings support policy where the government grants subsidy directly to farming producers, which is an opposite concept to the price support policy i.e. Harvest Grain Purchase. The advanced countries i.e. the USA and the EU are moving toward the direct subsidy for Farming producers from the price support policy, which causes some problems like overproduction.

After the Direct Payment & Management Transfer being is induced to Korea in 1997, the Direct Payment for Environment-friendly farming in 1999, the Direct Payment for Rice Farming in 2001, the Direct Payment for Rice Earnings Integrity in 2002, and the Mediation Rice Farming in 2003 have been in operation.

In this study, there are two policy alternatives to the direct payment for upland field farming. First alternative is to establish the system linking several agricultural policies to compensate lower income earning upland field farm households. Second one is to increase operational efficiency of the upland field households through the main target policies. There are various components to design the direct payment for upland field. They include ① target area, ② method, ③ price, ④ target land and farm size, ⑤ application system, ⑥ compliance reinforcement, and ⑦ application period.

Finally, the results of this study suggest several significant policy implications and the direct payment for upland field policies measures in Korea. In order to carry out the direct payment for upland field, it is necessary to set up the system

composed of key elements, such as goals, supporting groups, supporting conditions and methods, substantial farm supports, time, and the monitoring & evaluation system. Therefore, the government should consider the need to enlarge the upland field direct payments for the expansion of the total farm income and support farm income within diversity ways.

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Report No: C2005-44/Nov. 2005

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A Study on Development Strategies of Regional Agricultural Clusters

I. Goal and Objectives

Ministry of Agriculture and Forestry (MAF) has launched 20 model projects of the regional agricultural cluster (RAC). RAC is an important policy measure which aims at forming various agriculture related businesses in a certain area into 'agri-industrial cluster' as a main body of regional innovation system which could boost up household incomes and regional economy. In addition, RAC signifies a transition of agricultural policy approach in order to transform the scattered individual policy loan and investments projects without systematic perspective into an effective regional agricultural system which might improve the impact of policy investment into the regional agricultural development.

This study aims at identifying regional agricultural innovation competences, and examining their potentials and their environment, regarding results, presenting strategic policy measures for development of RAC by means of analyzing the 20 test RAC projects.

II. Main Contents

This study points out the term 'regional agricultural cluster' defines it as 'in a certain local area, all kinds of agriculture-related businesses, which are engaged in production, processing and marketing of certain agricultural products specified to the local area, universities and research institutes, and regional administrations and agencies form a network and generate synergic effects of regional agricultural innovation via competition and cooperation among them.' This study also argues that it would be a good signal for agricultural development if the agri-industrial cluster makes a close functional connection between farming and other activities and then establishes a novel leading group for the regional agriculture through the networking among the participants.

The core of industrial cluster policy is to reinforce the

networking between participating groups and the purpose is to support creative growth of economic actors by way of eliminating instable factors against regional agricultural systems. Especially, agri-industrial cluster does not try to establish a novel industry but to improve and reinforce those businesses specified to an area in existence.

According to the result of the study, forming 100 RAC's by 2013 will be appropriate. Therefore, local governments should choose a regionally specialized agricultural item in preparation for creating an RAC. It would be reasonable to establish one RAC in a county or city.

Since the formation and development of agri-industrial cluster entirely depends on the capability of local governments, the priority should be given to provide the local governments with the basis for building in order to promote endogenous local development. It is very important to clearly define the role of participating actors in a cluster and help build the close networks between individual actors. The central government should set out national framework so that agri-industrial clusters could be easily settled down in a local area. In this regards, the government should establish the infrastructure for RAC development which encompasses production, transaction and marketing, and formulate agricultural system facilitating fair competition among economic actors.

This study insists that the MAF should make various separate RAC policy projects integrated, and support the R&D activities for regional agricultural specialization. It also assets that RAC consultants should be fostered, and regional agriculture experts and local government officials should be supported to form a supporting system for RAC development.

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Report No: C2005-41/Dec. 2005

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Improving the Evaluation System for the Local Government's Agricultural Policy

The purpose of this study is to improve the evaluation system of the local government's agricultural policy.

In Korea, the evaluation system of the local government's agricultural policy has been executed since the launch of the WTO system. The evaluation system has monitored the agricultural policies of local governments in order to increase the effectiveness of their agricultural policies.

However, as the relationship between central government and local governments in implementing the agricultural policies and granting the public funds is changing, the evaluation system of the local government's agricultural policy should be improved. Under the rapidly changing local agricultural environments, the ability to plan and manage performance of local governments become more important factors. In order to increase the effectiveness of the agricultural policy, the ex-ant coordination rather than ex-post monitoring is more effective.

The AHP (Analytical Hierarchy Process) method is used in this study to improve the performance measures. The experts who specialize in designing agricultural policies emphasize the impact of agricultural policy measures, while local government officials emphasize the policy differentiation. To measure the efficiency of the agricultural policy measures, the DEA (Data Envelop Analysis) method is applied, and it was found that the performance of policies between local governments is different.

To improve the performance of the agricultural policy, the evaluation system should be converted into the performance agreement system between the central government and the local governments in the long run.

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Report No: C2005-63/Dec. 2005

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A Study on Modelling and Management of Korea Agricultural Outlook Model (KREI-ASMO 2005)

KREI-ASMO (Korea Agricultural Simulation Model) was developed by the Korea Rural Economic Institute (KREI) in 1995 and has been used to produce mid- to long-term outlooks for the Korean agricultural sector and to analyze various alternative policies. This model is a partial equilibrium and dynamic ex-anti simulation model for the Korean agricultural sector.

So far, the model has been applied as a useful quantitative analysis tool to forecast the demand-supply situation by commodity as well as to make agricultural outlook and analyze various policies.

The KREI has renewed statistical data-sets each year and improved the structure of the model to facilitate the role of KREI-ASMO. This is the purpose of annually performing this study.

KREI-ASMO could be divided into five sub-modules as follows:

1) the module for forecasting macro-economic variables; 2) the module for forecasting input-prices; 3) the module for cultivating sector outlook; 4) the module for livestock sector outlook; and 5) the module for forecasting agricultural total product value and total added value in agriculture. The imported commodities to the model include rice, pulse, miscellaneous grains, oilseeds, red pepper, chinese cabbage, white radish, barley, garlic, onion, other vegetables, apple, Asian pears, grapes, tangerine, peach, persimmon, beef cattle, dairy cattle and products, pig, and chicken.

In this study, the modified model structure for 2005 (KREI-ASMO 2005) was introduced, and the outputs of individual modules, such as acreage allocation module, rice production cost module, and agricultural GDP and income module as well as each commodity module, were estimated again.

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Report No: M71/Dec. 2005

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A Study on Performance Evaluation of Korea Agricultural Outlook Model (KREI-ASMO)

KREI-ASMO (Korea Agricultural Simulation Model) was developed by the Korea Rural Economic Institute (KREI) in 1995, and has been used to produce mid- to long-term outlooks for the Korean agricultural sector and to analyze various alternative policies. This model is a partial equilibrium and dynamic ex-anti simulation model for the Korean agricultural sector.

The KREI has renewed statistical data-sets each year and improved the structure of the model to facilitate the role of KREI-ASMO.

For the past ten years, the model has been applied as a useful quantitative analysis tool to forecast the demand-supply situation by commodity as well as to make agricultural outlook and analyze various policies.

The purpose of the study is to evaluate the performance of KREI-ASMO. It also makes a few suggestions aimed to improve the model into a more robust and effective outlook scheme of the KREI.

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A Study on Modelling and Management of OECD World Agricultural Outlook Model (Aglink 2005)

Aglink model is a dynamic ex-anti simulation and demand-supply partial equilibrium model for the world agricultural sector. The model was developed by the OECD Secretariat in cooperation with member countries in 1993 and has been used to produce the OECD world agricultural outlook and conduct simulation for various policy analysis.

As this study is carried each year, the final goal is to enable the Korea Rural Economic Institute (KREI) to increase the application capability of the model and use it to analyze the world agriculture market.

The major study contents of this year are as follows:

In Chapter 1, the research background, the purpose of the study, the review of preceding researches, and brief explanation of imported variables from Aglink model were described. In Chapter 2, current status and outlook for the demand and supply in the agricultural market of Korea, Japan and China were reviewed, and several implications were pointed out. In Chapter 3, the structure of the Korean rice module was introduced and its modified structure was suggested. And in Chapter 4, the national modules of the three countries including Korea, Japan and China and their differences were introduced.

In conclusion, further researches were requested on several points.

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FOREST POLICY RESEARCH

5

Direction for Direct Payment Program Introduction to Forestry Sector

The purpose of this study is to take a look at the need of introducing a direct payment program to the forestry sector and to suggest a proper direction. In order to achieve this purpose, domestic and foreign case studies on the direct payment programs in the agricultural and forestry sectors were reviewed.

The results of the study can be summarized as follows:

First, the direct payment program should be introduced to the forest sector to facilitate sustainable forest management via income compensations to non-productive forest land in the remote mountain areas of conserved mountain villages, which are the bases of achieving sustainable forest management.

Second, the introduction of Forest Direct Payment Program (FDPP) is needed for non-marketable public benefits, such as prevention of soil erosion, air purification, wildlife habitat protection, water quality enhancement, and biodiversity conservation. Under the program, forest owners providing environmental goods and services for the people for nothing can be compensated.

Third, regarding forest products cultivated to generate short term income, such as chestnut and oak mushroom, the cases and models of Direct Payment Programs applied to the agricultural sector can be utilized.

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Report No: R501/Dec. 2005

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Economic Analysis on Heat Energy Development with Woody Biomass and Measures to Supply Forest Residues for Energy

The growing interest in woody biomass as an environmentally friendly source of energy is leading to an increasing number of initiatives and researches in this field. The objective of the study is to develop the method of transformation of forest residues into energy.

The transformation method of biomass into energy involves direct burning, thermal-chemical transformation, biochemical transformation and so on. And the method using woody biomass energy involves biomass electric power system, district heating system, woody pellets, and co-firing with coal and bio-ethanol.

Korean forests, which have evolved into III and IV age class, need intensive management like thinning. As by-products of intensive management, massive woody biomass is expected to be produced. But the collection of the thinning products is difficult because of no usage and high cost of collecting. Collecting and supplying the thinning products to rural people is good for keeping the forest healthy, substituting fossil fuels, and enlarging rural people's welfare.

In the rural area, a household equipped with oil boiler consumed 1,274.1 liters of kerosine and 11,084.7 thousand kcal of heat energy for one year. To produce the same heat using woodchip boiler, about 4 tonnes of woodchip is needed. Assuming the price of woodchip is 50 thousand won per tonne, woodchip as energy sources can substitute the kerosine. But the price of woodchip made of forest residues is high. That cannot compensate the inconvenience of using woodchip boiler. Therefore considering social welfare of using woodchip boiler, subsidies and economic incentives for using woodchip boiler should be set out.

To encourage the utilization of woody biomass as a energy source, heating system using woody biomass has to be supplied. Woody biomass in Korea exists 'broad and shallow'. Therefore small-scale boiler in rural household and village is more proper

to minimize the logistical costs. And woodchip boiler is more convenient than the existing firewood boiler. To utilize the woody biomass as a source of energy, infrastructure construction such as forest roads, removal of regulation to plant the energy trees in the marginal agricultural lands, and subsidization of the forest residue collection have to be made.

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Report No: C2005-30/Oct. 2005

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A Scheme for Developing Agroforestry Policy

I. Objective

This study tried to find the way of encouraging agroforestry practices in Korea by way of investigating into current situations of agroforestry and finding the problems in implementing the agroforestry policies. In addition, agroforestry related policies of other countries were analyzed in order to find the possibility of their application to Korea.

II. Findings

The agroforestry models are basically categorized into five areas including forest farming, Silvopasture, Windbreak, Riparian buffer strips, and alley cropping. Although the categorization is based on the temperate zone, it is fundamental and applicable to other areas, too.

Among the models, forest farming, silvopasture, and alley cropping are considered as adequate models for raising farmer's income, and are popular models in underdeveloping countries. However, the rest models are more environmentally oriented, and common practices for advanced countries.

Agroforestry in Korea began in the year of 1999 in order to provide interim income to forest owners who were mostly suffering from the lack of income from management and investment in forests. The project for agroforestry started under the name of "a complex management of forest for multiple uses", and expanded to 168 sites hiring codes of agroforestry practices supported by government funding. Three models, such as short-term income providing model, timber producing model, and multi-products producing model were set up as a result.

Several problems surfaced during the application of agroforestry models and related policies. Most of investors in agroforestry felt that financial supports from the government were always short and especially needed after the first year of investments. They also complained the administrative processes

were mostly slow and out of date. They also suffered from the shortage of labor in the country side and eventually elevated labor costs. The government officials expressed other problem of supporting agroforestry. The problem is that the purpose of applying agroforest practices does not lie in earning money by producing forest products but converting forest lands into the land for other uses.

Additional problems also exist. The models classified by the central government are not quite well fitted into the real world. This resulted in the lack of management strategies for an individual model. This means that those models are not applicable to the real world, and the financial and other aids may not be provided properly.

The US government, which has the best supportive system in the world, provides various assistant programs by adopting multi-phase agroforestry related policies. The US government considers all five agroforestry management models equally important and provides the same amount of support. This means not only production activities but also conservation activities get the support. The sources of funding are various, meaning that private sectors are active to provide specific funds. The ways and methods of supports are various, meaning that developing skills and educating services are provided too.

In conclusion, in order to activate agroforestry practices, several strategies are suggested.

- 1) The management models should be revised and re-established by considering the way of application to the real world;
- 2) The code of practices of individual agroforestry models should be developed and distributed by way of educating forest owners;
- 3) Regional agroforest cluster can be a solution of acquiring economies of scale and adding values by processing a large amount of agroforest products in the confined area; and
- 4) The support systems for agroforestry should be revised and set up in good conditions.

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A Study of Compliance Survey and Measures for Improving Forestry Regulations

The purpose of this study is to survey forestry regulatory compliance and to suggest counterplan which will improve the level of compliance as well as measures of regulation. Selected regulations for the survey have been major targets of civil petitions recently such as the limitation of development height and the limitation of total size development in mountainous diversion. The survey was conducted for 1,026 randomly selected people, who are composed of 303 mountain owners or petitioners, 105 public officials in charge, and 105 members of NGO's or monitors of forestry policy.

The results say that many of those surveyed do not have enough knowledge about the rules, and they admit the necessity and coincidence with the purpose of the rules, but do not agree on the suitability of the standards. The level of observance for height limitation is relatively low, while the level for limitation of total size development is high.

To increase the level of compliance, the contents and standards of the regulations need to be readjusted, and the execution personnels should be supplemented. Dependence on experts and keeping a file on related material in computer will be also helpful in increasing the level. Information activities to help understanding of the rules will be also a good measure to improve compliance level.

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Monitoring Financial Performance of Major Forest Projects

Recently, sustainable forest management (SFM) has become a major issue in the forestry sector. The SFM represents that forests should be managed in the way that ecological soundness is maintained, while fulfilling the public needs and delivering economic rewards to the surrounding communities.

The Korean government manages forests by launching projects for thinning, planting, and establishing infrastructures, such as forest roads, while protecting forest resources from fire. The study monitors forest projects, which are mainly conducted in five areas, including planting, thinning, forest road construction, forest soil conservation, and fire prevention, where 80 percent of the total forest project budget is used.

In order to obtain unbiased results, 16 experts and four project related government officials were invited to participate in this research.

The findings of the study are as below:

First, it is required to maintain the tree planted areas for five to seven years after tree planting to achieve their successful settlement.

Second, for forest thinning, the electronic system should be established to trace the completion of the projects.

Third, the manual for forest road and related facilities design should be prepared.

And forth, the integrated forest fire suppression system should be established for efficient forest fire prevention.

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Report No: C2005-45/Dec. 2005

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A Basic Study of Hosting 2010 Forest Expo

Forest Expo will be held in the year of 2010 by Korean Forest Service. In order to ensure successful holding of the Expo, this study is designed to provide a basis for holding 2010 Forest Expo. The study includes and explains the necessity, character, and direction of the Forest Expo in the beginning chapter. In addition, it provides several sites proposed along with important factors and basic information for feasibility studies and basic planning studies to be held in the following year. Also, an estimated cost and a proposed plan are provided.

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Status of Non-Tariff Barriers and Market Survey for Developing Strategic Export Items Among Non-Timber Forest Products

Chestnuts, shiitakes and pine mushrooms are important non-timber forest products which are produced and exported by Korea. These products have contributed to obtaining foreign currencies and boosting farmer's income through export. But the entry of Chinese low-priced forest products to international market like Japan made Korean forest products lose their competitiveness. Decreasing export of the forest products is caused by low price competitiveness and increase of domestic demand. And the failure in quality and brand differentiation has made Korean forest products face direct price competition with Chinese forest products.

Japan is still a big market for Korean forest products because of its high price level and high dependency on imported foods. But because of the decreasing market scale in Japan, new strategies need to be developed to boost export to the Japanese market. And China is an emerging market for agriculture and forest products. Differentiation from Chinese low-priced forest products to overcome the disadvantages of price competitiveness is a key to expand Korean forest product export in these markets.

Strategies for expanding the export of non-timber forest products are as follows. First, strengthening the production base needs to be done. Second, competitiveness in quality has to be raised through R&D and quality control. Third, new processed products have to be invented to create new demand for forest products. Fourth, original brand has to be developed to obtain consumer's trust. Fifth, the role of forest products export has to be moved from export businesses to agribusiness consortium including producers. Sixth, marketing activities need to be encouraged.

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A Study on the Aggregation Realities of Statistics of Forest Products and Proposals for Improvement

The survey guideline on forest products statistics suggests a certain type of standard to aggregate production amount of each item such as dry bracken, raw dates, and cracked nuts. It does not, however, give any information about transition ratios, which would apply to converting weights of fresh bracken into dry one, or cracked nuts into the non-cracked. This fact has been one of the main factors which would make the statistics unreliable.

The purpose of this study is to examine the aggregation realities and to put forward some proposals to improve forest products statistics with a priority given to transition ratios.

This study targets 13 forest products that are strongly related to the mentioned problems. The main contents are composed of disclosing problems while looking at the reality and distribution structures, and making suggestions to improve the aggregation system. The Federation of forestry cooperatives was jointly involved in this study and took charge of producing transition ratios with experimental studies.

The main problems can be summarized as follows: Firstly, the census of forestry products is impossible due to manpower shortage, and the result of aggregation heavily depends on investigators, usually the head of a village, who really carries out the survey in reality. Secondly, the production amounts of some items vary from area to area, since forestry products are occasionally not cultivated but picked up from the natural state, and sampling survey could not be adopted. Thirdly, as mentioned before, transition ratios are not provided. With the calculated transition ratios, the changing rate of the official statistics of 2004 production amounts ranged from -44 percent to 474 percent for the 13 subjects.

To solve these problems, some measures are suggested as follows: Firstly, some products should be applied with the sampling survey in accordance with their cultivation methods. Products raised in the field are exemplified. Secondly, the

production amount of each cultivator, who would be the target of survey, should exceed a certain level, and pickers for their own consumption would be ruled out from survey. Thirdly, the guideline for aggregation should be modified on the realistic basis such as minimizing cases of applying transition ratios, and this will reduce the probability of making errors in the process of aggregation.

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A Study on Standard Chestnut Yield Calculation for Insurance Program

Chestnut farmers have consecutively suffered two major typhoons in 2002 and 2003. After the natural disasters, their demand for insurance program has grown stronger. Standard yield is one of the most important data necessary for crop insurance, and it is a basic data to calculate the insurance amount and premium. Consequently, the stability of insurance program heavily depends on the accurate calculation of standard yield.

The purpose of this study is to calculate chestnut standard yield as accurately as possible to help successful introduction of chestnut insurance program. The main chestnut-producing districts, such as Sanchung, Gwangyang, and Gongju, were surveyed for standard yield estimation.

Three different kinds of data have been utilized for yield estimation, and two of them were mainly used for final calculations. The method of cultivation and trimming is one criterion to divide producers into two groups. Averaged production amount per unit area or unit tree of each age was set as standard yield. However, one or two steps of adjustment are still required to apply the estimated standard yield to the actual program. Adjustment criteria include the sample size of each age and the consistency of production with neighbor ages. The final results for Sanchung and Gongju were good enough for practical application to the insurance program, but for Gwangyang the scale of yields between 2002 and 2005 were too different to be averaged. And the standard yield of 2002 would be proper to be used at the beginning stage of introducing the program.

To improve the accuracy of standard yield calculation, continuous surveys for the areas as well as other important producing districts are needed. Experimental studies are also required each year for the newly planted trees, since their yield will keep changing over time. Once the insurance program is adopted, the individual record method for output should be used to estimate individual yield rather than the standard yield of entire municipality.

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A Basic Study on Fostering Forest and Mountain Village Cluster

This study defines a "forest and mountain village cluster" as a "place where all kinds of forest-related businesses are concentrated for wood production, processing and marketing; and a place where universities, research institutes, local government, and agencies form a network and generate synergy effects for regional forestry innovation and the vitality of mountain villages." This study also argues that if forest and mountain village clusters closely connect forests with other activities and raise the investment efficiency through the networking of participants, this will facilitate forestry development.

Presently, the building of forest and mountain village clusters is only in the beginning stage. To foster the creation of such clusters, relevant policies should consider the followings:

- 1) The policies should contribute to sustainable forest management and increment of residents' income;
- 2) The policies should foster the forest and mountain village clusters as the growth engine for regional forestry;
- 3) The policies should be driven by region and crop under the strong leadership;
- 4) The policies should be in harmony with the policy for balanced regional development; and
- 5) The policies should create the star cluster through selection and concentration.

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Report No: C2005-49/Dec. 2005

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Monthly Outlook for Chestnut

The purpose of the monthly outlook for chestnut is to help farmers improve their farm planning and marketing strategies by timely providing information on demand and supply trends, price trend and short-term forecasts for chestnut whose prices are usually unstable. This information is also crucial to the central and regional governments when they set up plans to stabilize the chestnut market.

The monthly outlook is based on the survey of farmers selected as samples and of monitoring personnels in main producing districts. The major contents include the intended and real planting acreage, the growth status and yield, the estimated production, the price trend and forecast, the import and export amount, and the meteorological forecast.

The monthly outlook is published on the fifteenth day of each month seven times in total and distributed to farmers and nationwide organizations such as forestry cooperatives, agricultural cooperatives, agricultural technology centers, and local governments. The monthly outlook is also found on the Internet, the homepages of the Korea Rural Economic Institute(KREI) and the Korea Forest Service(KFS), and newspapers.

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Monthly Outlook for Oak-mushroom

The purpose of publishing the monthly oak-mushroom outlook is to help farmers improve their farm planning and marketing strategies by timely providing information on demand and supply trends, prices and short-term forecasts for oak-mushroom, whose prices are usually unstable. This information is also crucial to the central and regional governments when they set up plans to stabilize the oak-mushroom market.

The monthly oak-mushroom outlook includes such details as intended and real planting acreage, growth status and yield, estimated production, import and export amount, price trend, price forecast, and meteorological forecast.

The monthly outlook is published on the fifteenth day of each month and distributed to farmers and nationwide organizations such as forestry cooperatives, agricultural cooperatives, agricultural technology centers, and regional government.

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INTERNATIONAL AGRICULTURAL
TRADE RESEARCH

6

Mid- and Long-term Outlook for Chinese Agriculture Until 2014

Since 1978, the Chinese economy has grown rapidly. As the income increases, consumers' attitude has changed toward supporting the promotion of agricultural restructuring. As a member of the WTO, China has also experienced globalization and the integration into the global market system. As a result, Chinese agriculture has begun to shift from land intensive farming such as grain cultivation to labor intensive farming such as livestock and horticulture.

This study adopted not only a quantitative approach but also a qualitative one to analyze Chinese agricultural trend over the mid and long term. According to the qualitative analyses on the prospect of Chinese agriculture, most grain production will decrease. Cultivated land reduction, low level of relative prices, and environmental concerns seem to affect grain production. However, the production of Japonica rice and corn is forecast to increase as an exception. As their income goes up, Chinese consumers tend to substitute Japonica rice for Indica rice. Also, they are likely to consume more meat products, deriving more demand for feed grain, such as maize and soybean meal.

As a result, import of wheat, corn, and soybean is forecast to substantially increase in a few years. This may imply that China, which has enjoyed the status as a net corn exporting country, will become a net importing country in the near future. Production and export of garlic and onion, however, are expected to increase. In particular, their production and export in Shandong Province have started to grow rapidly since China joined the WTO in 2001.

The Chinese livestock market has recently experienced structural changes. The Chinese traditionally preferred pork, but the consumers' preference significantly changed and they began consuming more beef and poultry meat. Health concerns also seem to accelerate the changes in meat demand from red to white meat. Demand for clean and safe food tends to grow as the

economy develops and food sanitary problems prevail all over the country.

The quantitative analyses on 2014 Chinese agricultural outlook in 2014 also show the results, which are consistent with the qualitative approach in general. However, there exist some discrepancies in the projected rice production in 2014 by three institutes including the OECD, the CAAS, and the USDA. OECD's projected rice production volume is the largest, while CAAS's projected volume is the smallest. But they all presented the optimistic forecast on the balanced demand and supply of rice in China by 2014.

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Establishment of Northeast Asian Economic Cooperation and Strategies for Korean Agriculture

Korea, Japan, and China have made a commitment to establish a regional trade agreement (RTA). Northeast Asian Economic Cooperation or China-Japan-Korean FTA(CJK FTA), however, has not shown much progress mainly due to disagreements over agricultural issues. Therefore, the pursuit for free trade within the region, requires a new approach to minimize the damage of agricultural sectors of the concerned countries. With the purpose, this study explains difficulties in establishing the RTA among those three countries and estimates the impacts of the RTA on the Korean agriculture. Based on the analysis, the study proposes some strategies for the Korean agriculture to handle the situation regarding agricultural cooperation within the region, external policies for negotiations, and other domestic agricultural policy measures.

There are some obstacles lying ahead in achieving a successful Northeast Asian Economic Cooperation. First, there exists a huge gap in economic scales and income levels among the three countries. Second, it is difficult to strike a balance for mutual advantages in agricultural trade under the current regional trade agreement patterns. China has rapidly increased its agricultural exports at the expense of domestic producers in Korea and Japan, while the agricultural trade of Korea and Japan are expected to show huge deficits. Historical background of conflicts among the three countries also hinders the regional economic integration.

The share of agricultural exports within the region has decreased while that of imports has increased. The effects of the economic integration on the Korean agriculture seems to be negative. If tariffs are totally removed in relation to the economic integration, agricultural imports from China will increase further.

The 'Contribution to the Trade Balance (CTB)' index of the three countries indicates that China can specialize in most agricultural commodities and Korea can specialize in some processed agricultural products, but Japan has no agricultural products to be

specialized in to get benefits. China has a monopolistic power to control regional market for agricultural commodities, while Korea and Japan may suffer serious farm income loss and the possible collapse of agricultural production infrastructure.

The study proposes some possible strategies to minimize the loss of the Korean agriculture and maximize mutual benefits from the regional integration. First, agricultural cooperation among China, Japan and Korea is necessary for long-lasting regional agriculture. In order to motivate regional cooperation, an independent agricultural agreement, so called "Northeast Asian Agricultural Agreement" should be established. Agricultural cooperation may include cooperations for sanitary and phytosanitary (SPS) procedures, environmental issues, mutual consultations on agricultural policies, transfer of experiences for rural development, and constructing regional food security system.

Second, it is necessary to seek for more countries to strike FTAs with to secure a privileged position within the framework of Northeast Asian Economic Cooperation. Korea should consider establishing an FTA with Russia or Taiwan, since they can complement the Korean agriculture. Also, it is necessary to promote the establishment of the Korea-Japan FTA before signing the CJK FTA to give special treatment to agriculture. In order to minimize the damage to the agriculture sector, sensitive agricultural commodities should be identified and ranked. The assessment of producer's surplus by commodity indicate that rice is the most sensitive commodity followed by beef, red pepper, ginseng, pork, garlic, apple, and so on.

Third, agricultural policies for structural adjustment should be made to improve productivity and competitiveness. Expansion of farm size through the exit of marginal farmers is essential to improve productivity and competitiveness. For effective farm income stabilization, various direct payments by commodity or by policy should be consolidated for a farm unit. Systematic and comprehensive income compensation policies are required. Finally, all policies for agricultural structure transformation and farm income compensation should conform to the principles of market economy and strengthen the competitiveness of Korean farmers.

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Strategies for Local Agricultural Sector To Cope With Free Trade Agreements

Korea is currently conducting negotiations to sign Free Trade Agreements (FTAs) with big five economies: the United States, China, Japan, ASEAN, and the European Union (EU). This study analyzes the impact of the FTAs on the local agricultural sector, and suggests the strategies to cope with the opening of the agricultural market under the FTAs.

The Korea Rural Economic Institute - Agricultural Simulation Model (KREI-ASMO) was utilized to analyze the impact. The baseline scenario was prepared based on the assumption that the tariff rates of 2004 will be maintained during the analyzed period. Three FTA scenarios were established: i) tariffs on all products except rice will be eliminated after ten years; ii) tariffs on all products except rice will be immediately removed, but tariffs on products whose tariffs are 100 percent or higher will be removed after five years; and iii) tariffs on all products except rice, red pepper, beef, dairy products, clementine, apple, grape, pear, strawberry, and ginseng will be immediately removed, but tariffs on products whose tariffs are 100 percent or higher will be removed after five years. Based on the G20+ proposal, the impact of the Doha Development Agenda(DDA) on the agricultural sector was analyzed as well.

It is expected that the production value of red pepper and garlic after ten years from the FTA implementation will decrease by 37~83 percent, while that of onion will drop by 12~15 percent compared with their production values of the year prior to the FTA implementation. The income from vegetable production is projected to drop by 27~42 percent.

Among fruits, the production of apple, pear, and clementine will be severely influenced by the FTAs. The production value of apple will amount to only 41~60 percent of the value of the reference year. The clementine production after ten years of the FTA implementation will decrease by 63~67 percent. As a whole, the income from fruit production will be equivalent to only 37

percent of the income of the reference year.

It turns out that the livestock industry will be relatively less affected by the FTAs. It was found that the livestock production value after ten years will increase compared with the production value of the reference year. However, the income from livestock production is expected to decrease by 22 percent at maximum during the FTA implementation period.

It is expected that the accumulated income loss will be about 29 trillion won under Scenario 2, while it will be 20 trillion won under Scenario 1. In most cases, it is obvious that the effect of the FTAs on the local agricultural sector will be greater than that of the DDA.

To ease the FTA shock to the local agricultural sector, the existing laws including the Comprehensive Measures for Agricultural and Rural Development and the Special Law for FTA need to be reinforced. In addition, the law for the Trade Adjustment Assistance (TAA), which is being prepared by the industrial sector, could be referred to when establishing the measures on agriculture.

Supporting farms exited from the agricultural business, enhancing agricultural competitiveness, and compensation for the income loss stemming from the FTAs are suggested as the basic directions to cope with the FTAs. It is also underlined that the agricultural production and marketing system should be re-oriented in order to meet consumers' needs for safer and high-quality domestic agricultural products. This may be the most effective way to keep Korean agriculture viable in the face of cheaper imported agricultural products flooding the local agricultural market.

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Report No: R503/Dec. 2005

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A Study on the Strategies for 2005 DDA Agricultural Negotiation

The purpose of this study is to draw up an efficient strategy for DDA Agricultural negotiations based on the consideration of the key members' positions, and the analysis of the Korean agricultural characteristics.

Although WTO members are making efforts to draw up full modalities at the 6th Ministerial Conference to be held in Hong Kong, it is unlikely that a concrete guideline can be finalized in that meeting. Because key members including the United States, the EU, and Brazil have failed to resolve their differences on the three pillars such as market access, domestic support, and export competition. It will be harder than in former negotiations that the participants reach an agreement because they are willing to link all issues on the negotiating table to the three pillars and even NAMA.

It is more practical and efficient for Korea to have recourse to sensitive and special products. Because products that have exceptionally high bound tariffs cannot be excluded from steep tariff cut under the Korea's tariff structure.

Moreover, giving an appropriate treatment to sensitive products is more important than how many products are designated as sensitive product. In this regard, it is important to suggest an appropriate number, because as the number grows, it is more likely that sensitive products are poorly treated. Considering that recently the base of TRQ expansion is heatedly debated between exporting and importing countries, it is desirable to make a strategy on TRQ expansion.

To avoid drastic tariff cut, opposing the setting of tariff cap is the first strategy to take. It is undesirable to set a tariff cap for sensitive products.

Besides, it is more efficient that members designate limited number of Special Products with flexibility based on applicable indicators to all developing countries.

There is some convergence on three bands for the

reduction of Final Bound AMS and overall trade distorting support. And member countries with relatively low level of support including Korea would fall into the bottom band. Therefore, it is a more realistic approach to endeavor to minimize the reduction of de minimis.

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Evolution and Evaluation of WTO Negotiations on Agriculture

At this report, the whole series of the WTO negotiations on agriculture were analyzed for the in-depth understanding of basic elements and issues of the negotiation from the launch of the GATT until the current DDA negotiations on agriculture. In addition, the significance and implications of the procedures where agreements have been reached at each stage are described.

The detailed contents of this research include the launch of the GATT and its limitation, general analyses on the whole procedures of the WTO negotiations on agriculture, the background of every negotiation, theoretical and practical analyses on the issues and elements of the negotiation, the causal relationships among the negotiations, and the overall evaluation of the UR negotiations on agriculture and its implications. In particular, the theoretical issues of the negotiations considered conceptually elusive to understand were fully analyzed and explained including tariffication, AMS(aggregate measurement of support), NTC(non-trade concerns) and multi-functionalities of agriculture, tariff reduction based on the principle of harmonization, conversion of specific tariffs to ad valorem tariffs, trade distortion effects of domestic subsidies, and so on.

Lastly, in the summary and conclusion, several issues and problems occurring at the time of negotiation and implementation of the results of the negotiation are described, including the perception of agricultural trade liberalization, how to increase effectiveness of the participation at the negotiation on agriculture, and close relationships between internal agricultural policies and external negotiations.

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The Situation of Livestock Farming in North Korea and Cooperation between the North and South

The purpose of this study is to review the current issues in North Korea's livestock industry and the process of the inter-Korean livestock cooperation, and to evaluate the results. To this end, this study shows the states and results of livestock cooperation projects which have been progressed in North Korea and proposed the desirable model to promote inter-Korean livestock cooperation.

Since 1995, North Korea has been struck by food shortage. North Korea has strived to increase agricultural production, and was supported foods and fertilizers by the international society including South Korea, but failed to solve food shortage. Recently, North Korea has shown interest in livestock development. It is impossible for North Korea alone to develop agriculture without foreign assistance. For the development of livestock industry and the rehabilitation of North Korea, South Korea is able to play an important role. The livestock cooperation project in North Korea needs a large-scale capital and technical support, so that the project should be progressed together with 'South Korea's non-government organizations or public institutions. It could be developed as a good cooperation model to revitalize North Korea's agriculture and livestock.

The details of the project include the development of pasture, and the establishment of milk plants, feed factories, the plant of organic manure made from livestock waste, and the support of pig and poultry breeding facility. The implementation cost of the projects amounts to some 2.4million dollars. The aids and support to North Korea should be offered over the long run. In the early days of inter-Korean cooperation, Hwanghae Province, which is not far from South Korea, was regarded suitable for investment. The area has good conditions to transfer goods and exchange human resources for inter-Korean livestock cooperation.

In these conditions, we can pursue three directions for the development of livestock cooperation in the region near Gaeseong

industrial complex.

The first thing is to establish a model agricultural and livestock complex. The second direction is to expand the livestock cooperation to other areas. The third thing is to increase livestock production in the complex. North Korea's consistent livestock policy is an important factor for the success of the co-operation project.

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Report No: M66/Oct. 2005

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2005 FANEA Annual Report

In October 2003, the Forum for Agricultural Policy Research in Northeast Asia (FANEA) was jointly established by the Korea Rural Economic Institute (KREI), the Chinese Academy of Agricultural Sciences (CAAS), and the Policy Research Institute, which is affiliated with the Ministry of Agriculture, Forestry and Fisheries of Japan (PRIMAFF). This Forum was aimed to establish a collaborative relationship in agricultural research and related areas among Korea, China and Japan, including joint commitment to foster mutually beneficial researches and development.

The main activities of FANEA in 2005 include holding of international symposium, joint studies, holding of invitation seminars, and homepage management. The Director General/President Meeting of FANEA was held on April 29, 2005 to discuss the detailed plan for the FANEA 3rd International Symposium, joint research projects, and other cooperative programs. In the meeting, theme, time and venue of the 3rd FANEA International Symposium and other matters such as joint research and exchange of researchers were discussed and determined.

The 3rd FANEA International Symposium was held by PRIMAFF under the theme of "Global Economy and Sustainable Development of Agriculture in Northeast Asia" from October 25 to 26 in Tokyo, Japan. In the symposium, 15 papers dealing with three subordinate themes such as "Economic Growth and Social Problems in the Northeast Asia", "Rural Development and Disparity Problems in the Northeast Asia", and "Multi- functionality of Agriculture and Rural Environment in the Northeast Asia" were presented and debated by the participants from the three countries.

Since 2003, the FANEA International Symposium has been annually held in Korea, China, and Japan in turn. Until this year, 35 papers have been presented in the Symposium. The Forum has performed a critical role in enhancing mutual understandings of regional agricultural issues via cooperations among IAE/CAAS, PRIMAFF, and KREI.

As a joint research project, FANEA performed a study

entitled "Plan for boosting agricultural cooperation after signing the FTA among Korea, China and Japan" together with the Research Center for Rural Economics and the China's Ministry of Agriculture. For cooperative research on "D/B and Modeling of Agricultural Trade and Policy Analysis in Northeast Asian Agriculture" the researchers involved from three institutes discussed problems and solutions through expert meetings held in October 2005 in Japan.

Besides, FANEA has hosted two invitation seminars named "China's Economic Rise and Impacts on Korean Peninsula" and "China's Agricultural Trade and Competitiveness" respectively. "Agricultural and Rural Development in Northeast Asia" was also held under the theme of "Present and Future of Rice Industry in Northeast Asia". In this symposium, attendees discussed the problems and prospects in the production, marketing, and processing of rice during the course of rice market opening.

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The Meaning of Granting Market Economy Status(MES) to China and Its Impacts on Korean Agriculture

The purpose of this study is to analyze the validity of granting Market Economy Status(MES) to China and to measure its effects on the local agriculture of Korea, and furthermore, to find out how to utilize the existing Industrial Damage Relief Systems allowed by the WTO such as Anti-Dumping and Safeguard measures.

Granting MES to China means that Chinese domestic prices should be regarded as normal prices when Anti-Dumping margins are calculated. In this study, we calculated dumping margins of major agricultural products imported from China based on the price data of third countries. We considered the protection effects of Anti-Dumping measures based on the third country data on the costs of granting MES to China because Korea will lose the opportunities to utilize Anti-dumping measures toward China since it is a non-market economy.

The protection effects of the Anti-Dumping measures invoked in this way is estimated to be about 2.2 billion Korean won. This amount is not enormous compared with the total value of agricultural production and trade. In other words, this means that the impacts of granting MES to China on the Korean agricultural industry is expected to be small.

There are four types of Industrial Damage Relief System such as Safeguard, Special Safeguard (SSG), Transitional Safeguard, Anti-Dumping Duties, and Countervailing Duties. Even though Korea grants the MES to China, there is only difference in normal price to be quoted for the calculation of dumping margins. Korea still can take Anti-Dumping measures against Chinese agricultural products if they are imported at below the domestic prices.

To prevent negative effects of the rise on the imported cheap Chinese agricultural products and to minimize trade disputes between two countries, the legal and systematic problems

under existing industrial damage relief system should be improved. Korea should operate safeguard system considering the characteristics of agricultural products and take advantage of expected injury rather than resulted injury as the condition of invoking the safeguard measures. Besides, the function of research and survey in the trade committee should be reinforced for the efficient application of industrial damage relief system. In particular, agricultural experts should be involved in the trade committee for the exact evaluation of the situations related to safeguard measures.

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A Study of Developing Comprehensive Agricultural Assistance Plan for North Korea

North Korea's agricultural environment has changed in 2005. Because it designated the agricultural front as the main front in the construction of socialist economy in the 2005 new year editorial. What is the most important in economic affairs is to do farming well and solve the food problem. Such a policy will make positive environment for strengthening inter-Korean agricultural cooperation.

This study was designed under the circumstance. We have reviewed individual issues on inter-Korean agricultural cooperation and suggested short-term and long-term directions. We also constructed an experts network among diversified organizations. We expect that this study will contribute to developing policies on inter-Korean agricultural cooperation and to provide useful information for policy makers.

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The Strategy of Establishing and Developing South and North Korean Model Farm Co-Operation

In August 2005, South and North Korean governments came to an agreement to carry out several agricultural co-operations. Among the co-operations, the Model Farm co-operation is the most important project. The main purpose of the study is to suggest efficient establishment and operation of the model farm.

The study considers several points in relation to the model farm co-operation. First, the people in charge of cooperation need to have a correct understanding of the basic idea. Secondly, the South Korean government has to make a basic plan before initiating in-depth discussions with the North Korean government. Thirdly, both governments have to organize well-functioning cooperation and obtain good results.

This study considers a couple of tasks as follow:

- 1) To find out the necessities and usefulness of the Model Farm co-operation
- 2) To show a desirable direction of co-operation
- 3) To present a short term plan to build up and operate the model Farm

This study is divided into two parts. The first half of the study contains main idea, cooperation system and long term development of the Model Farm co-operation. The last part of the study consists of technical matters related to the establishment and operation of the Farm.

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Contingency Plan to Consolidate Agricultural Sectors against Unexpected Urgent Unification of Two Koreas

North Korea has experienced a serious downturn in national economy during the 1990s. The economic depression worsened the shortage of fuel and agricultural materials, and the lack of foreign currency. As a result, famine became common nationwide. North Korea has initiated an economic reform, since 2002, to overcome economic difficulties. The amount of food distributed through the public distribution system(PDS) has been sharply cut down to half of the daily requirement. Prices were adjusted to almost the same level as in markets. Consumers had to pay over fifty percent of their income to buy additional food in markets. Under the short supply of food grains, market price has continuously gone up. Most households, depending on PDS, are coping with declining food availability and insufficient livelihood system. Under the circumstances, every household has to have its own viable way of life.

South Korea's basic policy to the North is to enjoy prosperity together with North Korea in a peaceful way. Most experts recognize that the possibility of collapse of North Korea is very low. However, we don't know what is going to happen in North Korea. We might have an unexpected unification between two Koreas due to North Korea's collapse or an external political environment. If this situation is realized, we will have a great deal of confusion and pay too much cost. Hence, this study examines a contingency plan in agricultural sector against the unexpected unification between two Koreas. We can minimize the unification costs by preparing a plan.

We assume that unification will be realized by South Korea's absorption of North Korea. Four major issues can be raised in agricultural sector when unification is realized. Most urgent thing is to prepare an emergency plan. Main work is to supply food and necessities to North Korean people. Secondly, transformation of agricultural structure in North Korea is

important. We need to focus on transforming North Korea's agricultural structure from the control economy to market-oriented economy. Main task in agricultural sector is to set up individual farms by reforming state and cooperative farms. Thirdly, institutional reform process is necessary. We have to consolidate institutions and organizations on the unified Korean peninsula. Fourthly, stabilization of rural society is important. For these purposes, we have to develop policies to increase agricultural income and to create non-farm activities in rural areas. Also welfare for North Koreans should be strengthened in order to narrow down the gap between the south and north.

We can learn from the unifications of Germany and Vietnam. Both countries have different background and unification processes. However, we can extract some common factors. Most important lesson is that we have to realize unification through a peaceful and gradual process. When we unify the economic structure, we have to increase economic competitiveness instead of putting too much focus on political factors. Both Germany and Vietnam gave priorities to farmers working in cooperative farms and to purchasing farmland during the process of privatization. Also, economic unification without social unification raises many social problems.

We can set three basic principles such as liberalization, privatization, and stabilization for economic consolidation. The same principles are applied to agricultural sector. For liberalization, privatization of farmland and farm houses is a basic condition. The process of decision making should be shifted from centrally planned system to individual decision making system. Agricultural marketing system has to be changed from state supply system to market-oriented system. Sufficient agricultural products and agricultural inputs should be supplied to stabilize market prices and farmers' income. There are many sub-sectors in the agricultural sector. We suggest major important issues in the six sub-sectors for agricultural consolidation.

First of all, emergency food supply plan is necessary. Basic stuffs should be distributed to the people in North Korea through the public distribution system until the society is stabilized. Food grain shortage is estimated to reach 15~19

million tons when two Koreas are unified. Therefore, the government has to control food supply and demand while stabilizing food prices on the Korean peninsula for a while.

Secondly, we have to plan to supply sufficient agricultural materials to North Korea. Currently North Korea uses 230,000 tons of fertilizers which is 40 percent of the normal requirement. North Korea has sufficient potential to produce required amount of fertilizers. However, the facilities are obsolete and inefficient. Agricultural machines such as tractors are in short supply, and the rate of operation is slightly over 50 percent in North Korea. Agricultural chemicals are also in shortage because raw materials are not imported due to the shortage of foreign currency. When unification is realized, South Korea will have sufficient amount of facilities to supply the whole agricultural inputs on Korean peninsula.

Thirdly, stable and efficient agricultural marketing should be established. North Korea mainly depends on the state-operated marketing system, which is basically supply-driven. Transformation of its system to the market-based system is necessary, to be consolidated with the South Korean marketing system. At the beginning of the unification, many confusions must be overcome in the North area. Therefore, the government has to intervene in the market until marketing system is stabilized. Ration system for foods and basic necessities is an option at the beginning stage. The price ceiling system is an effective means in stabilizing basic commodities.

Fourthly, transformation of collective farms is necessary. This is one of the most important process in revitalizing agricultural sector after unification. The process should be implemented gradually, because a lot of time is required to complete farm reform. However, it is important to announce the principle and direction of farm reform to people as soon as possible. With the announcement, we can prevent big migration of rural peoples from the North. Privatization of state and cooperative farms should be implemented. The basic principle is to distribute farmland to farmers working at the farms. After transforming the ownership of the state and cooperative farms to the nation, cooperative farms should be sold to the farmers prior

to state farms, at low prices. It is necessary to reserve certain portions of farmlands for later distribution. We can encourage larger farm size through the two steps of privatization.

Fifthly, establishing competitive farms and increasing agricultural productivity are very important after farm reform. Financial risk is a common problem to newly established farms because the farmers do not have sufficient amount of mortgage to borrow money from financial institutes. Farmers have very limited knowledge on market economy. They do not have sufficient agricultural techniques to adjust markets. Therefore, special systematic training courses should be given to the farmers for earlier adaption. Client-based differentiated training would be effective for farmers.

Finally, stabilization of rural community is important for social consolidation. Many rural people in the North might have a strong desire to move to the South or urban areas. If these phenomenon prevails in the North, a lot of confusion will occur. Physical banning of movement is necessary at the beginning of unification, but it is not an efficient tool. Fundamental measures are to give economic and social incentives to the rural people. Economic incentives include, supporting farm income and creating non-farm jobs. Social incentives include, social welfare system, such as medical insurance, pension, and cultural infrastructure. Gradual and step-by-step consolidation of social welfare system between two Koreas is necessary to reduce shock from financial shortage and institutional conflicts.

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Report No: C2005-42/Dec. 2005

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Impact of Korea-US FTA on the Korean Agricultural Sector

This study, financially sponsored by the Korea Institute for International Economic Policy(KIEP), aims to analyze the expected impact of a Korea-US Free Trade Agreement(FTA) on the Korean agricultural sector. In Chapter 1 and 2, the situations of the US agriculture including major agricultural indicators, production, consumption, production and trade are outlined. Chapter 2 and 3 deal with US agricultural trade and Korea-US agricultural trade respectively. Chapter 4 analyzes the competitiveness of Korea and US agricultural products. In Chapter 5, the impact of Korea-US FTA on the agricultural sector are analyzed. In Chapter 6, sensitive products are chosen. In Chapter 7, the selected strategies for the agricultural sector are suggested.

The US ranks the third in terms of land size in the world. Based on huge cultivated land, the US is ranked the world's largest producer of 15 commodities including corn, soy, sorghum, beef, chicken, turkey, milk, and nuts, and as the second largest producer of 20 commodities including apple, pear, pork, orange, and peach. The US agricultural products with the self-sufficiency rate of more than 100 percent include millet, rice, wheat, soybean, ground-nut, canola, grapefruit, orange, and most of livestock products. The agricultural exports increased 2.5 percent year-on-year to 63.4 billion dollars in 2004. In the same year, the US agricultural import amounted to 53.5 billion dollars. As a results, the US recorded 8.8 billion dollars of profit in agricultural trade.

The US is one of the most important trading partners for Korea, but for the US, Korea is not relatively important as much as it is for Korea. In 2004, the US accounted for 24 percent and 14 percent of Korea's total agricultural exports and imports. By category, noodles accounted for the largest share of the agricultural exports with 59.4 million dollars, followed by tobaccos, confectionary, and alcoholic beverages. Among agricultural products imported by the US, grains account for the largest share, followed by livestock products, pulses, and fruits.

The Comparative Advantage by Country(CAC) indexes are utilized to figure out the competitiveness of agricultural products in each market. Among 365 items (in terms of HS 10 units) exported to the US market, the CACs of 100 commodities are greater than 1, which implies that Korea has comparative advantages in the U.S. market. The number of the U.S. agricultural products exported to Korea's market are 642. Among them, 373 items show comparative advantages in the Korea's market.

The Global Trade Analysis Project(GTAP) v5, a computable general equilibrium (CGE) model, is used to analyze the potential impact of a Korea-US FTA on the agricultural sector. The data was obtained from the GTAP database as of 2001. The scenario is built as follow: tariffs on all agricultural products but rice are to be immediately eliminated, while tariffs on grains are to lowered by 50 percent. Under the scenario, agricultural production is expected to decrease 2,089 billion won. By category and in value terms, drop in livestock products(784 billion won) will be the largest, followed by fruits & vegetables (363 billion won), and grain(355 billion won).

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China-Japan-Korea FTA: Effects on and Policy Implications for the Korean Agricultural Sector

This study is the first third-year result of the three-year cooperative researches on "The Implication of an FTA between China, Japan and Korea(CJK FTA): With a focus on the Agricultural Sector" undertaken under the auspices of the National Research Council for Economics, Humanities and Social Sciences. This report analyses the effects of a CJK FTA on the Korean agricultural sector based on the framework of the computable general equilibrium (CGE) model, neglected in the second-year report, and looks at policy implications for the Korean economy, including policy strategies and action plans to cope with a CJK FTA. The first report analyzed the agricultural production structure of the three countries and the trade structure between them. The second-year report analyzed the economic impact of an FTA on the agricultural sector, utilizing the analytical framework of the partial equilibrium model, with a focus on the specialization of an FTA. This resulted in neglecting feedback effects of the macro-economy.

According to the CGE simulation result, the Korean agricultural sector will be damaged by a CJK FTA in terms of production growth and welfare, but the analysis says that these reductions will be less than expected because of the trade increase caused by the FTA. The production of grains (expectedly rice), crops, vegetables, and fruits will decrease about 47.26 percent, 15.84 percent, and 3.60 percent, respectively, under the zero-tariffication scenario when the medium-run capital accumulation model is used.

NAFTA's ten-year history can also provide us with indications that agricultural products with comparative disadvantages would not be fully hit by the developments of specialization between FTA partner countries, and that small countries would experience more benefits from FTAs than large countries, due to increased access to large markets.

Based on the CGE simulation results and NAFTA, this

report presents seven strategies and/or action plans for the Korean agricultural sector in facing the challenges and opportunities from the CJK FTA. They are:

- 1) Protection of sensitive agricultural products and compensation scheme for agriculture-based income,
- 2) Strategies to differentiate Korean agricultural products from impacted ones, emphasizing high-quality, safety, and organic products,
- 3) Export of agricultural products to niche markets of partner countries,
- 4) Investment strategy for China and construction of cooperative processes,
- 5) Strategy for increasing the shares of non-agricultural incomes in farmers' total income, and
- 6) Enhancing the innovative roles of farmers and the farmers' association in production and distribution as well as agro-businesses.

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KREI Quarterly Report on North Korean Agricultural Trends

The purpose of this research is to help the policy makers and those who are concerned about North Korea understand the agricultural trend in North Korea by providing analytical data. "KREI Quarterly Report on North Korean Agricultural Trends" is issued quarterly and composed of "Focus", "Analysis on the Agricultural Trends", "Trends of Trades and Cooperations in Agriculture", and "Agricultural Data".

Under "Focus", there are four articles: "Outlook of 2006 agriculture in North Korea and inter-Korean cooperation", "Direction and strategies for inter-Korea cooperation", "Changes in agricultural policy and prospects of food supply and demand in North Korea", and "Meaning and issues of the committee for inter-Korean agricultural cooperation".

This year, the agricultural trends in North Korea were similar to last year. The basic goal was to increase food production through the production of high-quality seeds, increase of potato production, expansion of double cropping area, and small animal raising. In agricultural infrastructure, North Korea has put emphasis on the land arrangement undertaking and irrigation canal construction. In agricultural production sector, it allocated more farmland for potatoes and beans. The cultivated land of grains is stable. In the livestock sector, it concentrated efforts on increasing the production of small animals such as rabbit, goat, and poultry. In the agricultural management sector, it is devoted to supplying more agricultural labor, machinery, and fertilizers.

Agricultural trades and inter-Korean cooperation have been quite active. The trade volume in the agricultural and forestry, marine production has continuously increased. The two governments stepped forward to advance agricultural cooperation. The committee for agricultural cooperation was established and the South and the North agreed to initiate five major projects in 2006.

The international aids to North Korea have been shrunk because the North Korean government denied the UN's Consolidated Appeal Process(CAP). However, South Korea's assistance to the North increased both at the government and private level. International community's response is negative although North Korea appealed to them to switch emergency humanitarian assistance the development assistance.

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Online Report on World Agriculture

The world agricultural policy and trade is increasingly influencing the domestic agriculture. Accordingly, it is important to have information on the agriculture of other countries.

In this context, the study aims at providing farmers, entrepreneurs, researchers, and organizations with information on agriculture and agricultural policies of other countries. Such information is expected to be used for designing agricultural policy, identifying world trends, setting up a strategy for world trade negotiation, increasing agricultural export, and improving farm and firm management.

The information collected is displayed on "World Agriculture Online Reports" on the KREI homepage. These are published monthly dealing with agricultural events in the world. In 2005, we conducted the following activities.

Firstly, in 2005 a total of 185 world agriculture news articles were posted on the web site, including 13 world agricultural overviews; 25 agricultural policies; and 147 world topics. The information was provided mainly by research staffs of the KREI and co-operated by other organizations (Regional Academy, MAF, RDA, NACF, and so on).

Secondly, the World Agricultural News was published every month in 2005. 750 copies of the report are published each month, and a copy has about 130 pages in total.

Thirdly, the homepage of "World Agriculture Online Reports" was improved in the way that it offers the place for sharing information with others by reinforcing the search engine, establishing research networks and providing opportunities to access related web sites.

Lastly, the research networks will be expanded and used as a space for information sharing. Many people are expected to participate in the networks including KREI staffs, Internet users, translators, authors, and foreign government officers.

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INFORMATION SERVICE

7

2004 Poll Result on Farmers' Attitude Changes and Pending Problems

This poll was conducted for 2,000 local residents from November 26 to December 18, 2004 by Korea Rural Economic Institute (KREI) for research purpose. The following data are the results of analyzing the collected 791 questionnaires.

Two out of ten (20.3 percent) answered that their living standard has "improved" compared to that of 5 years ago. The negative attitude toward their living standard seems to be slight. Only one out of ten respondents (10.2 percent) answered that their living standard has 'improved' compared to 2003.

However, 67.8 percent predicted that the rural economic will be 'weaker than now' within next 5 years. It shows that they still have a higher sense of uncertainty about their future.

The result also shows that 20.5 percent (2 out of 10) are 'satisfied' with their occupation. It is 4.7 percent higher than the previous year, and the satisfaction level with their occupation has been increasing during the last three consecutive years.

Seven out of ten are now planning to actively respond to the opening of Korean market to foreign agricultural products. It is some 5.3 percent higher number than the previous year and shows they have more positive will to deal with the problem.

'The co-op reform' (31.1 percent) and 'the establishment of the measure toward agricultural rural areas' (25.1 percent) were chosen as the most effective agricultural policies promoted during the last one year.

On the other hand, the poll shows that the farmers believe the government should put more effort on reforming 'the distribution system for securing the price and quality competitiveness' (19.3 percent) and "the active response toward global agricultural negotiations" (17.7 percent).

Four out of ten (40.7 percent) respondents agreed with the necessity of amending the Grain Management Act, while three out of ten (29.3 percent) answered that it is 'appropriate' to fix the food administration system in general.

62.4 percent agreed with the necessity of fixing the farmland system and 63.1 percent made a positive remark on the amendment of the Farmland Act.

33.7 percent answered that the co-op reform has been 'successfully implemented' while 46.8 percent still feel that 'the issue regarding remuneration of the central organization and its executives' requires the serious attention.

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SPECIAL RESEARCH

8

Shipping-point Marketing of Agricultural Producer Corporations and Related Policies of Local Government in Japan

The purpose of this study is to carry out the multi-angular in-depth analysis of the shipping-point marketing activities and to draw up Japanese local government's countermeasure strategies in line with changing consumer needs.

The most preferred agricultural policies of Kagoshima Prefecture in Japan are consumers' reliability guarantee about farm products safety, farming successor and technology development projects, promotion of recognized agricultural producer system, Kagoshima Prefecture's brand establishment, and organization of agricultural producers.

The local farm cooperative JA and agricultural economic business cooperatives (AEBC) of Kagoshima Prefecture perform diverse functions. Marketing function of the local cooperative is the most basic just like collection of farm products produced by cooperative members, and the sorting and packing by joint sorting line of a farm co-op. In addition, they perform transaction and logistic functions.

The farm products collected by JA and specified agricultural cooperatives are typically shipped out through two marketing channels such as ① wholesale market, and ② public retail shop (store for volume sales, discount store, large-sized supermarket, etc.), processing business company and large quantities users like hospital, school deeding, and retailers. There is a radical difference in shipment method and the quality of goods between two sales channels. In case of wholesale shipment, there are two shipping methods, including the general shipping method and the route-sale or contract-sale method. The general shipping method is the method of selling general goods by a local government or AEBC without using particular brand. The route-sale method is the method of selling recognized goods such as local government's brand goods by the Kagoshima Prefecture government and Kagoshima Prefecture AEBC. To cope with the

health concerns and the changing needs for food safety of consumers and to improve the image of Kagoshima farm products, the Kagoshima Prefecture government is developing "Kagoshima brand establishment movement."

As for the authentication system of Kagoshima Prefecture, there are two authentication systems. First, the Kagoshima prefecture government authentication system is a unique farm products authentication system where the uniform standard for safety and relief of Kagoshima agricultural products are set by the Kagoshima local government, and its superiority was authenticated by a third official agency. Second, the authentication system of the Kagoshima AEBC is a quantity authentication system, which is used to promote the introduction of traceability system to production and marketing activities.

On the other hand, the Kagoshima local government has established "a fundamental policy for food and agricultural products safety of the Kagoshima prefecture" to ensure safety of the fresh agricultural, processed, and distributed products. The main purposes of the fundamental policy are ① to inform the value of the Kagoshima agricultural products, ② to promote the safety measures of the agricultural products and processed foods from the consumers' point of view, ③ to offer correct information to consumers, ④ to enhance the consumer's knowledge and awareness of local agricultural products, and ⑤ to define role allocation among producers, related businessmen, consumers and administrative officials for the development and promotion of the Kagoshima agriculture.

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Current Situation and Prospect of Kiwi fruit Industry in New Zealand

Around the world, kiwi fruit is mainly produced in Italy, New Zealand, and Chile. In New Zealand, the growing area of kiwi fruit substantially increased until 1998, but since then, it has decreased 3.6 percent each year and it recorded 16,000 hectares in 2004. In New Zealand, kiwi fruit production has increased since 1995. It produced 260,000 tones of kiwi fruits in 2004. The kiwi fruit production of South Korea was reduced recently, but the consumer demand for kiwi fruit is increasing every year. A shortage of kiwi fruit supply in South Korea may require kiwi fruit importation to significantly increase the kiwi fruit supply.

In 2004, the domestic production of kiwi fruit met only 30 percent of the demand, and the rest or 70 percent of demand were satisfied with the imported kiwi fruits. Among imported kiwi fruits, New Zealand's kiwi fruits amount to 83 percent, followed by the Chile's with 9 percent and the USA's with 8 percent. The kiwi fruits imported from New Zealand have a higher quality than those from Chile, but the price of Chilean kiwi fruit is cheaper. Due to the FTA signed between South Korea and Chile, by 2014, more Chilean kiwi fruits (18,000 tones, 41 percent) are predicted to be imported, which is higher than that imported from New Zealand (9,000 tones, 21 percent).

The collaboration method between New Zealand and South Korea regarding kiwi fruit importation is to seek for off-season import. New Zealand kiwi fruits are safe and have a high quality, so they will benefit Korean consumers. At present, ZESPRI has signed a contract with Korean kiwi fruit growers (especially Jeju Island) and will expand the growing areas to provide kiwi fruits all year-around to Korean consumers. ZESPRI has also provided and transferred production technology to Korean kiwi fruit growers. In the future, more studies will be conducted on imported kiwi fruits from New Zealand, which are distributed through the Korea Agricultural Marketing information Service.

236

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