

Report regarding the progress status of studies and problems encountered in 2003, and proposals regarding the implementation of further studies.

(1) Studies on evaluation and food policies

1) Studies on the evaluation of agricultural, forestry and fishery policies

Policy evaluation of MAFF is implemented based on The Basic Plans for Policy Evaluations by Ministry of Agriculture, Forestry and Fisheries, and The Execution Plans for Policy Evaluations by Ministry of Agriculture, Forestry and Fisheries. In these plans, the involvement of and the collaboration between PRIMAFF and MAFF in the development and improvement of evaluation methods have been clearly stipulated. PRIMAFF researchers have continuously contributed to the development and improvement of policy evaluation methods, participating in various meetings to evaluate projects.

In 2003, the outcome of overall evaluation of rice policy, which had been accomplished in the previous year, was reported to the Policy Evaluation Committee of MAFF and published. In addition, a study on farm income stabilization programs in United States and Canada is being continuously implemented. This study clarified the issues that arose when those policies were applied to Japan, and the outcome was offered to government agencies and published. Concerning the study on development and improvement of policy evaluation methods, examples about regulatory impact analysis at both home and abroad were reviewed and offered to government agencies. The regulatory impact analysis is prescribed to be experimentally implemented in 2004 by the 3rd report of Council for Regulatory Reform.

In 2004, in view of increasing importance of study on support measures for core farmers so as to reform the domestic agricultural structure, the theoretical side of measures for income stabilization, their government charge and their influences to farm economy will be analyzed. As to regulatory impact analysis, which is planned to be experimentally implemented in 2004, a study on development of evaluation method for it will be implemented, and the outcome will be offered to related government agencies.

2) Studies on the evaluation of the environment for food, agriculture and rural area policies

In 2003, as the final year of the study project on evaluation methods for policies on recycling and reuse of organic materials originating from agriculture, refinements of the environmental evaluation method, an estimate of local waste accounting, an estimate of organic resource accounting in a city, which was used to develop the method of estimating the effect of environment load reduction, and a study of economic condition for sustainable management of recycling facilities, were implemented. Repercussions that introducing a tax against global warming would have on agriculture, forestry, fisheries, and food industries were also assessed. Additionally, participating in a project on multifunctionality evaluation in ASEAN region, PRIMAFF researchers supported studies conducted in the member countries.

In 2004, a study on developing and introducing an environmental accounting framework in agriculture, forestry and fisheries, a study on evaluation of various types of measures to exert multifunctionality, and a study on sustainable development of agriculture and livestock farming in arid region of East Asia will start.

3) Studies on the causes of changes in international and domestic food supply and demand and on forecasting of food supply and demand

In 2003, as the last year of a study project on the refining of forecasting methods of world food supply and demand, a world food supply and demand model taking into account environmental and/or resource constraint factors was developed, and a simulation using the model was carried out. The results were offered to government agencies and published. Fruit and vegetable supply and demand was also analyzed following the previous year and the outcome was offered to government agencies. The results for vegetables were presented in Forum for Agricultural Policy Research in Northeast Asia. In addition, a study on risk evaluation concerning food supply and an economic analysis of risks related to food and agricultural safety were made.

In 2004, the supply and demand analysis of vegetables by item and economic analysis of risks related to food and agricultural safety

will continue. Comparative study on vegetable production and distribution structure in Japan and Korea, and international comparative study on production cost in agriculture will start.

4) Studies on food consumption trends and on food consumption policies

In recent studies on food consumption, the focus of analysis is shifting to food quality in addition to quantity and prices, and safety is especially the most important factor of food quality. In 2003, in the study project on establishment of risk management system for food and agriculture, comparative analysis of the current situation in food traceability and safety among European countries, United States and Japan has been continued. Factors influencing price formation of milk and dairy products were also analyzed. In addition, information and advice on risk communication methods were provided to government agencies.

In 2004, the last year of the study project, further investigation will be made on food safety and traceability, to accomplish the project. The price formation of milk and dairy products will continue to be analyzed.

5) Studies on the efficiency and the stability of food supply systems from production to consumption and on related policies

About the studies on the efficiency and the stability policies of food supply system from production to consumption, so-called food system, in 2003, distribution cost of fruit had been analyzed since the previous year, and the result was provided to government agencies and published. In addition, a study to arrange and reconstruct food distribution system analysis by way of general theoretical framework began to be addressed. The price transmission structure of food system was also analyzed.

In 2004, studies on the food distribution system and price transmission structure of the food system will continue. Additionally, an economic analysis of sugar policy and a study on rice bid market by experimental economics will start, to reinforce the study field of food system.

(2) Studies on rural development policies

1) Studies on policies for the development of management structure and

operation of agriculture, forestry and fisheries

The following studies have been carried out, as strategies for nurturing of various types of farming leaders:

Clarifying effects of technology training for new farmers in some aspects, institutional conditions for supporting them have been synthetically examined.

Management analysis of contract farming conducted by corporations invested by farmers' unions has also been studied. As a result, it is clarified that the small-and-scattered condition of farmland has prevented farms from efficient application of machinery, and therefore costs are raised in hilly and mountainous areas.

Studies on nourishment of agricultural production system toward for food safety and reduction of environmental load and on local reaction to "Reform of Rice Policy" have been undertaken.

2) Studies on policies for stabilizing farming, forestry and fishing communities and for improvement in welfare for farmers, forest workers and fishers

Through investigation into the actual conditions, the following has been analyzed:

On welfare function of rural communities, accessibility of welfare service between rural and urban areas have been diminished by proceed of public nursing care insurance for the elderly. And on cultural function in rural areas, theatrical activities have played a role of strengthening the ties of youths. As a part of this field of research, a national basis investigation of nursing care insurance for the elderly in rural areas will be conducted.

On the other hand, the contribution of elderly farmers to agricultural production has been quantitatively examined in a research project titled "Analysis of the role achieved by the elderly in agricultural and rural areas". This project also presents an index of quality of life of the elderly related to welfare and cultural activities.

3) Studies on policies for economic revitalization in farming, forestry and fishing districts, hilly and mountainous areas

Investigations in the Sanin and Kinki regions have been conducted to study the rural revitalization problem under changes in lifestyle. They focused on examining the characteristics of people who have newly entered rural areas from urban areas, and supporting systems and measures on a local level to

promote newcomer settlement. In addition, the following studies have been performed, which are a quantitative analysis of factors to promote young people's entry into farming, a national investigation on accession conditions of pupils and students in mountainous areas, study on concept of green tourism, and investigation of women's participation in management in fishing villages related to beginning of a new business.

Additionally, statistical analysis of vanished agricultural communities has been carried out utilizing agricultural census data, which shows the phenomenon is caused mainly from reduction of households in a community and that the cases of rural exodus are unusual. Study on youths and women's organizations of farmers' unions and their activities also have done.

4) Studies on policies for the conservation and better use of resources in farming, forestry and fishing districts, hilly and mountainous areas

A case study on behavior of non-agricultural enterprises which have newly entered farming has been conducted to confirm the effect of promoting utilization of abandoned farmland including them in "Special Zones for Structural Reform". As a result some of such enterprises are construction companies of which purpose is to utilize unemployed farmland and labor force rather than to pursue to enlarge revenue of farming. Further investigation of national basis will be continued.

Also, an econometric study on farmland price has clarified that it correlated with farm earnings in a long-term, a model of which is set in the change of agricultural structure. A dynamic model to evaluate farmland price was continued.

Further, a case study of Biosolids Derived Fuel (BDF) energy practice using rapeseed has done to appreciate activities using biomass energy in rural areas.

(3) Studies on international policies

1) Studies on the trend of international relations as to food, agriculture and rural areas and on international adjustment policies

Information about Chinese and Argentinean policies and regulations regarding genetically modified organisms (GMOs) was gathered with field investigation. Also, the background of the US-EU trade conflict over GM crops was clarified, and some key concepts

such as precautionary principle and substantial equivalence were discussed.

In response to global food problems, a world food supply and demand model taking account of resource constraints was developed in 2003. It clarifies the impacts of population estimation and the random shock of crop yields on the world food supply and demand outlook. Also, information concerning major agricultural production regions has been accumulated.

As a part of the studies on the measures taken in the transformation of rural communities in developed nations, the movement of agro-environmental policies and local governmental expenditures in Germany was investigated.

In addition, information about agriculture in Korea and Thailand, which are negotiating free trade agreement (FTA) with Japan, was gathered and analyzed. Econometric analysis on the impact of FTA was examined. Also, information about agriculture and policy in developing countries such as India and Brazil, which have been more powerful at WTO negotiations, was gathered.

In order to respond appropriately to the International Treaty on Plant Genetic Resources for Food and Agriculture, the allocation issue of the benefits produced through preserving genetic resources was examined.

The transformation of rural communities in North America will be studied in 2004. Information about FTA and the WTO will be gathered continuously. An analysis on the overseas movement regarding agro-biological regulation and econometric analysis on the trade impact of food accident such as BSE crisis will be initiated.

2) Studies on the trends of food, agriculture and rural areas and policy direction in Europe

Through the investigation on various Web sites of ministries and research institutes in France, studies elucidated how to reflect the public opinions of civil society and NGOs into policies.

As a part of a newly started research project titled "Study on rural revitalization policy taking account of changes in lifestyle", the comparative analysis on changes in the socio-economic indicator and nature of rural policy in Japan and Europe. Also, nature, outlook, and settlement of new entrants from cities have been investigated in France. The studies clarified the revitalization activities in disadvantaged areas in Sweden and the population movement returning into rural areas in North America.

In 2004, a comparative analysis on the

trends of rural areas and rural policies in Europe, North America and Japan will be continued. A new study on vertical development of food production and distribution system under labeling regulation in EU, especially in France, will be initiated.

3) Studies on the trends of food, agriculture and rural areas and policy direction in the Americas and Oceania regions

With field research, changes in the food system of soybeans and corn from US into Japan were investigated, and development of organized distribution channels for shifting to non-GM foods from farm to table was clarified.

Brazil, one of the largest agricultural supplying countries in the international market, has become a powerful leader of developing countries, especially recently at the WTO negotiations. As for this country, analysis clarified the structure of supply and demand of agricultural products and agricultural trade, including background.

The studies on Brazil will be furthered and expanded into the analyses of the political impact on trade structure of agricultural products. As to agricultural biotechnology in US, Canada, Brazil and Argentina, information about policy development will be gathered and their socioeconomic factors will be revealed.

4) Studies on the trends of food, agriculture and rural areas and policy direction in Asia and Africa regions

In 2003, econometric analysis on the economic activities in rural areas in China, based on official statistical data and company research data, has clarified various development factors for rural economies, and mechanism causing economic imbalance. The studies revealed economic reasons for overgrazing and degradation of the grasslands after the introduction of market economy system in Mongolia and Northern China. The comparative analysis of a new intensive rice production system (SRI) in Asia and Africa and Japanese traditional planting method has pointed out that Japanese experience have a certain implication for agricultural development of developing countries.

As the above studies were completed, new research projects will be started in 2004 as follows: an analysis of the structure of comparative advantage of agriculture and non-agriculture in China, a study on rural development policy and farm management in China, an investigation of structural changes of food trade and those factors in South East Asian countries, and a study on changes in food supply and demand in East Asia. Also, research on low incoming food shortage countries in Africa and South Asia will reveal the mechanism of desertification caused by human activity, and examine policies to solve poverty problem.

Outline of Research Project-type Research

● World Food Supply and Demand Project

In 2003, the World Cereals Projection Pilot Model under Resource Constraint was developed for Item 1, and the projections towards year 2030 for production, consumption, and prices on cereals was made under 3 scenarios concerning the growth rates of total farmland acreage and irrigated farmland acreage.

In addition, a model called WFM-PRIMAFF, which was based on FAO World Food Model (WFM) and farmland acreage was integrated into it as explanatory variable, was developed in order to more precisely analyze the economic response to resource constraint issues. Using this model, scenario analysis was carried out on the effects of the decrease in farmland acreage in the USA and China, two of the world's largest food-producing countries,

on production levels, farmland utilization, production competition among crops, and the expansion of trade.

For Item 2, multiple-range analysis was made on the resource restraint of water and farmland and new production techniques over the food-agriculture issue, in Asian countries (China, Mongolia, Vietnam, and India), Australia, Brazil, CIS countries, African countries, and others.

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● Research in Measures for the Revitalization of Rural Communities in Response to Lifestyle Changes

The aim of this research is to promote the revitalization of rural areas capable of addressing the diverse expectations of consumers and the general public through interchange between urban and rural areas. In this study, we elucidate the formation of diverse lifestyles, the move into rural areas, and an approach to the development of conditions for further promoting that while also clarifying its impact and effects on rural communities.

This research deals with the following two issues.

Issue 1 is the elucidation of the formation of diverse lifestyles in rural areas, and measures for the development of conditions for regional revitalization. This includes an examination of population shifts between urban and rural areas, new advances into agriculture in response to the new lifestyles of urban dwellers, endogenous regional activation resulting from changes in lifestyle in rural areas, and the comprehension of conditions for the development of an environment for the realization of a dual lifestyle through urban-rural interaction.

Issue 2 is comparative international research into the conditions for the formation of diverse lifestyles for the revitalization of rural areas. This includes an analysis of the state of new advances into rural areas, trends in

relevant government policies, and trends in various other countries regarding the evaluation of those effects, and an examination of the implications for relevant measures in Japan.

Relating to Issue 1, in 2003 we conducted a statistical analysis of population mobility and organized concepts for green tourism while conducting case studies of the shift from urban to agricultural areas and female employment problems, and clarifying the format of interchange between urban and rural areas.

For Issue 2, we compared the EU and Japan relevant to the economic conditions of rural communities and policies for regional development, and analyzed the social, economic and cultural factors in the movement of people to rural communities in France and the US, and their age and hierarchical characteristics.

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● Research on Evaluation Methods for the Policies of Recycle and Reuse of Organic Materials Produced from Agriculture

The MAFF is currently creating a number of policies for recycling organic materials. Concerning the food industry, a law has already been enacted stating that each industry should reduce organic waste by 20% within the next 5 years. In addition, other laws were enacted to force livestock farmers to install necessary equipment for preventing pollution from leaching of animal manure. There are still, however, no clear and definitive methods for evaluating such policies. Although there are many aspects to be dealt with, we have been tackling three subjects in the present project. Past discussions are classified into three groups. The first is related to evaluation methodology, the second is the systematic view toward the objectives of the past policies, and the third is their actual effects.

In the first year, we worked to clarify the concept of recycling of organic materials, especially in rural areas. We then worked to develop an evaluation method. Policy evaluation is one of the most important issues in environmental discussions. How much does the policy

reduce environmental impact? And secondly, how to efficiently implement the policy must also be examined. An additional question is: Are there any alternative policies?

The final results of the project were reported in "Recycling Policies and Environmental Evaluation." This report consists of three Parts. The first chapter in Part one deals with a new system of waste accounting. This topic will be described in detail in this annual report (See p. 24). The second chapter analyzes an evaluation method in a closed space with a strict management of reducing environmental impact. It emphasizes the importance of recognition and judgment of the local community and stakeholders.

Part two of the report analyzes policies for recycling organic matter. Third chapter begins with a review of the history of MAFF policies related to recycling organic matter. It clarifies that the gradual shift to more comprehensive measures taken by the MAFF has matured into the present policy framework, which is now symbolized by the new strategy of the

Biomass Japan project. The fourth chapter then surveys a few compost centers, which are one of the main facilities whose arrangement has been promoted. The key for the effective management of the centers is a basic cost/benefit balance that is especially dependent upon the price of compost and the gate fee in receiving manure from farmers. But more important is the fact that the benefits to local areas brought about by recycling organic matters are currently neglected. When taking account of their values into the balance, it could be ameliorated in one stroke. But the methodology of such environmental accounting has not yet

been identified.

Part three is an experimental chapter to try to make a framework of environmental accounting. The author proposes four new accounts: environmental finance, environmental finance stock, environmental finance flow, and environmental value stock. The framework of these accounts and calculating methods will be the main themes of a coming project.

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● Study on Overseas Movements Regarding the Development and Regulations of Genetically Modified Crops

This research was carried out as part of the “Comprehensive Study on Ensuring Safety in the Industrial Use of Genetically Modified Products (1999 – 2003)” conducted by the Ministry of Agriculture, Forestry and Fisheries.

Over recent years, the development of biotechnology has been remarkable, and the application of genetic manipulation technology in the agricultural industry is rapidly on the increase. On the other hand, the social acceptance of genetically modified (GM) products in many countries around the world is in question. There are debates over the safety of GM products, as well as labelling regulations and trading rules not only between governmental bodies but also producers, consumers and others who are concerned with these issues. Considering such circumstances, this research was intended to interpret and analyze the actual overseas trends in the development of GM crops and relevant regulations by means of social and economic analysis, and to clarify the influence and circumstances behind these trends.

Major Findings of this research in 2003 are as follows.

(1) European GMO research policy

It might be fair to argue that the year of 2003 can be considered as a turning point in European GMO policy. In this year, we can observe many kinds of event which have profound impact on European GMO policy. For example, new EU regulations for GM food and feed (EU Regulation No. 1829/2003), and labelling and traceability (EU Regulation No. 1830/2003) were enacted in July. The European Food Safety Authority began to release their opinions on safety of GMOs. Today the main discussions over the regulation of GMOs tend to focus on adventitious presence of GMOs in seeds and measures for coexistence

with non-GMOs and organic agriculture.

In the United Kingdom, the government initiated three strands of public consultations on GMO issue in the summer of 2003, including public debate, cost/benefit analysis, and science review. In addition, the government released the results of the Farm Scale Evaluation (FSE) in October 2003. This FSE project is planned to examine indirect impacts of GMOs on farm-level biodiversity. The result of the FSE shows that GM spring-sown rapeseed and GM beets have negative impacts on on-farm biological diversity, while GM maize has positive impacts. The UK government gave a conditional permit for commercial cultivation of GM herbicide-tolerant maize based on the results of the FSE in March 2004.

(2) Consumers' purchase preference of GM foods

Consumer heterogeneity in preferences is one of the most vital components of the policy discussions over labelling and market segmentation in relation to GM foods. The hypothesis was tested on English consumers' egg purchasing preferences, especially on the use of a GM diet for hens. The survey was conducted between November and December 2001.

Based on the analysis of the Latent Class model, the consumers were divided into three groups: “food and environment”, “GM unfaithful,” and “GM optimistic.” The ratio of the first two groups together was 46.5%, and the latter was 53.5%.

The willingness to pay (WTP) for non-GM eggs was several times more than the real difference in market price, as the tendency of GM evasion of the first two groups was strong. The WTP for non-GM eggs of the “GM optimistic” group, however, was only several pence different from the real egg price range, and sufficiently settled inside the real egg price

difference of non-GM eggs. The research findings revealed that several groups were identified among the English consumers whose thinking differs largely concerning GM technology and actual purchasing behaviour.

(3) others

In addition, a social/legal analysis was carried out regarding US-EU trade disputes over GMOs, debates on the precautionary principle, and the concept of “substantial equivalence.”

● Research on the Establishment of a Risk Management System for Food and Agriculture

In Japan, the establishment of a risk management system for supplying consumers with safe and reliable food is of high priority in the governmental policy agenda. This situation has been caused by unrest among consumers, triggered by the outbreak of BSE and the other turmoil in the food-supply systems in Japan.

The objective of this research project is, therefore, to help the government pave the way to overcoming the above situation. Methods employed include cost/benefit analysis, input-output analysis and conjoint analysis, all of which are analytical tools of modern economics. Further, comparative study has been carried out to examine policy measures regarding food safety in EU, US and in Japan, from a scientific point of view.

The research has been organized into the following four sub-topics, in order to achieve the objective stated above.

(1) Assessment of Risks in Food Systems

At the local and national levels, risks in food supplying system in Japan have been analyzed employing econometrical methods, such as input-output analysis. For 2003, the potential effects of introducing rbST (recombinant bovine somatotropin) on the dairy market in Japan, as well as the economic effects of the US' outbreak of BSE on the Japanese meat market, have been analyzed.

(2) Economic Analysis of Risks in Food and Agricultural Commodities

Economic analysis has been used to study the risks relevant to food and agricultural commodities from points of view of both demand and supply sides. For 2003, the attitudes of Japanese consumers towards food and agricultural commodities has been analyzed

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from a viewpoint of consumer preferences in Japan, and their risk-avoidance behavior has been grouped into classes.

(3) Development of Risk Communication Methods Relevant to Food Safety

Many accidents relevant to food safety in Japan have been reviewed so that effective risk communication methods could be developed. For 2003, the Study of Failure method has been employed to find more effective means of risk communication between stakeholders.

(4) Comparative Study on Policies and Institutions Relevant to Food Safety

Institutional and policy arrangements of European countries and of US have been studied in comparison with those in Japan, from the perspective of preventing and/or spreading damage to food systems. For 2003, safety and quality assurance schemes with respect to traceability of beef have been surveyed in Germany and in Japan.

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Economic Analysis for the Stabilization of Supply and Demand of Major Fruits

Satsuma oranges (*Unsyu* mandarin oranges) and apples occupy an important position, accounting for more than half of the fruit production in Japan. In recent years, however, there has been no growth in the consumption of Satsuma oranges and apples, and market prices have been sliding. Measures were thus devised in 2001 to coordinate supply and demand and stabilize management relevant to apples and Satsuma oranges under these conditions. In order to appropriately implement these systems, it is essential to properly ascertain supply and demand and elucidate the price formation factors.

To that end, in this study, we developed a price-prediction model, evaluated management stabilization measures, and elucidated the factors involved in the formation of retail prices.

(1) Development of price prediction model

It became clear in the case of Satsuma oranges that sugar content and other quality factors have a significant effect. Taking this into account, we developed a monthly price-prediction model with market sales volume, consumption expenditures, prices of substitute goods and quality factors (sweetness) as explanatory variables.

In the case of apples, we were not able to confirm quality indicators that had an effect on the price formation of as in the case of sweetness of Satsuma oranges. We therefore devised a price function introducing climatic factors (number of low temperature days before harvest and time of the blossoming period).

(2) Evaluation of management stabilization measures

The ratio of participation in the management stabilization measures for Satsuma oranges reached a level of about 75% of producers nationwide. In order to verify the effects of the measures, marginal income and marginal costs due to participation in the management stabilization measures were estimated by area, and the two were then compared. As a result, marginal income = marginal costs was achieved in four of six major production areas, thereby confirming the effectiveness of the measures.

(3) Elucidation of the factors involved in retail price formation

A tendency has been evident among retail stores in recent years to reduce the weight per

pack as a way of responding to the decrease in consumer income and to hold down the retail prices of fruit (Fig. 1). Under these circumstances, the disparity (margin) between wholesale and retail prices has been increasing. The margin for a single pack (1kg) of Satsuma oranges was found to be about ¥100. Of that, packaging expenses accounted for about ¥25, about 25% of the margin (Table 1). On the other hand, the cost of packaging was often the same for packs with a weight in the range of 800g – 1kg. That therefore has the effect of increasing the margin due to packaging costs as the weight of single packs is decreased.

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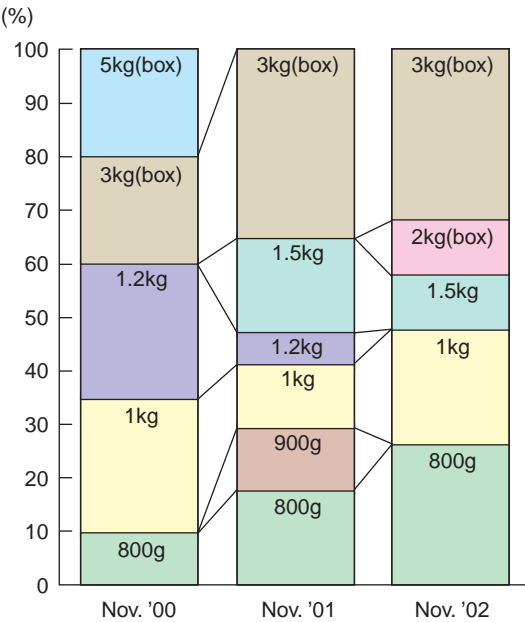


Fig. 1. Ratio of retail goods by weight (oranges, A Co-op)
Note: all containers other than "box" are bags

Table 1. Breakdown of margin of Satsuma oranges produced in 2002 (in ¥/kg)

Wholesale price (A)		188.7	
Retail price (B)		288.5	
Margin (B-A)		99.8	100.0%
Margin breakdown	Wholesale margin	20.0	20.1%
	Packaging cost	25.0	25.1%
	Other	47.3	47.4%
	Discards	7.5	7.5%

Note: Calculated assuming a 1-kg pack

● Analysis of the Impact of a Climate Change Tax on Agriculture and Food Industry

With the ratification of the Kyoto Protocol, it has become essential for Japan to promote measures for the prevention of global warming in order to achieve its promised reduction in carbon dioxide emissions. The introduction of a climate-change tax is being examined as one such measure. It is assumed that a climate-change tax would be the primary measure among the additional policies to be introduced as Step 2 set forth in the Climate Change Policy Program (formulated by the Headquarters for the Promotion of Efforts to Prevent Global Warming, July 2002).

In this study, we estimated the tax burden on the agriculture and food industries in the event that such tax were to be introduced based on scenarios presented by the Expert Working Group for Global Warming Tax Introduction of the Global Central Environmental Council's Comprehensive Policy and Global Warming Joint Subcommittee in July 2003,

using an industry-related model with the aim of furthering a comprehensive discussion of the introduction of the tax.

The scenarios are described below.

As measures for reducing CO₂ emissions originating in energy by 2% from 1990 levels by 2010:

Scenario 1: Achieve the goal solely through the price incentive effect of the tax. The required tax amount would be ¥45,000/t-C.

Scenario 2: Achieve the goal by implementing global warming prevention measures through price incentives as well as subsidies that utilize tax revenues. The required tax amount would be ¥3,400/t-C.

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● Research in International Policies on Access to Genetic Resources and Sharing of the Benefits Arising from Their Use

1. Research Objective

This study aims at helping the government of Japan decide its position on the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR), as the decision should be made based on careful observations about the complicated debates on this treaty. The complexity stems from such questions as how the contribution of farmers in conserving their genetic resources for generations is recognized (the issue of Traditional Knowledge (TK)) and whether granting of Intellectual Property Rights (IPR) over genetic resources limits access to the said genetic resources. These questions are parts of debate on Access to genetic resources and Benefit Sharing from their use (ABS).

2. Results

(IPR)

The debates on IPR have two aspects: (1) protection for the fruits of the state-of-the-art in biotechnology, and (2) protection/recognition of TK whose owners are difficult to identify. In the case of the former, cooperation between the International Union for the Protection of New Varieties of Plants (UPOV) and the World Intellectual Property Organization (WIPO) is

being promoted. However, the latter has been a topic of intense discussion among the parties to the Convention on Biological Diversity (CBD), WIPO and WTO (World Trade Organization). Though many opinions exist, protection for TK is not moving into a new direction of establishing a *sui-generis* international IPR system.

(ABS)

One of the controversial issues regarding ABS is the argument on the establishment of ways of monitoring the transfer of genetic resources to realize a transparent mechanism of sharing benefits arising from the use of genetic resources. A way is suggested through disclosing the country of origin of genetic resources when IPR protection is claimed for the fruits from the utilization of the genetic resources.

This idea, which has been proposed by the south, is being opposed by the north, because imposing such a specific condition on the fruits from the use of genetic resources only is against existing IPR-related international laws such as the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of WTO. The essence of the debate is the argument on the interpretation on the priority of two international laws, CBD and

3. Conclusions

The debates on ABS should be interpreted in the context of wider arguments on the power balance between the south and the north in the world of globalization. For Japan to resolve the issue, including ITPGR, it is necessary to

understand that opposition from the south goes back to the problem of the economic gap between the north and the south, as well as of coexistence of diverse cultures.

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● Analysis of the Role Achieved by the Elderly in Agriculture and in Rural Areas

The aging of society has been advancing in agriculture and in rural areas in recent years and, under these circumstances, the elderly have come to play a major role in agricultural production and the management of regional communities, and are an important factor in policy formulation. Under the current conditions, however, the activities of the elderly have not been adequately quantified. This study therefore quantitatively analyzes the degree of contribution of the elderly to agricultural production. In addition, the characteristics of the elderly-oriented policies being furthered by the JA (Japan Agricultural Co-operatives) are also analyzed. Furthermore, the effect on the habitation configuration of farming families along with advancing age and the current state of elderly policies in European countries, where society is aging as in Japan, were also surveyed.

The major results are given below.

The ever increasing elderly population (age 65 and over; likewise below) accounts for 33% of persons engaged in farming and 41% of the total number of days engaged in agriculture. By region, the ratios are low in Hokkaido while exceeding 50% in the Sanyo and Sanin regions (Fig. 1). On average, elderly persons are engaged in agriculture 27% more days than younger people and, in the case of rice cultivation, 54% more. We next estimated the degree of contribution of the labor of the elderly (persons engaged in agriculture) to agricultural income produced using the production function. As a result, it was confirmed that the degree of contribution of the elderly has been increasing since 1985.

Meanwhile, the JA is promoting elderly-oriented policies centered on activities to organize the elderly as well as welfare, cultural, and other social activities. As the result of an analysis of JA activities by principal component analysis, it was revealed that the more actively the JA promoted agricultural production, the more vigorous were its elderly policies.

In regard to the effect on the habitation configuration of farming families, it was confirmed through case studies that advancing age is leading to the collapse of the principle of parent-child two-generation households and a gradual increase in separate habitation.

In addition, the aging of society is also advancing in agricultural and in farming rural areas in Europe as in Japan; however, in France, the elderly are positioned as the recipients of long-term nursing services and no move was evident toward using the elderly for policy objectives. Rather, involvement in agriculture by younger people was being promoted through early retirement measures.

List of Research Members

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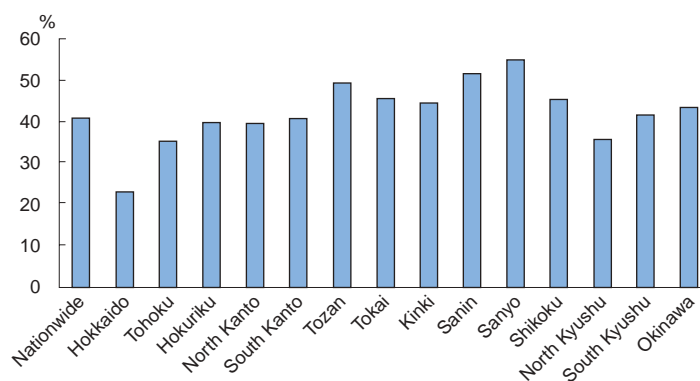


Fig. 1. Share of the elderly in the total number of days engaged in agriculture (2000)

● Research Relating to Agricultural Trade Policies

As the globalization of trade intensifies, there has been intensive negotiation of bilateral and regional Free Trade Agreements (FTAs) in parallel with WTO multilateral trade negotiations. Following the FTA agreement concluded with Singapore in 2002, Japan is also moving ahead with discussions with Mexico, Korea, and ASEAN member countries.

Taking this into account, a survey and analysis were conducted in this study regarding the items below expected to have an effect on the agricultural trade policies of Japan. Implementation of the survey is being planned for two years, 2003 and 2004.

- 1) Negotiating position and state of domestic agriculture centered on Korea and ASEAN countries as potential FTA counterparts
- 2) State of the response of developing countries to the WTO
- 3) Effect of FTAs on Japan

Basic data was collected and tabulated in 2003 regarding the FTA negotiating position and state of domestic agriculture in Korea and Thailand, and the response to the WTO by Brazil, China and India. In addition, we also examined means for measuring the economic effect of FTAs on the Japanese economy.

Within this context, a number of points regarding agriculture in Korea and Thailand that are of relevance to Japan were revealed, as described below.

(1) Korea

Agriculture in Korea is very similar to that in Japan in a number of respects, such as the facts that paddy field rice production has developed based on irrigated agricultural land, that rice production occupies an important position, that the scale of cultivated land per farm household is small, and that Korea is one of the largest grain-importing countries in the world. Meanwhile, there are also many areas in which agriculture in Korea differs greatly from that in Japan, such as, given the fact that there are few opportunities in rural

areas to engage in subsidiary business activities, the ratio of full-time farmers is at the high level of 67% (20% in Japan), the average farm household consists of 2.9 members (4.3 in Japan) and there is a high percentage of leased farmland. In Korea, as a part of the measures under the Uruguay Round Negotiation, investments were actively promoted for the development of facilities especially for hot-house vegetables and livestock in the 1990s and, as a result, there was a rapid increase in exports of vegetables and pork, most of which was destined for the Japanese market (Table 1).

(2) Thailand

In recent years, the share of agriculture in the national economy has been declining in Thailand, and the share of trade has also decreased. However, the balance of trade in agricultural products indicates a considerable surplus and, as before, Thailand remains a major exporter of agricultural products. Rice is Thailand's major export agricultural product, and Thailand is the world's largest rice exporting country, with exports accounting for about 40% of total domestic production. Rice is followed by the export of sugar produced from sugarcane, and Japan is the most important importer of raw sugar. Next in the ranking of export products after rice and sugar is cassava. It is processed into tapioca products (animal feed pellets, tapioca starch, etc.), about 75% of which is exported. Among livestock products, broiler poultry has shown rapid growth, and export values have more than doubled during the past decade. As a result, Thailand has become the world's fifth largest exporter of poultry, meat and Japan is its most important customer.

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Table 1. Transitions in export volumes of vegetables and pork in Korea
(unit: 1,000 tons)

	1990	1995	2000
Vegetables	24	66	67
Chinese cabbage	9	17	26
Tomatoes	0.1	2	13
Cucumbers	0.2	3	6
Pork	6	14	80*

*This figure is for 1999.

List of the Research Subjects

Name of Subject	Name of Researcher
1. Studies on evaluation and food policies	
(1) Studies on the evaluation of agricultural, forestry and fishery policies	
Study on the evaluation of farm income stabilization programs in the US and Canada	Kunihisa Yoshii
Studies on development and improvement of methods for the evaluation of MAFF programs	Kunihisa Yoshii, Kentaro Katsumata, Kayoko Kubo, Taiji Yoshida
(2) Studies on the evaluation of the environment for food, agriculture and rural area policies	
Development of a policy evaluation method regarding the promotion of the cyclic use of organic resources of agricultural origin	Kentaro Yoshida, Mitsuyasu Yabe, Takashi Hayashi, Motoyuki Goda
Studies on policies for mainstreaming recycling of organic resources and their effects on sustainable rural development	Akio Yamamoto, Mitsuyasu Yabe, Takashi Hayashi, Motoyuki Goda, Ryohei Kada, Kayoko Kubo
Research on the economic estimation which the carbon tax introduction gives to it to agriculture, forestry, fisheries and food industries	Taiji Yoshida, Mitsuyasu Yabe, Takashi Hayashi, Hiroki Sasaki, Tetsuro Yakushiji
(3) Studies on the causes of changes in international and domestic food supply and demand and on forecasting of food supply and demand	
The development of a world food supply-demand model that takes into account environmental and/or resource constraint factors	Atsuyuki Uebayashi, Sotaro Inoue, Shunji Oniki
Price prediction of major fruits using demand functions	Taiji Yoshida
Studies on the market impact of food safety risks and incidents	Taiji Yoshida, Junko Kinoshita, Kyoko Sato, Yutaka Inoue
Economic analysis on food safety and risks	Kunihisa Yoshii, Ryohei Kada, Mitsuyasu Yabe, Kentaro Yoshida, Takashi Hayashi, Koichiro Akashi, Kayoko Kubo

Name of Subject	Name of Researcher
Demand and supply analysis of vegetable by items	Toshitaka Katsuki, Takaya Honma, Shigenori Kobayashi
(4) Studies on food consumption trends and on food consumption policies	
Study on the development of risk communication methods related to food safety	Yuichiro Takahashi, Kyoko Sato, Yuki Suzuki
Comparative study on institutions and policies for food safety	Tomoko Ichida, Hiroshi Kondo, Takayoshi Horikoshi
Economic analysis of dairy product pricing for the GATT/WTO system in Japan	Junko Kinoshita
(5) Studies on the efficiency and the stability of food supply systems from production to consumption and on related policies	
Analysis of fruit prices and distribution costs	Toshitaka Katsuki, Takaya Honma, Shigenori Kobayashi, Koichi Sato, Katsuya Takahashi
Economic analysis of Japanese food distribution system	Tetsuro Yakushiji
An empirical analysis of price transmission system in the Japanese food industry	Yasutomo Kojima
2. Studies on rural development policies	
(1) Studies on policies for the development of management structure and operation of agriculture, forestry and fisheries	
Clarification of the cost structure concerning agricultural corporations financed by local governments and agricultural cooperatives from the public viewpoint	Gentaro Suzumura
Analysis of agricultural training systems corresponding to applicants for new entrants to agriculture	Akira Egawa
(2) Studies on policies for stabilizing farming, forestry and fishing communities and for improvement in welfare of farmers, forest workers and fishers	
An analysis of the influences of the elders' roles on agriculture and rural area	Yoshihiko Aikawa, Ryohei Kada, Tsutomu Matsuhisa, Tomoaki Ono, Hitomi Nakamichi, Fumiaki Suda

Name of Subject	Name of Researcher
A study of welfare, cultural and social functions in agriculture and rural society	Yoshihiko Aikawa
(3) Studies on policies for economic revitalization in farming, forestry and fishing districts, hilly and mountainous areas	
Clarification of the co-operatives' roles for revitalization of rural economy	Osamu Chiba
Studies on policy of building-up various lifestyles and revitalizing rural areas	Tsutomu Matsuhisa, Masami Mizuno, Tetsuya Nakata, Toshitaka Katsuki, Yoshihiko Aikawa, Kyoichiro Adachi, Osamu Chiba, Hitomi Nakamichi, Tomoaki Ono, Noboru Hashizume, Akira Egawa, Gentaro Suzumura, Takeshi Fujie, Koichi Sato, Yutaka Inoue
Studies on the necessary condition for continuance of rural community and management of farmland resource in hilly and mountainous areas	Noboru Hashizume
(4) Studies on policies for conserving and the better use of resources in farming, forestry and fishing districts, hilly and mountainous areas	
Study for prevention the emergence of abandoned farmland and local agricultural developing	Tomoaki Ono
Time series analysis of farmland price using longitudinal data	Takeshi Fujie
3. Studies on international policies	
(1) Studies on the trend of international relations as to food, agriculture and rural areas and on international adjustment policies	
Analysis of overseas movements in policy planning concerning the production, distribution and descriptive labelling of genetically modified agricultural products	Masami Mizuno, Yasuo Watanabe, Masashi Tachikawa, Sotaro Inoue, Kyoichiro Adachi, Fumiaki Suda, Norio Fujioka, Mitsuyasu Yabe, Yoshihisa Aita, Ryohei Kada, Tetsuya Nakata, Akio Yamamoto, Yuichiro Takahashi

Name of Subject	Name of Researcher
Studies on the potential food productivity in major world regions in consideration of environmental and resource constraints	Masami Mizuno, Junichi Shimizu, Toshitaka Katsuki, Shunji Oniki, Koichiro Akashi, Shuang Xi, Hiroshi Kondo, Sotaro Inoue, Wyatt Thompson
Study on the adaptation process of rural communities to social change in developed countries	Masashi Tachikawa, Fumiaki Suda, Tomoko Ichida
Studies on agricultural trade policies under changing socioeconomic conditions	Motoyuki Goda, Yoshihisa Aita, Sotaro Inoue, Junichi Ito, Masato Ito, Gyunghee You
Research in international policies on access to genetic resources and sharing of the benefits arising from their use	Akio Yamamoto, Masato Ito
(2) Studies on the trend of food, agriculture and rural areas and policy direction in Europe	
Expansion of the “public zone” and agricultural policy planning	Fumiaki Suda
International comparative study on conditions for building-up various lifestyles and for revitalizing rural areas	Masami Mizuno, Tomoko Ichida, Mitsuyasu Yabe, Yoshihiko Aikawa, Hitomi Nakamichi, Motoyuki Goda, Masashi Tachikawa, Yoshihisa Aita, Fumiaki Suda
(3) Studies on the trend of food, agriculture and rural areas and policy direction in the America and Oceania regions	
Clarification of overseas trends in production, distribution and consumption of genetically modified crops and the impact on the food system	Masami Mizuno, Yasuo Watanabe, Masashi Tachikawa, Sotaro Inoue, Kyoichiro Adachi, Fumiaki Suda, Norio Fujioka, Mitsuyasu Yabe, Yoshihisa Aita, Ryohei Kada, Tetsuya Nakata, Akio Yamamoto, Yuichiro Takahashi

Name of Subject	Name of Researcher
Clarification of the trading structure of agricultural commodities and trends in Brazil	Junichi Shimizu
(4) Studies on the trend of food, agriculture and rural areas and policy direction in Asia and Africa regions	
An empirical study on township village enterprises in rural China and agricultural development	Junichi Ito
Econometric study on pastoral management and desertification of grassland on the Mongolia Plateau	Shunji Oniki, Shuang Xi
Sustainable agricultural development in the developing countries	Masami Mizuno