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## SUMMARIES OF ARTICLES

### Water Management and Rice Income Distribution in Sri Lanka

Hiroichi Kono (Obihiro University of Agriculture and Veterinary Medicine)

The purpose of this paper is to analyze how the difference in water availability in irrigation systems affects the structure of rice production and income distribution in Sri Lanka.

Our survey was carried out in 1989 in two Sri Lankan villages. One was located at the headreach and the other at the tailend of the main canal in a large irrigation system that is mainly managed by the government. There was a significant differences in water availability between the two villages and within each village.

The difference in water availability has significantly affected the structure of rice production in areas such as production techniques, labor inputs, and rice yields.

Our estimated production function showed that the structure of rice production was brought about by unequal water distribution in the irrigation system.

In addition, we have found that the rice income of the headreach village was three times of the tailend village in the dry season and that the inequality in income distribution in the respective villages was more severe in the tailend village than the headreach. These inequalities were brought about by unequal water availability in the irrigation system.

We believe that it is necessary to develop farm organizations to participate in irrigation management in systems that are mainly controlled by the government.

## The Dynamic Analysis of Vegetable Farming in the Large-scale Upland Farming Area

Hiromi Tokuda (Agriculture, Forestry, Fisheries Research Council Secretariat)

The purpose of this paper is to make clear the change of the vegetable producers in Tokachi district after the latter half of 1980's by the case study in Memuro town. In Tokachi district, large-scale upland farming has been developed largely, while vegetable production has been increasing rapidly after the latter half of 1980's. Memuro town is one of the largest vegetable production town in the district.

Main findings are as follows

- 1) The number of vegetable producers has turned to decrease after the middle of 1990's, that makes the expansion of the vegetable planted acreage in the town slow down.
- 2) The difference of the proportion of vegetable producers among the farm size has almost disappeared and the proportion of large size farms in vegetable producers has increased in 1990's while the proportion of vegetable producer was higher in the small size farms before. The main factor of these changes is the expansion of field in the vegetable producers rather than the introduction of vegetable production in the large size farms.
- 3) Most of the farms that have expanded the vegetable-planted acreage have also expanded their field. But the proportion of the farms which expand both their vegetable planted acreage and field is lower in the large size farms. Nowadays the proportion of the large size farms is increasing. Also abandoned farms are increasing and the remaining farms expand their field through getting field from the abandoned farms in Tokachi district. Therefore it seems to become more difficult to expand vegetable-planted acreage in the district from now on.

# Demand Analysis of Agricultural Services and the Possibility of Introducing a Discriminatory Pricing System

- A Choice-Based Conjoint Analysis of Farmer's Behavior -

Hideo Aizaki (National Agriculture Research Center)

As a way of increasing the percent of capacity use of grain related facilities, discriminatory pricing system is attended. In order to introduce the system, it is necessary that the elasticity of demand for rice drying service to utility fee varies among rice farmers. But, there has been no study that tried to examine the relationship between the elasticity and characteristics of farmer (e.g. size of paddy rice field).

This article aimed to explore the possibility of introducing a discriminatory pricing system to grain related facilities for increasing the percent of capacity use. Through a choice-based conjoint analysis of rice farmer's choice of rice drying types, following results are obtained.

First, factors which determine rice farmer's choice are utility fee, length of staying at facility (staying time), closing time of receiving harvested paddy rice from farmers, size of paddy rice field, occupation of drying equipment, and main crop. Besides, labor and conflict of harvesting paddy rice with operation of other crops are included for large farmers.

Second, marginal willingness to pay (MWTP) for staying time and closing time per hour are 190yen and 101yen per 60kg, respectively. The reason which MWTP for staying time is greater than that for closing time is that rice farmers can't do anything while staying at facility.

Third, the utility fee elasticity varies among size of paddy rice field. Therefore, it seems reasonable to conclude that discriminatory pricing with respect to size of paddy rice field makes possible to increase the percent of capacity use.

The function of the small scale wholesale market in the local circulation area.  
-As a case of Okhotsk circulation area, Hokkaido prefecture.-

Yasuhiko Sugimura (Graduate school of Hokkaido University)

The purpose of this thesis is to analyze the function of the small scale wholesale market in the local circulation area. So, the actual condition of stocking of more than one local market of Okhotsk area and the sales actual condition were made clear by this thesis.

The summary of the conclusion is as the following.

- (1) Securing the vegetables which conform to the demand for the large-scale retail store is difficult in the small scale markets of Okhotsk circulation area. So, these market stock with the vegetables directly, and also have to stock with vegetables from the other wholesale market as well.
- (2) And, these small scale markets are doing very polite correspondence to the minor farmers. These can secure the vegetables of the high quality as that result. That thing has brought a profit to the consumer of not only these small scale markets but also this area as well.
- (3) Therefore, such a function of the small scale market is very important. So, a careful examination is necessary for the unification of these small scale markets and the enlargement of it.

# The Policy Change Simulation accompanied by Trade Liberalization of Rice in Korea

Se-Wook Seo\*

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The purpose of this paper is to predict the impacts of GATT Agreement on Agriculture with respect to supply-demand, stock, and consumer's price of Korean Rice. For this aim I developed a Supply-Demand Model of Rice which consists of eight structural equations used and estimated the time series data from 1970 to 1998 and eight definition formulas.

In order to conduct simulations, I think two factor, the change of political sector variables such as the government intervention price (purchasing or offering price) or quantity and market opening variables such as the amount of the Minimum Market Access or the Tariffication.

From the simulation, it is clear that the continual raising of the government-purchasing price is a necessary condition in order to achieve self-sufficiency. And the key of decision is amount of the stock when is faced to the choice problem of the special treatment or the tariffication.

The notable simulation results are as follows: (1) Self-sufficiency is achieved by raising a government-purchasing price. (2) However this political process result in increasing the stock. The problem of the surplus stock becomes more serious when the government chooses the continuation of special treatment so that the Minimum Market Access is expanded. In the worst case, the amount of stock reaches up to 72.4% of domestic consumption. (3) When accepting tariffication, the problem of the stock surplus is mitigated. The amount of stock becomes 15% of the domestic consumption. (4) When accepting tariffication, the rate of self-sufficiency comes down to 77.4%. But the difference between the cases to choose the continuation of special treatment is only 1.6%. (5) If accepting tariffication, the tariff rate is reduced to 75% for 6-years, the amount imported additionally is 771,500ton, 15.3% of the domestic consumption at the maximum.