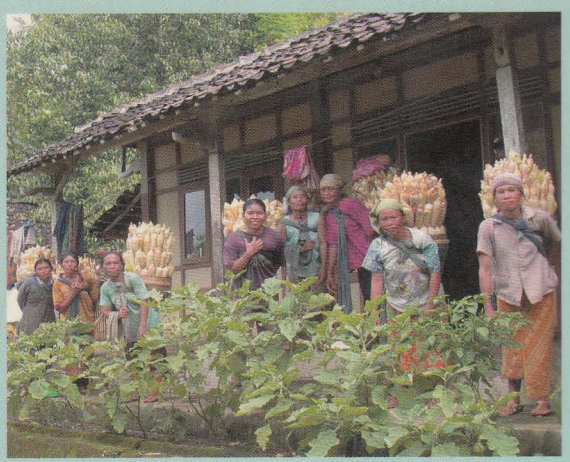
JSPS-DGHE
Core University Program in Applied Biosciences

Proceedings of the 2nd Seminar

Toward Harmonization between Development and Environmental Conservation in Biological Production



February 15-16, 2003

Sanjo Conference Hall
The University of Tokyo

Sponsored by Japan Society for the Promotion of Science

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Contents

Preface

Nearly five years has passed since the JSPS-DGHE Core University Project was started in a densely populated rural area of Indonesia under the title "Toward Harmonization between Development and Environmental Conservation in Biological Production." Establishing a system of sustainable agricultural production is one of the most important issues in the 21st century, particularly for developing countries including Indonesia. The Graduate School of Agricultural and Life Sciences, the University of Tokyo, and Bogor Agricultural University (IPB) have actively carried out this research project in cooperation with other universities in both countries.

The main purpose of the Second Seminar is to trace back the progress of our research activities at the turn of this ten-year project. The academic results of this project are well reflected by the papers submitted to this seminar, amounting to 57 papers including eight for the plenary session, 35 for the group meeting and fourteen for posters. In addition, a book of collected papers will be published in order to disseminate our academic results.

Moreover, six eminent experts will participate in this seminar to objectively evaluate overall performance of the first half of this project. We deeply appreciate that they kindly arranged to undertake this task given their busy schedules. Their esteemed comments will provide valuable guidance for the next stage of this project.

We would like to express our thanks to all researchers who participate in the seminar in spite of the sudden rescheduling. We hope that discussion throughout the seminar will be fruitful and shall create an impetus for further research. It is not only desired that our project will produce still more academic achievement in the future, but will also harmonize agricultural development and environmental conservation in rural Indonesia. Our seminar is a start in this new direction.

January 27, 2003

Dr. Yoshihiro Hayashi and Dr. Kazuhiko Takeuchi
Coordinator and Sub-coordinator of the Japanese Team

Analysis of Rice Farming Production and Agricultural Products Marketing (A Case Study in An Upland Village, West Java)

*Ratna W. Asmarantaka, Sri Hartoyo, Siti Sugiah M. Mugniesyah and Kosuke Mizuno**

1. Introduction

The agricultural sector plays an important role in the national development in Indonesia. This sector has directly and significantly contributed to the increase of Gross Domestic Product (GDP), labor absorption, community income, export, revenue and inflation pressure; and indirectly to the creation of conducive conditions for national development program and a synergic relationship to other sectors.

During the period 1990-1997, the national GDP growth was around 6.60 percent per year, and in the same period the average growth in the agricultural sector was 2.57 percent per year. The economic crisis during the period 1997-1998 had a big impact on economic development. It can be seen from the decrease of national GDP. The agricultural share in GDP declined from 45 per cent in 1970 to 16 percent in 1998 (Tsujii and Darwanto, 2001). However, the agricultural GDP increased by 0.2 percent on an average. In 2000, the GDP was estimated to increase by 1.4 percent. Furthermore, the structure of agricultural GDP in 1999 showed that the food sub-sector was the biggest contributor, followed by plantation, fishery, livestock and forestry. In terms of food sub-sector, the role of paddy commodity of GDP was very dominant. This meant that the success of paddy production has strongly influenced agricultural GDP (Departemen Pertanian, 2000).

Many studies on rice farming production have been conducted in the irrigated rice fields, but there have only been a few in the upland area. Since rice commodity still plays an important role in the food security among peasant households, analysis on rice farming production in peasant household is needed. It is found from previous study, that as an upland area, the rice fields in Kemang Village are very limited and were not distributed evenly; on the other hand the dry land that belongs to farmer households are higher than the rice fields (Mugniesyah and Mizuno, 2002). With

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regard to this condition, it is important to elaborate whether rice farming in the two types of land is efficient. Furthermore, as agricultural products in upland areas are quite different from the low land, and these products are supposed to support the economy of the peasants' households and the traders as well. As such a study on the farm retail price spread is needed too, especially to know weather or not there is an equal share among the farmers, traders and other institutions.

With reference to the explanation above, and the fact that Kemang Village is an isolated area where the majority of the population is small farmers (Mugniesyah and Mizuno, 2001) , we are of the opinion that the input used in rice farming is lower than in the irrigated areas and the farm income is also lower. Moreover, due to the difference in the characteristics of traders, it is felt that the larger the level of trader the larger the risk and in turns the larger the revenue.

2. Research Objectives

The objectives of the study are to analyze :

(1) The cost and revenue of paddy farming in the upland village
(2) The physical response of rice farming input-output by using the Cobb Douglas production function
(3) The marketing system of the potential agricultural products in the upland village and the role of potential economic institutions in the marketing system.

3. Methodology

This study is a part of the Japan Society for Promoting Sciences (the JSPS)-DGHE Core University Program between the University of Tokyo and Bogor Agricultural University (IPB). The study was conducted in Kemang Village, which is located in the sub-district of Bojongpicung, District of Cianjur, West Java. The data that was used in the study was based on the rice farming survey (paddy fields in rainy and dry seasons as well as *huma* paddy) during the period of 1998 to 2000 . Due to the difference in land cultivation frequency in rice fields and upland, the number of household samples in each year survey was different. There were 70 household samples in 1998, and 66 household samples, both in 1999 and 2000.

The production function for each peasant household is specified to be Cobb Douglas in form (Yotopoulos and Lau, 1974; Dillon, 1979; Hardtaker, 1985; Pindyck, 1991) and was used to analyze the input response of the production function model. The Statistical Analysis System (SAS) was used to estimate the parameter. The marketing system analysis used the marketing channel and the farm – retail price spread, both absolute and relative marketing margin (Gardner, 1975; Kohls and Uhl,

1990; Holloway, 1991). These were used to study the marketing efficiency by using the Market Structure, Conduct and Performance analysis (Phillips, 1970; Lyon and Thompson, 1993). As for the marketing system, the Market Structure, Conduct and Performance analysis was used to study the marketing efficiency.

4. The Study Result

The Rice Production Analysis

As can be seen in Table 1, the rice production in Kemang Village fluctuated; in 1998 the production was 4.6 tons per hectare, in 1999 it declined to 3.7 tons per hectare, and then in 2000 rose to 4.3 tons per hectare. The main factor that caused a decline in production in 1999 was the drought, instead of low production input. A comparison was made. The fertilizer that was used in 1999 was higher than that in 1998, which were 357 kg and 338 kg per hectare respectively. On the other hand, although the fertilizer used in 2000 was relatively high (556 kg per hectare) , the rice production in that year was relatively constant. It seems that there was land degradation in the rice field, as the farmers tended to use more fertilizer, which was high in macro element.

Table 1. Cost and Revenue of Paddy Farming in Kemang, Cianjur, West Java

Items	1998			1999			2000		
	Physical	Value (Rp000)	%	Physical	Value (Rp000)	%	Physical	Value (Rp000)	%
Production (kg)	4585	5241		3714	4998		4283	4514	
Production Cost									
Seeds (kg)	50	103	5.2	63	82	5.2	96	150	6.1
Fertilizer N (kg)	203	147	7.4	220	256	16.5	318	401	16.3
FertilizerP&K (kg)	154	138	6.9	118	217	14.0	238	374	15.2
Pesticides		62	3.1		63	4.0		120	4.9
Labor (WH)									
Family Labor	444			475			571		
Hired Labor	675	1535	77.2	514	934	60.2	866	1413	57.5
Total Cost		1985	100		1552	100		2458	100
Income		3256			3446			1356	

Note : WH = Working Hours

Furthermore, although rice production in 1999 was lower than that of 1998 and 2000, it was found that the farmer's income in 1999 was higher than in the other two

years. This happened due to the higher price of rice in 1999. This means, in terms of staple food, the demand elasticity shows an inelastic value, namely if there is national rice production , the price will increase and the farmer's revenue will also increase.

To find out what factors influence the production, the Cobb Douglas function analysis (Klein , 1973; Pindyck, 1991) was used, which in general is as follows:

$$Y = A \prod_{i=1}^{k} X_i^{\beta_i} e^{\delta D + \mu} \quad \text{.....(1)}$$

where Y is paddy production for Kemang Village, and total production value for Cisarua Village, X is the production input or input value, e = 2.7183...., D is a dummy variable for year and group, and μ is the error term. The production function was estimated by OLS (Ordinary Least Square) method. The result is presented in Table 2.

Table 2. Estimates of Paddy Production Function in Kemang, Cianjur, West Java, 1998-2000

Items	Without restriction		With restriction (Σβ=1)	
	Coefficient	p for one tail	Coefficient	p for one tail
Intercept	3.147	< 0.001	4.492	<0.001
Area	0.429	< 0.001	0.428	<0.001
Seed	0.104	0.046	0.033	0.298
N-Fertilizer	0.166	0.010	0.161	0.014
P& K Fertilizer	0.018	0.034	0.029	0.002
Pesticides	-0.004	0.176	0.003	0.227
Labor	0.574	< 0.001	0.346	<0.001
Dummy for Year 1998	0.026	0.386	0.023	0.403
Dummy for Year 1999	0.043	0.327	0.026	0.397
Dummy for rainy season	-0.054	0.233	-0.021	0.360
Restrict			20.049	<0.001
R square	0.725		0.7026	
F	65.695		66.435	
N	234		234	

The data in Table 2 shows the estimates of paddy production in rice fields . As can be seen in the table, the determination coefficient (R^2) is 0.72 and it means that the independent variable can explain the variation of paddy production by 72 percent. In this case, the coefficient of multiple correlations is greater than that of simple correlation among the independent variables and this means that if multicollinearity occurs, it won't be serious. By imposing restriction on the sum production elasticity equals to one, which is significant at 0.1 per cent level, it shows that the paddy farming is constant returning to scale. Therefore, the estimation of the production function

without restriction can be used for further analysis. The sum production elasticity of 1.287 means that paddy farming in Kemang is increasing return to scale. If all input increases in the same proportion by 10 per cent, the output will increase as much as 12.9 per cent.

Furthermore, as can be seen in the table, five out of nine independent variables in the model are significant at 10 per cent or less, namely paddy area, seeds, N, TSP, and labor. The dummy variable for the year has insignificant meaning that there is no difference between 1998 and 1999-2000 production. It is interesting that the coefficient of pesticides variable in Kemang Village had a negative sign. However, it does not mean that farmers have applied pesticides extensively rather farmers usually used pesticides after attack. Hence, pesticides are used as a later action.

Besides in the rice fields, farmers in Kemang Village also cultivated rice, especially huma paddy in dry land area. Table 3 shows the estimates of *huma paddy* production. As can be seen in the table, there are many variable signs which are not as expected . It can be seen in the area (land) size that has negative sign or, in other words, that the land did not significantly influence production. This happened as the majority of farmers' household cultivated huma paddy in the National Forest Land where the average land size was around a quarter hectare (Mugniesyah and Mizuno, 2001).

Tables 3. Estimates of Huma Paddy Production in Kemang

Items	1998	1999	2000
Intercept	2.90	3.40**	4.39***
Area	0.48	1.30	-1.11*
Hired Labor	-0.16	0.04	-0.26
Seeds	0.29	0.92**	0.49
Fertilizer	0.24**	-0.30*	0.50**

Note : *** significant at 0.01 ; ** significant at 0.05; * significant at 0.10

It is already known that production of huma paddy that is harvested for the first time/year --in one succession of huma-talun cycle—is relatively higher than that of the years after. This means that if the farmers continue to cultivate huma paddy in the upland there will be land degradation. As such, it would be wise if the farmer practices re-greening the land.

5. The Marketing Analysis

The marketing system was conducted through the marketing channel analysis , the marketing margin and the role of the marketing institution, especially the traders and village cooperatives. The analysis emphasizes on the dominant commodities of the upland , which were sold by the peasant households as samples, consisting of banana leaves, bananas and brown sugar.

The Banana Leaves Marketing. It is known that banana leaves (especially the *manggala* banana leaves) play an important role in the income at the peasants in Kemang Village. They usually harvest the banana leaves twice per month or every 20 days . The marketing system of the banana leaves can be seen in Appendix 2.

It is seen from Appendix 2 that banana leaves from the peasants, go to the local traders or hamlet traders in Cikupa (Mr. Y and Mr. HK) or directly to the village traders in Beber Hamlet (Mr.HA), Cimenteng (Mr. K) and Kalapa Condong Hamlets (Mr E); who live close to the village traders' location or from the people who have a patron-client relationship and are relatives of the village traders. Mr. HA is a dominant trader who is also the chairperson of the Wana Mukti Cooperative. He controls around 70 percent of the banana leaves market, and Mr. E and Mr. HK control the rest. The village traders sell the banana leaves to Jakarta and Bekasi. There are three wholesalers in Jakarta, Mr T in Kampung Jawa, South Jakarta; Mr I in Pasar Rumput, Central Jakarta and Mr S in Tanjung Priuk Market in North Jakarta, while in Bekasi there is Mr H. The marketing margin of banana leaves can be seen in Appendix 3. The most efficient marketing channel is the third channel, because the margin spread is equally distributed and provides profit ratio at the lowest cost (2.75) and the highest farmers' share (52.1 percent), meanwhile the cost margin is 12.8 percent and the profit margin is 35.1 per cent. Based on the field data and the S-C-P analysis result, it can be concluded that in general the banana marketing structure is oligopsony, and in Beber and Cikupa hamlets it is duopsony. To increase the marketing efficiency or to decrease the uncertainty risk due to oligopsony, according to Caves (1970), effort should be taken to stabilize the market share, by farm merger-in terms of management, product diversification and vertical integration between the farmer and cooperative and wholesaler. As such, the market structure will change into a dynamic one (Philips,1970).

The Banana Marketing. Besides the banana leaves, bananas themselves are another important upland commodity for Kemang people. Compared to the banana leaves, banana marketing is simpler, as can be seen in Figure 1. Most peasants sell bananas to the village traders in the central village twice a week, on Wednesday and Saturday. There is a banana trader in each hamlet in Kemang Village. The study focused on banana marketing in the two hamlets; Beber and Cikupa. There are 2 village traders who have their base in the central village and in one hamlet trader. Except the hamlet traders, the traders usually use the village cooperative's vehicle (a

small truck) to transport the bananas to the wholesale market in Cimindi Market, Bandung District.

The price of banana varies depending on the kind or variety. The price of *pisang nangka (jackfruit banana)* is Rp 750,- per kg, *the yapan or Lampung* banana *and the pisang ambon* lumut price is Rp 600,- and Rp 550,- per kg, respectively. On an average, the price of the banana is Rp 635,-per kg. The hamlet trader usually distributes the bananas in his own vehicle. The village trader pays the peasants (producers) in cash. The product volume, which is sold by the village trader to Cimindi market, is 6 – 10 tons per week whereas the hamlet trader sells only two quintals per week on an average. The cost of transportation from Kemang to Cimindi market is Rp. 90 000,-, especially for vehicles which have 1.5 – 1.7 ton capacity and Rp. 140 000,- for vehicles having 2.5 to 3 ton capacity.

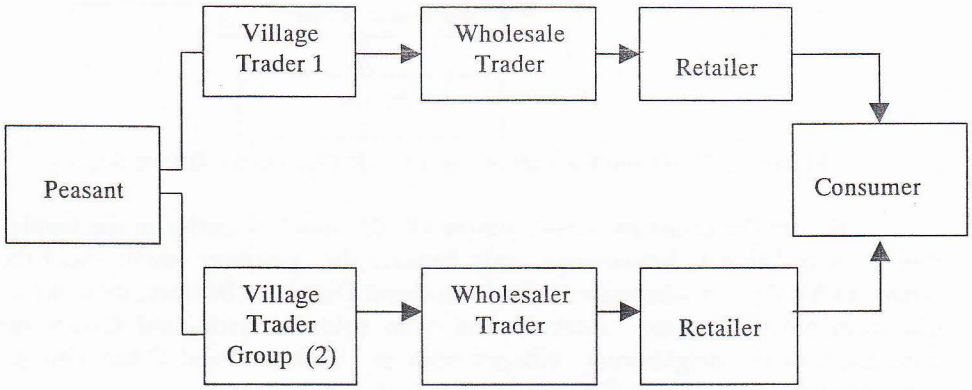

Figure 1. Bananas Marketing Channel from Kemang Village

In Cimindi market there are two wholesale traders who bring the Kemang bananas, and they are Mr A and Mr R. The banana volume bought by the wholesale traders from Kemang is 90 percent of the total volume sold in Cimindi market. The channel cost of banana marketing is presented in Table 4. As can be seen from the table, the Channel 2 cost is double to Channel 1, because of the high depreciation cost (20 – 30 percent). The farmer share is around 50 – 52 percent, which is less than the marketing institution's profit margin. It means that banana marketing is not efficient.

The Brown Sugar Marketing . One of the important commodities from the upland or pasir is the *aren* tree *(Arena pinnata sp.)*. People in Kemang Village get a lot of benefit from aren trees, such us for liqueur (*lahang*), fruit *(caruluk)*, and fibre *(ijuk)*. From the liquor, the peasant households produce brown sugar. There are two

kinds of brown sugar that are produced by Kemang peasant households : *gula gandu/gula cetak* (traditional or spotted brown sugar) and *gula semut* (granulated brown sugar). The spotted brown sugar marketing channel is presented in Figure 2 .

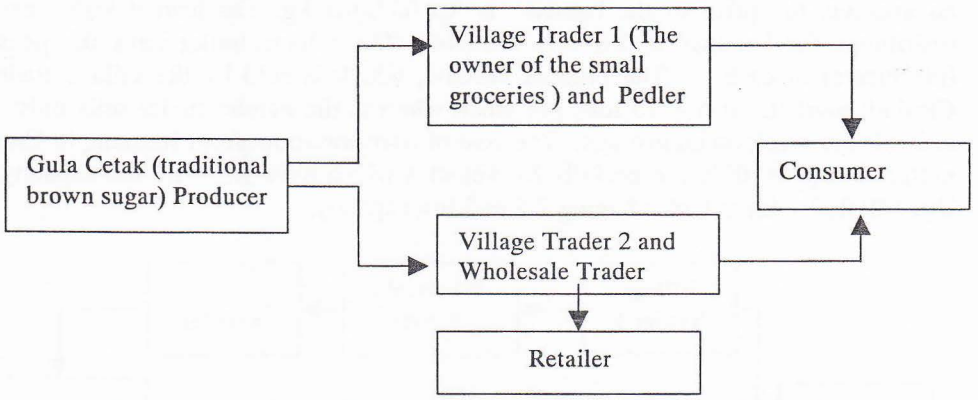

Figure 2. Marketing Channel of Gula Cetak (Traditional Brown Sugar)

Before the economic crisis, almost all the small groceries in the hamlet were traders of traditional brown sugar only because the producer usually sold the *gula semut* to Mr Ag, a wholesale trader from Garut District. Besides, there were many old women who became small traders, who sold the traditional brown sugar to consumers in the neighboring villages such as Sukaratu and Cihea villages. The bananas margin analysis in Kemang Village is shown in Table 4.

The village traders usually sell the traditional brown sugar (*gula cetak*) to Ciranjang and Cianjur markets, which are located around 3.5 Km and 12 Km from Kemang Village respectively. The average volume, which can be sold by the Kemang traders to Ciranjang and Cianjur market, is around 50 – 300 kg and the total volume of gula cetak is around 750 kg per week or in other words, the total volume of gula cetak is around 3 tons per month. According to the traders and producers, the price of gula cetak fluctuates. The highest price usually is in the fasting month, when the Moslem households usually consume traditional foods for breaking the fast.

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price of gula cetak fluctuates. The highest price usually is in the fasting month, where the Moslem households usually consume traditional food for breaking the fast.

Table 4. The Bananas Margin Analysis in Kemang Village In November 2000

No	Items	Channel 1		Channel 2	
		Absolut (Rp)	%	Absolut (Rp)	%
1	The Average Price of Bananas in the peasants household	635	49,8	635	52,0
2	Village Trader:				
	Buying Price	635		635	52,0
	Cost:	77,50	6,1	77,50	6,3
	Transportation	56,25		56,25	
	Labor	6,25		6,25	
	Lost	10,0		10,0	
	Cooperative Fee	5,00		5,00	
	Profit	57,5	4,5	57,5	4,7
	Selling Price	770	60,4	770	63,1
3	Wholesale Trader:				
	Buying Price	770	60,4	770	63,1
	Costs :	125	9,8	195	16,0
	Labor	10		12,5	
	Lost	100		161,7	
	Kiosk Rent	15		21	
	Profit	380	29,8	225	20,9
	Selling Price	1275	100	1220	100
	Total Analysis				
	Peasants Acceptance	635	49,8	635	52,0
	Cost Margin	202,5	15,9	272,5	22,3
	Profit Margin	437,5	34,3	312,5	25,6
	Price for the Consumer	1275	100	1220	100
	Ratio π/c	2,16		1,15	

In year 2000, the highest price was Rp. 3900,- per kg, and the lowest price was around Rp. 2200,-. Based on the data in Table 4, there are two kinds of marketing channels and Channel 2 is the dominant one covering around 90 percent of the total volume. In terms of margin, the average producer price is Rp. 3 325,- per kg, whereas the cost margin per kg is Rp. 137,- and the profit margin is Rp. 538,- kg.

As shown in Table 5, in terms of *gula semut* (granulated brown sugar) marketing, the producers have been selling gula semut to Mr Ag, who usually

comes to Kemang Village to collect gula semut twice a month (on the 15th and 30th). Mr Ag has been in gula semut trading in Kemang Village for 12 years.

Table 5. Margin Analysis of Traditional Brown Sugar Marketing From Kemang Village to Ciranjang Market during the Period August to November 2000

No	Items	Margin per Kg	
		Absolute (Rupiah)	Percentage
1	Producer	3 325	83.12
2	Village Trader		
	Buying Price	3 325	
	Cost(1)	30.0	0.75
	Profit	211.7	5.29
	Selling Price	3 566. 7	89.17
3	Retailer:		
	Buying Price	3 566.7	2.50
	Cost (2)	100.0	8.33
	Profit	333.3	8.33
	Selling Price	4 000	100.00
	Total Analysis		
	Producer	3325,-	83.12
	Cost Margin (c)	130,-	3.25
	Profit Margin (π)	545,-	13.63
	Price for Consumer	4000,-	100.00
	Ratio π/c	4,11	

Due to the continuous demand for *gula semut*, Mr. Ag initiated a group of *gula semut* producers (*Kelompok Pengrajin Gula Semut*) consisting of 64 members. Since the small groceries (*warung kecil*) are also marketing agents for gula semut to other traders in Cianjur, in the last three years, the number of members who still continue to sell *gula semut* for Mr Ag. Are fifteen.
Similar to *gula cetak* (spotted brown sugar), the price of *gula semut* also fluctuates. According to the producers and traders, the gula semut price is usually around Rp. 500,- to Rp.1000,- higher than that of *gula cetak*.

6. The Role of Village Cooperative

Along with the poverty alleviation program introduced by *Perum Perhutani* or the National Forest Enterprise –through Social Forestry Program--, in 1994 Perum Perhutani also encouraged Kemang Village to establish a village cooperative by developing the "embryo of cooperative" which was a saving and loan association

established by banana traders by Mr. HA and an elementary shool teacher, Mr. H. The name of the cooperative was *Koperasi Sukarela Wana Mukti.* At the beginning, the village cooperative was engaged in trading of the spotted and granular brown sugars. As Perum Perhutani gave the 2000 young banana trees through the *Pembinaan Masyarakat Desa Hutan Terpadu* (Integrated Forest Community Program) or PMDHT Program which were cultivated in Mr HA's land in Mujit, the cooperative developed the business of banana leaves marketing.

The cooperative committee consists of a chairperson (Mr. HA), a vice chairperson (Mr. T), a secretary (Mr H) and a clerk or an accounting management assistant, Ms A, Mr HA's daughter, who holds the position of clerk is also responsible for taking care of the shop, being one of the cooperative businesses.

The initial number of cooperative members was 25 and now are the membership has increased significantly, to 225 persons. The member of the cooperative is an individual, usually couples (husband and wife) and the adult daughters/sons are automatically cooperative members. But, the majority are men, as most of the banana traders and banana harvesters are men. The female members are usually those who manage small shops, brown sugar traders, teachers and small farmers. The Perum Perhutani gave about Rp. 25 million grants to Wana Mukti Cooperative, especially to build the Cooperative building, which is located on the village government land. The Perum Perhutani also gave an opportunity to the committee and other cooperative members as well as other village leaders, traders and teachers to participate in various trainings, such as the honeybee, mushroom, banana chips, and pepper production, and training on cooperatives in IKOPIN (Indonesia Cooperative Institute) in Jatinangor which is located in Bandung District.

Besides the cooperative building, there are 2 cars (small and medium trucks) , which are the main transportation for dry-land product marketing from Kemang Village and for purchasing goods for the groceries. The cars are under the care of Mr. HA and the grocery is managed by his daughter. There is an unclear boundary between the cooperative and Mr. HA and his family business. Although the *Rapat Anggota Tahunan* (Annual Member Meeting) of the village cooperative has been conducted for 2 years, it seems that there is still lack of awareness of the rights and obligations among the cooperative members as well as the control from village government personnel on the one hand, and the lack of transparency in the management of the village cooperative on the other hand. This has made the role of village cooperative in improving the peasant household economy less optimal.

7. Conclusion

The function of rice (wetland) production is increasing return to scale condition and constant or in other words is efficient. Nevertheless, we have found that in the case where application of input was low, it caused low production. This means that the effort to increase the farmer' access to credit to purchase the input is important.

As the farmer's share was lower than profit margin, the marketing system of the dry-land dominant products in Kemang Village was not so efficient . The role of village cooperative as well as the village trader accelerated the marketing of all agricultural products of Kemang Village. However, in order to increase the quality of village cooperatives, it seems that the separation of private and village cooperative business is needed. In addition, the cooperative extension is needed to encourage peasant households, men and women to become cooperative members and to increase their role in supervising the cooperative business by developing cooperation with the wholesalers outside the village (vertical integration).

References

Badan Pusat Statistik, 2000. *Struktur Ongkos Padi dan Palawija 1998/1999*. Jakarta.

Caves, R.E., 1970. *Uncertainty Market Structure and Performance*. In. Markham, J.W. and Gustav, F.P. (Ed.). *Industrial Organization and Economic Development*. Boston. Houghton Miffler Company. P.26-37

Departemen Pertanian. 1999. *Profil Pertanian Dalam Angka. Pusat Data Pertanian*. ISBN: 978 – 8958-65-9

----------, 2000a. *Program Pembangunan Pertanian Tahun 2001-2004. Rakorbangnas 2000*, Sekretaris Jenderal Departemen Peranian, Jakarta.

----------, 2000b. Statistik Pertanian 2000. Jakarta.

Dillon, J.L. 1979. *The Analysis of Response in Crop and Livestock Production*. Second Edition. Pergamon Press Group.

Gardner, B.L., 1975. The Farm-Retail Price Spread in a Competitive Food Industry.AJAE 57 : 339-409.

Holloway. G.J. 1991. The Farm-Retail Price Spread in an Imperfectly Competitive Food Industry. AJAE Vol.73 (4) p : 979-989.

Hardaker, J.B. et.al. 1985. *A Model of A Padi Farming Household in Central Java*. Bulletin of Indonesian Economic Studies. Vol XXI, No 3. P: 30-49.

Lyon, C.C. and Gray D. Thompson 1993. *Alternative Marketing Margin Models*. AJAE, Vol. 75 (3) p: 523 – 536.

Klein, L. R, 1973. *An Introduction to Econometrics*. Englewood Cliffs. Prentice Hall. Inc.

Kohls, R.L. and J.N. Uhl.1990. Marketing of Agricultural Products. Seventh Edition Macmillan Publishing Company. New York. P : 182-201.

Mugniesyah, S.S.M. and K.Mizuno, 2002. *Women`s Access To Land and Local Institutions : Case of Upland Peasant Households in Kemang village West Java, Indonesia.* Paper presented in the Workshop Of Socio-Economic Studies on Sustainable Development in Rural Indonesia. Group III of the JSPS- DGHE Core University Program beween The University of Tokyo and Bogor Agricultural University (IPB).

Pindyck, R.S and D.L. Rubinfeld. 1991. *Econometric Models and Economic Forecasts.* Mc. Graw – Hill.Inc.

Phillips, A., 1970. *Structure-Conduct and Performance* . In Markham, J.W. and Gustav, F.P. (Ed.). Industrial Organization and Economic Development. Boston. Houghton Miffler Company. P.26-37

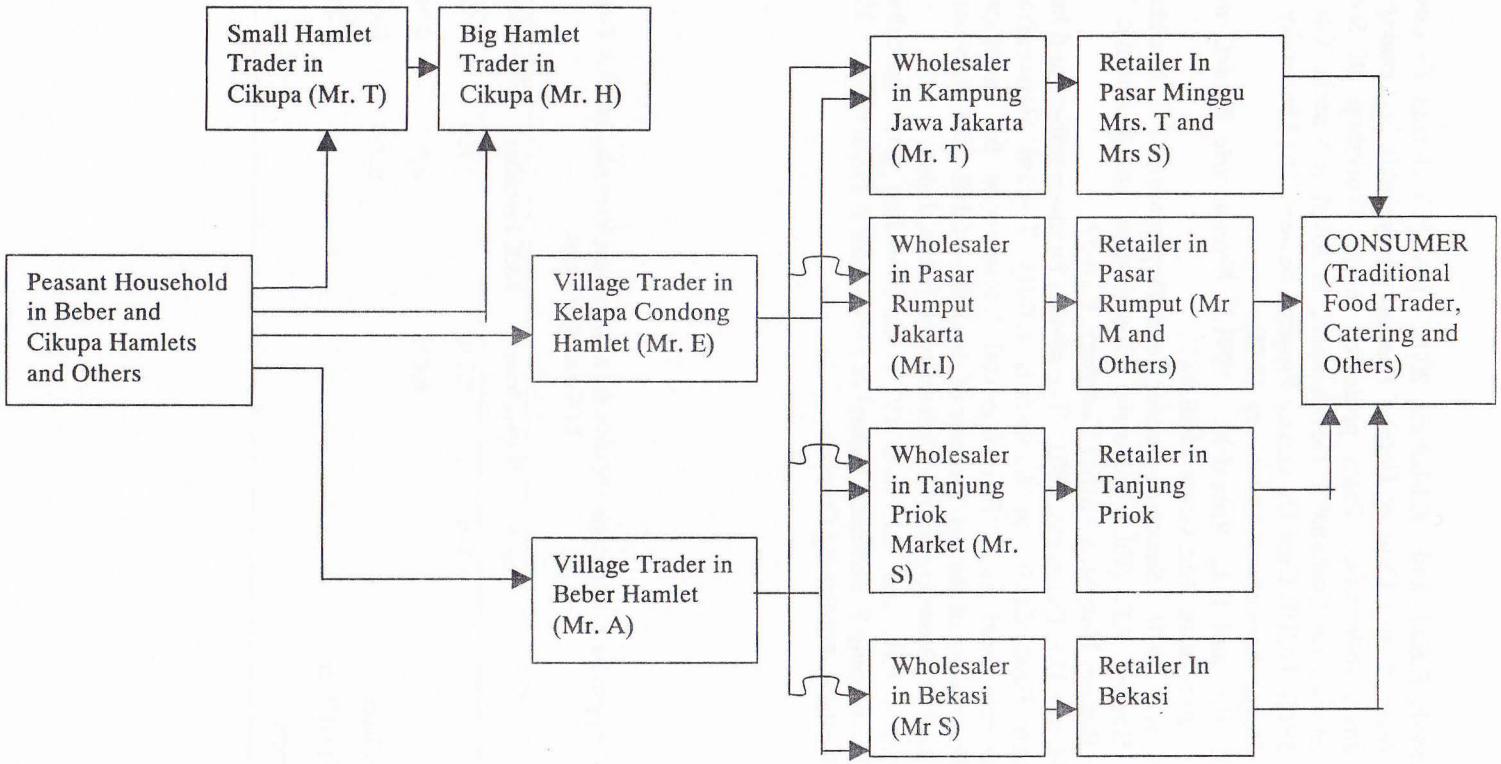
Tsujii H. and D.H.Darwanto, 2001. The Market Fundamentalism and Indonesian Rice and Food Crisis. In Anonymus (2001). Toward Harmonization between Development and Environmental Conservation in Biological Production. Proceeding of the 1st Seminar of the JSPS-DGHE Core University Program in Applied Biosciences. The University of Tokyo, Japan.

Yotopoulos, P.A. and L.J. Lau, 1974. On Modeling The Agricultural Sector in Developing Economics. Journal of Development Economics I : 105-127. North-Holland Publishing Company.

Appendix 1. Correlation Matrix for Independent Variables in Rice Production In Kemang Village.

	Seed	N Fertilizer	P&K Fertilizer	Pesticide	Labor
Area	0.526	0.730	0.360	0.450	0.756
Seed		0.625	0.292	0.346	0.595
N Fertilizer			0.233	0.441	.006
P&K Fertilizer				0.471	0.016
Pesticide					0.471

Appendix 2. Marketing Channel of Banana Leaves from Kemang Village



Appendix 3 . Price Spread and Margin in Banana Leaves Marketing in Kemang Village (Rupiah/Kompet) during the Period August to November 2000

Items	Channel 1		Channel 2		Channel 3		Channel 4	
	Rp/kpt	%	Rp/kpt	%	Rp/kpt	%	Rp/kpt	%
Selling Price at the peasant level	1000	46,1	1000	50,0	1000	52,1	1000	
Village Trader I 1:								
Purchasing Price	1000	46,1			1000	52,1	1000	44,5
Selling Price	1050	48,4			1050	54,7	1050	46,7
Cost	0	0			0	0	0	0
Profit	50,0	2,3			50,,0	2,6	50,,0	2,2
Village Trader 2 :								
Purchase Price	1050	48,4	1000	50,0	1050	54,7	1050	46,7
Selling Price	1400	64,5	1300	65,0	1400	72,9	1500	66,7
Cost:	136	6,3	136	6,6	195	10,1	195	8,7
Transportation	111		111		175		175	
Cooperative Fee	15		15		0		0	
Binding	5		5		20		20	
Karang Taruna Fee	5		5		0		0	
Profit	214	10,1	169	8,4	155	8,1	255	11,3
Village Trader 3:								
Purchase Price			1300	65,0				
Selling Price			1400	70,0				
Cost			0	0				
Profit			100	5				
Retailer:								
Purchase Price	1400	64,5	1400	70,0	1400	72,9	1500	66,7
Selling Price	2170	100	2000	100	1925	100	2250	100,0
Cost :	115	5,3	75	3,8	50	2,6	74,0	3,3
Workers Salary	71		71		33		62,5	
Others	44		4		17		11,5	
Profit	655	30,2	525	26,2	475	24,7	676,0	30,0
Total Analysis :								
Peasant Acceptance	1000	46,1	1000	50	1000	52,1	1000	44,5
Cost Margin (c)	236(1)	10,9	206	10,3	245(2)	12,8	269	12,0
Profit Margin (π)	919	42,3	794	39,7	680	35,1	981	43,5
Price for Consumer	2170	100	2000	100	1925	100	2250	100
Ratio π/c	3,89		3,85		2,75		3,6	

Note : KPt = *kompet* ; one kompet consists of 10 banana leaves

(1) a. In the Village Trader level: Renting Truck Rp.200 000 per 800 *kompest*; Price of one *kompet* is Rp 111,- ; and Rp.25,- of the price covers the cooperative fee, the labor who bind the leaves into *kompest* and Karang Taruna Fee.

b. At the retailer level , the payment for the labor is Rp.20 000,- per day: 450 Kpt = Rp 71/Kpt Other costs Rp 44/Kpt.

(2) a. At the village trader level : Transportation cost is Rp 140 thousand per 800 Kompet = Rp 175/Kpt;

to tie up = Rp 16000 : 800 = Rp 20/Kpt

b. Retailer level: Kiosk Rent is Rp 3500/20Kpt = Rp 33/Kpt. Other costs are Rp 17/Kpt

(3) Selling Price to the consumer is at an average price for varying quality:

a. $\frac{\text{Rp } 976.500}{450 \text{ Kpt}}$ = Rp 2170/Kpt

b. $\frac{\text{Rp } 288.500}{450 \text{ Kpt}}$ = 1923,3 average Rp 1925

c. The average is Rp 2000

d. $\frac{\text{Rp } 4500}{2}$ = Rp. 2250