農家調査報告書　一九九〇

THE SURVEY REPORT ON FARM HOUSE IN JAPAN

農家調査報告書
(新潟県)

1990

Farm Mechanization Course
Tsukuba International Agricultural Training Centre (TIATC)
Japan International Cooperation Agency (JICA)
国際協力事業団　筑波国際農業研修センター

農業機械化コース 1990

Preface

This programme, namely the farm household practice being carried out as "The survey of Japanese farm mechanization" was one of the most important events during the training period in our Centre. This year, the programme was successfully conducted in Niigata Pref. from August 6 to August 11, 1990.

During the farm household practice, the participants are painstakingly studied rice production mechanization through farm management, utilization of machinery and its countermeasures, and also the life style in the village by sharing field work and daily life with host farmers, despite of their very short stay of five days.

Concerning the report, there may be some errors in reports in terms of their ideas, facts and data, etc, because of the hearing with their host farmer in English and Japanese. Please note, however, that it is based on participants observation. We believe that the fruits of their efforts the experience in this programme are quite instructive for their future activities and their daily life.

Finally, we would like to express our sincerest and deepest appreciation and gratitude to The Chamber of Agriculture in Niigata Pref, and Agriculture Council for Rice Production Management in Niigata Pref, and the Host Farmer who accepted the participants warmly and let them stay in their home.

January, 1991

Tsuyoshi EIDA
Managing Director
Tsukuba International Agricultural
Training Centre (TIATC)
Japan International Cooperation Agency
(JICA)

各受入れ農家と研修員

Host farmers and with participants

LIST OF PARTICIPANTS　FARM MECHANIZATION COURSE (1990)

平成２年　農業機械化コース研修員名簿（研修期間1990年３月５日～11月24日）

1 ドルジ　2 モッセン　3 ヒダヤット　4 サアド　5 カリム　6 ザマニ　7 オルショラ　8 バタラオ　9 アガド　10 モハムッド　11 ンブイレ　12 チューサック

	Name　(呼称名)	Age (年令)	Country (国名)	Present Post and Addres　(現職および住所)	Remarks (備　考)
1	Mr. Lhaba Dorji　(ドルジ)	29	Bhutan (ブータン)	Supervisor, Agriculture Machinery Centre, Department of Agriculture, Ministry of Agriculture Bondey,Paro (農業省農業機械センター主任)	
2	Mr. Mohsen Ebrahim Mohamed Egela (モッセン)	27	Egypt (エジプト)	Engineer on Mechanization Trial Division, Rice Mechanization Center, Agricultural Mechanization Research Institute Ministry of Agriculture, Meet El Dyba, Kafr El Sheikh (農業省　農業機械化研究所　米作機械化センター機械化試験課技師)	
3	Mr. Muhammad Hidayat (ヒダヤット)	33	Indonesia (インドネシア)	Staff of Sub Directorate of Agricultural Machinery, Directorate of Food Crop Production, Ministry of Agriculture (Center for Development of Appropriate Agricultural Engineering Technology) Jalan AUP No. 3 Pasar Minggu Jakarta Selatan (農業省作物総局農業機械化局職員)［適正農業機械技術開発センターカウンターパート］	
4	Mr. Saad Ali Al Haddad (サアド)	38	Iraqu (イラク)	Staff, Mishkhab Rice Research Station, Organization State of Agricultural Research, Ministry of Ariculture, Iraqu Kufa　(農業省　農業研究機構　ミシュカブ稲研究所所員)	
5	Mr. Karim Bin Razab　(カリム)	28	Malaysia (マレイシア)	Technical Assistant, Kemubu Agriculture Development Authority (KADA) PO Box 127 Kota Bharu Kelantan (クムブ農業開発公社（ＫＡＤＡ）技師補)	
6	Mr. M. Zamani Bin Hussein (ザマニ)	38	Malaysia (マレイシア)	Agricultural Officer, Perak Mechanization Center, Department of Agriculture, Ministry of Agriculture, Bota Perak　(農業省　農業局　ペラ農業機械化センター　農業技官)	
7	Mr.Olutunji Mufutau Olusola (オルショラ)	35	Nigeria (ナイジリア)	Senior Agricultural Engineer, Ministry of Agriculture and Natural Resources, Oyo State (オヨ州農業・天然資源省　農業技官)	
8	Mr. Godofredo Manzano Batarao Jr. (バタラオ)	43	Philippines (フィリピン)	Associate Professor 11／Director, Physical Plant and Machinery Services Program, Nueva Vizcaya State Institute of Technology, Bayombong, Nueva Vizcaya (ヌエバビスカヤ州工科大学助教授／農業技術センター所長)	
9	Mr. Marcial Dalagan Agad (アガド)	31	Philippines (フィリピン)	Agricultural Engineer, Bohol Agricultural Promotion Center, Department of Agriculture, Dao, Tagbilaran City, Bohol (農業局ボホール農業開発センター・プロジェクトカウンターパート，農業技官)	カウンターパート
10	Mr. Mohamed Ali Elamin Mohamed (モハムッド)	36	Sudan (スーダン)	Chief Agricultural Engineer, Rahad Agricultural Corporation, Khartoum (ラハド農業公社主任農業技官)	
11	Mr. Abel Robins Mbwile (ンブイレ)	37	Tanzania (タンザニア)	Extension Officer, Project Agronomist, Ministry of Agriculture and Livestock Development, Mbozi　(農業畜産開発省　プロジェクトアグロノミスト・普及官)	
12	Mr. Choosak Losagulpong (チューサック)	35	Thailand (タイ)	Engineer, Cooperatives Promotion Department, Ministry of Agriculture and Cooperatives, Krungkasem Rd. Bangkok　(農業協同組合省　協同組合促進局　技官)	

国際協力事業団　筑波国際農業研修センター　〒305　茨城県つくば市高野台３－７　TEL 0298－38－1771　FAX 0298－38－1776

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by Mohsen Ibrahim Egela (Egypt)
Karim Bin Razab (Malaysia)

THE SURVEY REPORT ON FARM HOUSEHOLD

by Mohsen Ibrahim Egela (Egypt)
Karim Bin Razab (Malaysia)

INTRODUCTION

This farm household practice was conducted by staff of Tsukuba International Agriculture Training Centre (TIATC) cooperated with the staff of Niigata Prefecture Agriculture Council.

Farm household practice is one of the programme for the participants in the Farm Mechanization Group Training Course to expose them to the real life of Japanese farmers especially in farm machineries aspect and Japanese farming system.

Niigata portion of Honshu Island, the level area located along the coast, remains one of the Japan's major rice producing areas.

Cultivated area of paddy rice in Niigata Prefecture is about 139,000 hectares in 1989 slightly decreased year by year because resigned field due to alterations and abolishment. In this prefectural the high quality rice was produced and the percentage area of "Koshihikari" rice is increasing to the current share 59.0%. The total amount of paddy was produced in 1989 is around 727,000 tons, with the average yield is 5.23 tons per hectare.

During our farm household practice we have a good chance to stay with Mr. Kazuyoshi Makie and his family. His family stayed in Joetsu City, southwest portion of Niigata Prefecture, it's take one and half hours from Niigata City by bus.

Mr. Makie is not only a full-time farmer and member of agriculture cooperative but also a leader of group farmer in his village.

HOT FARMER'S FAMILY AND BACKGROUND

Our host farmer is Mr. Kazuyoshi Makie, he is a full-time farmer. The members of his family during our home stay is 3 persons as show in the Table 1.

Table 1. Members of the Household during the Home Stay

Name	Sex	Age	Relation	Occupation	Education
Mr. Kazuyoshi Makie	Male	52	Head	F. time farmer	Senior
Mrs. Tomie Makie	Female	52	Wife	F. timer farmer	High
Mr. Katutoshi Makie	Male	20	Son	Govt. Servant	School

Mr. Makie and his wife cultivated 12 hectares of paddy field in 1989. 9 hectares belong to him and other 3 hectares has been rented from his neighbour. Table 2 show the land tenure by him.

Around 50% of his paddy field, Mr. Makie was cultivated with the special rice (high quality rice). For the special rice, he process and pack by him self and distributed around Japan. According to his report, Mr. Makie plan to be a large scale farmers in future.

SCHEDULES AND ACTIVITIES

Date	Activities
August 6, 1990	- Courtesy visit to Niigata Prefecture Chamber of Agriculture. - Welcome meeting - Introduction of participants and host farmers. - Countesy visit to the Department of Niigata Agriculture Prefectural Government. - Attend the Cooperative Branch Office party. - Arrived at Mr. Makie house.

Date	Activities

August 7, 1990	- Observation at Hokuriku National Agriculture Experiment Station in Joetsu City.
	- Visit Joetsu City Office.
	  - Discussion with Chief of City (Meyor).
	  - Introduction about Joetsu City.
	- Visit Joetsu Agriculture Cooperative Office.
	  - Discussion about cooperative activities.
	- Attend group farmer's meeting.
	- Home party by host farmer.

August 8, 1990	- Observation visit to WADA Rice Mill Company. - Observation visit to the Oshima Agriculture Machineries. - Observation visit to the Agriculture Senior High School. - Visit host farmer's store and garage. - Visit Cooperative Branch Office.

August 9, 1990	- Practice on the field.
	  - Operated tractor with rotory.
	  - Operated grass cutter machine.
	- Worked in store.
	  - Packed rice to distribute.
	- Sight seeing around Joetsu City.
	- Sayonara party at home with our host farmer's families and his relatives.

August 10, 1990	- Left our host farmar's house to Nagaoka Grand Hotel with his families. - Assemble at Nagaoka Grand Hotel. - Observation visit around Nagaoka together with host farmer. - Evaluation meeting. - Sayonara party.
August 11, 1990	- Left Nagaoka Grand Hotel to Tsukuba (TIATC).

FARMER IN MALAYSIA

In term of rice production in Malaysia, it's very difficult to find large scale farmer. In KADA region, under Kemubu Irrigation Scheme, the average of farm land is 1.2 hectares per household, the number of farmers, who have their own agriculture machineries are very small.

For the farmers in Malaysia, contract farming system is more popular. Under this system the farmers only need to pay the service charge to the owner of machine per unit hours or areas. The price of agriculture machineries are very expensive compare with the price of the agriculture products.

Land preparation in Malaysia almost fully mechanize, but for the harvesting works, most of the farmers still using manual. Transplanter were introduced in KADA area since 1984 under the KADA's projects.

At the present time, the agriculture cooperatives in Malaysia still under government control, because that cooperatives are not very strong to provide enough services for the members. We hope in future, that the agriculture cooperative will get more support from the members to be more strong.

In case of education level, the farmers in Malaysia still lower than Japanese farmers. To introduce new technologies or new farming systems will take a long time for them to understand.

FARMER IN EGYPT

Rice in an important cereal crop in Egypt which is grown on 0.42 million ha, or approximately 10% of total area in the country. Rice yield in Egypt are among the highest in the world (5.64 tons/ha) and the country is self sufficient in rice production.

Mechanization of rice production in Egypt has undergone a rather spotty development with almost 100% mechanization of the land preparation operation on one hand and a little or no mechanization of transplanting, harvesting and threshing operations.

Wherefore the Ministry of Agriculture strongly requested to the Agricultural Mechanization Research Institute (A.M.R.I.) to initially identified for development and modification as needed were mechanical transplanters, harvesters and portable threshing machines. Therefor A.M.R.I. was been started the mechanization programme to identify and/or develop machines for rice production, harvesting and threshing that are appropriate to the small rice farm in Egypt. Also to train agricultural engineers, extension officers and rice farmers in the proper operation and maintenance of machines.

CONCLUSION

The rice cultivation in Japan is already fully mechanized. Most of the farmers in Japan have their own machineries to help them in agriculture operation.

The Japanese farmers also have been accepted higher education level that makes them very easy to understand and carry out new technologies in the rice cultivation.

Cooperative system in Japan is very strong, because they have a good relationship and cooperation between local agriculture cooperative, agriculture extension office and farmers. Agriculture cooperative in Japan provided many services for the members and get support from them.

The price of agriculture products in Japan is very high and stable, therefore the farmers in Japan can have their own machineries. Otherwise there is very high cost of production, but they still get the profit from the agriculture sectors.

From the data, we can find out the average of working hours per year is very low. Therefore the machineries fix cost per hour very high for the farmer. If the farmer can increase the operation hour per year, that should be reduce the fix cost of machineries per year. In case of our farmer, that is a good planning for him to increase his paddy field in the future.

Table 2. Land Tenure (Paddy Rice Area occupied by the Household)

PARAMETER	PADDY FIELD	UPLAND FIELD	LAND FOR HOUSE
Own land	900 are	500 are	600 tsubo
Land(rent in)	300 are		

Table 3. Capital Assets in Form of Machineries, 1989

Name of Machine	Model	Total Work Hr/yr	Year Bought	Price (Yen)	Repair Cost (Yen)	Depri-ciation/ Year(Yen)	Main Operation	Total Work Area
Tractor	38 ps.	150	1988	4,500,000	315,000	562,500	Tillage	13.23
Transplater	8 rows	120	1989	2,000,000	166,600	400,000	Transplanting	13.23
Mist Sprayer	5 ps.	10	1989	620,000	24,800	124,000	Pest Control	10.63
Power Sprayer	3 ps.	10	1987	100,000	4,000	20,000	Pest Control	10.63
Combine	5 ps.	160	1987	6,300,000	315,000	1,260,000	Harvesting	15.43
Dryer	38 koku	680	-	-	-	-	Drying	-
Husker	-	680	-	-	-	-	Husking	-
Rotory	-	35	1988	350,000	21,875	70,000	Tillage	13.23
Puddling Rotor	-	35	1988	350,000	5,845	70,000	Puddling	13.23
Truck	700 kg.	-	1988	2,880,000	-	-	Transport	-

Table 4. Main Farm Variable Expenses for Rice, 1989

VARIABLE INPUT	YEARLY APPLICATION	TOTAL COST/YEAR (YEN)
Seed	340.16 kg	61,228
Fertilizer		
i - Basic	2,500 kg	111,778
ii - Top Dressing	2,000 kg	89,422
Chemical		
i - Herbicide	240 kg	514,790
ii - Pest Control	By helicopter	137,078
Fuel and Oil		
i - Diesel	2,610 litre	182,700
ii - Lubricant oil	30% of fuel	54,810

Table 5. Operation Management and Duration of Rice Cultivation, 1989

OPERATION	PERIOD
Box Nursery	20 March - 30 April
Plowing	15 April - 10 May
Transplanting	4 May - 21 May
Weeding	25 May - 10 June
Top Dressing	10 July - 5 August
Spraying	20 July - 3 August
Water Management	20 June - 31 August
Harvesting	8 September - 13 october

Table 6. Sale of Crop in 1989

KIND OF CROP	YEILD AREA	TOTAL PRICE(Yen)
Paddy	10.63	19,626,000

Table 7. Cultivation and Crop Condition

VARIETY	PLANTING METHOD	COVERED AREA(ha)	DEGREE OF FIELD DISTRIBUTION
Koshihikari	Transplanting	1.85	0 km
Koshihikari	Transplanting	0.95	5 km
Koshihikari	Transplanting	0.96	7 km
Koshihikari	Transplanting	0.10	0 km
Koshihikari	Transplanting	0.40	1 km
Koshihikari	Transplanting	0.57	7 km
Niigata-Wase	Transplanting	1.80	5 km
Kinuhikari	Transplanting	0.95	1 km
Kinuhikari	Transplanting	0.84	1 km
Akinishiki	Transplanting	1.01	3 km
Akinishiki	Transplanting	1.20	4 km

Table 8. Production Cost of Rice in 1989

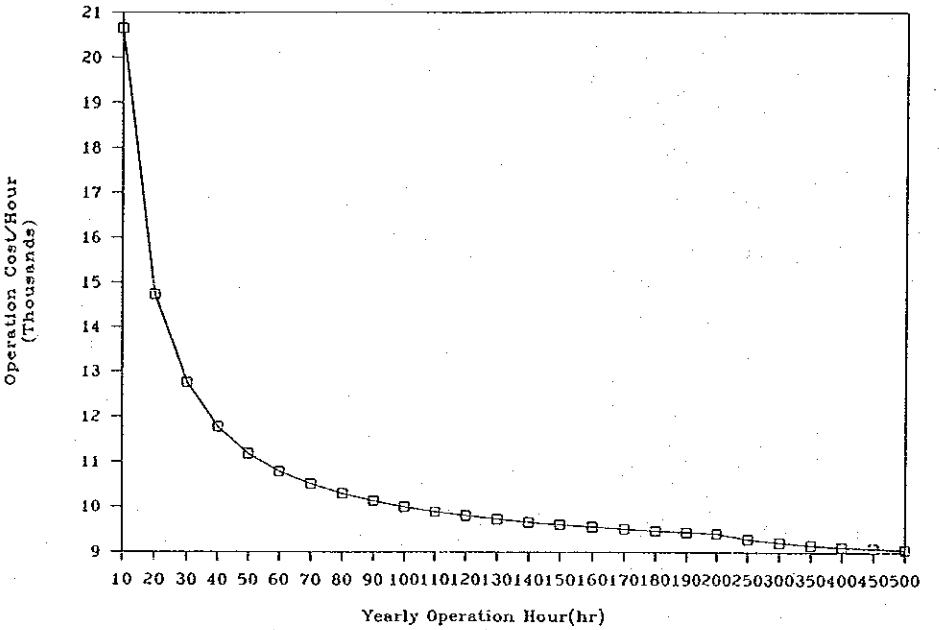
	ITEM	COST(Yen)	
1.	Seed Preparation		
	i. Seed	192,870	
2.	Fertilizer		
	i. Basic	111,778	
	ii. Top Dressing	89,422	
3.	Chemical		
	i. Pest Control	137,078	
	ii. Herbicide	514,790	
4.	Rent Fee		
	i. Land	84,000	
5.	Labour Cost		
	i. Family	995,840	*Base on 800 Y/hr
	ii. Labour	247,010	
6.	Interest Payment	1,851,000	
7.	Tenant Fee	489,161	
8.	Machineries		
	i. Tractor	1,322,550	) Include
	ii. Transplanter	831,240	) - Fix Cost
	iii. Power Sprayer	39,470	) - Variable Cost
	iv. Mist Sprayer	193,390	) - Wages
	v. Combine	2,126,240	)
		=========	
	TOTAL >>>	9,225,839	
		=========	

Table 9. Trial Calculation of Tractor with Attachment

Item to Estimate	Proposal
Price of Machine	4500000
Yearly Fix Cost	1107000
Yearly Operation Hour	150
Attachment **********	
Price	350000
Yearly Fix Cost	118300
Field Efficiency	4.27
Variable Cost per Hour **********	
Fix Cost per Hour	7380
Fuel Cost	490
Lubricant Cost	147
Operator Wages	800
TOTAL >>>>>>	8817

Cost per Hours		Cost per Hacter	
Yearly Operation Hour(hr)	Cost (Yen)	Yearly Operation Area(ha)	Cost (Yen)
10	20647	1	155949
20	14732	1.5	116515
30	12760	2	96799
40	11775	2.5	84969
50	11183	3	77082
60	10789	3.5	71449
70	10507	4	67224
80	10296	5	61309
90	10131	6	57365
100	10000	7	54549
110	9892	8	52436
120	9803	9	50793
130	9727	10	49479
140	9662	11	48403
150	9606	12	47507
160	9556	13	46749
170	9513	14	46099
180	9474	15	45535
190	9440	16	45042
200	9409	17	44607
250	9290	18	44221
300	9211	19	43875
350	9155	20	43564
400	9113	25	42381
450	9080	30	41592
500	9054	50	40015

Tractor with Attachment
(Operation Cost/Hour)



Tractor with Attachment
(Operation Cost/Hectare)

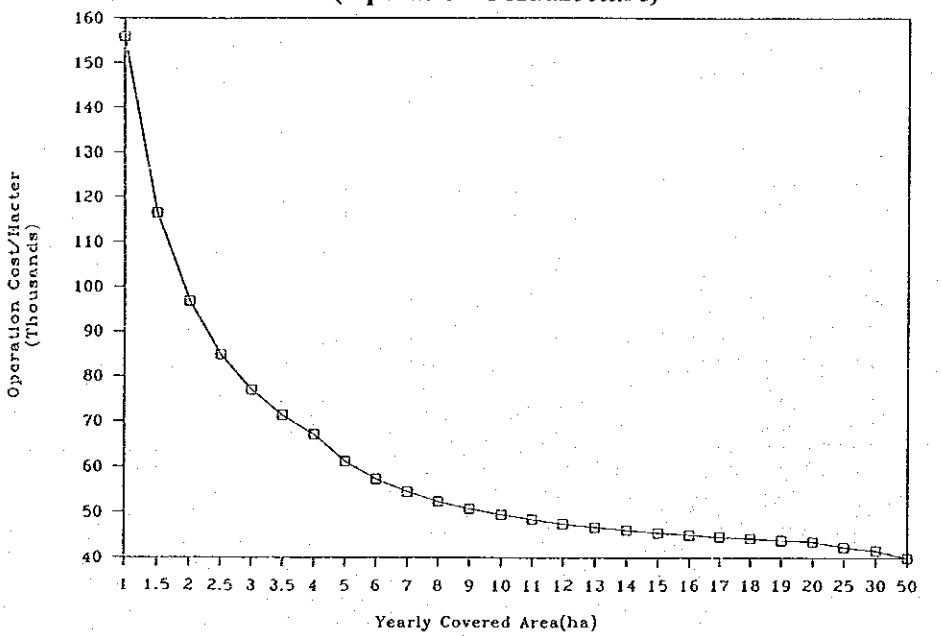
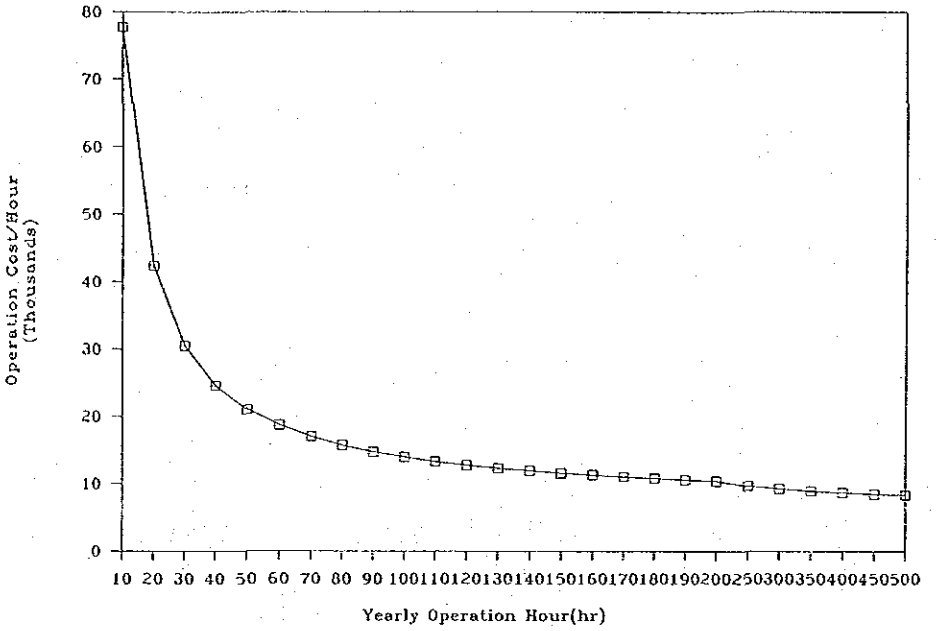


Table 10. Trial Calculation of Transplanter

Item to Estimate	Proposal
Price of Machine	2000000
Yearly Fix Cost	708000
Yearly Operation Hour	120
Attachment **********	
Price	-
Yearly Fix Cost	-
Field Efficiency	4.20
Variable Cost per Hour **********	
Fix Cost per Hour	5900
Fuel Cost	175
Lubricant Cost	53
Operator Wages	800
TOTAL >>>>>>	6928

Cost per Hours		Cost per Hacter	
Yearly Operation Hour(hr)	Cost (Yen)	Yearly Operation Area(ha)	Cost (Yen)
10	77728	1	737098
20	42328	1.5	501098
30	30528	2	383098
40	24628	2.5	312298
50	21088	3	265098
60	18728	3.5	231383
70	17042	4	206098
80	15778	5	170698
90	14795	6	147098
100	14008	7	130240
110	13364	8	117598
120	12828	9	107764
130	12374	10	99898
140	11985	11	93461
150	11648	12	88098
160	11353	13	83559
170	11093	14	79669
180	10861	15	76298
190	10654	16	73348
200	10468	17	70745
250	9760	18	68431
300	9288	19	66361
350	8951	20	64498
400	8698	25	57418
450	8501	30	52698
500	8344	50	43258

Transplanter
(Operation Cost/Hour)



Transplanter
(Operation Cost/Hectare)

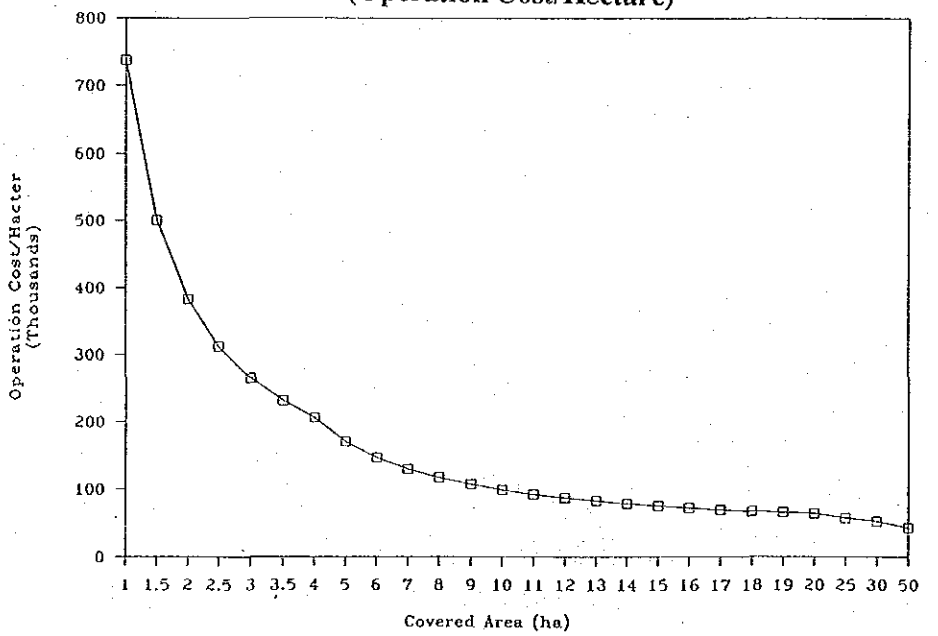
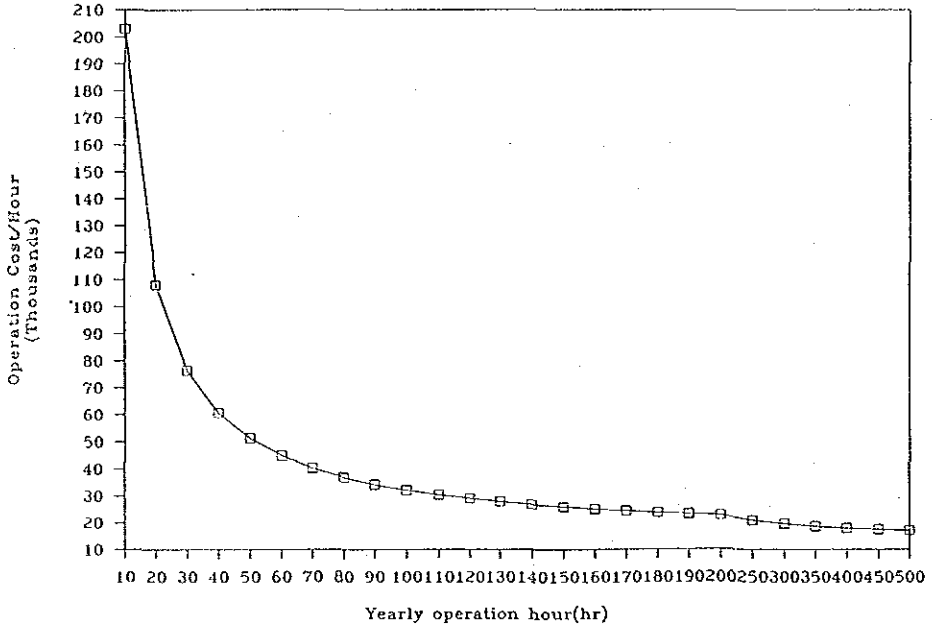


Table 11. Trial Calculation of Combine Harvester

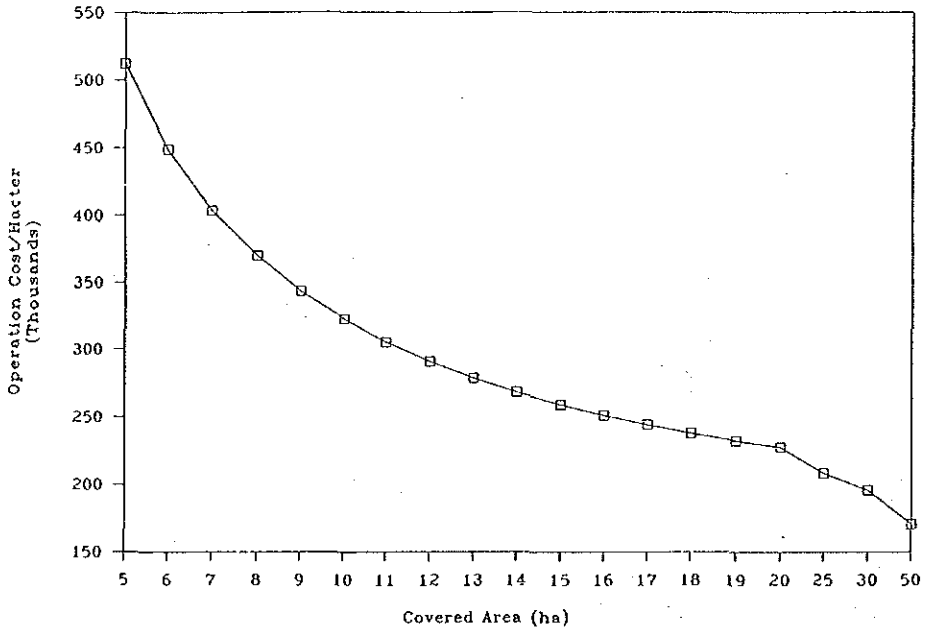
Item to Estimate	Proposal
Price of Machine	6300000
Yearly Fix Cost	1896300
Yearly Operation Hour	160
Attachment **********	
Price	-
Yearly Fix Cost	-
Field Efficiency	10 hr/ha
Variable Cost per Hour **********	
Fix Cost per Hour	11852
Fuel Cost	490
Lubricant Cost	147
Operator Wages	800
TOTAL >>>>>>	13289

Cost per Hours		Cost per Hacter	
Yearly Operation Hour(hr)	Cost (Yen)	Yearly Operation Area(ha)	Cost (Yen)
10	202919	1	2029190
20	108104	1.5	1397090
30	76499	2	1081040
40	60697	2.5	891410
50	51215	3	764990
60	44894	3.5	674690
70	40379	4	606965
80	36993	5	512150
90	34359	6	448940
100	32252	7	403790
110	30528	8	369928
120	29092	9	343590
130	27876	10	322520
140	26834	11	305281
150	25931	12	290915
160	25141	13	278759
170	24444	14	268340
180	23824	15	259310
190	23270	16	251409
200	22771	17	244437
250	20874	18	238240
300	19610	19	232695
350	18707	20	227705
400	18030	25	208742
450	17503	30	196100
500	17082	50	170816

Combine
(Operation Cost/Hour)



Combine
(Operation Cost/Hectare)



The Survey Report on Farm Household

by Olutunji Mufutau Olusola (Nigeria)
Abel Robins Mbwile (Tanzania)

THE SURVEY REPORT ON FARM HOUSEHOLD

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Abel Robins Mbwile (Tanzania)

INTRODUCTION

Farm household practice is one of the subjects in the program of Farm Mechanization Course. The subject was arranged, such that every participants were assigned to Japanese farmers, to live and stay with them, and observe their Mechanization style of Japanese agricultural practice.

Besides, the participants were also advised to learn the Japanese culture during their stay with respective host farmers. At the end of the program every participants would be able to analyze the advanced mechanization style of Japanese agricultural practice, and made evaluation/reassessment of agricultural practice in their respective home countries, fit in new knowledge, information and techniques acquired during the farm household practice appropriately.

The arrangement of farm household practice was made by Farm Mechanization Staff to consist of two participants to each farmer.

Six groups were made altogether. We were accompanied by two staff, Mr. Tsujimoto and Mr. Hasegawa to Niigata Prefecture which was the location of household practice. Niigata is one of best rice production area in Japan. During our stay in Mr. Tsuboi's house (host farmer) we enjoyed living together and understood some of Japanese ideal home. But the problem was of language communication, we were able to solve this by use of dictionary because our knowledge of Japanese language was not sufficient to cope with continuous conversation in Nihongo. Our host farmer is a full-time farmer.

SCHEDULES AND ACTIVITIES

Date	Activities
August 6, 1990	- Trip to Niigata Prefecture. - Courtesy visit to Niigata Prefecture chamber of Agriculture. - Welcome meeting. - Courtesy visits to the Department of Niigata Agriculture, Prefectural Government. - Departure to our farmers house.
August 7, 1990	- Observation at Hokuriku National Agriculture Experiment Station in Joetsu city. - Visit Joetsu city office. - Visit Joetsu Agriculture cooperative. - Visit country elevator.
August 8, 1990	- Observation at Oshima Factory. - Working with our farmer in the field (Binding hay by using reaper binder).
August 9, 1990	- Visit irrigation cooperative in Joetsu city. - Visit irrigation dam. - Visit diary cooperative farm. - Visit individual diary farms.
August 10, 1990	- Left our farmers house at 10:00 a.m. with his wife to Nagaoka Grand Hotel. - Evaluation meeting. - Sayonara party.
August 11, 1990	- Left Nagaoka Hotel at 1:00 pm to TBIC.

Information about the farmer

Table 1. Information about the Member of Farmer Family

Name	Relatioon to head	Age	Sex	Last education
Minoru Tuboi	Head	52	Male	Agriculture high school
Yoko Tsuboi	Wife	49	Female	Middle school
Youji Tsuboi	Son	25	Male	Junior college
Minori Tsuboi	Wife/son	24	Female	Junior college
Yai Tsuboi	Mother of Head	75	Female	Primary school
Eichiro Tsuboi	Grand son	8 months	Male	

Table 2. Farm Machinery Utilization

Machine	Model	Units	hr/year 1989	Year bought	Price (yen)
Tractor	80 HP	1	200	1976	7,000,000
Tractor	75 HP	1	50	1988	5,000,000
Transplanter	8 rows	1	150	1988	2,000,000
Power sprayer		1	100	1988	70,000
Combine	5 rows	1	120	1985	1,500,000
Combine	4 rows	1	180	1988	1,300,000
Dryer	105 HP	1	200	1988	1,600,000
Dryer	155 HP	1	1,000	1978	2,000,000
Husker	2 tons	1	300	1989	300,000
Seed drill		1	150	1979	600,000

Operation Management

Table 3. Operation Management - Duration of Rice Cultivation 1989

Operation	Period
Box nursery	20 March — 25 May
Plowing	20 April — 22 May
Basal Fertilizer	6 May — 22 May
Transplanting	6 May — 22 June
Weeding	10 May — 20 August
Top-dressing	15 May — 20 August
Spraying	20 July — 5 August
Water management	1 May — 25 August
Harvesting	3 Sept. — 25 October

Table 4. Yield of Rice in 1989

Variety	Area (a)	Production in kgs/as.	Average (kg)
Akihikari Hokuliku No. 105	300	6,000 12,000	600 600
Nigatawase	180	11,340	630
Koshihikari Akinishiki	450	14,580 10,260	540 570
Kinuhikari	60	3,420	570
Koshihikari	90	4,320	480
Kinuhikari Koshihikari	210	2,850 7,200	570 450

Variety	Area (a)	Production in kgs/as.	Average (kg)
Hatukazari	180	7,200	450
Kinuhikari	50	2,850	570
Koshihikari	140	7,560	540
Koshihikari	100	5,400	540
Koshihikari	140	7,560	540
Koshihikari	60	3,240	540
	160 150 130	– – –	– – –
Total		108,300	

Table 5. Machinery Yearly Fixed Cost

Machine	Purchase price (yen)	Rate (%)	Yearly fixed cost (yen)
Tractor	7,000,000	24.6	1,722,000
Tractor	5,000,000	24.6	1,230,000
Transplanter	2,000,000	35.4	708,000
Power Sprayer	70,000	29.6	20,720
Combine	1,500,000	22.6	339,000
Combine	1,500,000	22.6	339,000
Dryer	1,600,000	17.8	284,800
Dryer	20,000,000	17.8	3,560,000
Husker	300,000	16.7	50,100
Total machine fixed cost			8,253,620

Table 6. Variable Cost and Total Expenses during 1989

Item	Amount in yen
Fertilizer	1,075,000
Basal Fertilizer	420,000
Chemical	900,000
Herbicide	320,000
Wages for laboures	300,000
Machinery/building	8,300,000
Rent area cost	2,600,000
Rent fee	2,200,000
Seeds	40,000
Others	1,200,000
Total	17,355,000

Table 7. Operation Variable Cost

Operation	Hours spent	Amount (yen)
Tractor	250	526,500
Transplanter	150	191,700
Power sprayer	100	98,000
Combine	300	285,000
Thresher	40	28,000
Dryer	3,000	2,700,000
Sub-total		3,829,200
Machinery fixed cost		8,253,620
Variable cost		17,355,000
Total expenditure		29,437,820

Table 8. Total Income in 1989

Total area	Units (a)
Own land	2,000
Rent land	500
Cultivated area	1,960
Total selling amount of rice in 1989	37,000,0000 yen

Net income 37,000,000 – 29,437,820 = 7,562,180 yen

Table 9. Cost Analysis for Tractor with Plow

Item of estimate	Amount (yen)	Remarks
Purchase price	7,000,000	80 HP (Tractor)
Yearly fixed cost	1,722,000	Yearly fixed rate 24.3%
Hours worked/year	250 hrs	Plowing 100%
Rotary purchase price	400,000	1.4 wide
Yearly fixed cost	135,200	Yearly fixed rate 33.8%
Performance	4 hrs/ha	Cultivation
Fuel cost	680	17 liter/hr at 40 yen/liter
Lubricant cost	204	30% of fuel cost
Fixed cost/tractor	6,888	Cost/hr
Operators wage	600	One operator/hr

Table 10. Service Charge per Hour/Ha for Tractor with Rotary

Tractor (hr./yr.)	Cost/hr.	Area/year (ha)	Cost/ha
25	13,780	1	168,688
50	11,076	3	78,555
75	10,174	5	60,528
100	9,724	7	52,802
125	9,454	9	48,510
150	9,273	11	45,779
1,175	9,144	13	43,888
225	8,972	15	42,501
250	8,912	17	41,441
		19	40,604
		21	39,838

Table 11. Service Charge per Hour/Ha for Transplanter

Work (hr.yr.)	Cost/hr.	ha./yr.	Cost/ha. yen
10	71,478	1	720,204
20	36,078	2	366,204
30	24,278	3	248,204
40	18,378	4	189,204
50	14,838	5	153,804
60	12,478	6	130,204
70	10,079	7	113,347
80	9,528	8	100,704
90	8,544	9	908,706
100	7,758	10	83,004
110	7,114	11	76,568
120	6,578	12	71,204
130	6,124	13	6,667
140	5,735	14	62,775

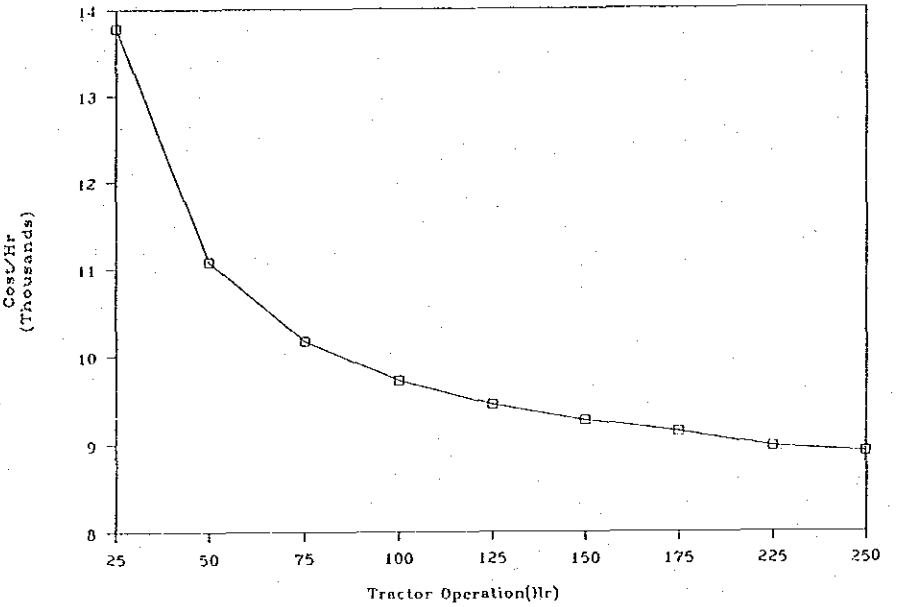
Table 12. Service Charge per Hour/Ha for Combine

Work (hr./yr.)	Cost/hr.	ha/hr.	Cost/ha
10	34,838	2	173,862
20	17,888	4	89,112
30	12,238	6	60,862
40	9,413	8	46,737
50	6,588	10	38,262
60	5,781	12	32,612
70	5,176	14	28,576
80	4,705	16	25,549
90	4,328	18	23,195
100	4,020	20	21,312

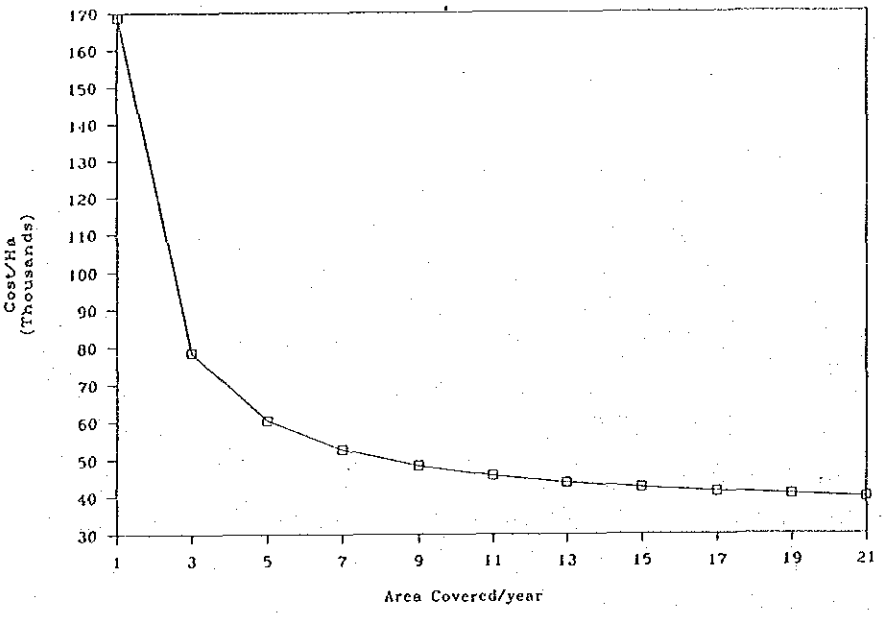
Table 13. Service Charge per Hour/Year, Ha/Year and Cost

Dryer worked (hr./yr.)	Cost/hr. yen	ha./hr.	Cost/ha.
200	1,809	2	1,862,750
400	9,188	4	972,750
600	6,220	6	676,083
800	4,738	8	527,750
1,000	3,849	10	438,750
1,200	3,255	12	379,417
1,400	2,830	14	337,036
1,600	2,566	16	305,250
1,800	2,265	18	280,528
2,000	2,068	20	260,750

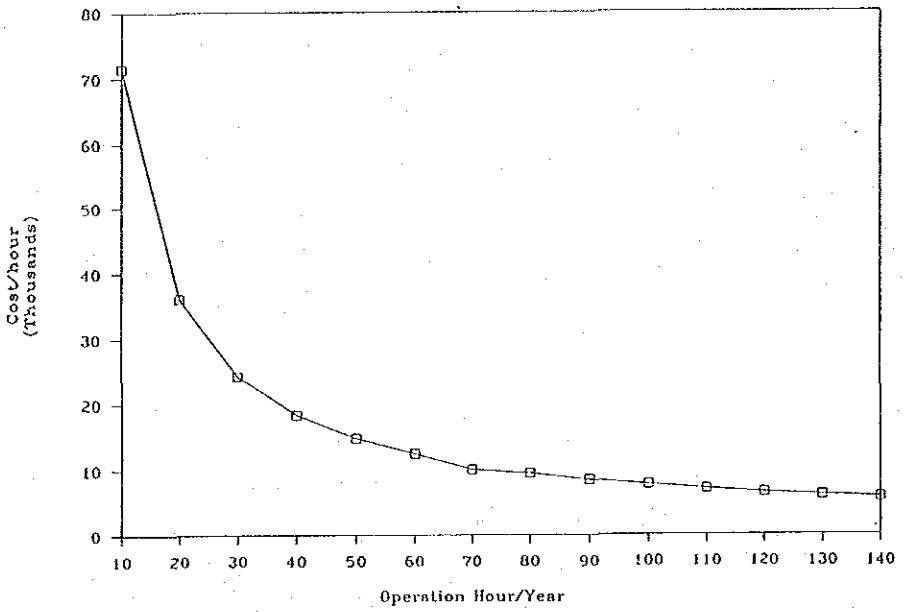
Cost Analysis of Tractor with Rotary



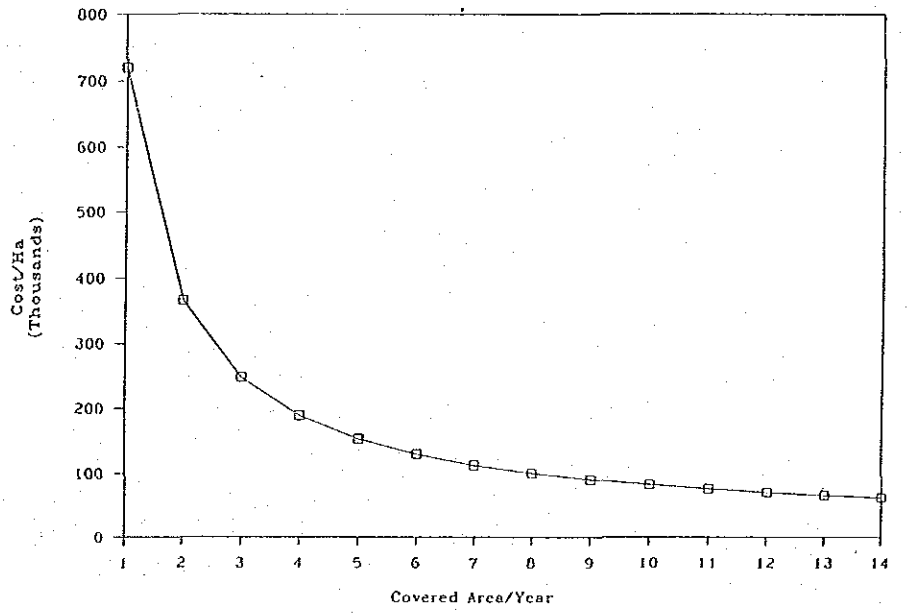
Cost Analysis/Hectare of Tractor with Rotary



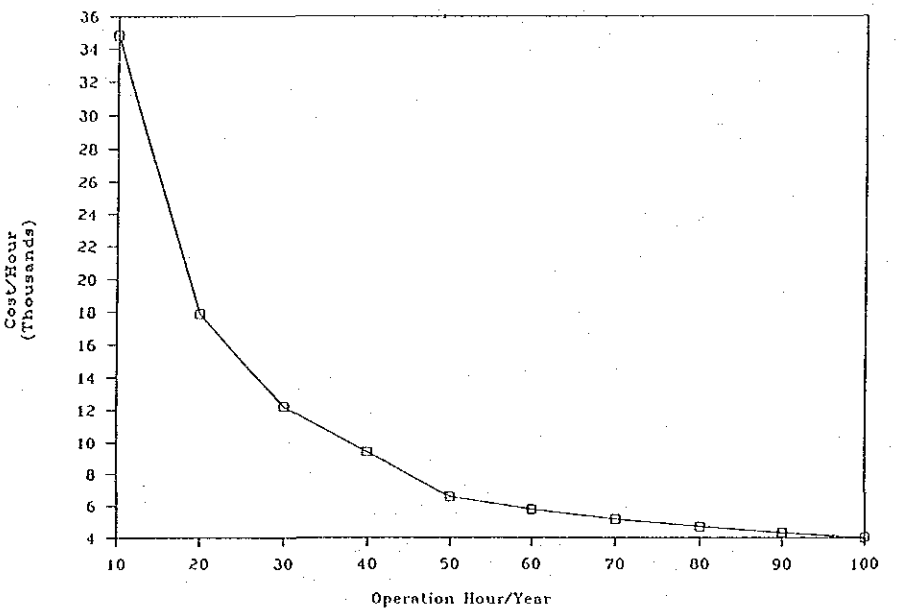
Operation Cost/Hour of Transplanter



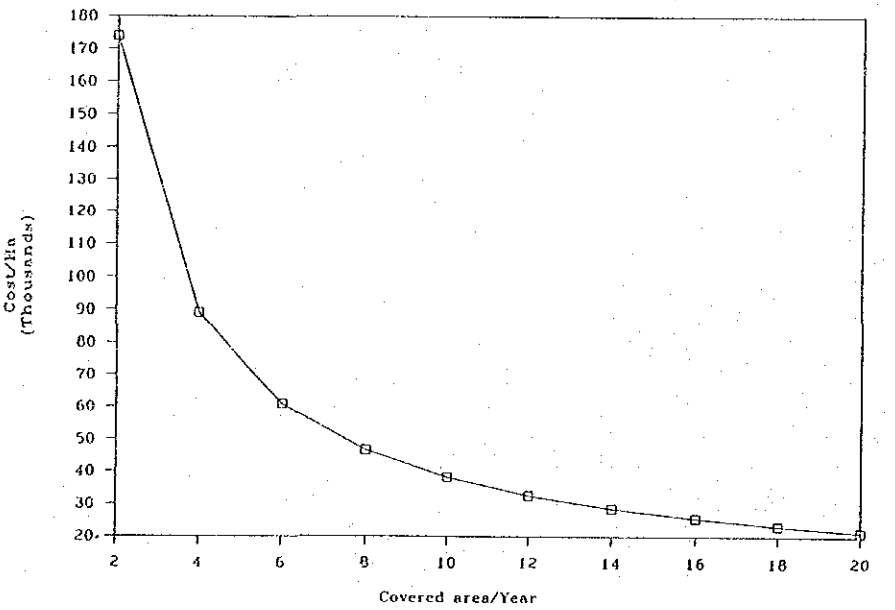
Operation Cost/Hectare of Transplanter



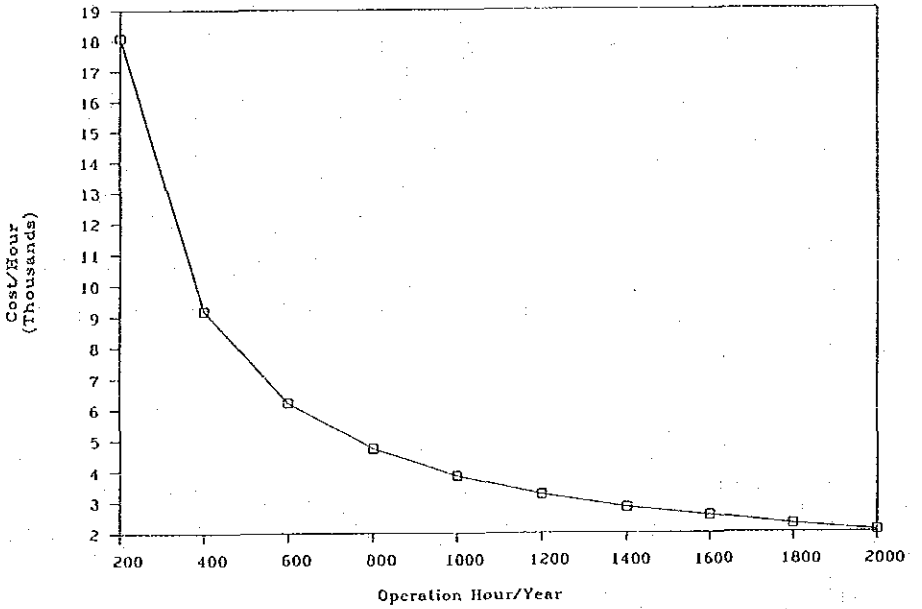
Cost Analysis/Hour of Combine



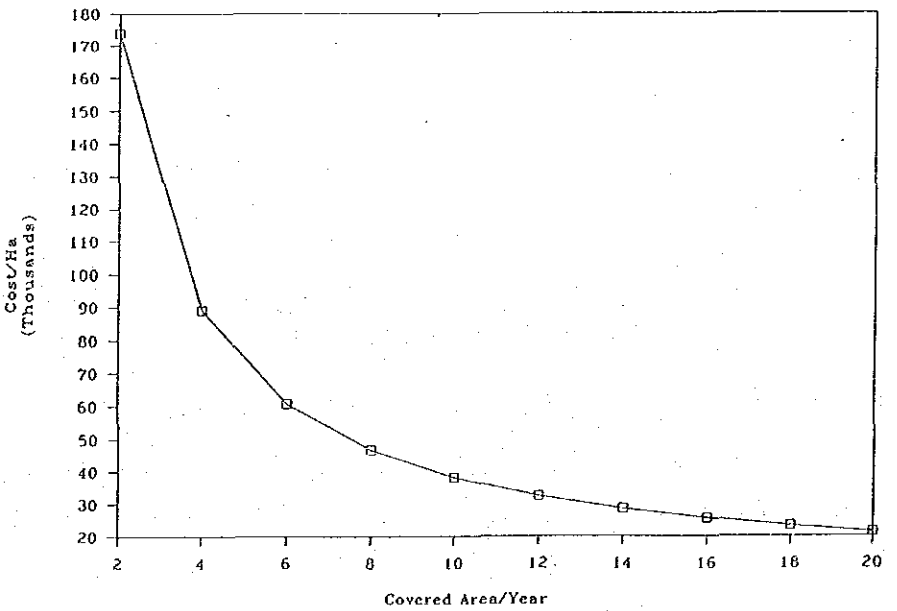
Analysis Cost/Hectare of Combine



Analysis Cost/Hour of Dryer



Analysis Cost/Hectare of Dryer



MACHINERY UTILIZATION ANALYSIS

Host Farmers Field Machinery Stock:

Mr. Minoru Tsuboi owns 20 ha of farm land, and 4.0 ha was given to him on rental basis.

In total, he has 24 hectares. He cultivated 19.6 hectares in the year 1989 farming season. The remaining ha was kept under fallow. The rice fields of Mr. Tsuboi are located at different areas from his house. This poses problems of Machinery Management.

Individual Cost Analysis:

Only one machine in each category has been considered. However, information on the machines considered is sufficient enough to draw conclusion.

The tables of service charges for individual machinery and corresponding graph is the cost curve of yearly hours cost and hectare to cost. But the following has to be considered:

- Expenses utilized by the farmer on agriculture is much when you compare it with net profit (which is low).

- When you see working hours of his machines/year, the machines are not fully utilized.

- Good enough rice in Japan is sold at a higher price, if not the farmer could not get any profit due higher maintenance and variable costs.

CONCLUSION

Japanese farmers have high education concerning modern agricultural techniques. Their agricultural cooperative are functioning properly thus making

good relationship with their farmers. Japanese governmental agricultural policy helps the farmers on reducing the production cost and over production of rice through reducing planting area and increasing upland crops by giving subsidy to farmers. Although the cost of production is relatively high, but the price of rice product is also high. This helps the farming to be profitable. Due to high level of farmers education, Japanese farmer are hard working with good work program. Also the development of farm machinery manufactures, makes all agricultural activities full mechanized in Japan.

COMPARISON BETWEEN JAPANESE FARMER AND OUR FARMERS

Farmer from Nigeria:

The farmers in Japan are well protected by the government, and this makes the Japanese agricultural production to be on a gainful format. This is quite unlike my country. Agricultural mechanization in Japan is of high standard, compared with situation in my country (Nigeria) which is still struggling to have a stable and result oriented agricultural mechanization style. Education plays an important role in practice of agriculture, the farmers in Japan are well educated and they could therefore enjoy use of irrigation facilities, agricultural machineries and beneficial information in practice of agriculture.

Finally, the farmers are rich and have higher standard of living compared to farmers in my country (Nigeria).

The Tanzania Farmer:

The aim of any farmer is to produce enough crops to sustain their life and sell the surplus to get their income for use on other daily needs. But the way agricultural practices are being conducted are different depending on:

- Education of a farmer on modern agricultural practices.

- Capital to invest on agriculture.

- Agricultural machineries.

Japanese farmers have enough knowledge or modern agricultural practices, that is why farmers in Japan are rich, and thus they are able to invest much in agriculture (inputs and machinery) which help them to reduce the cost/unit area. In Tanzania, farmers have low education, low income and that is why they can not be able to afford to own farm machineries. They only depend on few tractors from hiring centres owned by the government. But still many farmers use hand hoe and draught animals. In Japan, farmers agriculture cooperatives are operating properly and the government protect them from risks and uncertainties. Tanzanian farmer have low knowledge on modern agriculture and bears his/her own risk, the government has less assistance to farmers. Farmers in Tanzania sell their produces with a very low prices offered by the government, so they can not manage to buy enough agricultural inputs as prices are high. Production costs are very high in Japan, but the higher prices of rice offered by the government assures them enough profit due to their high total revenue.

The yield of paddy/ha is high in Japan because of good management. Irrigation and drainage system have been carried in most paddy fields which make mechanization practices possible. No land consolidation on paddy field of farmers in Tanzania.

The Survey Report on Farm Household Practice

by Godofredo M. Batarao Jr. (Philippines)
Marcial D. Agad (Philippines)

THE SURVEY REPORT ON FARM HOUSEHOLD PRACTICE

by Godofredo M. Batarao Jr. (Philippines)
Marcial D. Agad (Philippines)

INTRODUCTION

The scheduled farm household practice is one of the vital components of our training in Japan. It is envisaged to give the participants a chance of rich countryside life, living and working with the host farmer with the end in view to learning and understanding Japanese progressive farming methods and practices and observing situational conditions at rice fields and other farm areas due to full implementation of farm mechanization ventures. It is also expected that each participant will have a first hand actual observation of Japanese life styles, cultures and traditions through the host farmer, members of his family, his associates and friends.

For this year, Niigata Prefecture, noted for having very successful farmers and well-known for producing high quality rice was chosen for the participants' homestay. The class was divided into six groups, each group of two was assigned to a selected host farmer who willingly spared his most precious time and effort for a successful practice. Notwithstanding, communication problem, there was mutual understanding and furtherance of friendship and camaraderie.

During the homestay, we have talked about and discussed farmer's farm management practices, his selection, acquisition, ownership and effective utilization of farm machineries and equipments, and his membership and role in the farmers association and in the cooperative. Moreover, we were given chance to actually operate some machineries. We have also observed the extent of farm mechanization development and were shown sophisticated pumping system, irrigation and drainage facilities and the on-going land consolidation projects. The visits to various government agencies which extend full support to farmers were

worthwhile and very informative. As a whole, the homestay and household practice was a real success, the memories of which every participant should cherished. The knowledge gained and the friendship developed were all beyond anybody's dream.

FARM HOUSEHOLD PRACTICE ACTIVITIES

August 6, 1990 (Monday)

- Trip to Niigata City from TIATC
- Courtesy call to the Director of Niigata Prefecture Chamber of Agriculture, Department of Agriculture, Fishery and Forestry, Niigata Prefecture
- Together with some prefectural government official, welcome meeting and introduction to respective host farmer was held.
- Trip to Kubiki-mura, Nakakubiki, homeplace of Mr. Tsutumo Koshino, our host farmer
- Acquaintance and dinner with members of the family of our host farmer

August 7, 1990 (Tuesday)

- Visited Hokuriku National Agricultural Experiment Station. Briefing on missions, programs, and organizational structures of the station. Observation tour of the compound and on-going projects/researches.
- Visited country elevator. Mr. T. Tsujimoto, chief instructor was there ahead. We observed the sophisticated and big storage and dryer facilities.

- Courtesy visit to the Village Head and his Staff at the Village Hall of Kubiki-mura

- Visit to Kubiki-mura Agricultural Cooperative Office

- Visit to field office of the on-going land consolidation project

- Garden party at Mr. Koshino's compound together with family friends and young successor farmers

August 8, 1990 (Wednesday)

- Observation tour around Mr. Koshino's farm

- Practice operation of our host farmer's farm machineries

  a. Operation of new tractor
  b. Rotary tilling at our host farmer's field

- Operate soil crusher for pulverizing the soil for nursery box seedling

- Visit to Kubota Field Extension Office

August 9, 1990 (Thursday)

- Shopping at Ito Koyado Department Store

- Lunch at Oike Lake Restaurant

- Visit and inspection of host farmer's farm particularly the irrigation and drainage facilities

- Continue practice operation with soil crusher

- Attend Festival at Kubiki Village

August 10, 1990 (Friday)

- Left host farmer's house for Nagaoka Grand Hotel at Nagaoka City
- Lunch at Nagaoka Grand Hotel
- Sight-seeing and observation tour around Nagaoka City
- Evaluation meeting with farmers and Niigata Prefecture Chamber of Agriculture's key official
- Sayonara Party with the host farmers and official

August 11, 1990 (Saturday)

- Check-out from hotel and return back to TIATC

THE HOST FARMER

Mr. Tsutumo Koshino is a full-time farmer. The workload in his farm is shared by his son and other members of the family (Table 1). He has a total farm area of 16 hectares all planted with rice having 4 hectares as his owned land and 12 hectares rented in for ten years contract period with a contract fee of 34,000.00 yen per 10a as shown in Table 2. This are is divided into 22 fields scattered around his village.

Majority of his fields are consolidated with very good irrigation and drainage facilities. It has underground irrigation pipelines and control valves for irrigation water. It has also underground pipelines for draining out water during harvest season. However, he has still about 4 hectares undergoing land consolidation. It

is expected to be finished early next year and can be planted for the next cropping season.

To manage his farm effectively, Mr. Koshino purchased different kinds of agricultural machineries (Table 3), as family labor is limited. His son who will be his successor owns a personal computer system for efficient book keeping and farm simulation activities.

FARM OPERATION SYSTEM AND MANAGEMENT

Good planning and management are important factors for the success of any business enterprise. Mr. Koshino has done these in his farming business. Proper scheduling of work is carried out to prevent delays and backlogs. He planted five different kinds of varieties with Koshihikari variety known as the best quality and the most expensive rice in Japan got the biggest share of his farming area, totalling about 8 hectares (Table 4).

Box nursery operation starts from March 5 to May 16. He has around 4,000 nursery boxes which he sells to his neighboring farmers during planting season. Land preparation (plowing and puddling) is done from April 7 to 26, using tractors and rotavators.

Basal application of fertilizers is done with the use of fertilizer broadcaster during final harrowing in order to mix properly the fertilizer with the soil. Transplanting follows from May 2 to 15, using his 8-row riding type transplanter.

During plant grow, proper cultural management is being carried out. Weed control is done by herbicides using dusters or blowers. Top dressing (second application of fertilizer) is done from July 16 to August 8 with the use of fertilizer applicator. Helicopter spraying is carried out to control pest and diseases through contract work.

Since water is very important during plant growth, good water management must be implemented. This carried out from April 26 to August 15 of almost two weeks before harvesting.

Harvesting is done from August 29 to September 29 using 3-row combine harvester. Harvested paddy is then dried in his two units fully automatic recirculating type dryers during night time. After drying, the paddy goes to the husking machine and come out as brown rice. This time it is now ready for marketing.

MACHINE UTILIZATION ANALYSIS

There are two kinds of cost factors used in the economic analysis of using agricultural machines. One is fixed cost which is independent whether the machine is used or not and the other one is the variable cost which depends upon the use of the machines.

Trial calculations of the service charge of machineries owned by the farmer is shown in Tables 9 to 12. During the analysis, some data are not directly available from the farmer so that assumptions were made basing upon the data from books on the use of agricultural machines in Japan.

Analysis showed that the cost incurred in using the machines is relatively high. One reason for this is that the machine is not fully utilized to its rated capacity. Like for example the combine harvester, it is the most expensive machine owned by the farmer yet it is only used for about 100 hours per year or 12.5 days per year (Table 3).

Therefore, in order to lower down the cost of production, farm area should be increased. The farmer must increase his contract area to fully utilize his machine for maximizing profits.

From Table 8, the net income of the farmer from 1989 harvest is about ¥9,352,720.00. The return of Investment (ROI) is 89.6 percent which is very high. This indicates that our host farmer is doing his farming business very well.

CONCLUSION

Japanese farmers have relatively higher level of education compared with the farmers from its neighboring countries. This makes them very responsive to adopt new technologies and trends developed of research institutes for the enhancement of his farming enterprise. They are not ordinary farmers but professional farmers. They are also very hardworking, so that when they work, they work with their whole heart and mind. And above all these things, the government fully support the farmers in all aspects of their farming activities. So, even if the production cost is high, the price of the product is also high and stable, yielding a high profit margin. This makes farming in Japan very attractive and profitable.

COMPARISON OF THE JAPANESE FARMERS AND PARTICIPANTS FARMERS

The Philippine Farmers:

It is quiet strange to note that in the Philippines, our farmers grow rice twice a year comparing to Japanese farmers which only grows once a year but the Japanese rice farmers have still very high income compared to the Filipino rice farmers. There are many reasons behind this but we just point out some important factors to compare our rice farmers with that of the Japanese rice farmers.

First is the level of education. Our farmers have relatively lower educational level compared to the Japanese counterparts. As a consequence of this, there is mismanagement of farm products and income. They don't practice book keeping so that their income cannot hardly reach the next harvest season. They cannot easily adopt new techniques introduced by the government because of this reason.

Secondly, our farmers still lack the full support of our government. Irrigation facilities are not enough and farm areas are not consolidated making mechanization a tough job to do. Prices of farm products are very unstable putting the farmers always at the losing side. This farming in our country a very risky business.

Finally, our farmers in the average are not as hard working as Japanese farmers do. They don't think farming as a business enterprise but just a way of life.

Table 1. Members of Farmer's Household

Name	Sex	Age	Relation	Occupation	Education
Tsutomo Koshino	Male	56	Head	Farmer	High school
Mitsu Koshino	Female	56	Wife	Farmer	High school
Kaoru Koshino	Male	31	Son	Farmer	High school
Mariko Koshino	Female	27	Son's wife	Farmer	High school
Michiko Koshino	Demale	5	Grand daughter	—	Kindergarten

Table 2. Land Tenure (Paddy Rice Area, 1989)

Parameters	Unit	Total
Area owned	ha	4
Rented area from outside	ha	12
1. Years leased	yrs	10
2. Rental fee	¥/yr/10a	34,000
Cost of chemicals	¥/yr	
1. Pesticides		458,000
2. Herbicide		600,000
Cost of fertilizers	¥/yr	460,000

Table 3. Capital Assets in the Form of Machineries

Name of machine	Model	Total working hours/year	Year of purchase	Repair cost (¥)	Depreciation cost (¥)	Price (¥)
Tractor	26 PS	150	1988	155,400	227,500	2,220,000
Tractor	11 PS	120	1981	17,500	31,250	250,000
Transplanter	8R	80	1987	166,600	250,000	2,000,000
Transplanter	4R	10	1989	8,330	12,500	100,000
Combine	3R	100	1986	181,000	452,500	620,000
Dryer	32 koku	300	1984	70,000	175,000	1,400,000
Dryer	42 koku	300	1989	103,000	257,500	2,060,000
Husker		400	1988	41,250	103,125	825,000
Truck	0.36 T		1984	38,000	152,000	760,000
Truck	0.36 T		1988	55,000	226,000	1,100,000

Table 4. Main Farm Variable Expenses for Rice, 1989

Various inputs	Yearly application	Total cost/year
Seeds	612 kg	
Fertilizers		460,000
Chemicals a. Herbicide b. Pesticide c. Seed disinfection		 600,000 458,000 27,750
Fuel and oil a. Gasoline b. Diesel c. Oil (lub)		 25,200 198,800 89,640
Total		1,959,390

Table 5. Sales of Crops in 1989

Kinds of crop	Field area	Total yield	Price/kg	Total sales (¥)
Rice	12 ha			19,781,000

Table 6. Farm Operation System for Paddy Rice, 1989

Variety	Planting method	Field blocks	Area covered (ha)	Degree of dist'n	Yield
Sticky rice	Transplanting by machine	20 × 100	1.67	One village	510 kg/10 a
Niigata wase	- ditto -	30 × 100	0.45	same	326.7 kg/10 a
H 101	same	30 × 100	0.32	same	487.5 kg/10 a
Todoroki wase	same	20 × 100	1.37	same	509.5 kg/10 a
Koshihikari	same	30 × 100	8.0	same	510 kg/10 a

Table 7. Farm Operation System

Name of op'n.	Period	Mat. amount (kg)	Power source	Machine/ emp.	Total op'n. (hr)	Fuel consumption
Box nursery	4/5–5/16	612	Electric	Nursery machine	400	
Plowing	4/7–4/26		Tractor	Rotary	2,400	5 liter/hr
Basal fert.	4/26–5/16		Tractor	Broadcaster	12	5 liter/hr
Transplanting	5/2–5/15		Transplanter		2,400	1 liter/hr
Weeding	4/26–6/13		Blower		80	1 liter/hr
Top dressing	7/16–8/8				80	
Spraying	7/26–8/4				8	
Water mgt.	4/26–8/15		Pump			
Harvesting	8/29–9/29		Combine		120	4 liter/hr

Table 8. Farm Income and Expenditures, 1989

Items	Amount (¥)
A. Revenue	
Rice sales	19,781,000
B. Expenditures	
1. Fixed cost of farm machineries	3,542,890
2. Tenant fee	3,418,000
3. Rental fee	8,000
4. Fertilizers	460,000
5. Chemicals	1,085,750
6. Fuel and oil	413,640
7. Others	1,500,000
Total	(10,428,280)

Profit (Net income) = Total revenue – Total expenses
= 19,781,000 – 10,428,280
= 9,352,720

Return on Investment (ROI) = Profit/total expenses

$$= \frac{9,352,702}{10,428,280} \times 100$$

= 89.6%

Table 9. Trial Calculation for the Service Charge of Tractor (25 PS Model)

Items of estimate	Proposal	Remarks
1. Price of tractor (¥)	2,220,000	26 PS
2. Yearly fixed cost (¥)	546,120	24.6% of Price
3. Total work-hour/yr	150	
4. Performance (ha/hr)	4.27	
5. Fixed cost of tractor (¥/hr)	3,640.8	
6. Fuel cost (diesel) (¥/hr)	504.7	7 liter/hr, @¥72.1/liter
7. Lubricant (¥/hr)	151.41	30% of fuel cost
8. Operator wage (¥/h)	800	
Total cost (¥/hr)	5,096.91	

Calculation Table			
hr/yr	Cost/hr (¥)	ha/yr	Cost/ha (¥)
10	59,708.91	1	567,884
20	32,402	1.5	385,844
30	23,300	2	294,824
40	18,749	2.5	240,212
50	16,018	3	203,804
60	14,198	3.5	177,798
70	12,898	4	158,294
80	11,922	4.5	143,124
90	11,164	5	130,988
100	10,557	5.5	121,058
110	10,061	6	112,784
120	9,647	6.5	105,782
130	9,296	7	99,781
140	8,996	7.5	94,580
150	8,736	8	90,029
160	8,509	9	82,444
170	8,308	10	76,376

180	8,130	11	71,411
190	7,970	12	67,274
200	7,826	13	63,772
250	7,280	14	60,772
300	6,916	15	58,172
350	6,656	16	55,896
400	6,461	17	53,888
450	6,309	18	52,104
500	6,188	19	50,507
		20	49,072
		22	46,587
		24	44,519
		26	42,768
		28	41,268
		30	39,968

Table 10. Trial Calculation for the Service Charge of 8-Row Rice Transplanter

Items of estimate	Proposal	Remarks
1. Price of transplanter (¥)	2,000,000	
2. Yearly fixed cost (¥)	708,000	
3. Operation (hrs/yr)	80	
4. Performance (hrs/ha)	18.87	
5. Fixed cost per hour (¥)	8,850	
6. Fuel cost (¥/hr)	120	1 liter/hr @¥120/liter
7. Lub cost (¥/hr)	36	30% of fuel cost
8. Operation wage (¥/hr)	800	
Total cost (¥/hr)	9,806	

Calculation Table			
hr/yr	Cost /hr (¥)	ha/yr	Cost/hr (¥)
10	80,606	1	893,039
20	45,206	1.5	657,039
30	33,406	2	539,039
40	27,506	2.5	468,239
50	23,966	3	421,039
60	21,606	3.5	387,325
70	19,920	4	362,039
80	18,656	4.5	342,372
90	17,673	5	326,639
100	16,886	5.5	313,766
110	16,242	6	303,039
120	15,706	6.5	293,962
130	15,252	7	286,182
140	14,863	7.5	279,439
150	14,526	8	273,539
160	14,231	9	263,706
170	13,971	10	255,839
180	13,739	11	249,403
190	13,532	12	244,039
200	13,346	13	239,500
250	12,638	14	235,610
300	12,166	15	232,239
350	11,829	16	229,289
400	11,576	17	226,686
450	11,379	18	224,372
500	11,222	19	222,302
550	11,093	20	220,439
600	10,986	22	217,221
		24	214,539
		26	212,269
		28	210,325
		30	208,639

Table 11. Trial Calculation for the Service Charge of 3-Row Combine

Items of estimate	Proposal	Remarks
1. Price of combine (¥)	3,620,000	
2. Yearly fixed cost (¥)	818,120	
3. Operation hours/year	100	
4. Performance (hrs/ha)	10	
5. Fixed cost per hour (¥)	8,181.12	
6. Fuel cost per hour (¥)	288	4 liter/hr ¥72/liter
7. Lubrication cost (¥/hr)	86.4	30% of fuel cost
8. Operator wage (¥)	800	
Total cost (¥/hr)	9,355.60	

Calculation Table			
hr/yr	Cost/hr (¥)	ha/yr	Cost/ha (¥)
10	119,186.00	1.0	1,191,864
20	78,280	1.5	919,157
30	64,645	2.0	782,804
40	57,827	2.5	700,992
50	53,736	3.0	646,451
60	51,009	3.5	607,492
70	49,061	4.0	578,274
80	47,600	4.5	555,548
90	46,464	5.0	537,368
100	45,555	5.5	522,493
110	44,811	6.0	510,097
120	44,192	6.5	499,608
130	43,667	7.0	490,618
140	43,218	7.5	482,827
150	42,828	8.0	476,009
160	42,487	9.0	464,646
170	42,186	10	455,556

180	41,191	11	448,118
190	41,680	12	441,921
200	41,465	13	436,676
250	40,646	14	432,181
300	40,101	15	428,285
350	39,711	16	424,877
400	39,319	17	421,869
450	39,192	18	419,195
500	39,010	19	416,803
		20	414,650
		22	410,931
		24	407,832
		26	405,210
		28	402,962
		30	401,015

Table 12. Trial Calculation for the Service Charge of Fully Automatic Recirculating Type Dryer

Items of estimate	Proposal	Remarks
1. Price of dryer (¥)	2,060,000	42 koku capacity
2. Yearly fixed cost (¥)	366,680	
3. Operation hours per year	300	
4. Performance (hrs/ha)	16.9	
5. Fixed cost per hour	1,222.3	
6. Electricity (¥/hr)	120	2 kw-hr @¥60/kw/hr
7. Kerosene (¥/hr)	105	12 liter/day @¥70/liter
8. Labor wage (¥/hr)	800	
Total cost (¥/hr)	2,247.3	

Calculation Table			
hr/yr	Cost/hr (¥)	ha/yr	Cost (¥/ha)
10	38,915.00	1.0	404,654.0
20	20,581	1.5	282,428
30	14,470	2.0	221,314
40	11,414	2.5	184,646
50	9,581	3.0	160,200
60	8,358	3.5	142,740
70	7,485	4.0	129,644
80	6,830	4.5	119,458
90	6,321	5.0	111,310
100	5,914	5.5	104,643
110	5,580	6.0	99,088
120	5,303	6.5	94,387
130	5,068	7.0	90,357
140	4,866	7.5	86,865
150	4,691	8.0	83,816
170	4,404	10	74,642
180	4,284	11	71,309
190	4,177	12	68,531
200	4,080	13	66,180
250	3,714	14	64,166
300	3,469	15	62,419
350	3,295	16	60,892
400	3,164	17	59,544
450	3,062	18	58,345
500	2,980	19	57,273
		20	56,308
		22	64,642
		24	53,253
		26	52,077
		28	51,070
		30	50,197

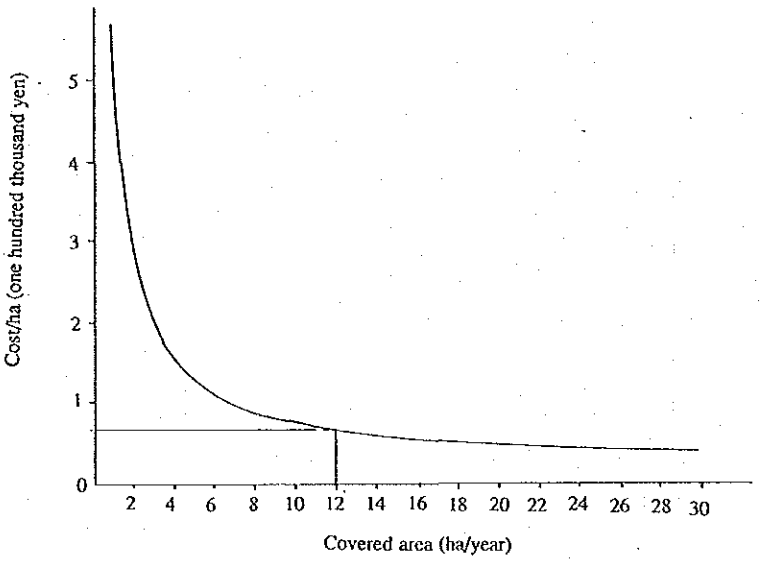


Fig.1. Cost Analysis of Tractor 26 PS

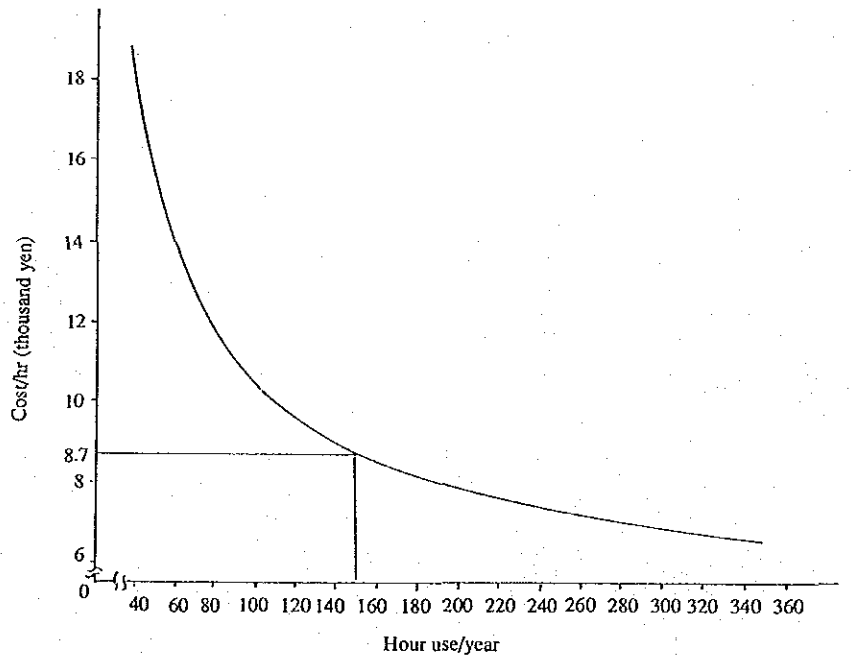


Fig. 2. Cost Analysis of Tractor 26 PS

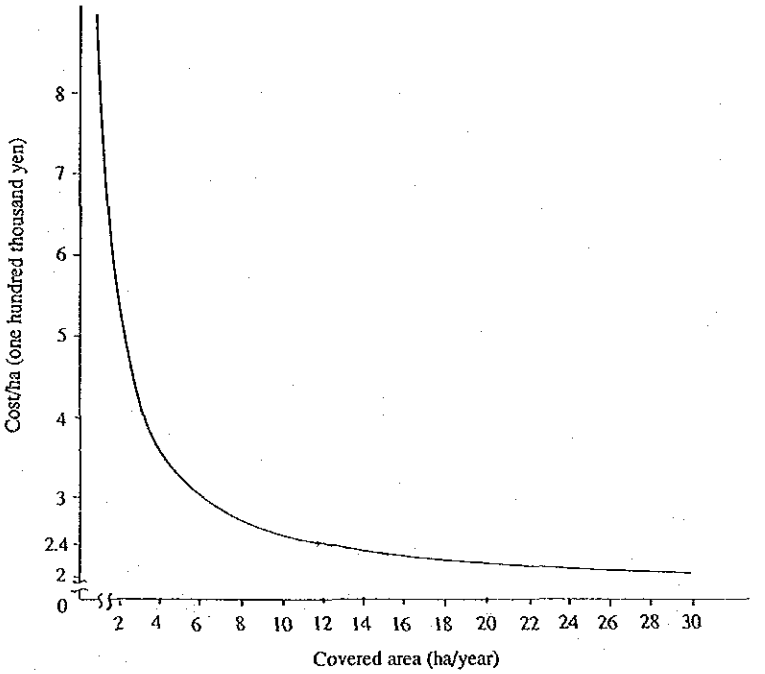


Fig. 3. Cost Analysis of Transplanter, 8-Row Riding Type

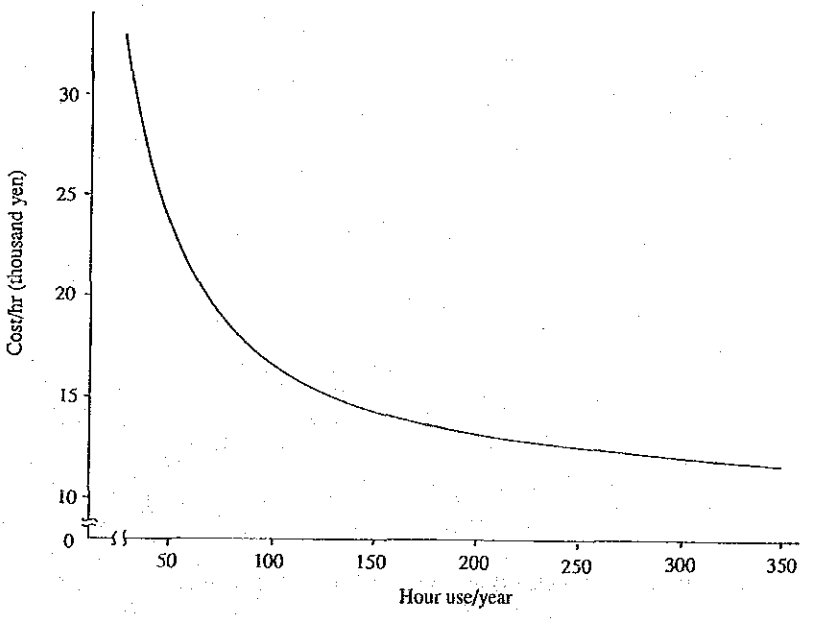


Fig. 4. Cost Analysis of Transplanter, 8-Row Riding Type

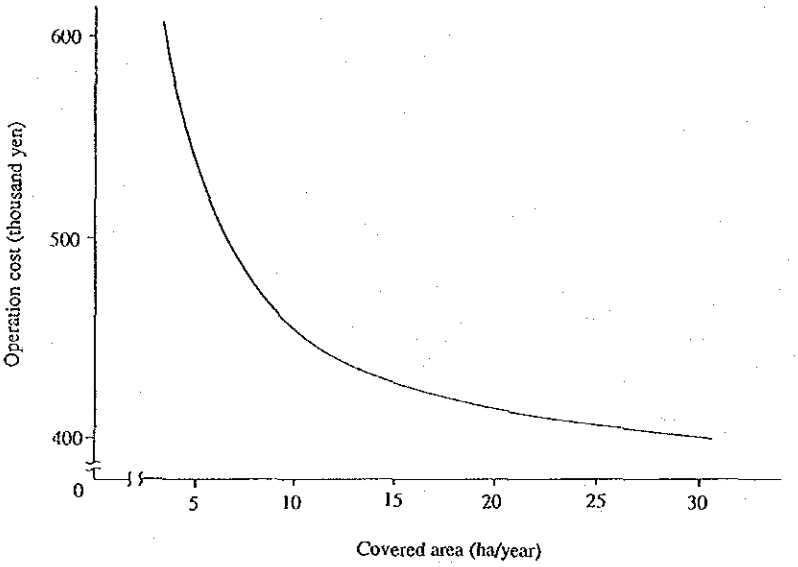


Fig. 5. Cost Analysis of 3-Row Combine Harvester

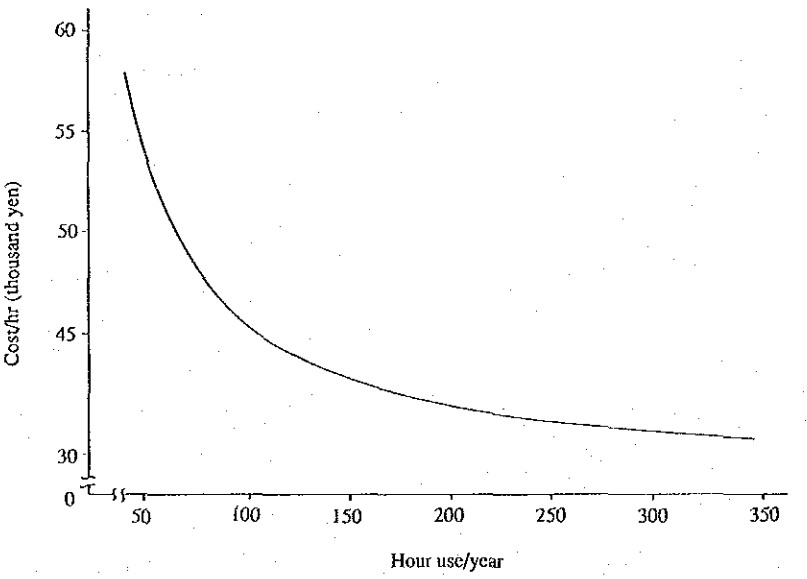


Fig. 6. Cost Analysis of 3-Row Combine Harvester

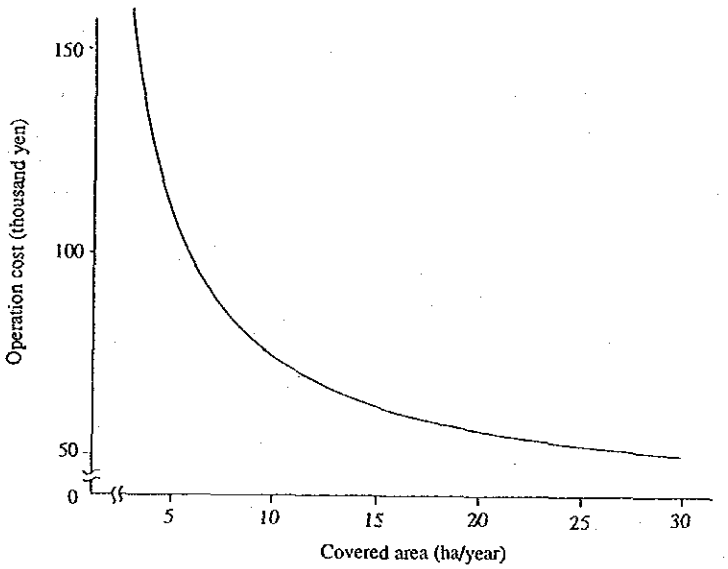


Fig. 7. Cost Analysis of Fully Automatic Recirculating Type Dryer

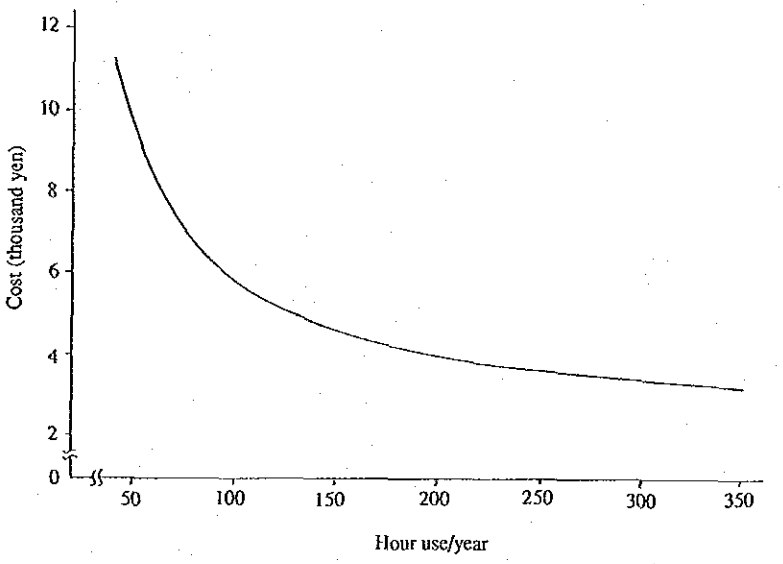


Fig. 8. Cost Analysis of Fully Automatic Recirculating Type Dryer

Report on the Farm Household

by Saad Ali El Hadad (Iraq)
Mohamed Ali Elamin (Sudan)

REPORT ON THE FARM HOUSEHOLD PRACTICE

by Saad Ali El Hadad (Iraq)
Mohamed Ali Elamin (Sudan)

INTRODUCTION

This practice was held within the period from August 6th to August 11th in Niigata Prefecture as a leading area in rice production. It was successfully supervised by Mr. Tsujimoto and Mr. Hasegawa. Our host farmer is living in Shiozawa town namely in Takehashinden village. We would like here to express our thanks and gratitudes to our host farmer and to all members of his family for their kind hospitality and for allowing us to live among them sharing their own house-facilities.

This practice was one of the most interesting subjects of Farm Mechanization Course. Mainly because it was the only chance through which we were able to gain good knowledge about the Japanese agricultural system (farm management, machinery utilization, ... etc.) and the farmer's daily life practices, in spite of the very short duration and the difficulty in communication with the farmer due to language problems. However our host farmer was kindly able to answer our questioner through his brother's help, Mr. Akira who speaks English - and to whom we express our thanks for sparing the whole period to help us in our daily communications.

The following pages covers our questioner data and the some analysis of the farming system.

SCHEDULE AND ACTIVITIES OF THE FARM HOUSEHOLD

Date	Activities
August 6, 1990	- Trip to Niigata prefecture.
	- Courtesy visit to Niigata prefecture chamber of agriculture.
	- Welcome meeting.
	- Courtesy visit to the department of Niigata agricultural perfectural government.
	- Depaparture to our farmer's home (Shiozawa).
August 7, 1990	- Visit to Shiozawa city office.
	- Visit to Shiozawa city agricultural office
	- Observation at Shiozawa country elevator.
	- Observation at Shiozawa traditional textile museum.
	- Observation at Uonto temple.
	- Observation at Okutadami dam.
August 8, 1990	- Introduction and orientation of the farmer's business: (Kaiware factory, machinery, dryer, and rice seedling nursery).
	- Work in the Kaiware factory.
August 9, 1990	- Work in the field.
August 10, 1990	- Leave the farmer house for Nagaoka.
	- Evaluation meeting.
	- Sayonara party.
August 11, 1990	- Leave Nagaoka for TBIC.

HEAD OF FARM HOUSEHOLD

Name:	Mr. Mamoru Fueki
Age:	46
Address:	Takeho-Shinden, Shiozawa-machi, Minami-Uonuma-gun, Niigata-ken
Tel:	949-64
Date of stay:	August 6 - August 10, 1990
Interviewers:	Mr. Saad Ali Al Hadad, and Mr. Mohamed Ali El Amin

MEMBERS OF THE FARM HOUSEHOLD DURING THE STAY

Name	Sex	Age	Relation	Occupation	Education
Mamoru Fueki	Male	46	Head	Farmer	High school
Toshiko Fueki	Female	42	Wife	Teacher	High school
Fusa Fueki	Female	78	Mother	Household	—
Kenichi Fueki	Male	21	Son	Assistant	High school
Tatsuya Fueki	Male	16	Son	Student	High school
Mika Fueki	Female	15	Daughter	Student	High school
Aki Fueki	Female	12	Daughter	Student	Primary school

LAND TENURE

1. Paddy Rice occupied by the Household, 1989

Parameter	
1. Area owned (ha)	3.92
2. Area rented from outside (ha) a) Years leased (years) b) Rent fee (kg/year/ha)	1.41 10 2.55 × 60
3. Land tax (¥/year)	2,949,000

Parameter	
4. Cost of chemicals (¥/year)	236,740
5. Cost of fertilizer (¥/year)	576,720
6. Yield (Average brown rice) (kg/ha)	4,762.97

2. Other than Paddy Rice

Upland field area: 0.165 are
Mountain & forest: 5.94 are
Land for house: 9.9 are

CAPITAL ASSETS IN THE FORM OF MACHINERY, 1989

Name of machine	Model	Total work (hr/yr)	Year bought	Price (¥)	Total work (ha)	Efficiency (%)
Tractor	25.5	168.23	1989	2,500,000	4.78	79.32
Transplanter	5/row	1,123	1987	1,300,000	4.78	47.60
Mist sprayer	—	64	1983	200,000	—	—
Power sprayer	—	—	1985	80,000	—	—
Combine	3/row	320	1988	2,500,000	4.78	75%
Dryer	45/koku	—	1988	1,300,000	—	—
Dryer	40/koku	—	1989	1,100,000	—	—
Husker	—	—	1983	460,000	—	—
Farm truck	2/ton	—	1985	1,700,000	—	—
Small truck	—	—	1983	1,400,000	—	—
Small truck	—	—	1989	—	—	—
Car	2000 cc	—	—	3,000,000	—	—
Car	2000 cc	—	—	1,500,000	—	—

Name of machine	Model	Total work (hr/yr)	Year bought	Price (¥)	Total work (ha)	Efficiency (%)
Nursery machine	—	—	1988	1,300,000	—	—
Rotary	—	—	1989	450,000	—	—
Teeth harrow	—	—	1989	—	—	—
Total investment	—	—	—	18,340,000	—	—

Machinery facilites cost without depreciation 52,186,000 ¥/year
Depreciation 10,564,000 ¥/year

MAIN FARM VARIABLE EXPENSES FOR RICE, 1989

Main input	Yearly application (kg)	Total cost/yr (¥)
Seed	133.25	(own)
Herbicide	—	179,300
Fertilizer	—	576,720
Pest & disease control	—	89,440
Total		845,460

OPERATION SYSTEM

Name of operation	Period	Total operation (hr)
Nursery box	4/8 – 5/25	6,400
Plowing	5/3 – 5/8	168
Plowing	5/18 – 5/23	—
Basal fertilizer	5/15	4
Transplanting	5/23 – 5/31	112

Name of operation	Period	Total operation (hr)
Weeding	6/25 – 7/5	320
Top dressing	7/20 – 7/25	24
Top dressing	8/10 – 8/17	—
Spraying	7/15 – 7/25	64
Spraying	3/7 – 8/15	—
Water management	5/23 – 7/10	120 (irrigation)
Water management	7/10 – 7/25	— (mid-sumer/dr.)
Water management	7/25 – 8/31	— (intermed./dr)
Water management	8/31 – 1/9	— (residual/dr.)
Harvesting	9/15 – 10/5	320
Total		7,532

FARM OPERATION SYSTEM, 1989

Cultivation and Crop Condition:

Variety	Planting method	Area (ha)	Covered area	Degree of field distribution	Yield (kg)
Koshihikari	Transplanting	0.30	0.30	4	1,440
"	"	0.22	0.22	4	990
"	"	0.25	0.25	4	1,125
"	"	0.23	0.23	4	1,035
"	"	0.20	0.20	2	960
"	"	0.20	0.20	2	960
"	"	0.20	0.20	2	960

Variety	Planting method	Area (ha)	Covered area	Degree of field distribution	Yield (kg)
"	"	0.05	0.05	2	240
"	"	0.10	0.10	1	540
"	"	0.10	0.10	1	540
"	"	0.10	0.10	1	540
"	"	0.10	0.10	1	540
"	"	0.10	0.10	1	540
"	"	0.20	0.20	1	1,080
Todoroka	"	0.14	0.14	0.1	756
"	"	0.10	0.10	0.1	450
"	"	0.15	0.15	0.1	810
Radish	"	0.45	0.45	0.1	—
Koshihikari	"	0.13	0.13	0.1	702
"	"	0.20	0.20	0.05	1,080
"	"	0.15	0.15	0.05	810
"	"	0.15	0.15	0.05	810
Fish carp	"	0.10	0.10	0.05	—
Todoroka	"	0.10	0.10	1	540
"	"	0.10	0.10	1	540
"	"	0.10	0.10	1	540
"	"	0.08	0.08	1	432
Koshihikari	"	0.35	0.35	0.5	1,390
"	"	0.35	0.35	2	1,595
"	"	0.33	0.33	0.05	1,782
Total		5.33	5.33		22,767

Paddy rice area 5.33 – 00.55 = 4.78

Yield (kg/ha) 22,767/4.78 = 4,762.97

Degree of field distribution = Distance from house (km)

TOTAL SELLING AMOUNT

Sales of Crops and Others, 1989:

Name of crop	Amount (¥)
Rice	8,810,000
Vegetables (Kaiwre)	118,490,000
Others (Nursery seedlings)	28,000,000
Total	155,300,000

EXPENDITURE

Item	Amount (¥)
Machinery, facilities without dep.	52,186,000
Depreciation	10,564,000
Wages	26,735,000
Interest payment	3,875,000
Tenant fee	2,949,000
Others	3,583,500
Total	99,892,500

FARMING BUSINESS EVALUATION: (Total Business)

Profit = 155,300,000 - 99,892,500 = 55,407,500 yen

Return on investment = 55,407,500 / 99,892,500 = 55.47%

Paddy Rice only:

Cost of production = 50% of sales = 4,405,000 yen

Return on investment = 4,405,000 / 4,405,000 = 100%

Vegetable (Kaiware):

Cost of production = 90% = 118,490,000 / 100 x 90 = 106,410,000 yen
Return on investment = 12,080,000 / 106,410,000 = 11.35%

Others (Nursery Seedlings):

Cost of production = 40% = 28,000,000 / 100 x 40.= 11,200,000 yen
Return on investment = 16,800,000 / 11,200,000 = 150%

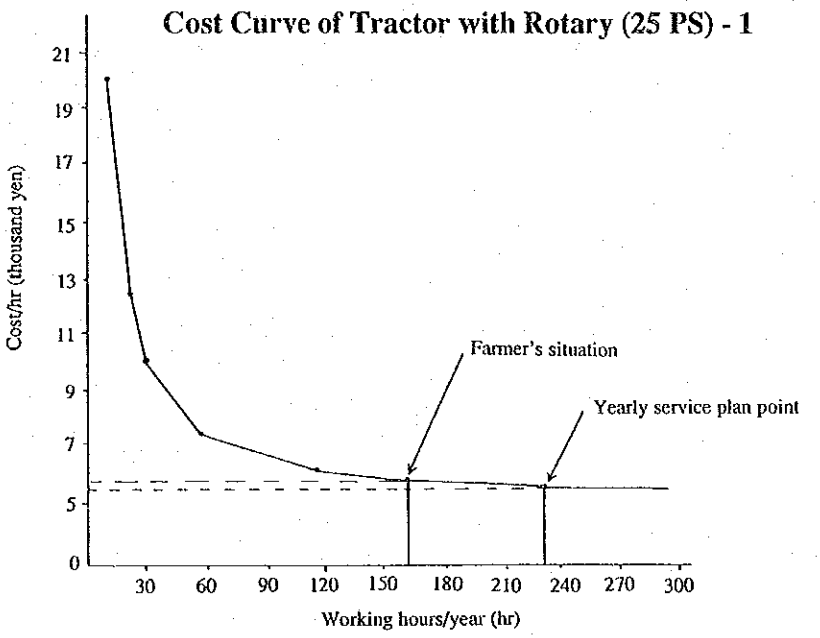
ECONOMICAL EVALUATION OF MACHINERY UTILIZATION

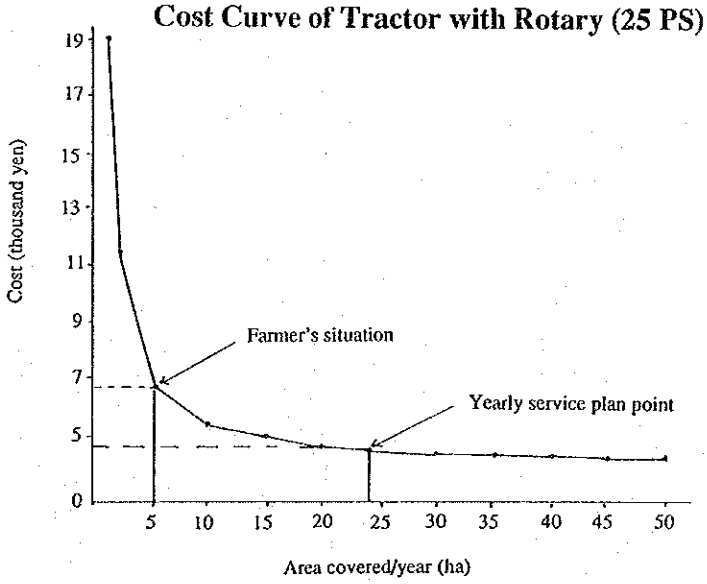
1. Tractor with Rotary

Calculation	Amount	Remarks
Purchase price (Tracter) (¥)	2,500,000	25 PS
Yearly fixed cost (¥/yr)	615,000	26.4%
Yearly operation (hr)	168	
Purchase price (Rotary) (¥)	450,000	
Yearly fixed cost (¥/yr)	152,100	33.8%
Performance (hr/ha)	8.3	
Fixed cost/hour (Tracter) (¥/hr)	3,660.7	
Fuel cost/hour (Diesel) (¥/hr)	490	7 liter/hr 70 yen/liter
Lubricant cost (¥/hr)	147	30% of fuel
Operater wages (¥/hr)	800	
Total cost/hour (¥/hr)	5,097.7	

Cost Curve Calculation

Cost per hours		Cost per ha	
Yearly operation hours (hr)	Cost (¥)	Yearly operation area (ha)	Cost (¥)
10	20,307.7	1	194,410.9
20	12,702.7	2	118,360.9
30	10,176.7	3	93,010.9
40	8,900.2	4	80,335.9
50	8,139.7	5	72,730.9
60	7,632.7	6	67,660.0
70	7,270.5	7	64,039.4
80	6,998.9	8	61,323.4
90	6,987.7	9	59,210.9
100	6,618.7	10	57,520.9
120	6,365.2	11	56,136.2
140	6,184.1	12	54,985.9
160	6,048.3	15	52,450.9
180	5,942.7	20	49,415.9
200	5,858.2	25	48,394.9
220	5,789.1	30	47,380.9
240	5,731.4	35	46,656.6
260	5,682.7	40	46,113.4
280	5,640.9	45	45,690.9
300	5,604.7	50	45,252.9


Cost Curve of Tractor with Rotary (25 PS) - 1
Cost/hr (thousand yen)
21
19
17
15
13
11
9
7
5
0
Farmer's situation
Yearly service plan point
30
60
90
120
150
180
210
240
270
300
Working hours/year (hr)


Cost Curve of Tractor with Rotary (25 PS) - 2
Cost (thousand yen)
19
17
15
13
11
9
7
5
0
Farmer's situation
Yearly service plan point
5
10
15
20
25
30
35
40
45
50
Area covered/year (ha)

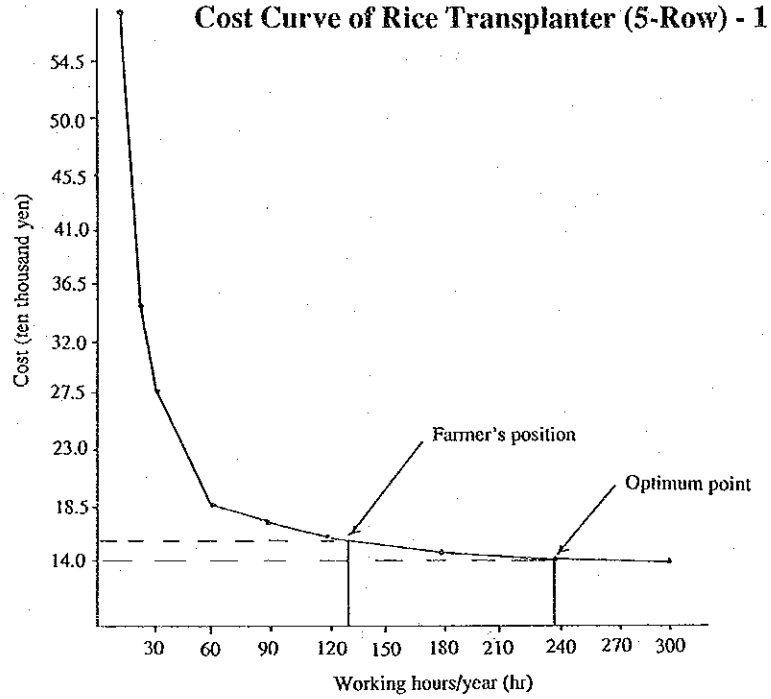
2. Transplanter

Calculation	Amount	Remarks
Purchase price (¥)	1,300,000	5 row
Yearly fixed cost (¥/yr)	460,000	35.4%
Yearly operation (hr)	112	
Performance (hr/ha)	10	
Fixed cost/hour (¥/hr)	11,607.1	
Fuel cost (Diesel) (¥/hr)	175	2.5 liter/hr 70 yen/liter
Lubricant cost (¥/hr)	52.5	30% of fuel cost
Operator wages (¥/hr)	800	
Total cost/hour (¥/hr)	12,634.6	

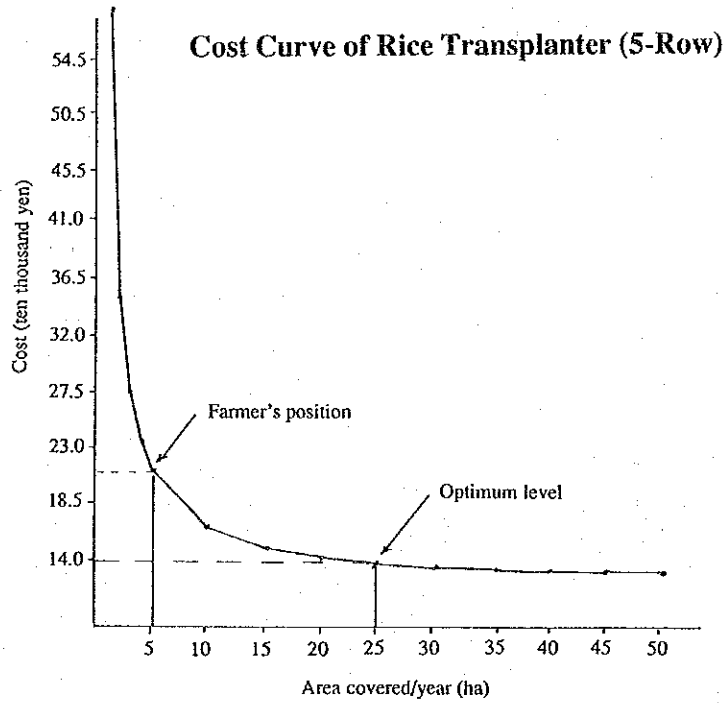
Cost Curve Calculation

Cost per hours		Cost per ha	
Yearly operation hours (hr)	Cost (¥)	Yearly operation area (ha)	Cost (¥)
10	58,654.6	1	586,546
20	35,644.6	2	356,446
30	27,974.4	3	279,746
40	24,139.6	4	241,396
50	21,838.6	5	218,386
60	20,304.6	6	203,046
70	19,208.9	7	192,088
80	18,387.1	8	183,871
90	17,747.9	9	177.479
100	17,236.6	10	172,366
120	16,469.6	11	168,182
140	15,921.7	12	164,696
160	15,510.8	15	157,026
180	15,191.2	20	149,356
200	14,935.6	25	144,394
220	14,726.4	30	141,686
240	14,552.1	40	137,851
260	14,404.6	45	136,572.6
280	14,278.1	50	135,550
300	14,168.6	35	139,494.5

Cost Curve of Rice Transplanter (5-Row) - 1



Cost Curve of Rice Transplanter (5-Row) - 2

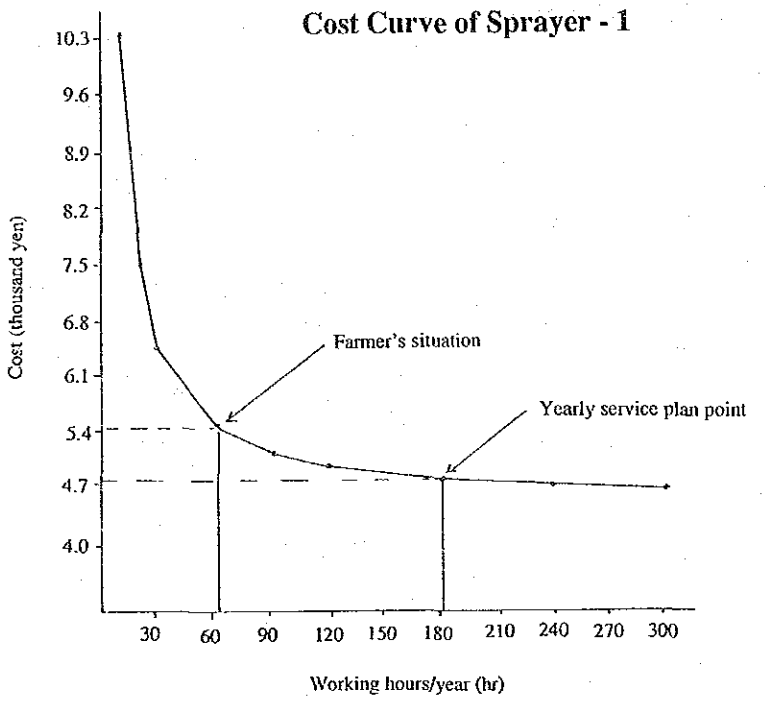


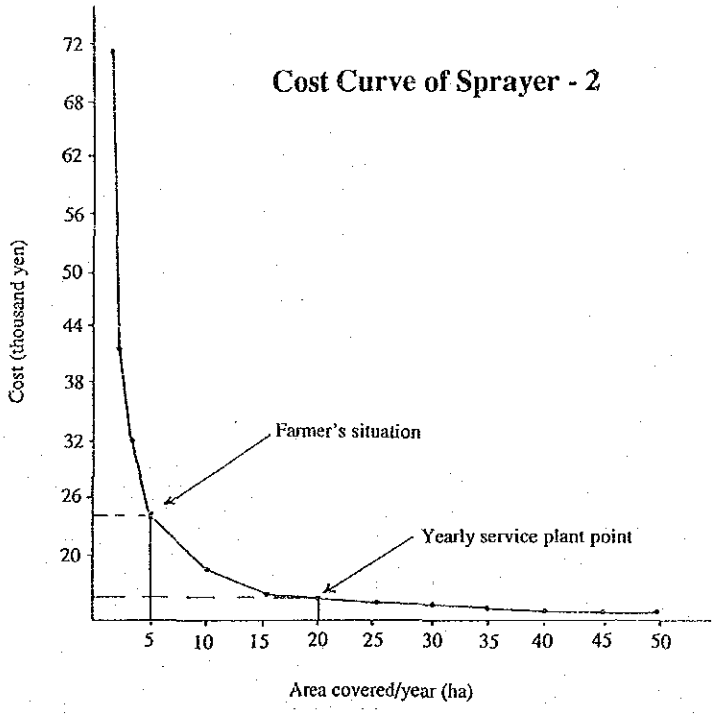
3. Sprayer

Calculation	Amount	Remarks
Purchase price (¥)	200,000	
Yearly fixed cost (¥/yr)	59,200	29.6
Yearly operation (hr)	64	
Performance (hr/ha)	2.86	
Fixed cost/hour (¥/hr)	3,125	
Fuel cost (Diesel) (¥/hr)	490	7 liter/hr 70 yen/liter
Lubricant cost (¥/hr)	147	30% of fuel cost
Operator wages (¥/hr)	800	
Total cost/hour (¥/hr)	4,562	

Cost Curve Calculation

Cost per hours		Cost per ha	
Yearly operation hours (hr)	Cost (¥)	Yearly operation area (ha)	Cost (¥)
10	10,482	1	72,247.3
20	7,522	2	42,647.3
30	6,535.3	3	32,780.6
40	6,042	4	27,847.3
50	5,746	5	24,887.3
60	5,548.6	6	22,913.9
70	5,407.7	7	21,504.5
80	5,302	8	20,447.3
90	5,219.7	9	19,625
100	5,154	10	18,967.3
120	5,055.3	11	18,429.1
140	4,984.8	12	17,980.6
160	4,932	15	16,993.9
180	4,890.8	20	16,007.3
200	4,858	25	15,415.3
220	4,831	30	15,020.7
240	4,808.6	35	14,738.7
260	4,789.7	40	14,527.3
280	4,773.4	45	14,362.8
300	4,759.3	50	14,231.3


Cost Curve of Sprayer - 1
Cost (thousand yen)
10.3
9.6
8.9
8.2
7.5
6.8
6.1
5.4
4.7
4.0
Farmer's situation
Yearly service plan point
30
60
90
120
150
180
210
240
270
300
Working hours/year (hr)

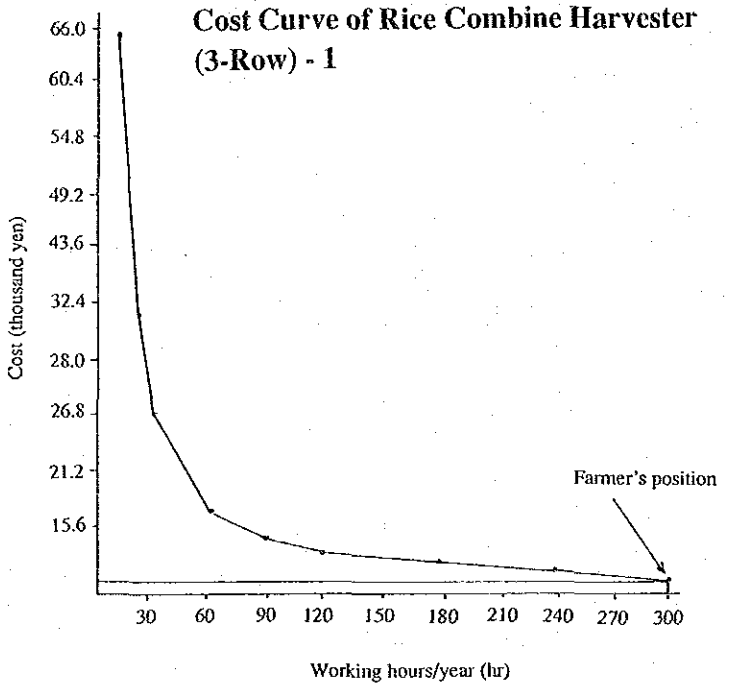

Cost Curve of Sprayer - 2
Cost (thousand yen)
72
68
62
56
50
44
38
32
26
20
Farmer's situation
Yearly service plant point
5
10
15
20
25
30
35
40
45
50
Area covered/year (ha)

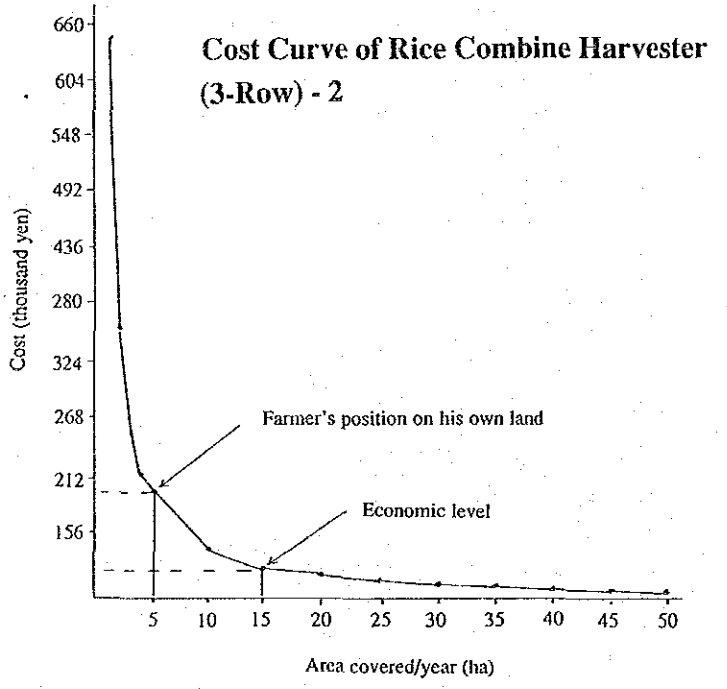
4. Rice Combine Harvester

Calculation	Amount	Remarks
Purchase price (¥)	2,500,000	3 row
Yearly fixed cost (¥/yr)	565,000	22.6%
Yearly operation (hr)	320	
Performance (hr/ha)	19	
Fixed cost/hour (¥/hr)	7,812.5	
Fuel cost (Diesel) (¥/hr)	280	4 liter/hr. 70 yen/liter
Lubricant cost (¥/hr)	84	30% of fuel
Operator wages (¥/hr)	800	
Total cost/hour (¥/hr)	8,976.5	

Cost Curve Calculation

Cost per hours		Cost per ha	
Yearly operation hours (hr)	Cost (¥)	Yearly operation area (ha)	Cost (¥)
10	65,476.5	1	654,765
20	37,226.5	2	372,265
30	27,809.8	3	278,098.3
40	23,101.5	5	202,765
50	20,276.5	6	183,931.6
60	18,393.2	7	170,479.2
70	17,047.9	8	160,390
80	16,039.0	9	152,542.7
90	15,254.2	10	146,265
100	14,626.5	11	141,128.3
120	13,684.8	15	127,431.6
140	13,012.2	20	118,015
160	12,507.7	25	112,365
180	12,115.3	30	108,598.3
200	11,801.5	35	105,907.8
220	11,544.7	40	103,890
240	11,330.6	45	102,320.6
260	11,149.5	50	101,065
280	10,994.3	12	136,848.3
300	10,859.8	4	231,015


Cost Curve of Rice Combine Harvester
(3-Row) - 1
66.0
60.4
54.8
49.2
43.6
32.4
28.0
26.8
21.2
15.6
Cost (thousand yen)
Farmer's position
30
60
90
120
150
180
210
240
270
300
Working hours/year (hr)


Cost Curve of Rice Combine Harvester
(3-Row) - 2
660
604
548
492
436
280
324
268
212
156
Cost (thousand yen)
Farmer's position on his own land
Economic level
5
10
15
20
25
30
35
40
45
50
Area covered/year (ha)

COST CURVE ANALYSIS AND CONCLUSION

According to the graphs findings our host farmer is generally running his machinery - except the rice combine - at an yearly higher fixed cost rate than the optimum economic level. This increases the machine cost per unit area or per hour, thus increasing the cost of production and decreasing his income resulting in an undue reduced profit out of his farming system. Also he is loosing the opportunity to invest that extra additional cost elsewhere.

Our host farmer is utilizing his rice combine harvester at its best economic level. Although he has only about 5 ha but he is engaged with some other farmers to harvest their crops. His combine is a special type soft combine used to harvest rice for seeds.

For optimum economic level through better utilization of machinery, reduced production cost and high profit, our host farmer has to choose one or a combination of the following alternatives:

1) To own and/or hire in more land.

2) Hire out his machinery beside his farming operations.

3) When purchasing new machinery he is advised to buy smaller, cheaper machines to cope with his farming system.

FARMING SYSTEMS COMPARISON: PARTICIPANT'S FARMERS vs. JAPANESE

1. Sudanese Farmers

The very high standard education level of the Japanese farmer compared to the Sudanese farmer, assist him in better farm management, better machinery utilization and handling, and use of modern agricultural technology.

Japan being a developed country, the farmers do not suffer from the lack of agricultural inputs, specially spare parts, chemicals and fertilizers; as the case in Sudan being a developing country. Beside the big amount of subsidies give to the Japanese farmers compared to that of Sudan.

Much more efforts and work have to be done on irrigation and drainage systems, land improvement, farm roads and other infrastructures in Sudan so as to be comparable with the Japanese farming system.

The machinery fixed cost per year in Japan is very high and constitute the highest percentage of the production cost due to the machine intensive labour system but still the output is very high due to the availability of other inputs. On the other hand the machinery fixed cost per year in Sudan is almost nil and the farmer has to pay only the current machine-operation hiring charges or otherwise its a group farming system supervised by the government. Thus low due to the lack of other inputs.

The total cost of production in Sudan is approximately 50% of the total cost of production of the Japanese farming system/unit area.

The total cost of production in Japan is approximately 50% of the total income while its 65% in Sudan.

The agricultural insurance policy in Japan protects the farmer from risks and uncertainty while both prices of cops and inputs in Sudan are unstable.

2. Farmers from Iraq

In Japan due to execution of land consolidation project and establishment of farm roads irrigation and drainage in the field, it makes an easy way for farmers to operate with a high level of mechanization in all stages of farming systems as paddling or tillage, transplanting or seeding, spraying, weeding, herbicide and pest control; irrigation and drainage, harvesting and transplanting.

In Iraq land consolidation is not like Japan. The soils are in different types and do not have a hard pan soil for paddy field and also different weather but I can say Iraqi farmers also have fully mechanized specially on rice mechanization.

Iraq government wants to improve and give more attention for agriculture development. The situation of Iraqi farmers are also high income per year.

The Survey Report on Farm Household Practice in Niigata Prefecture of Japan

by M. Zamani Bin Hussain (Malaysia)
Choosak Losagulpong (Thailand)

THE SURVEY REPORT ON FARM HOUSEHOLD PRACTICE IN NIIGATA PREFECTURE OF JAPAN

by M. Zamani Bin Hussain (Malaysia)
Choosak Losagulpong (Thailand)

Name of farmer:	Takeshi Saito
Age of farmer:	44 years old
Address:	Honden-Ipponmatsuura, Toyoura-machi, Kita-Kanbara-gun, Niigata-ken, 959-23
Date of stay (interview):	August 6 to 9, 1990

INTRODUCTION

Niigata Prefecture is located in the north west of the Honshu Island. In the past this area was inundated with water and rice cultivation was tough since the soil was very soft and deep to waist high. With better drainage facilities nowadays many of the areas have become agriculturally productive as is evidenced in the cultivation of the best rice variety in Japan is done here.

According to the statistics the best rice variety Koshihikari is now sharing 59% of the production from the total paddy rice area of 139,000 hectares in Niigata, and the cultivation of this variety is expanding in this area.

This survey was conducted on a farm family of Mr. Takeshi Saito at Toyoura-machi in Niigata Prefecture. During the survey period his family consists of mother, wife and three sons. Only the husband and wife were active in farming, all the children were still studying and the mother was already old. Mr. Saito and his wife are a full-time farmer.

The survey was made in the farm of prepared questionnaires and the farmer has to answer the questionnaires by filling in the provided spaces in the format or to fill in a certain related tables for a consecutive related answers. It is from this

questionnaires and answers that some analysis were made in order to understand the farming condition of the farmers.

Besides answering the questionnaires, we had the opportunity to work on the farmers farm, consulting the extension officer, the mayor, the land improvement and the cooperative offices. This opportunity helped us to understand better the structure of the farming system in the Niigata Prefecture. The daily practice of the farm household practice were as follows.

FARM HOUSEHOLD PRACTICE SCHEDULE OF ACTIVITIES

August 6, 1990	-	Arrival in Niigata
	-	Briefing and meet the farmers
	-	Courtesy visit to the Department of Agriculture
August 7, 1990	-	Courtesy visit to the Mayor Office
	-	Visit to the Farmer Cooperative
	-	Visit to the Land Improvement Office
	-	Visit to the Iseki Agricultural Machinery Service Station
August 8, 1990	-	Spraying work in farmers paddy fields
August 9, 1990	-	Visit to the Extension Office
	-	Visit to the Museum of Agriculture
	-	Visit to the Museum of the Landlord
August 10, 1990	-	Visit to the Water Dam
	-	Visit to the Nishikigoi Carp Garden
	-	Evaluation of the homestay
	-	Farewell party

OBSERVATION

The Host Farmer:

Mr. Saito runs his farming business as a company. The company assets and liabilities are shared among the company members. The company is well organized, there is a secretary to run the daily office chores like receiving calls and orders, book keeping, etc. A personal computer is used to process certain office tasks. There is also a factory that belongs to the company. It seems all the farm products are processed in this factory. In the factory, there are 4 big dryers, huskers, rice mill, grading machine and a packaging machine. Besides factory Mr. Saito also has 12 vinyl hoses where the company members grow vegetables. Mr. Saito classifies growing melons as vegetable farming, and melons bring a big income to the company.

The Farm:

Mr. Saito has only 150 ares of land owned by himself. The rest are rented farms. Most of the farms are planted with rice. Some barley and soybean are also planted on a small scale. 920 ares of the paddy fields are planted with the best variety rice Koshihikari, 850 ares are planted with rice variety Akihikari, and 200 ares are planted with a new variety E 101 on a trial basis. Barley occupies 340 ares of the land while melon occupies 80 ares. The rest are for some other varieties of rice.

All the farms have good irrigation, about 810 ares have poor drainage, 825 ares are not yet finished in land reformation and 95 ares are far from farm roads. On the average it seems that most of Mr. Saito farms are about 6 km away from his house. But with good farm roads and easy asses to the farm, it does not pose a problem to him in farming.

Rice Cultivation:

Mr. Saito begins his land preparation work in April, by plowing the land and then followed by basal fertilizer application. In the month of April also he prepares the box nursery and begins the water management. For all his fields the land preparation ended at the end of May, after which transplanting follows. The transplanting operation takes about 15 days. At the end of June to the end of July his paddy field is applied with top dressing fertilizer and then followed by the spraying of fungicide to prevent disease. Then harvesting is normally done in early September.

Mr. Saito's rice farming is highly mechanized, practically there is no manual labour used directly working in the rice field. The three tractors are fully utilized in the daily chores of farming operation like spraying and transportation, besides the basic farm work.

All the nursery are prepared by the company members, and then transplanted in the field by using the 6 rows transplanters. Some of the paddy are directly sowed by using the 6 row direct sowing machine. For harvesting, the three combine harvesters are fully utilized. The rice is then dried in the driers to the specific moisture content for storage and sale later on. Occasionally some rice is also polished and bagged for sale to certain customers who patronize the company.

Machine Utilization and Its Cost:

Rice farming in Japan is highly mechanized, since all farmers use machines. Machinery cost and labor cost are very high as reflected in this survey. But machinery utilization is a must, because there are insufficient labor supply in the farming business. Analysis of this machine utilization and its cost is very essential in order to make good planning of the machinery utilization.

In this survey a trial calculation was made on Mr. Saito's machineries. Wherever a data is not available an assumption is made in order to facilitate the computation. Nevertheless these assumptions are based on the published data for the agricultural machineries for Japanese standards.

Table 8 was constructed from the data of Tables 2 to 6. In Table 8, the values of total in the per hour variable cost row are used as a basis to derive the cost per hour and cost per hectare for the two sets of values of work hour per year and area covered per year. Then after, these values were used to construct the graphs of the machineries considered.

Analyses are made from the graphs to determine the cost of expenditures on the various machines at a standard (normal yearly) working hour of the farmer. Since these values of expenditures from the graphs have already incorporated the other costs such as interest, depreciation, etc., they reflect the total expenditures on the machineries. This is noted in Table 10. Table 9 shows the values obtained from the graphs.

It must be noted here that this analysis is not meant to be a complete study of Mr. Saito's farming business. The return on investment seems to be not realistic because it is a too high percentage. There are several reasons for this to happen and one of them is the insufficient data in the following areas as listed below:

1. The operation cost of the factory
2. The exact fuel consumption cost of the machineries
3. There are other machineries not included in this survey
4. The exact incomes and bonuses of the members of the company
5. The operation cost of the vinyl houses

6. Other inputs cost to the farms such as fertilizers, water, etc.

CONCLUSION

It seems that Mr. Saito has made a good use on the dryer, husker, rotovator, combine harvester and teeth harrow. This is so because the standard work hour per year coincide with the grain at almost the bottom of the graph where the line is almost horizontal. This means the cost of operation per hour is nearly at the lowest. Lowest cost of operation means good utilization and management practice. But for the transplanter and sprayer the standard work hour per year coincide with the graph at a higher level, which means the cost of operation per hour can still be reduced. Mr. Saito should use more on the transplanter and sprayer for good economical utilization and management.

The return on investment is rather high, 117%. If accurate data on the 6 areas as mentioned earlier were available then the return on investment would be more realistic. Nevertheless a very high return on improvement is possible with a very good management and a very active farming.

COMPARISON OF THE JAPANESE FARMERS AND THE PARTICIPANTS' FARMERS

The Malaysian Farmers:

There are three classes of farming in Malaysia, they are i) the small holder farming, ii) the Chinese community farming and iii) the estate farming. The small holder farming is that of the individual farmers, mainly of the Malay race, who are handicapped in many ways in their farming business. The Chinese community farming is that of the individual or group farming, mainly of the Chinese race and their farming business are better of in term of marketing, mechanization and management. The estate farming are those very large farming business owned or run by large companies and are efficient in management, mechanization and very influential in the marketing activities.

It is the small holder farming which is of main concern to the government and particularly to the Ministry of Agriculture. In term of production, the yield of rice is still low in many areas. There is no rice land consolidation in Malaysia, except the irrigation and drainage facilities are provided by the government and they run through the farmer's land. In a new scheme rice farm, which is a new project, the government prepares the land plots properly and the farmers move in to settle there to do rice farming. Malaysia and Japan are facing the same problem of rural to urban emigration of the young generation. In Malaysia many rice fields are abandoned because there is no people to work on the land.

In term of mechanization, the small holder farmers cannot afford to own the machineries, because they are very expensive. Japanese agricultural machineries re small and suitable to the small holder farmers but they are not long lasting and very expensive. 10 years ago some farmers could afford to own these machines but as the yen becomes stronger and the price of machines becomes more expensive the farmers have to work in the old traditional ways. Nevertheless the farmers receive some mechanization service from the government in the form of demonstration and promotion of certain new techniques. Also the farmers cooperatives and some private machines owners provide mechanization services to the farmers at a reasonable charges. It is foreseeable that without mechanization, rice farming in Malaysia will diminish to a very small percentage.

The Thailand Farmers:

In Thailand, the situation of farmers is different so much from Japanese farmers, Thai farmers cannot use kinds of machines, because of the soil condition and land consolidation. The soil do not have a bed pan for paddy field and Thai government has not been able to support and establish the complete irrigation and drainage system. Some area they have to use rainfall alone, according to the nature sometimes it gets flood.

The education is the one reason that deprived Thai farmers to pursue farm mechanization, almost the farmers are only in the elementary level or even illiterate, so it is difficult to guide them on farm mechanization. We look at Japanese farmers the lowest education is high school, so the extension of new technology and related researches are more effective and faster.

By the Japanese government the price of rice is fixed at the high price, mean high income for farmers, so they can get enough farm machine to manage their farm. Compare with Thai farmer, they can get average income at the poverty line, it is difficult to use machine in their field. They way to reduce the field fixed cost prefer normal labour. That is the other reason why Thai farmers do not have technology to utilize the farm machine.

In Japan the cooperatives have grown stronger and more stable with the years, all farmers have believed in cooperatives. One hundred percent of the total farmers are the members of cooperatives. All agricultural products are sold to cooperatives and cooperatives offer innumerable assistance to farmers, ranging from loan, insurance protection, large community agricultural facilities. This situation is very extreme and contrasting from my country, Thai farmers do not trust cooperatives. A few farmers are the member of cooperatives, in this case the cooperatives are not strong enough to help the farmers by supporting the price of agricultural products and assistance other to farmers.

In generally it can be said that Japanese farmers have high standard of living and their lives are better than Thai farmers.

Overall View:

We have found that this farm household practice is very useful in understanding the farming business of Japanese farmers. Our report is very brief due to the lack of accurate data and insufficient survey time. But with a good

guidance from the training instructors this report can be of much value both to the participants and to the farmers.

We express our sincere thanks to the host family for the very good cooperation in preparing this report, and deepest gratitude for accepting us to stay in their home

Table 1. Member of the Company during the Farmstay

Name	Sex	Age	Relation	Occupation	Education	Remarks
1. Mr. Saito	Male	44	Head	Farmer	High school	
2. Ms. Yuriko	Female	44	Wife	Farmer	High school	
3. Mr. Watanabe	Male	37	Member	Farmer	High school	
4. Mr. Yoshiyuki Nozaki	Male	36	Member	Farmer	High school	
5. Mr. Massashi	Male	30	Member	Farmer	High school	
6. Mr. Naoe Iwachi	Male	30	Member	Farmer	High school	

Table 2. Land Tenure (Paddy Rice Area occupied by the Household)

Parameter	Unit	Total
1. Area owned	150 are	150 are
2. Rented area from outside a) Years leased b) Rented fee	10 year 47,000/10 are/year	1990 are
3. Cost of land consolidation Land tax Water rate (I and D) Cost of chemical Cost of fertilizer	— — — — —	— — — — —
4. Yield	91,650 kg	91,650 kg

Table 3. Capital Asssets in the Farm Machineries, 1989

Name of machine	Model	Total work (hr/yr)	Year bought	Price (¥)	Repair cost	Depreci-ation per year	Main operation	Total work area	Utilization efficiency
Tractor	50 HP	250	1989	4,250,000	297,500	531,250	Head	—	—
Tractor	37 HP	200	1984	3,900,000	273,000	487,500	Member	—	—
Tractor	27 HP	200	1984	3,000,000	210,000	375,000	Member	—	—
Transplanter	8 HP	100	1986	1,800,000	149,940	360,000	Head	—	—
Transplanter	6 HP	100	1987	1,200,000	99,960	240,000	Member	—	—
Transplanter	6 HP	100	1987	1,200,000	99,960	240,000	Member	—	—
Direct seeder	6 HP	100	1988	360,000	14,400	72,000	Member	21.4	—
Mist sprayer	—	70	1982	75,000	3,000	150,000	Head	21.4	—
Power sprayer	5 HP	80	1987	105,000	4,200	21,000	Member	21.4	—
Power sprayer	5 HP	80	1987	105,000	4,200	21,000	Member	21.4	—
Combine harvester	4 row	200	1987	5,400,000	270,000	675,000	Head	21.4	—
Combine harvester	4 row	200	1984	4,300,000	215,000	573,500	Member	21.4	—
Combine harvester	3 row	160	1984	3,600,000	180,000	450,000	Member	21.4	—
Dryer	43 koku	310	1984	1,500,000	22,500	—	Member	21.4	
Husker	260 ton	230	1984	600,000	9,000	—	Head	21.4	
Truck	2 ton	200	1984	1,750,000	87,500	350,000	Member	—	
Truck	3 ton	300	1986	1,400,000	70,000	280,000	Member	—	
Truck	3 ton	300	1986	1,400,000	70,000	280,000	Member	—	
Rotovator	—	200	1984	550,000	34,375	110,000	—	25.6	
Rotovator	—	200	1984	550,000	34,375	110,000	—	25.6	
Rotovator	—	200	1984	550,000	34,375	110,000	—	25.6	
Teeth harrow	—	180	1984	300,000	8,010	60,000	—	25.6	
Teeeth harrow	—	180	1984	300,000	8,010	600,000	—	25.6	
Lime sower	—	20	1984	250,000	5,000	50,000	—	25.6	

Table 4. Main Farm Variable Expenses for Rice, 1989

Variable inputs	Yearly application	Total cost
1. Seeds	7,704 kg	
2. Fertilizer a) Basal fertilizer i) Paste ii) Saotome b) Top dressing i) Oru ii) Haigo c) Application per 10 ares	 1,600 kg 1,200 kg 1,600 kg 2,200 kg	 ¥1,200,000 ¥1,036,000
3. *Chemicals* a) Gasoline b) Diesel c) Lubrication oil		
5. Crop insurance	None	
Total		¥3,806,000

Table 5. Year 1989 Sale of Crops

Kind of crops	Field area	Yield per 10 are (kg)	Total yield (kg)	Price per kg (¥)	Total price (¥)
1. Rice	2,140	428.3	91,680	455.7	41,779,0000
2. Melon	80	—	—	—	4,600,000
3. Soybean	—	—	—	—	220,000
4. Barley	340	300	10,200	137.3	1,400,000
Total					47,999,000

Table 6. Farm Operation System of Paddy Rice Only, 1989

A. Cultivation and Crop Condition

Variety	Planting method	Area (ha)	Field block (m × m)	Covered area (ha)	Degree of field distribution (km)	Yield kg/10a average
Koshihikari	Direct sowing	920	100 × 30	512	1.8	512
Akihikari	Direct sowing	850	100 × 30	345.3	2.6	245
E 101	Direct sowing	110	100 × 30	527.3	5.5	982
Nigata wase	Direct sowing	35	100 × 30	542.8	6.5	543
Hatsukazari	Direct sowing	210	100 × 30	523.8	1.0	524

B. Operation System

Items	Basis of cultivation		Basis of operation						
Name of operation	Period	Amount of material	Power	Machine Implement	Operation capacity		Rate of work		
					Actual work rate	Total operation hour	Actual work rate	Total operation hour	Fuel consumption
Water management	4/5–8/20	—	Manual						
Plowing	4/10–5/25		Tractor	Rotavator			0.5 ha/10 are		
Box nursery	4/10{5/20								
Transplanting	4/10–		Transplanter	Riding type			0.6 ha/ 10 are		

Items	Basis of cultivation		Basis of operation						
Name of operation	Period	Amount of material	Power	Machine Implement	Operation capacity		Rate of work		
					Actual work rate	Total operation hour	Actual work rate	Total operation hour	Fuel consumption
Basal fertilizer	4/25–	2,800 kg	—	—	—	—	—	—	—
Weeding	6/25–5/30	1,800 kg	—	—	—	—	—	—	—
Top dresssing	6/25–7/25	3,800 kg	—	—	—	—	—	—	—
Spraying	7/25–8/15	40 kg	High pressure sprayer						
Harvesting	9/5–9/25		Combine harvester						

Table 7. Cost per Hour and per Hectare for Farm Machineries

Items			Name of each machinery							
			Tractor	Trans-planter	Rotova-tor	Combine harvester	Power sprayer	Husker	Dryer	Teeth harrow
Price of machine (¥)			4,250,000	1,800,000	550,000	5,400,000	105,000	600,000	1,500,000	600,000
Rate (%)			21	35.4	33.8	22.6	29.6	16.7	17.8	31.1
Fixed cost/year (¥)			892,500	637,200	185,900	1,220,400	31,080	100,200	267,000	186,600
Total working (hr/yr)			250	100	200	180	80	200	270	180
Field capacity (hr/ha)			11	6	5	8.4	3.7	9.3	12.6	8.7
Per hour variable	Fixed cost (¥)		3,438	6,372	929.5	6,780	388.5	501	988.8	1,036.6
	Fuel cost (¥)		—	192.5	847	1,463	847	154	192.5	847
	Oil cost (¥)		—	57.7	254.1	438.9	254.1	46.2	57.7	254.1
	Labor cost (¥)		—	1,000	1,000	1,000	3,000	6600	600	1,000
	Total		3,438	7,622.2	3,030.6	9,681.9	4,489.6	1,301.2	1,839	3,137.7
Cost of tractor and equipment	Cost per hour		—	—	7,125.6	—	7,927.6	—	—	6,575.7
	Cost per hectar		—	—	35,628	—	29,569.9	—	—	55,301.6
Cost per hour	Work hour per year	10	—	71,342.2	24,261.1	131,721.9	7,597.6	11,331.2	28,539	21,797.7
		25	—	33,110.2	13,107.1	58,497.9	5,732.8	5,309.2	12,519	10,601.7
		50	—	20,366.2	9,309.1	34,089.9	5,111.2	3,305.2	7,179	6,869.7
		75	—	16,118.2	8,149.7	25,953.9	4,904.0	2,637.2	5,399	5,625.7
		100	—	13,994.2	7,530.1	21,885.9	4,800.4	2,303.2	4,509	5,003.7

Items			Name of each machinery							
			Tractor	Trans-planter	Rotova-tor	Combine harvester	Power sprayer	Husker	Dryer	Teeth harrow
		125	—	12,719.8	7,158.3	19,443.1	4,738.2	2,102.8	3,975	4,630.5
		150	—	11,870.2	6,910.4	17,817.9	4,696.8	1,969.2	3,619	4,381.7
		175	—	11,263.3	6,733.3	16,655.6	4,667.2	1,873.7	3,364	4,203.9
		200	—	11,808.2	6,600.6	15,783.5	4,645.0	1,802.2	3,174	4,070.7
		250	—	10,171.1	6,414.7	14,563.5	4,613.9	1,702.0	2,907	3,884.1
		300	—	9,746.2	6,290.7	13,749.9	4,593.2	1,635.2	2,729	3,759.7
Cost per hectare	Area covered per year (ha)	1	—	682,933.5	210,115.5	1,301,727.9	47,826.2	112,3553.2	290,171.4	213,929.3
		2	—	364,333.5	117,165.5	691,527.9	32,286.2	62,253.2	156,671.4	120,629.3
		3	—	258,133.5	86,182.2	488,127.9	27,106.2	455,553.2	112,171.4	89,529.3
		4	—	205,033.5	70,690.5	386,427.9	24,516.2	37,203.2	89,921.4	73,979.3
		5	—	173,173.5	61,395.5	325,407.9	22,962.2	32,193.2	76,571.4	64,649.3
		10	—	109,953.5	42,805.5	203,367.9	19,854.2	22,173.2	49,871.4	45,989.3
		15	—	88,213.5	36,608.9	162,687.9	18,818.2	18,833.2	40,971.4	39,769.3
		20	—	77,593.5	33,510.5	142,347.9	18,300.2	17,163.2	36,521.4	36,659.3
		30	—	66,973.5	30,412.2	122,007.9	17,782.2	15,493.2	32,071.4	33,549.3
		40	—	61,663.5	28,863.0	111,837.9	17,523.2	14,658.2	29,846.4	31,994.3
		50	—	58,477.5	27,933.5	105,735.9	17,367.8	14,157.2	28,511.4	31,061.3

Table 8. Expenditure on Each Machinery per Year at Standard Working Hour per Year

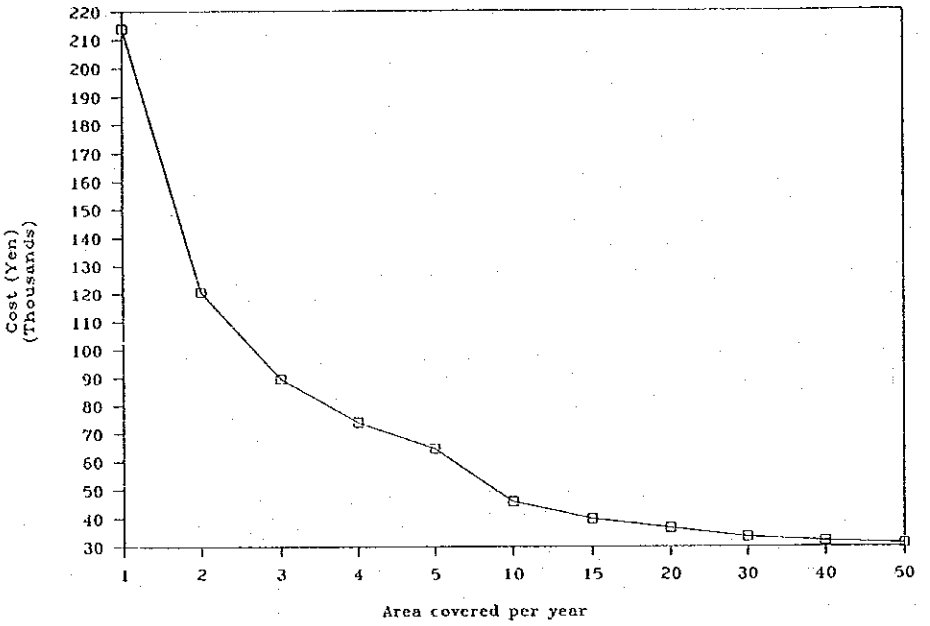
Item	Total cost per hour	Total hour use per year	Total cost per year
Rotovator	6,600	200	1,320,000
Combine harvester	17,000	180	3,060,000
Husker	1,800	200	360,000
Sprayer	4,900	80	360,000
Transplanter	14,000	100	1,400,000
Dryer	3,000	270	810,000
Teeth harrow	4,200	180	756,000
Total	—	—	7,706,000

Table 9. Farm Income and Expenditure, 1989

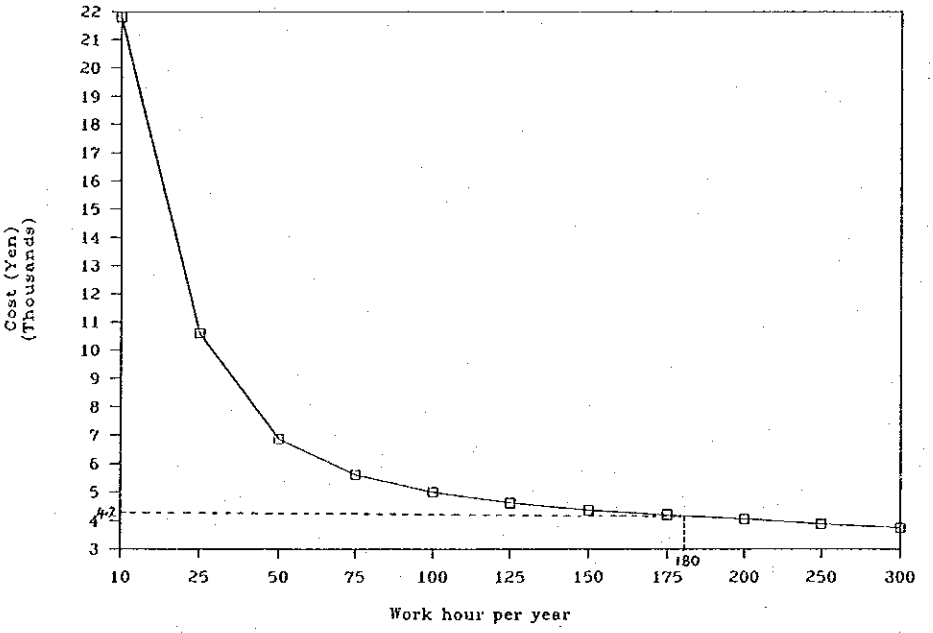
Items	Amount (¥)
A. Revenue	
1. Rice sale	41,779,000
2. Other crops	6,220,000
3. Other	—
Sub total	47,999,000
B. Expendiitures	
1. Expenses on machineries	7,706,000
2. Materials	3,806,000
3. Depreciation (alreadyy incorporated)	—
4. Interest (already incorporated)	—

Items	Amount (¥)
5. Farm rental fee	9,353,000
6. Employment fee (already incorporated)	—
7. Administration cost @15% of machinery expenses)	1,155,900
Sub-total	22,020,900
Profit (Net income) = Total revenue – Total expenses = 47,999,000 – 22,020,900 = ¥25,978,100	
Return on investment = Profit/Total expenses = $\frac{25,978,100}{22,020,900} \times 100$ = 117.97%	

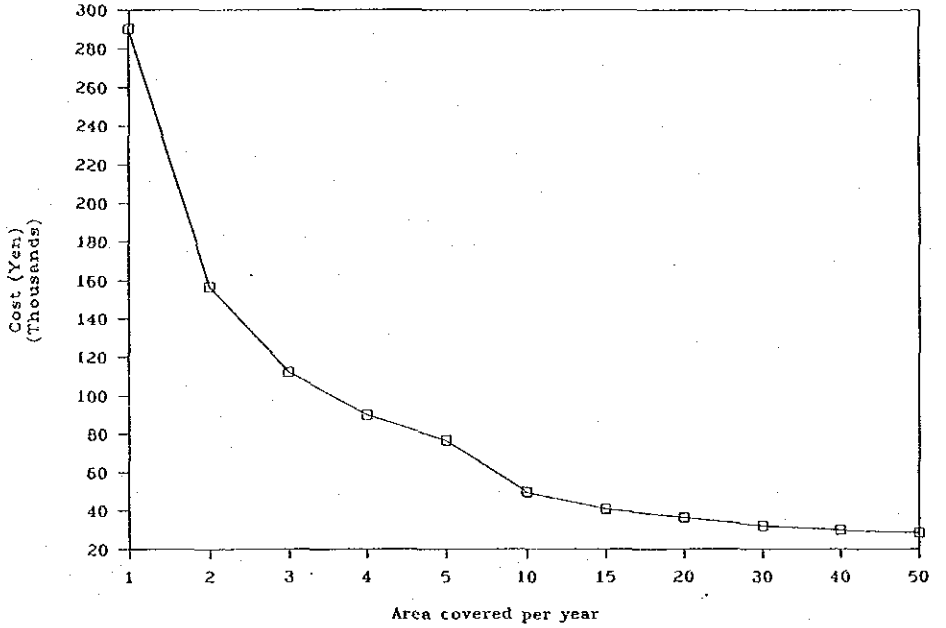
Teeth Harrow (1)



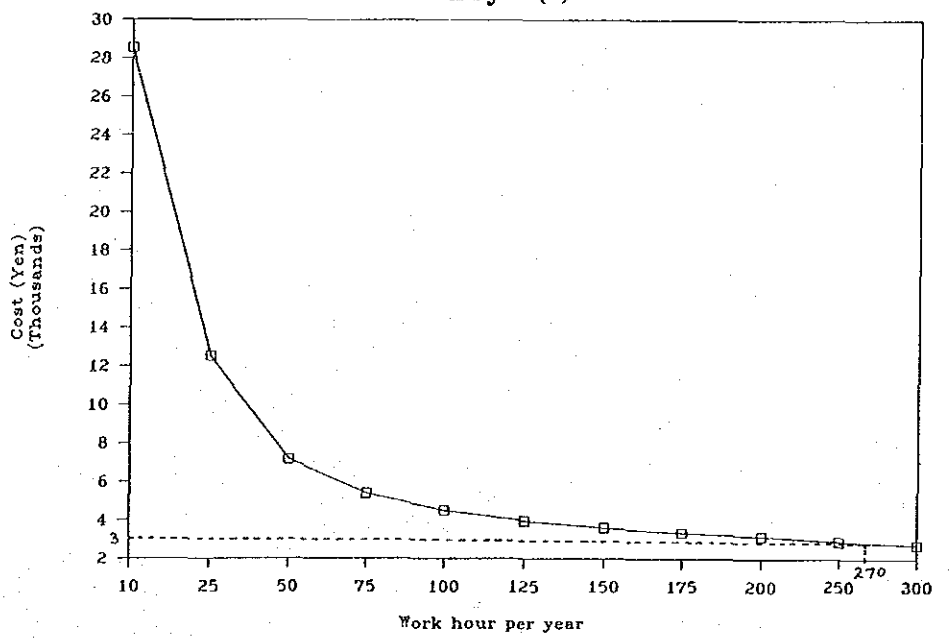
Teeth Harrow (2)



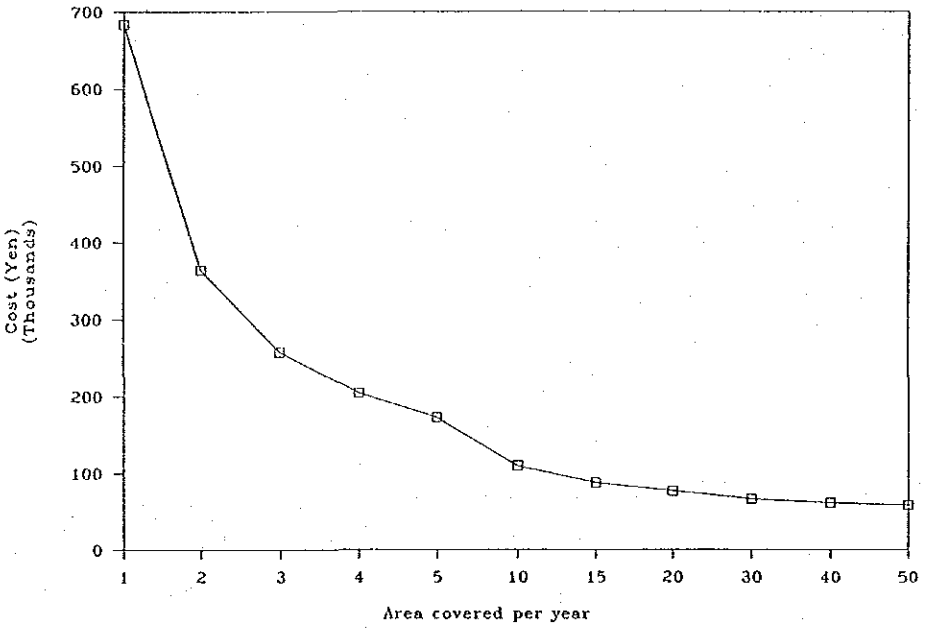
Dryer (1)



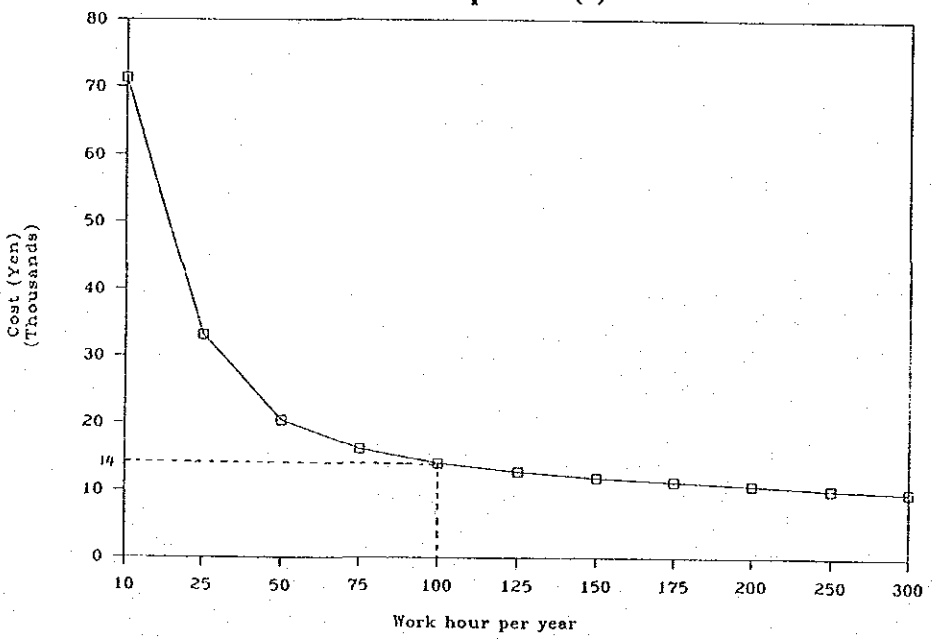
Dryer (2)



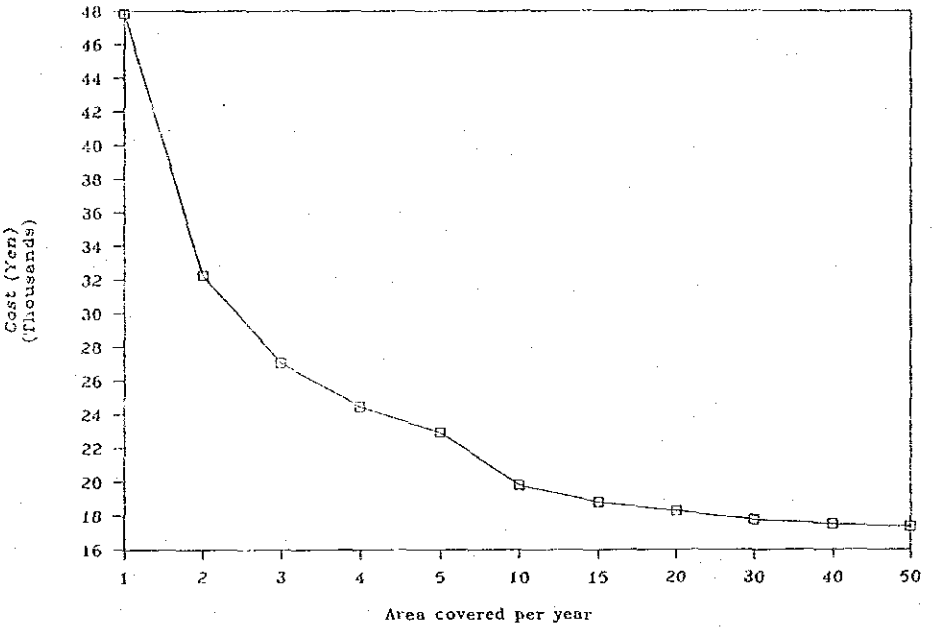
Transplanter (1)



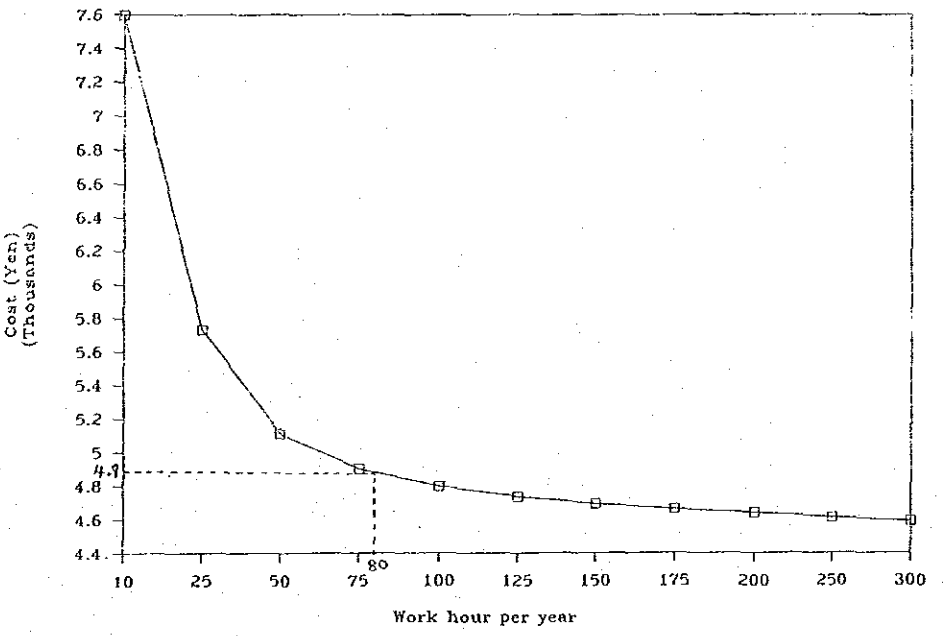
Transplanter (2)



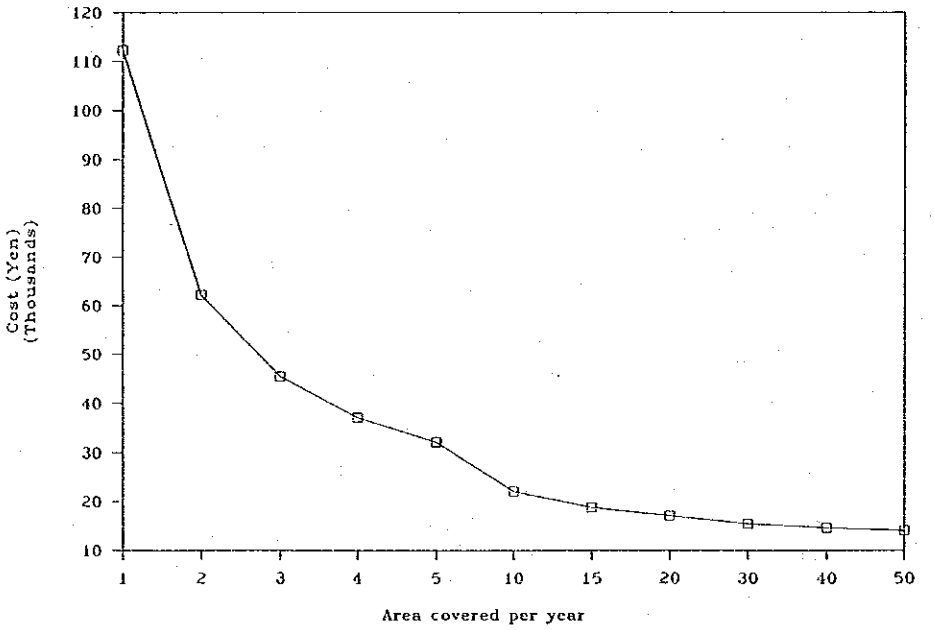
Sprayer (1)



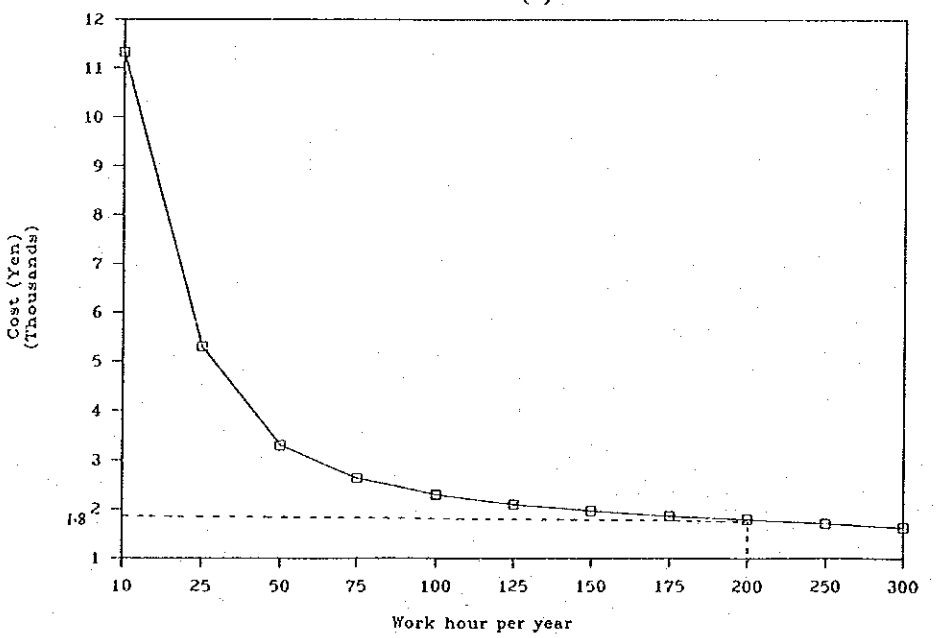
Sprayer (2)



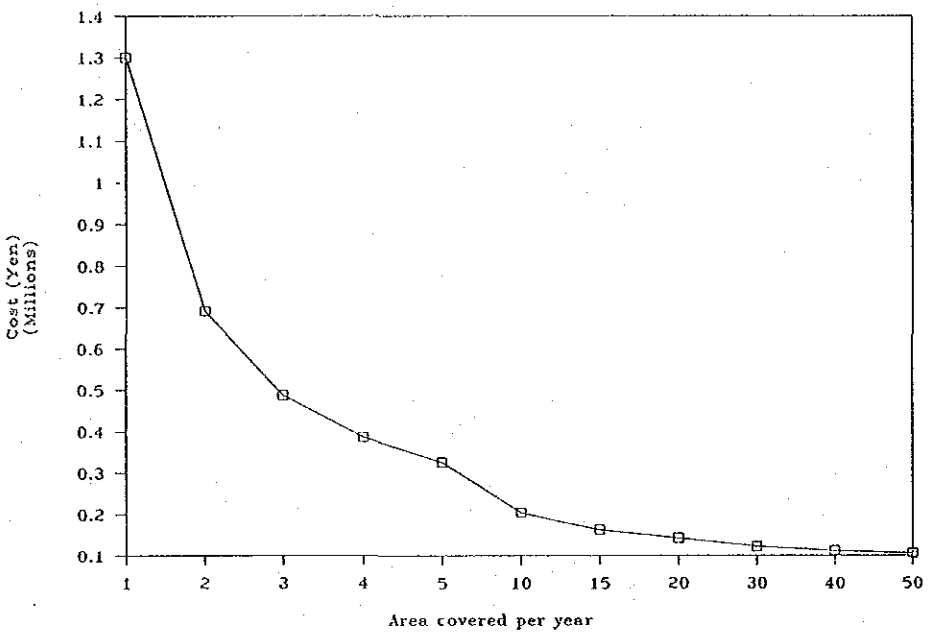
Husker (1)



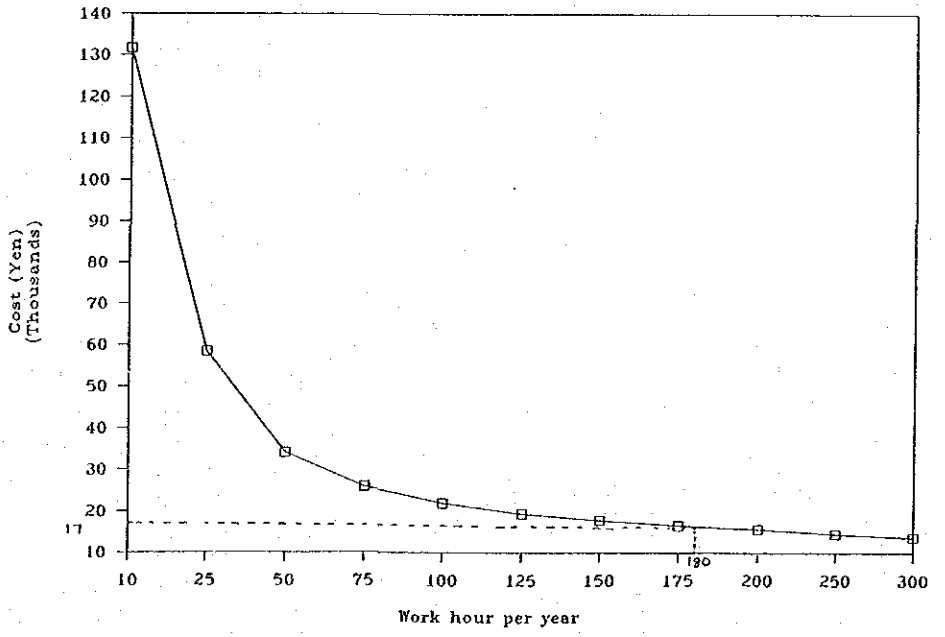
Husker (2)



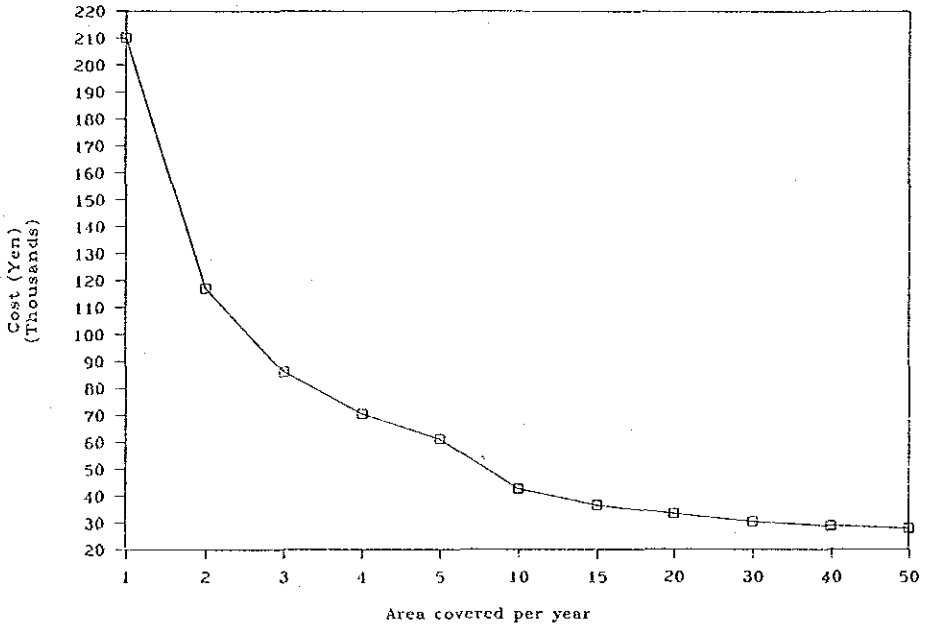
Combine Harvester (1)



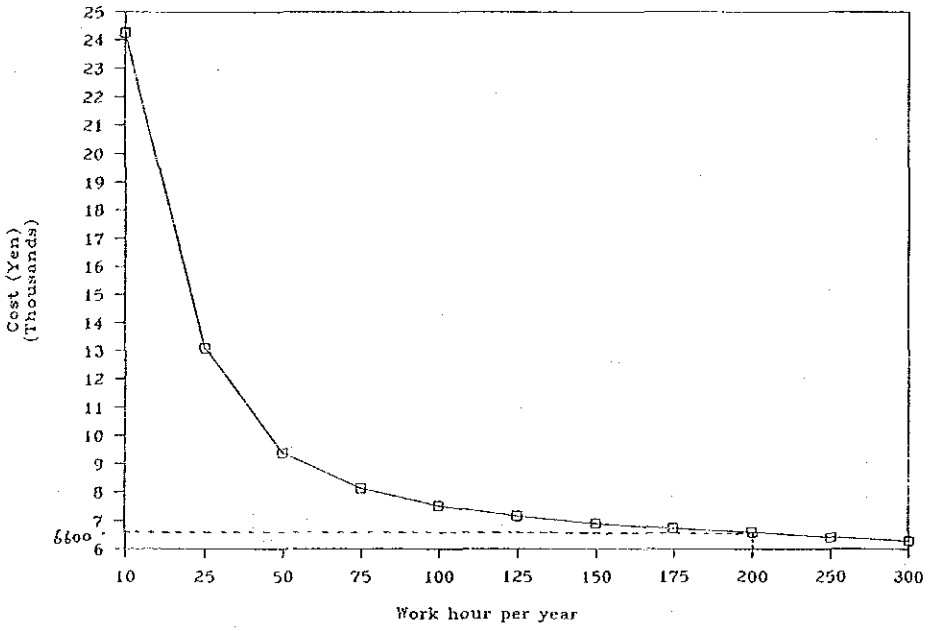
Combine Harvester (2)



Rotovator (1)



Rotovator (2)



The Survey Report on Farm Household Practice

by Muhammad Hidayat (Indonesia)
Ihaba Dorji (Bhutan)

THE SURVEY REPORT ON FARM HOUSEHOLD PRACTICE

by Muhammad Hidayat (Indonesia)
Ihaba Dorji (Bhutan)

INTRODUCTION

Our farm household practice was held at Ima-machi, Mitsuke-shi in Niigata Prefecture with Mr. Shinsuke Ota's family. It was about 45 km from Niigata City.

We were arranged in two persons for one host farmer. We had a good stay with Mr. Shinsuke Ota's family, our farmer is full time farmer.

For proper data collection regarding on farm house practice, we were already prepare by related questionnaires, it made us more convenient to collect the report.

Niigata Prefecture which is one of the leading prefecture in rice production was chosen for the farm household practice. Participants were assigned to some of the best farmers in the prefecture.

PRACTICE SCHEDULE AND ACTIVITIES

Date	Activities
August 6, 1990	- Trip to Niigata city from Tsukuba. - Welcome meeting (introduction of participant and host farmers. - Explanation of schedule for farm household practice. - Courtesy visit to the Niigata Prefecture Chamber of Agriculture. - Courtesy visit to the Department of Agriculture Niigata Prefectureal Government
August 7, 1990	- Courtesy visit to the Mayor of Mitsuke City.

Date	Activities
	- Visit to Seawage Disposal Plant.
	- Visit to Police Office. - Visit to Mitsuke Fire House Section. - Visit to Land Disposal Office. - Visit to Industry Office Section.
August 8, 1990	- Visit to the Land Improvement and Development Office. - Visit to the Association of Cooperative Council.
August 9, 1990	- Repair and maintenance of rice dryer. - Paddy field weeding.
August 10, 1990	- Visit and observation with all participant, host farmers and instructors to the Shinanome Dam, rice sake factory and Nishikigoi Carp Garden. - Evaluation meeting on farm household, host farmers and Niigata Agricultural Council. - Sayonara party at Niigata Grand Hotel.
August 11, 1990	- Back to Tsukuba.

INFORMATION ABOUT THE FARMER

Mr. Shinsuke Ota family consist of 8 persons as shown below:

Name	Relation	Age	Sex	Last education
Sengo Ota	Father	80	Male	Junior high school
Yuushi Ota	Mother	78	Female	Junior high school
Ryoji Ota	Head	52	Male	Senior high school
Ken Ota	Wife	52	Female	Senior high school
Yukiko Ota	Wife of Shinsuke	26	Female	Senior high school
Hironori Ota	Son	4	Male	—
Takako Ota	Grand daughter	3	Female	—
Yasuaki Ota	Grand son	1	Male	—

He is a full-time farmer, he has 5 block paddy field and all managed by him and his family. His total area about 16 ha, in 1989, he planted 15.75 ha paddy rice.

The area not all belonging to him, he has about 10 ha owned and the rest is a rend land. The average distance of his farm from the house about 2 km and near from the main road. The system of irrigation and drainage is good.

Cultivation and crop condition as shown below:

Variety	Planting method	Area (ha)	Covered area (ha)	Distribution of field from house (km)	Yield (kg/ha)
Koshihikari	by machine	15.75	3.55	1.5	6,400
			2.20	1.0	6,400
			3.20	2.0	6,400
			4.00	2.5	6,400
			2.80	2.5	6,400

FARM MACHINERY UTILIZATION AND DURATION OF RICE CULTIVATION, 1989

1. Farm Machinery Utilization

Machine	Unit	Model	Total work hr/yr, 1989	Year bought	Price (¥)
Tractor	3	28 HP	114	1983	2,380,000
		28 HP	114	1989	2,400,000
		17 HP	114	1989	1,700,000
Transplanter	3	4 row	30	1983	500,000
		6 row	30	1985	350,000

Machine	Unit	Model	Total work hr/yr, 1989	Year bought	Price (¥)
		8 row	30	1985	1,400,000
Mist sprayer	1	1 HP	8	1980	45,000
Power Sprayer	1	—	265	1989	125,000
Combine	2	3 row	100	1983	4,300,000
		6 row	100	1989	6,000,000
Dryer	4	1.8 ton	208	1985	4,400,000
Husker	1	—	98	1985	595,000
Grass Cutter	2	—	100	1986	150,000
Truck	3	—	2,000	1984	800,000

2. Duration of Rice Cultivation, 1989

Operation	Period	Power source	Machine implement	Total operation (hr)
Box nursery	March 10 to April 4	Electric	Sowing mahcine	40
Plowing and harrowing	April 1 to April 30	Tractor	rotary	114
Basal fertilizer	May 1 to May 10	Mechanis	Transplanter	25
Transplanting	May 1 to May 10	Mechanis	Transplanter	30
Weeding	- April 28 to April 30	Manual	—	24
	- May 20 to June 1	Manual	Weeder	88
	- July to August 10	Manual	—	240
Top dressing	June 20 to August 10	Manual	—	50
Spraying	July 20 to August 11	Mechanis	Power sprayer	132

Operation	Period	Power source	Machine implement	Total operation (hr)
Water management	April 20 to August 25	—	—	—
Harvesting	Sept. 1 to Sept. 20	Mechanis	Combine harvester	100

MACHINERY OPERATION COST, 1989

1. Machinery Yearly Fixed Cost

Machine	Purchase price (¥)	Fixed cost rate (%)	Yearly fixed cost (¥)
Tractor	2,380,000	24	585,480
Tractor	2,400,000	24.6	590,400
Tractor	1,700,000	24.6	418,200
Transplanter	500,000	35.4	177,000
Transplanter	1,400,000	35.4	495,600
Transplanter	350,000	35.4	123,900
Combine	1,300,000	22.6	293,800
Combine	6,000,000	22.6	1,356,000
Dryer	4,400,000	17.8	783,200
Mist sprayer	45,000	29.6	13,320
Power sprayer	125,000	29.6	37,000
Husker	500,000	16.7	83,500
Truck	2,400,000	30.1	722,400
Total			5,679,800

2. Machinery Yearly Variable Cost

Machine	Fuel cost/hour	Lubrication cost/hr	Operation cost/hour	Operation cost/yr
Tractor	560	168	728	22,992
Tractor	560	168	728	22,992
Tractor	560	168	728	22,992
Transplanter	120	36	156	4,680
Transplanter	120	36	156	4,680
Transplanter	300	90	390	11,700
Combine	480	144	624	62,400
Combine	840	252	1,092	109,200
Mist sprayer	120	36	156	1,248
Power sprayer	480	144	624	165,360
Truck	480	144	624	1,240,000
Total				1,668,244

3. Total Income in Year, 1989

Item	Amount (¥)
A. Revenue	
Rice sales	35,000,000
B. Expenditures	
Machinery fixed cost	5,679,800
Machinery variable cost	1,668,244
Seeding cost	585,900
Fertilizer	1,071,157

Item			Amount (¥)
Chemical			152,775
Water rate			472,500
Rental cost			2,520,000
Tenant fee			2,500,000
Wage (Labour)			550,000
Total expenses			15,200,376
Profit (Net income)	=	Total revenue – Total expenses	
	=	¥35,000,000 – 15,200,376	
	=	19,799,624	

COMPARISON BETWEEN JAPANESE FARMER AND OUR FARMER

1. Farmer from Indonesia

In Indonesia some farmers using machinery for tillage work, pest control and post harvest processing. But most of the farmers using man power and animal power in rice farming. But in Japan almost all of farm work are conducted by agricultural machinery.

In Indonesia land consolidation is not uniform to use of such kind of machine, like farm road, irrigation and drainage in the field to make an easy way for farmers to operate agricultural machinery in all stage of farming system. Irrigation system has established in some area so farmers could plant twice or thrice crop per year, but in some area farmers have to use rainfall, which is varying in every year and some time it will be dry. The yield per hectare of paddy is high in Japan because the good irrigation and drainage system, high quality seed, fertilizer chemical and fully mechanized farming etc.

The concept of agricultural mechanization is done by selective approach agricultural development programme. And it should be implemented in consideration of the farmers condition who have a limited area of farm field, weakly economic condition, limited skill and knowledge, low level of education and tight social structure.

2. Farmer from Bhutan

In Japan due to execution of land consolidation project and establishment of farm roads, irrigation and drainage in the field, it makes easy way for farmers to operate with high level of mechanization in all stage of farming systems.

In Bhutan land consolidation is not established, so farmers find very difficult to operate with high level of mechanization. The soil are in different type. They have a hard soil for paddy field, so there are so many obstructions to use machineries. Irrigation has established only in some areas, such as central plain. But in most areas they have to use rainfed alone, which is varying in every year.

In Japan, there are many various cooperatives association have grown stronger and more stable with the year and offer innumerable assistance to farmers, ranging from loan, insurance protection and large community agricultural facilities. Farmers in Japan are much more richer and have very high living standard.

CONCLUSION

1. In Japan has supported the system by established farm road, irrigation and drainage in the field, it is make an easy way for farmers to operate a high level of mechanization in all stage of farming system.

2. The farmers have been accepted higher education level that make an easy to understand and carry out new trends and technologies.

3. The agricultural cooperative unit can help the farmers with efficient production and they don't need to sell their products according to the marked needs. The farmers have been realizing to concentrate to produce in a more profitable and to improve the quality.

4. The farmer have 3 tractor and average working hour of each tractor is only 114 hours. And covered area is 15.5 ha per year for one tractor. Through the figure we can find out that the tractor operation cost is still high for the farmer. For plowing and harrowing the farmer need only 2 tractor to covered the area, so the tractor utilization hour will increase about 160 hours per year, thus the operation cost can be reduced.

5. The same phenomena also happen in transplanter and combine harvester were not used at the optimum working hour. According the data we found that for transplanting can be covered by 2 transplanter (6 row and 8 row), so the yearly working hour increase about 60 hour/year, and for harvesting can be covered by only one combine harvester 6 row. In the case the farmer can decrease the operation cost per hour and operation cost per hectare.

TRIAL CALCULATION OF FARM MACHINERY PER AREA AND HOUR

1. Tractor

Item for estimate	17 HP	28 HP	28 HP
- Price	1,700,000	2,380,000	2,400,000
- Yearly fixed cost	418,200	585,480	590,400
- Hour's worked per year	114	114	114
- Performance	7.35	4.27	4.27
- Fixed cost	3,668	5,136	5,179
- Fuel cost	840	840	840
- Lubricant cost	252	252	252
- Operator's pay	—	—	—
Total	1,092	1,092	1,092

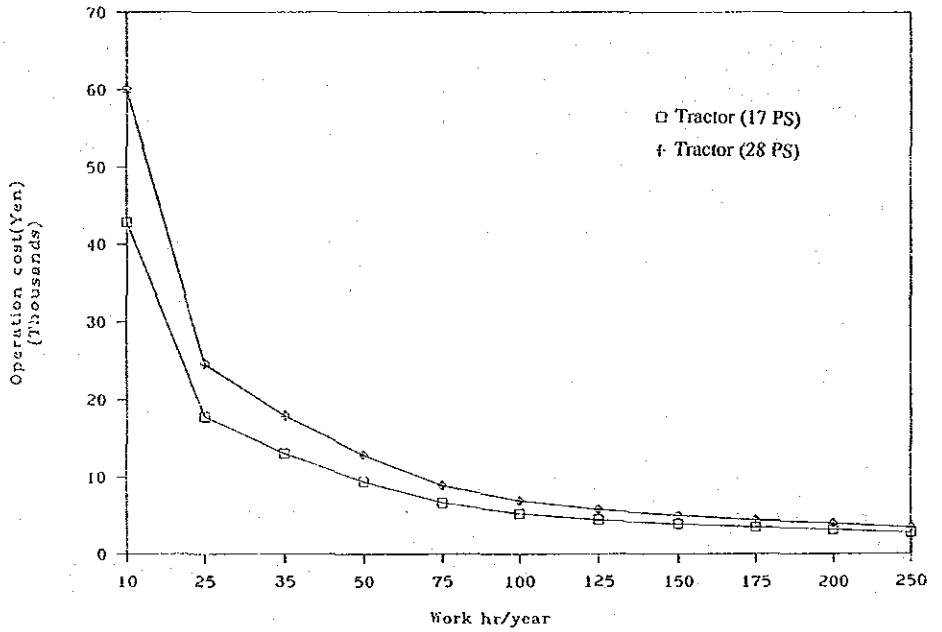
2. Transplanter

Item for estimate	4 row	6 row	8 row
- Price	350,000	500,000	1,400,000
- Yearly fixed cost	123,900	177,000	495,600
- Hour's worked per year	30	30	30
- Performance	18.87	18.87	18.87
- Fixed cost	4,130	5,900	16,520
- Fuel cost	120	200	200
- Lubricant cost	36	60	60
- Operator's pay	—	—	—
Total	156	260	260

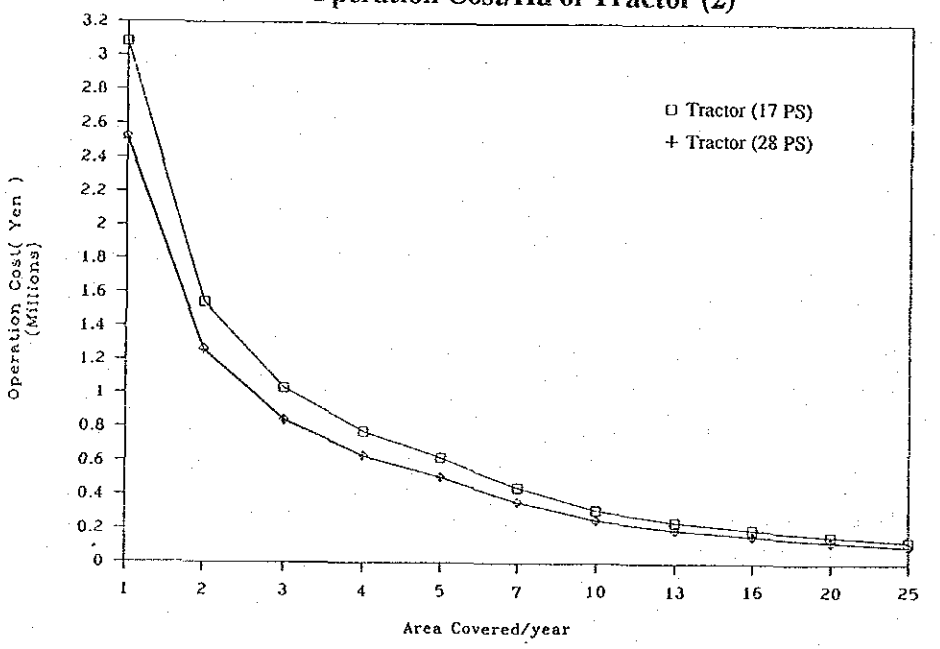
3. Combine Harvester

Item for estimate	3 row	6 row
- Price	1,300,000	6,000,000
- Yearly fixed cost	293,800	1,356,000
- Hour's worked per year	100	100
- Performance	10	4.65
- Fixed cost	2,938	13,560
- Fuel cost	320	320
- Lubricant cost	96	456
- Operator's pay	—	—
Total	416	1,976

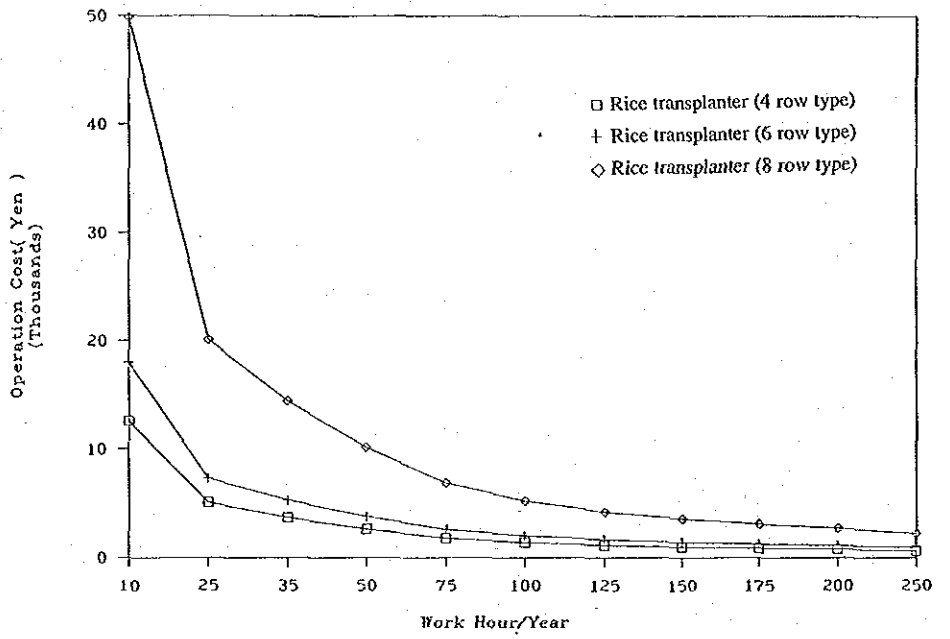
Operation Cost/Hour of Tractor (1)



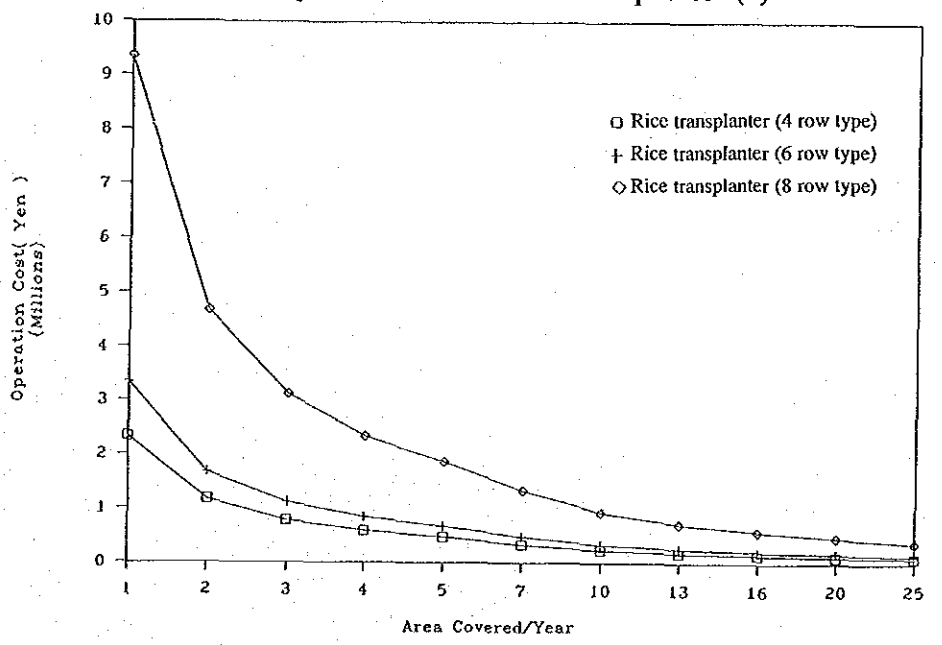
Operation Cost/Ha of Tractor (2)



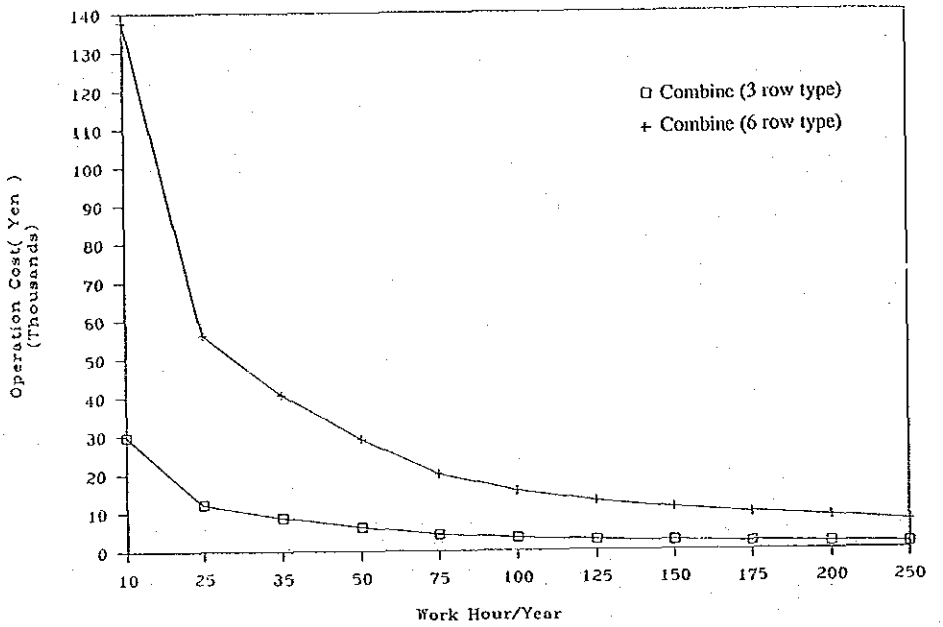
Operation Cost/Hour of Transplanter (1)



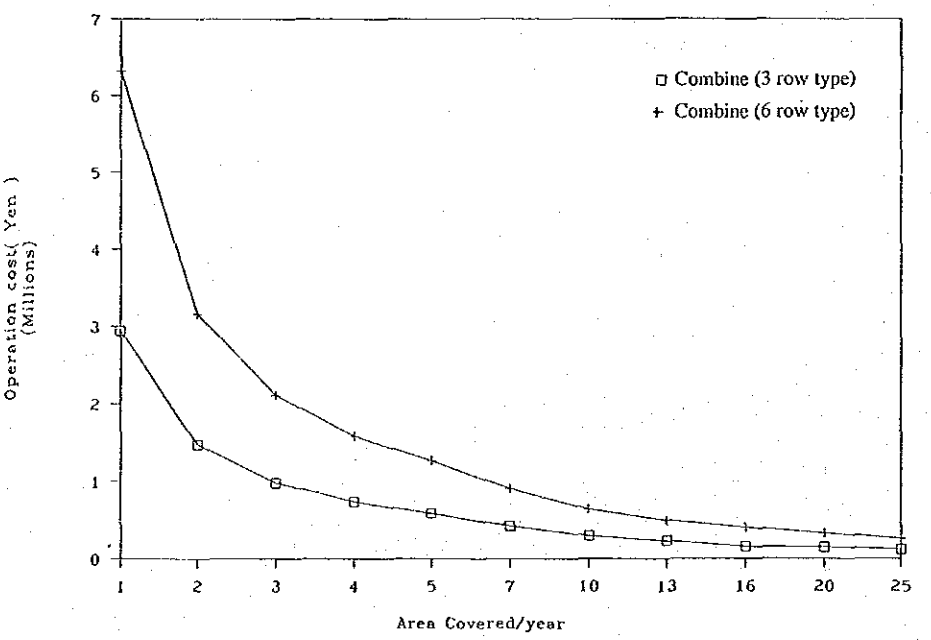
Operation Cost/Ha of Transplanter (2)



Operation Cost/Hour of Combine Harvester (1)



Operation Cost/Ha of Combine Harvester (2)



はじめに

国際協力事業団，筑波国際農業研修センターは農業機械化コースの技術研修員を昭和39年から現在まで42ケ国から 301名受入ている。これらの研修員は，それぞれの農業普及員，農業機械関係機関から派遣された技術者で，当センターの施設，圃場を利用して農業機械化について研修（講義，実験実習等を通して）をしています。

農業実習（農業機械化の調査）は当センターの研修の一環として大変重要な研修イベントの一つであります。今年は平成２年８月６日から11日まで新潟県で実施され，幸い本年も成功裡に終了することができました。

本実習及び調査の目的とするところは，研修員が農家の方々と共に生活し働くことを通して，我国の農業を理解し，また農業機械化の調査，農業経営のしくみや機械利用の現状と問題点等について学ぶことにあります。

本報告書は５日間と言う短い滞在期間でもあり，まか受入農家の方々との言葉の壁もありましたが，ここに記載されたものは研修員自身の目でみた報告であり，原文のまま報告書としてまとめたものであります。研修員が彼等のカウンターパートである農家の方々と英語並びに片言の日本語で交したヒアリングに基づいて取材し，記述されたものであるため考え方，事実，データ等に或いは間違いがあるかと思いますが，その点お含みおきの上，ご一読願えれば幸いです。これらの実体験による努力の成果は，研修員の将来の貴重な財産となるものと信じます。

終りに望み，調査，実習に際しお世話になった受入農家の皆様，全国農業会議所，新潟県農業会議及び新潟県稲作経営者会議等の関係者の皆様に心から厚く御礼申し上げます。

平成３年１月

国際協力事業団
筑波国際農業研修センター
所長　栄田　剛

目　　次

農業実習報告書

モッセン・エブラヒム・エゲラ（エジプト）
カリム・ビン・ラザブ　　（マレーシア）

はじめに

この農家実習は，国際協力事業団，筑波国際農業研修センターと新潟県農業評議会の協力によって実現した。

農家実習は，同センター，農業機械化コースの研修の一環であり，日本の農民の実際の生活，特に，農業機械の使用状況と日本の農業システムについて学習するものである。実習地先の新潟県は，本州中央部より西に位置し，その平地部は，海岸線に沿って延びており，日本では古くからの主要米作地帯である。県内の水稲栽培地域は，1989年には，約13万9千ヘクタールであり，年々少しずつ減少している。原因としては廃農や地目の変更によって耕地が放棄される事があげられる。

また，この県では，品質の高い米が生産されており，『コシヒカリ』の生産は，全国流通シェアの59%を占めている。1989年の籾生産量は，約72万7千トンであり，ヘクタール当たりの平均収量は，5.23トンである。

この実習の期間中，牧絵さん宅に滞在する好運をえた。牧絵さん宅は，新潟県でも南西部に位置する上越市にあり，新潟市より，バスで1時間半位の処にある。

牧絵さんは，専業農家であり，農業協同組合の組合員でもある。そして，さらに地域の農民グループのリーダーとしても活躍している。

受け入れ農家状況

我々の受け入れ農家となってくれた牧絵家は，専業農家である。我々の滞在期間中の牧絵家の家族構成は，下記の図1の通りである。

氏名	続柄	性別	年齢	職業	最終学歴
牧絵一義	世帯主	男	52歳	専業農家	高卒
TOMIE	妻	女	52歳	専業農家	高卒
KATUTOSHI	長男	男	20歳	国家公務員	高卒

土地利用状況

牧絵さんと奥さんは，1989年には，12ヘクタールの水稲栽培を行った。内，9ヘクタールは，自らの所有地であり，残りの3ヘクタールは隣人より租借している。詳細は，別添えの図2を参照の事。栽培面積の約半分は特別な米を栽培しており，その米は，彼自身の手によって調整，袋詰めされて全国に発送されている。

牧絵さんは，今後より大規模な経営を目指している。

日程と活動状況

平成2年8月6日
- 新潟県に移動
- 新潟県農業会議所に表敬訪問
  歓迎会及び受け入れ農家紹介
- 新潟県農政局に表敬訪問
- 農業協同組合支所にて歓迎パーティ
- 牧絵さん宅に移動

平成2年8月7日
- 農林水産省　北陸農業試験場見学
- 上越市市役所訪問
  （市長と面接の後，市の概況説明を受ける。）
- 上越農業協同組合訪問
- 営農グループとミーティング
- ホームパーティー（牧絵さん宅にて）

平成2年8月8日
- ＜見学＞　和田精米機㈱→大島農機→農業高等学校
  →牧絵家の農機庫及び作業棟→農協支所

平成2年8月9日
- ＜実習＞　圃場実習　（ロータリー耕，草刈り）
  調整実習　（袋詰め米の配送）
- 上越市観光
- さよならパーティー　（牧絵さん家族とその親類と）

平成2年8月10日
- 長岡グランドホテル移動
- 長岡市観光
- 実習評価ミーティング

－さよならパーティー

平成２年８月11日　　－長岡市を出発し筑波へ

マレーシアの農民

マレーシアを稲作という視点より見ると，大規模経営をしている農民を見つける事は難しい。カダ地域におけるクムブ灌漑計画下の１農家当たりの耕地面積は，1.2 ヘクタールであり，農民のうち農業機械を所有する者は極めて稀である。

マレーシアの農民は，非常に一般的な栽培方法を行っている。この方法のもとで農民達が唯一支払わねばならないのが，機械の所有者に時間当たり，または面積当たり支払っている機械利用費である。この機械利用費は，生産物の価格に比べて非常に高価になっている。

マレーシアでの耕運作業は，ほとんど機械化されているが，収穫については，農民は未だに手作業に頼っている。田植え機は，カダ地域においては，カダ・プロジェクトによって導入されている。

現在，マレーシアの農業協同組合は，まだ政府の指導下にある。なぜならば，この農協は，その組合員に十分なサービスが出来るほど強力な組織ではないからである。

我々は，近い将来この農協がより組合員を支援出来るような強力なものになる事を切望している。

教育水準について述べれば，マレーシアの農民は日本のそれに比べてまだまだ低い。新しい技術や農法の導入する場合，彼らが理解できるまで相当の時間が必要であろう。

エジプトの農民

国家面積の約10%，即ち42万ヘクタールの栽培面積を占める米作はエジプトの穀物の中でも最も重要なものである。エジプトの面積当たり米生産量は5.64トンと世界中で最も高く，また自国内で自給している。

エジプトの稲作機械化について言えば，耕運・整地作業などは，ほぼ 100%機械化されているが，一方，田植え・収穫・精米作業などは，僅かにまたは，全く機械化が行われてない。

そう言った訳で，農業省は，田植え機・収穫機・小型精米機などの開発，改良を農業機

械化研究所（A.M.R.I.）に強く要求している。それ以来，この研究所は，小規模米作農家のための稲作機械を開発する機械化計画を続けている。また，農業機械整備士や改良普及員，そして米作農民達のための農業機械の安全運転及び保守整備訓練も行われている。

結　論

日本の稲作栽培は，既に十分機械化されている。ほとんどの日本の農民は彼自身の農作業を補うための農業機械を自分自身で所有している。

そしてまた，日本の農民は高い教育水準を持ち，そのことが彼らに稲作栽培に関する新技術の利用，理解を容易にさせている。

日本の農業協同組合は非常に強力である。なぜならば，それらは，組合，普及所そして農家の3者間に良い信頼，協力関係を築いているからである。日本の農協は組合員によって支えられており，それら組合員に数々のサービスを供給している。

日本の農産物価格は非常に高く，かつ安定している。その結果，日本の農民は自分自身で農業機械を所有する事が出来る。別の言い方をすれば，生産物価格が高いのでいまだに農業分野より収益を得る事が出来るのである。

我々の得たデータを解析すると，年間の機械稼働時間が非常に低い事が解った。この結果，機械の時間当たり固定費は農家に取って非常に高価なものとなっている。もし作業時間を今より増やす事が出来れば固定費も減少する。我々の受け入れ農家の場合，将来的に耕地面積を増やす計画を持っているので問題はないように思われる。

図表．2　耕作面積

土地所有先	水　田	畑　地	住　宅　地
自己所有地	9ヘクタール	5ヘクタール	600 坪
租　借　地	3ヘクタール		

図表. 3　農業機械利用状況　1989

名　称	形　式	年間利用時間hr/y	購入年	価　格	修理費	減価償却費 円／年	作業面積 ha
トラクター	38 ps	150	1988	4,500,000	315,000	562,500	13.23
田植え機	8 条	120	1989	2,000,000	166,600	400,000	13.23
ミスト防除機	5 ps	10	1989	620,000	24,800	124,000	10.63
防除機	3 ps	10	1987	100,000	4,000	20,000	10.63
コンバイン	5 ps	160	1987	6,300,000	315,000	1,260,000	15.43
乾燥機	38 石	680	−	−	−	−	−
籾摺機	−	680	−	−	−	−	−
ロータリー	−	35	1988	350,000	21,875	70,000	13.23
代掻ローター	−	35	1988	350,000	5,845	70,000	13.23
トラック	700 kg	−	1988	2,880,000	−	−	−

図表. 4　主要経費項目

経費項目	備考（年間使用量）	年間総経費（円）
種苗経費	340.16 kg	61,228
肥料経費		
1. 元肥	2,500 kg	111,778
2. 追肥	2,500 kg	89,422
農薬経費		
1. 除草剤	240 kg	514,790
2. 除虫剤	空中散布	137,078
燃料・潤滑油経費		
1. 軽油	2,610 リッター	182,700
2. 潤滑油	燃料費の3割	54,810

図表．５　稲作作業・管理及びその期間（１９８９）

作業内容	作業期間
箱育苗	3月20日 ～ 4月30日
耕運	4月15日 ～ 5月10日
田植え	5月 4日 ～ 5月21日
除草	5月25日 ～ 6月10日
追肥	7月10日 ～ 8月 5日
防除	7月20日 ～ 8月 3日
水管理	6月20日 ～ 8月31日
収穫	9月 8日 ～ 10月13日

図表．６　穀物販売実績（１９８９）

作目	栽培面積	総収入（円）
水田	10.63 ヘクタール	19,626,000

図表．７　圃場栽培状況

栽培品種	移植方法	栽培面積	自宅からの距離
コシヒカリ	田植え機	1.85 ha	0 km
コシヒカリ	〃	0.95 ha	5 km
コシヒカリ	〃	0.96 ha	7 km
コシヒカリ	〃	0.10 ha	0 km
コシヒカリ	〃	0.40 ha	1 km
コシヒカリ	〃	0.57 ha	7 km
ニイガタワセ	〃	1.80 ha	5 km
キヌヒカリ	〃	0.95 ha	1 km
キヌヒカリ	〃	0.84 ha	1 km
アキニシキ	〃	1.01 ha	3 km
アキニシキ	〃	1.20 ha	4 km

図表．8　稲作に関わる生産費

項　　目	経　　費
種子準備 ……	192，870
施　　肥	
1．元　　肥 ……	111，778
2．追　　肥 ……	89，778
農　　薬	
1．病虫防除 ……	137，078
2．除　　草 ……	514，790
土地代 ……	84，000
労働賃金	
1．家　　族 ……	995，840
2．労働者 ……	247，010
株支払い ……	1，851，000
テナント料 ……	489，161
機　　械	
1．トラクター ……	1，322，550
2．田植え機 ……	831，240
3．動　　噴 ……	39，470
4．ミスト機 ……	193，390
5．コンバイン ……	2，126，240
合　　計	9，255，839

図表．9　トラクター及びロータリー耕運部の作業時間と面積当たりの経費

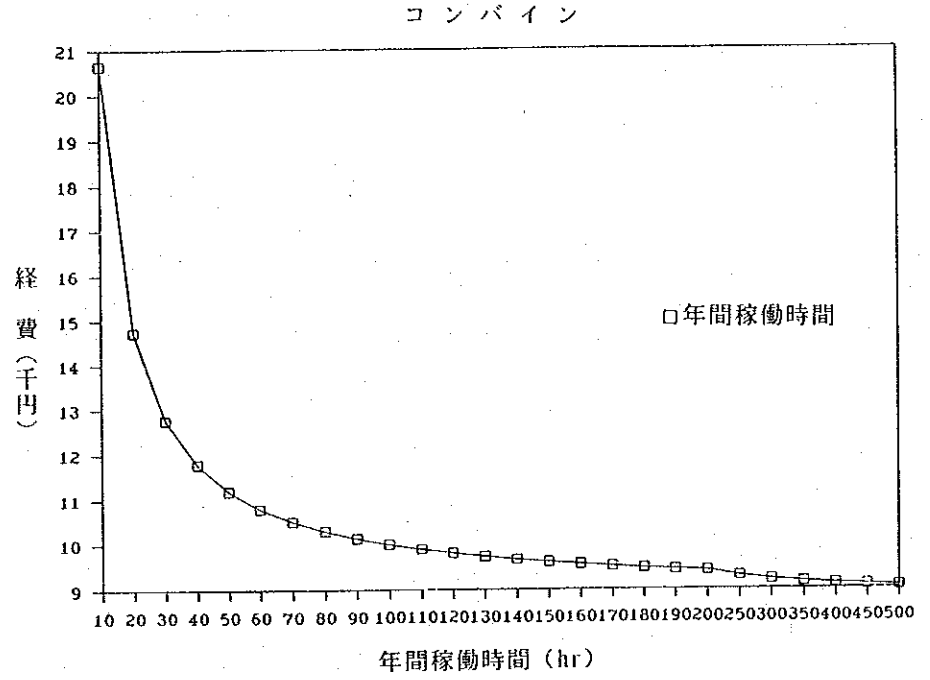
評価項目	金額	価格／時間		価格／ヘクタール	
◎トラクターの		時間／年	価格（円）	面積／年	価格（円）
購入価格	¥ 4,500,000	10(hr)	20,647	1(ha)	155,949
年間固定価格	¥ 1,107,000	30	12,760	2	96,799
年間使用時間	350 hr	60	10,789	3	77,082
◎ ﾛｰﾀﾘｰ耕運部の		90	10,131	4	67,224
購入価格	¥ 350,000	120	9,803	5	61,309
年間固定価格	¥ 118,300	150	9,606	10	49,479
性能	4.27 hr/ha	180	9,474	12	47,507
ﾄﾗｸﾀｰの固定価格	¥ 7,380(¥/hr)	250	9,290	15	45,535
燃料代	¥ 490(¥/hr)	300	9,211	20	43,564
潤滑油代	¥ 147(¥/hr)	350	9,155	25	42,381
ｵﾍﾟﾚｰﾀｰ代（賃金）	¥ 800(¥/hr)	400	9,113	30	41,592
総計	¥ 8,817	500	9,054	50	40,015

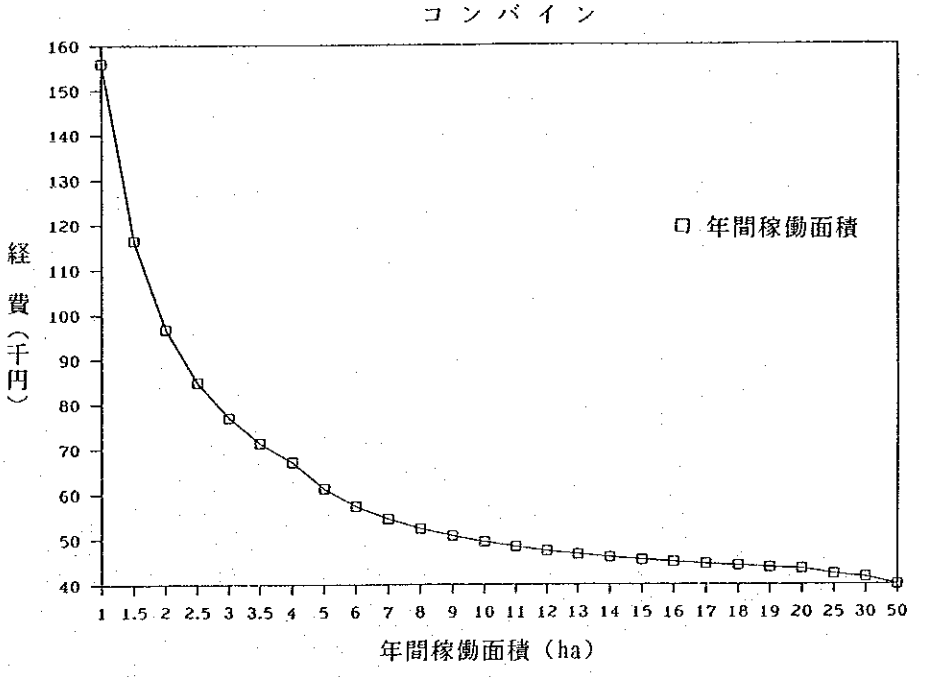
図表．１０　田植え機の作業時間と面積当たりの経費

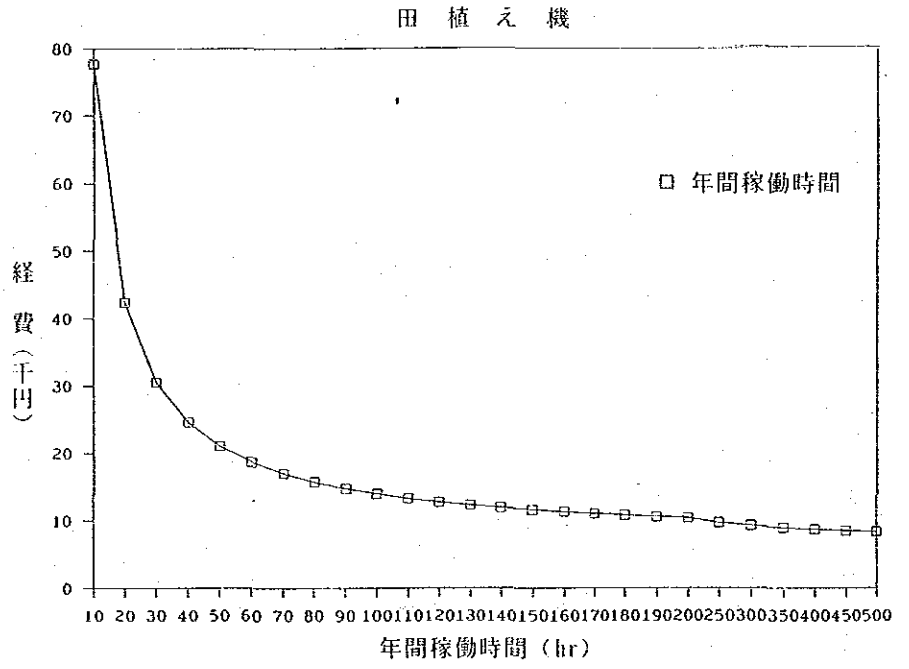
評価項目	金額	価格／時間		価格／ヘクタール	
◎田植え機の		時間／年	価格（円）	面積／年	価格（円）
購入価格	¥ 2,000,000	10(hr)	77,728	1(ha)	737,098
年間固定価格	¥ 708,000	30	30,528	2	383,098
年間使用時間	120 hr	60	18,728	3	265,098
◎作業機の		90	14,795	4	206,098
購入価格	¥ −	120	12,828	5	170,698
年間固定価格	¥ −	150	11,648	10	99,898
性能	4.20 hr/ha	180	10,861	12	88,098
田植え機の価格	¥ 5,900(¥/hr)	250	9,760	15	76,298
燃料代	¥ 175(¥/hr)	300	9,288	20	64,498
潤滑油代	¥ 53(¥/hr)	350	8,951	25	57,418
ｵﾍﾟﾚｰﾀｰ代（賃金）	¥ 800(¥/hr)	400	8,698	30	52,698
総計	¥ 6,928	500	8,344	50	43,258

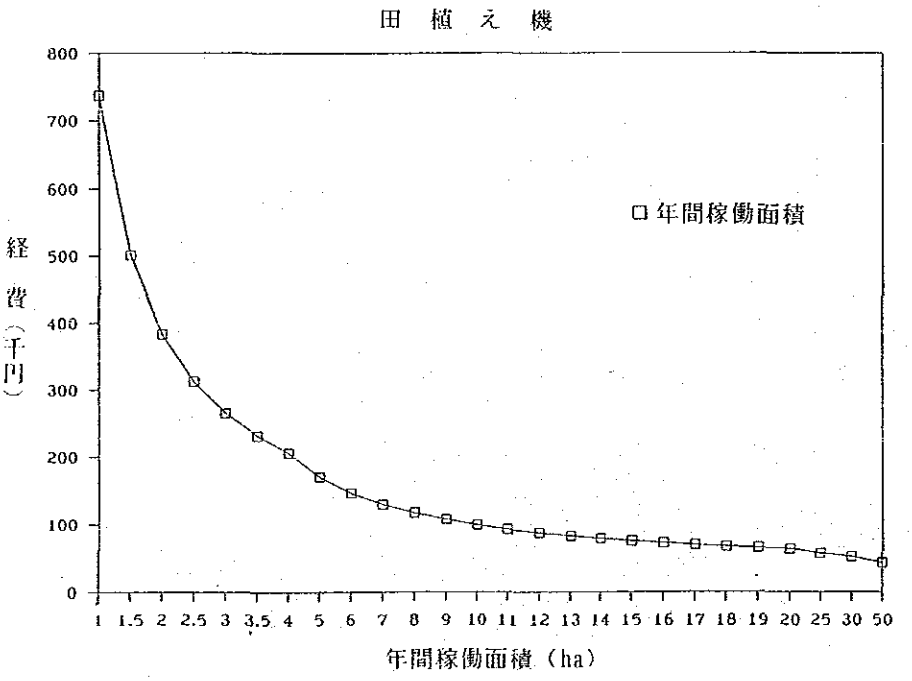
図表．１１　コンバイン・ハーベスターの作業時間と面積当たりの経費

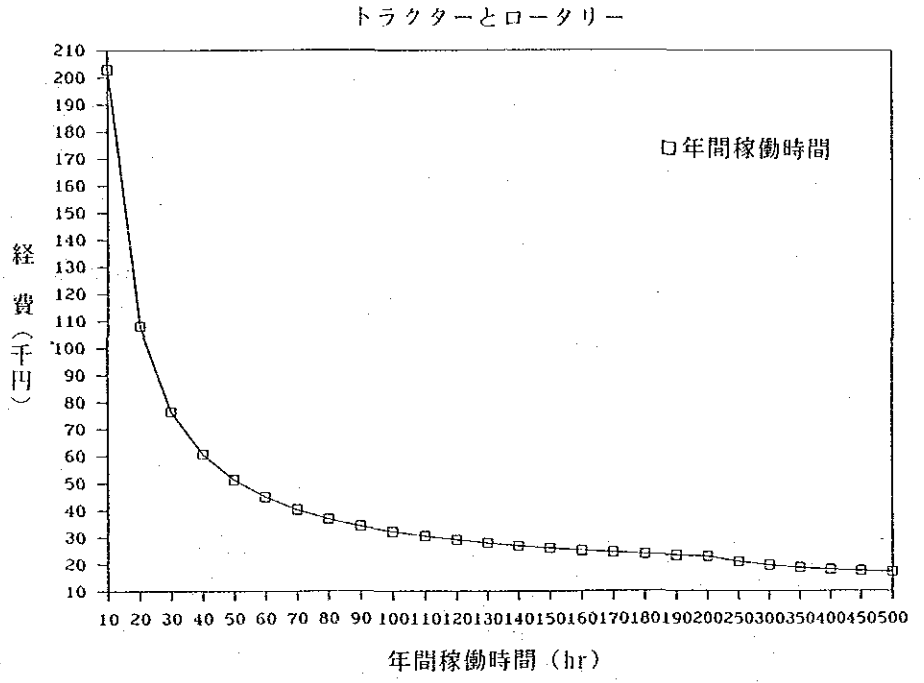
評価項目	金額	価格／時間		価格／ヘクタール	
◎コンバインの		時間／年	価格（円）	面積／年	価格（円）
購入価格	￥6,300,000	10(hr)	202,919	1(ha)	2,029,190
年間固定価格	￥1,896,300	30	76,499	2	1,081,040
年間使用時間	160 hr	60	44,894	3	764,990
◎作業機の		90	34,359	4	606,965
購入価格	￥　－	120	29,092	5	512,150
年間固定価格	￥　－	150	25,931	10	322,520
性能	10 hr/ha	180	23,824	12	290,915
コンバインの価格	￥1,852(¥/hr)	250	20,874	15	259,310
燃料代	￥　490(¥/hr)	300	19,610	20	227,705
潤滑油代	￥　147(¥/hr)	350	18,707	25	208,742
ｵﾍﾟﾚｰﾀｰ代（賃金）	￥　800(¥/hr)	400	18,030	30	196,100
総計	￥13,289	500	17,082	50	170,816

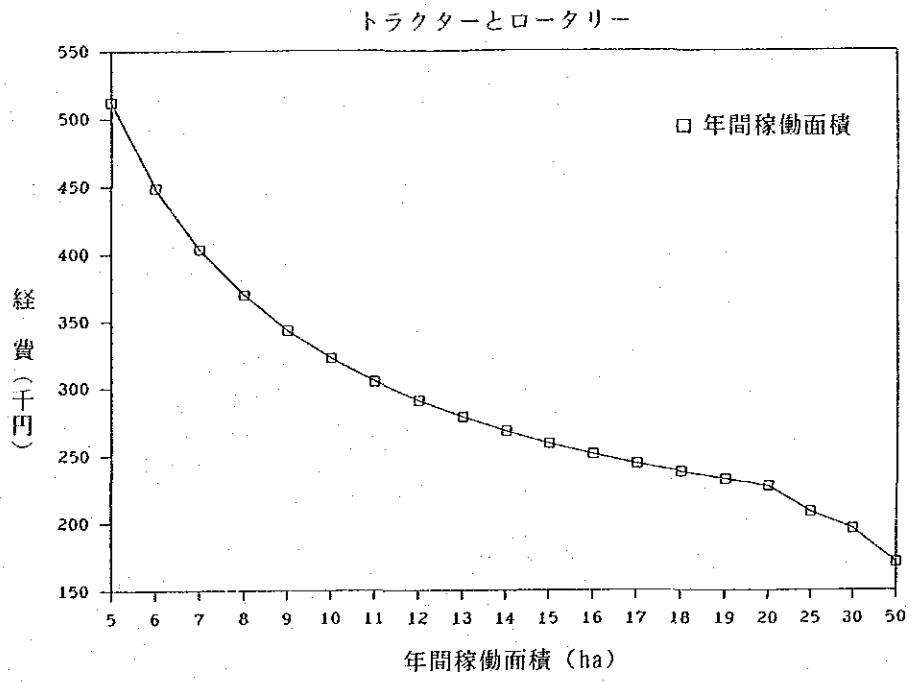

コンバイン
経費（千円）
□年間稼働時間
年間稼働時間（hr）


コンバイン
経費（千円）
□ 年間稼働面積
年間稼働面積（ha）


田 植 え 機
80
70
60
50
40
30
20
10
0
経費（千円）
□ 年間稼働時間
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 250 300 350 400 450 500
年間稼働時間（hr）


田 植 え 機
800
700
600
500
400
300
200
100
0
経費（千円）
□ 年間稼働面積
1 1.5 2 2.5 3 3.5 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 25 30 50
年間稼働面積（ha）


トラクターとロータリー
□年間稼働時間
経費（千円）
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 250 300 350 400 450 500
年間稼働時間（hr）


トラクターとロータリー
□ 年間稼働面積
経費（千円）
550
500
450
400
350
300
250
200
150
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 25 30 50
年間稼働面積（ha）

農家実習調査報告書

ウィルトゥンジー・ムフタウ・オルショラ（ナイジェリア）
アベル・ロビン・ンブイレ　　（タンザニア）

はじめに

農家実習は，農業機械化コースの研修課目の１つです。この実習は，研修員全員が農家に配置され，そこで生活し，日本農業の機械化について学ぶよう計画されています。その上，研修員は各々の農家に滞在中，日本の文化についても学ぶことができます。実習の最後に，研修員は日本の農業機械化の様式について解析をし，この実習で得られた新知識，情報，技術を参考にして自分の国の農業技術について再評価をしなければなりません。

実習は，各農家へ研修員が２名ずつ配置されます。６つのグループが参加しました。私たちは，辻本，長谷川指導員に引率され実習先の新潟県に行きました。新潟県は，日本の米どころの１つです。私たちは，坪井さんの家にお世話になり滞在中楽しくすごし，また日本の理想的な家庭を知ることが出来ました。しかしながら，コミュニケーションには問題がありました。私たちは日本語で会話を充分に行うことが出来なかったので，辞書を使って言葉の問題を解決していきました。

日程と活動内容

1990年８月６日	新潟県へ移動
	新潟県農林水産部を表敬訪問，歓迎パーティ
	実習先農家へ配置
８月７日	北陸農試（上越市）を見学
	上越市役所を訪問
	上越市農協を見学
	カントリーエレベーターを見学
８月８日	大島工場を見学
	農業実習（リーパー，バインダーを使って干し草の結束）
８月９日	上越市水利組合を見学

灌漑ダムを見学

畜産組合農場を見学

畜産農家を見学

8月10日　受入れ先農家から長岡グランドホテルへ移動（奥さんが付き添って下さる）

評価会，さよならパーティ

8月11日　つくばへ帰着

第1表　家族構成

氏名	続柄	年令	最終学歴
坪井　稔	本人	52	農業高校卒
洋子	妻	49	高校卒
洋次	長男	25	短期大学卒
実	長女	24	短期大学卒
八重	祖母	75	国民学校卒
英一郎	孫	8ヶ月	

第2表　農業機械利用状況

農業機械	型式	台数	使用時間／年	購入年度	購入価格（円）
トラクター	80馬力	1	200	1976	7,000,000
トラクター	75馬力	1	50	1988	5,000,000
田植機	8条	1	150	1988	2,000,000
動力噴霧機		1	100	1988	70,000
コンバイン	5条	1	120	1985	1,500,000
コンバイン	4条	1	180	1988	1,300,000
乾燥機	105馬力	1	200	1988	1,600,000
乾燥機	155馬力	1	1000	1978	20,000,000
籾摺機	2トン	1	300	1989	300,000
種子ドリル		1	150	1979	600,000

第３表　　稲作の作業・管理方法とその時期（1989年）

作　　業	期　　間
苗　作　り	３月20日　～　５月25日
耕　　地	４月20日　～　５月22日
肥料散布	５月６日　～　５月22日
移　　植	５月６日　～　６月22日
除　　草	５月10日　～　８月20日
追　　肥	５月15日　～　８月20日
薬剤散布	７月20日　～　８月５日
水　管　理	５月１日　～　８月25日
収　　穫	９月３日　～　10月25日

第４表　　米の品種とその収量（1989年）

品　　種	面積（アール）	総収量（kg）	反収（kg／アール）
アキヒカリ ホクリク 105号	300	6,000 12,000	600 600
ニイガタワセ	180	11,340	630
コシヒカリ アキニシキ	450	14,580 10,260	540 570
キヌヒカリ	60	3,420	570
コシヒカリ	90	4,320	480
キヌヒカリ	210	2,850	570
コシヒカリ		7,200	450
ハツカザリ	180	7,200	450
キヌヒカリ	50	2,850	570
コシヒカリ	140	7,560	540
コシヒカリ	100	5,400	540
コシヒカリ	140	7,560	540
コシヒカリ	60 160 150 130	3,240 〃 〃 〃	540 〃 〃 〃
合　　計	108,300 kg		

第５表　機械の年間固定費

機　械　名	購入価格（円）	固定費率（％）	年間固定費（円）
トラクター	7,000,000	24.6	1,722,000
トラクター	5,000,000	24.6	1,230,000
田　植　機	2,000,000	35.4	708,000
動力噴霧機	70,000	29.6	20,720
コンバイン	1,500,000	22.6	339,000
コンバイン	1,500,000	22.6	339,000
乾　燥　機	1,600,000	17.8	284,800
乾　燥　機	20,000,000	17.8	3,560,000
籾　摺　機	300,000	16.7	50,100
年間固定費　合　計			8,253,620

第６表　1989年の総経費

項　目	経　費（円）
肥　料　代	1,075,000
元　肥　代	420,000
農　薬　代	900,000
除草剤代	320,000
人　夫　賃	300,000
機械／建物経費	8,300,000
借　地　代	2,600,000
賃　貸　料	2,200,000
種　子　代	40,000
そ　の　他	1,200,000
合　計	17,355,000

第7表　作業変動費

機械名	作業時間	変動費（円）
トラクター	250	526,500
田植機	150	191,700
動力噴霧機	100	98,000
コンバイン	300	285,000
脱穀機	40	28,000
乾燥機	3,000	2,700,000
小計		3,829,200
機械固定費		8,253,620
変動費		17,355,000
総経費		29,437,820

第8表　1989年の総収入

土地の種類	面積（アール）
所有地	2,000
借地	500
耕作地	1,960
1989年の米販売額	37,000,000 円

純益　37,000,000 － 29,437,820 ＝ 7,562,180円

第９表　　トラクターによる耕うん作業の経費

評価項目	金額（円）	備考
購入価格	7,000,000	馬力（トラクター）
年間固定費	1,722,000	固定費率　24.3%
年間作業時間	250 時間	100%プラの耕うん
ロータリー購入価格	400,000	1.4 m幅
年間固定費	135,200	固定費率　33.8%
性能	4 hrs/ha	耕うん作業
燃料費	680 円	40円／ℓ，17ℓ／時間
潤滑油代	204 円	燃料費の30%
トラクターの固定価格	6.888 円	円／時　間
オペレーター代（賃金）	600 円	人／時　間

第10表　　ロータリー耕うんトラクターの利用経費

時間／年	円／時間	ヘクタール／年	円ヘクタール
25	13,780	1	168,688
50	11,076	3	78,554.6
75	10,174	5	60,528
100	9,724	7	52,802.2
125	9,453.6	9	48,510.22
150	9,273.3	11	45,778.9
1175	9,144	13	43,888
225	8,972	15	42,501.3
250	8,912	17	41,440.94
		19	40,603.78
		21	39,838.09

第11表　田植機の利用経費

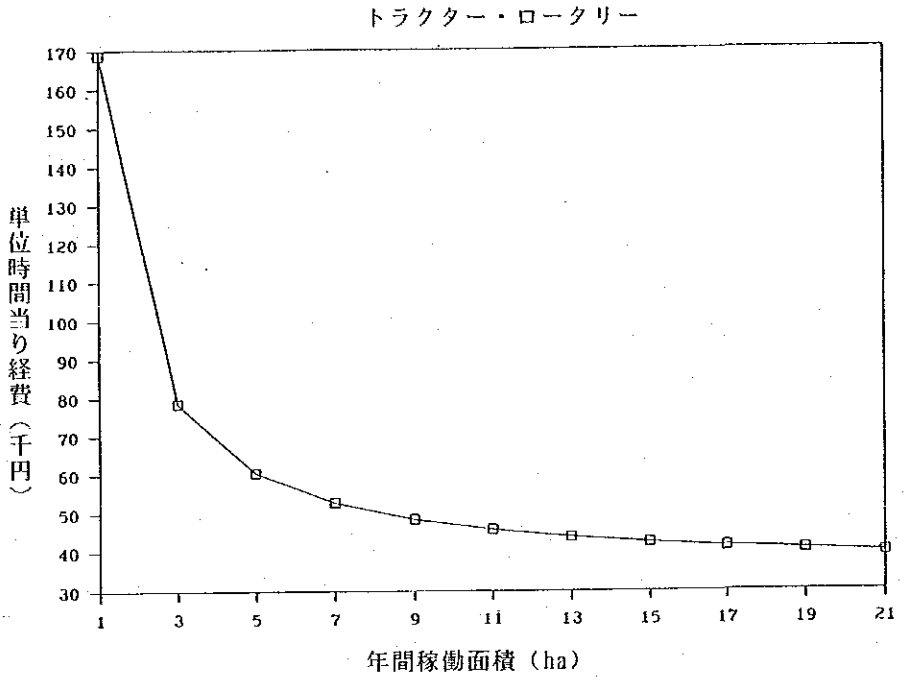
時間／年	円／時間	ヘクタール／年	円／ヘクタール
10	71,478	1	720,204
20	36,078	2	366,204
30	24,278	3	248,204
40	18,378	4	189,204
50	14,838	5	153,804
60	12,478	6	130,204
70	10,079	7	113,347
80	9,528	8	100,704
90	8,544	9	908,706
100	7,758	10	83,004
110	7,114	11	76,568
120	6,578	12	71,204
130	6,124	13	6,667
140	5,735	14	6,278

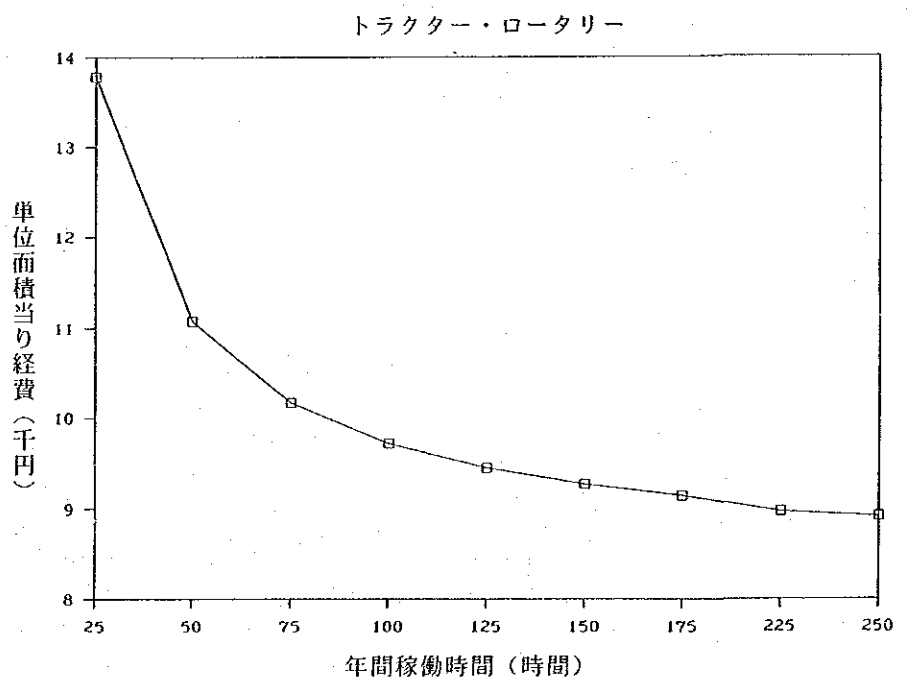
第12表　コンバインの利用経費

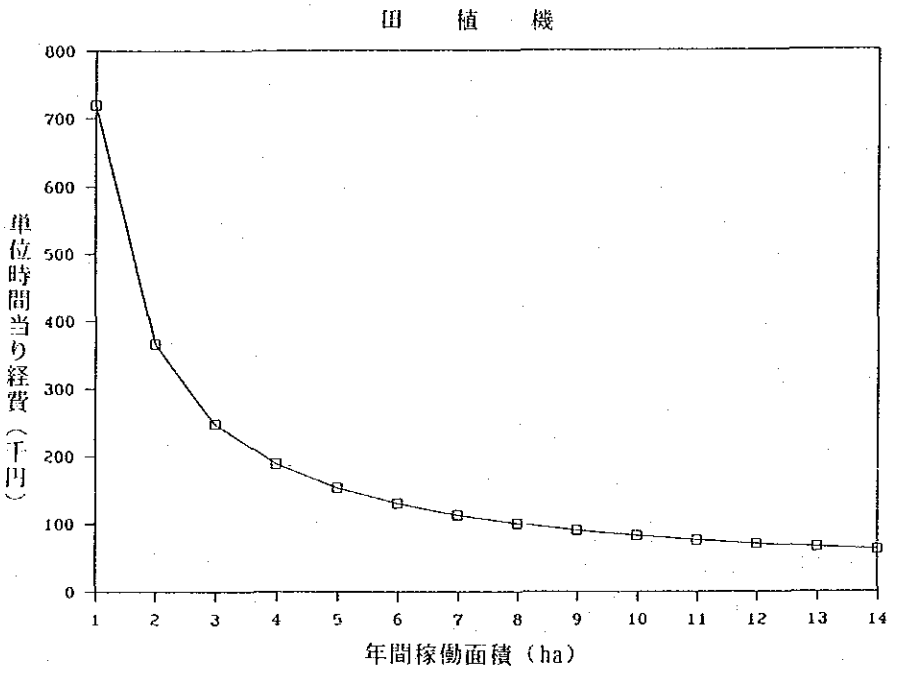
時間／年	円／時間	ヘクタール／年	円／ヘクタール
10	34,838	2	173,862
20	17,888	4	89,112
30	12,238	6	60,862
40	9,413	8	46,737
50	6,588	10	38,262
60	5,781	12	32,612
70	5,176	14	28,576
80	4,705	16	25,549
90	4,328	18	23,195
100	4,020	20	21,312

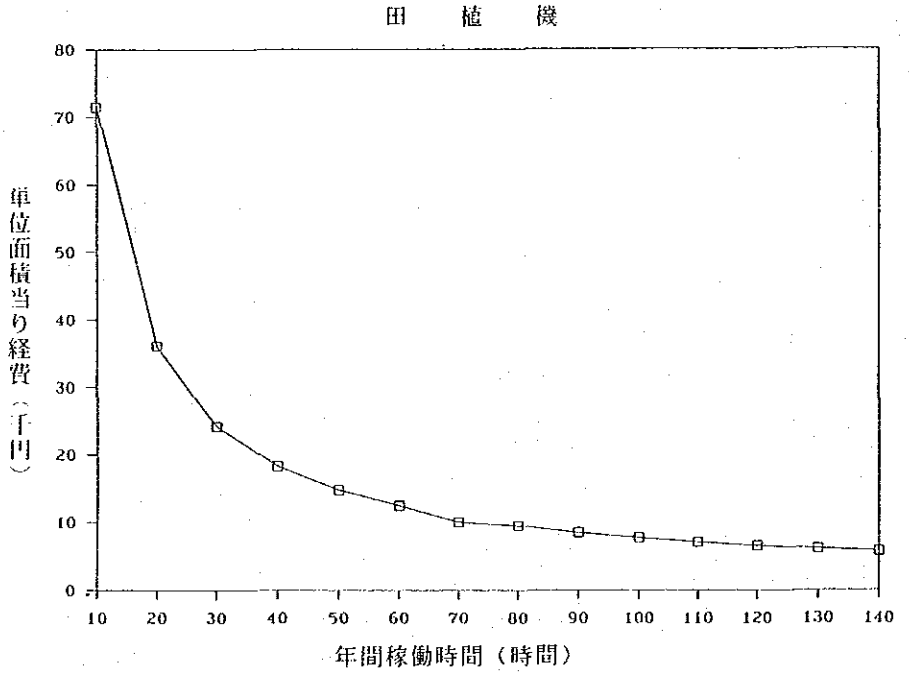
第13表　乾燥機の利用経費

時間／年	円／時間	ヘクタール／年	円／ヘクタール
200	1,808.75	2	1,862,750
400	9,187.5	4	972,750
600	6,220	6	676,083
800	4,737.5	8	527,750
1000	3,848.5	10	438,750
1200	3,254.5	12	379,417
1400	2,830.4	14	337,036
1600	2,565.5	16	305,250
1800	2,265.2	18	280,528
2000	2,067.5	20	260,750

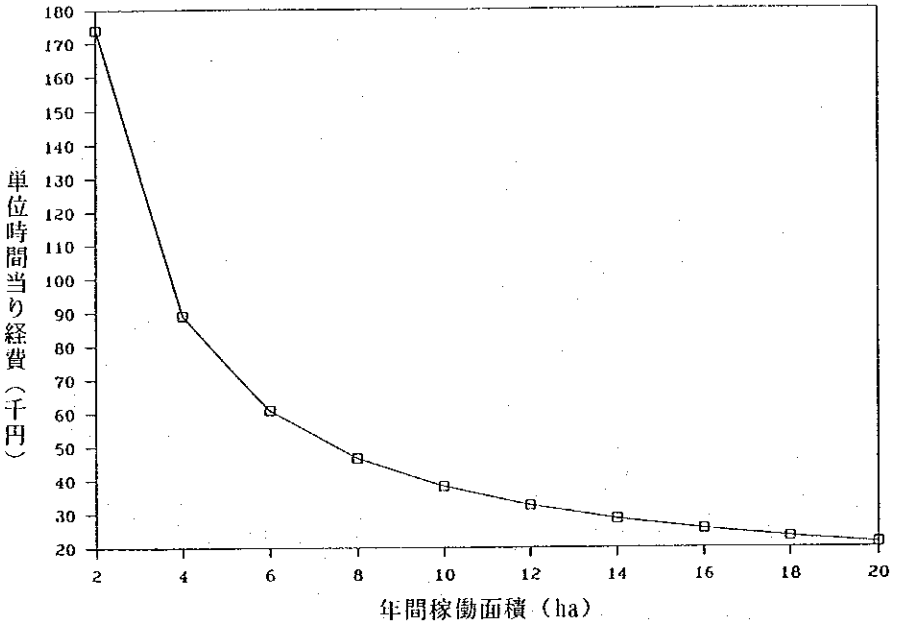

トラクター・ロータリー
単位時間当り経費（千円）
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
1
3
5
7
9
11
13
15
17
19
21
年間稼働面積（ha）


トラクター・ロータリー
単位面積当り経費（千円）
14
13
12
11
10
9
8
25
50
75
100
125
150
175
225
250
年間稼働時間（時間）


田　植　機
単位時間当り経費（千円）
800
700
600
500
400
300
200
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
年間稼働面積（ha）


田　植　機
単位面積当り経費（千円）
80
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
年間稼働時間（時間）

コンバイン


単位時間当り経費（千円）
180
170
160
150
140
130
120
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100
90
80
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60
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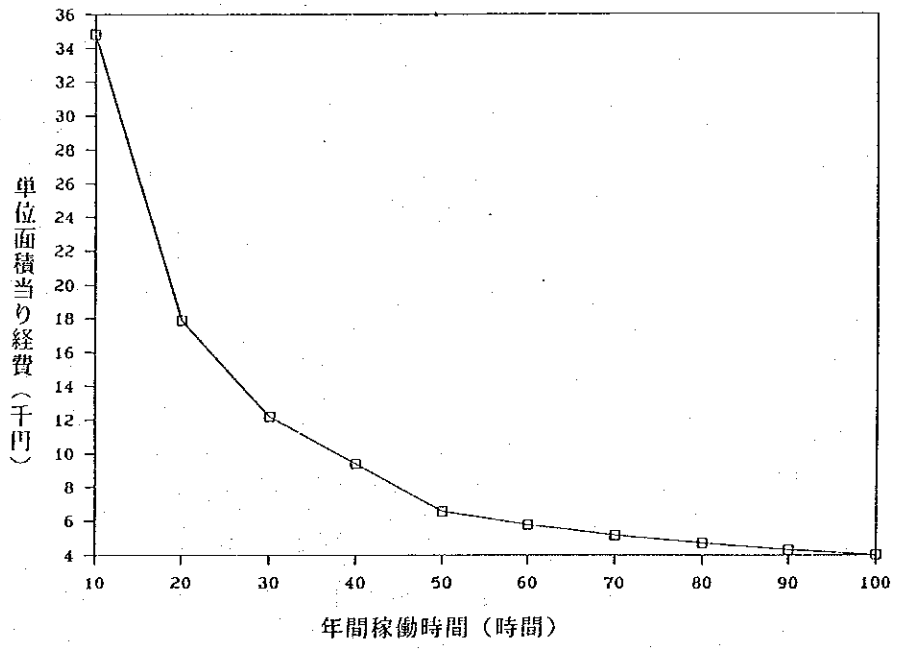
14
16
18
20
年間稼働面積（ha）

コンバイン


単位面積当り経費（千円）
36
34
32
30
28
26
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20
18
16
14
12
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8
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4
10
20
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40
50
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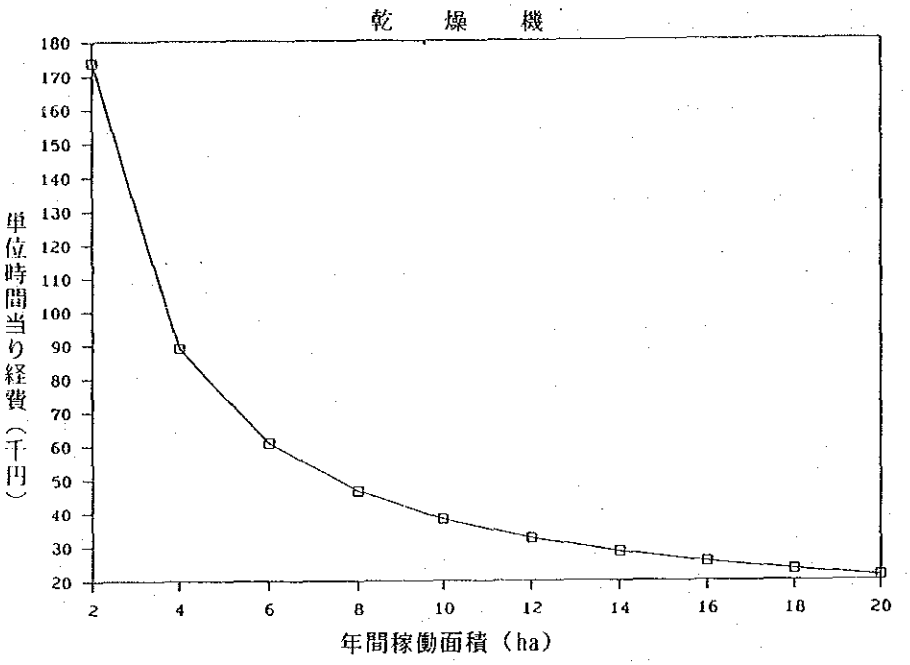
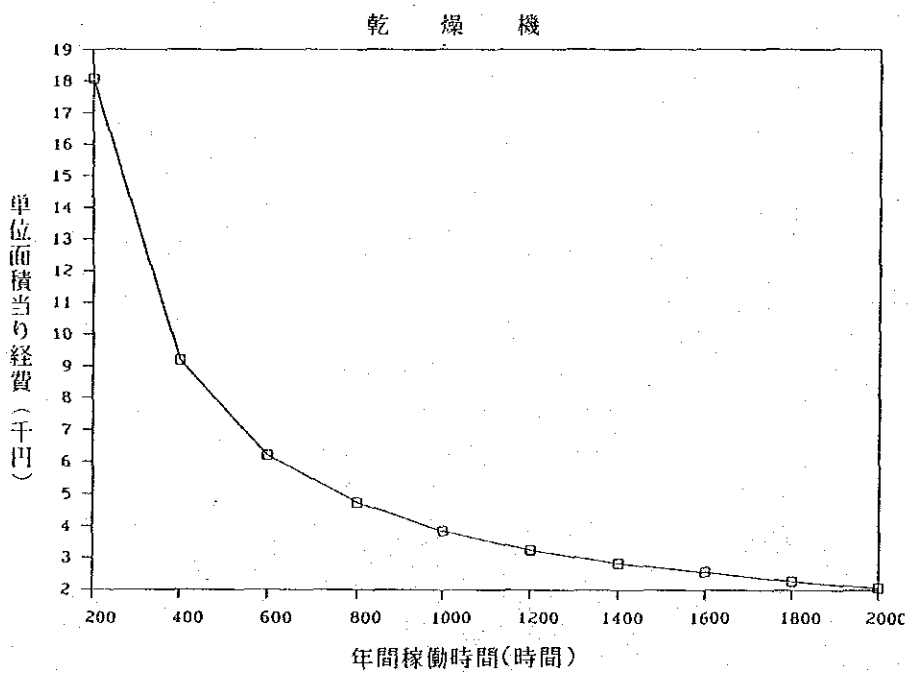
70
80
90
100
年間稼働時間（時間）


乾　燥　機
単位時間当り経費（千円）
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
2
4
6
8
10
12
14
16
18
20
年間稼働面積（ha）


乾　燥　機
単位面積当り経費（千円）
19
18
17
16
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14
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10
9
8
7
6
5
4
3
2
200
400
600
800
1000
1200
1400
1600
1800
2000
年間稼働時間(時間)

農業機械利用についての解析

受入れ先農家の農業機械の保有

坪井稔氏は，20haの土地を所有し，更に借地で4 ha，計24haの農地を経営している。1989年は19.6haを耕作した。残りは現在耕作中。水田は彼の家から離れたところにあり機械管理上多少の問題がある。

個別農業機械の価格分析

ここでは，各作業について1台の農業機械について考察する。結論を引き出すのにこの情報で充分だと思われる。個々の農業機械のサービス価格の図表は，年間稼働面積及び年間稼働時間に対する経費を示す。

次の項目について考察した。

－低い純利益に比べて生産コストが高い。

－年間稼働時間をみると農業機械は充分に利用されていない。

－日本の米の買上げ価格は高く，もし農家が充分に利益を得られないとするならそれは農業機械の高い保守管理経費に帰せられる。

結　論

日本の農民は高いレベルの教育を受けていて，近代的な農業技術についてくわしい。農協は農民と良い関係を保ち効率のよい仕事をしている。日本の農政は，減反や田畑転換政策を通して米の過剰生産を抑え，また生産コストを低く抑えることにより，農民を保護している。生産コストは比較的高く，また米の販売価格も高い。このことは，稲作を収益性の高いものとしている。日本の農民は高レベルの教育に裏付けされて，計画的に経営しまた良く働く。

農業機械製造の発達により，日本の農作業はすべて機械化されている。

日本とナイジェリアの農民の比較

日本の農民は，政府により手厚く保護されている。このことは，日本の農業生産をより収益性の高いものにしている。私の国とは全く違う。

日本の農業機械化はナイジェリアに比べずっと進んでいる。私の国では，安定した収穫

を得るために，その手段として農業機械化を導入することに努力している。農業技術の向上にとって教育は重要である。日本の農民はとても教育レベルが高くて，それ故灌漑施設，農業機械，農業技術の情報を上手に利用することが出来る。

最後に，わが国の農民と比較して，日本の農民は裕福で高い生産レベルを維持している。

日本とタンザニアの農民の比較

いかなる農民も，その目標とするところは彼らの生活を充足するに足るだけの作物を生産することであり，余剰分は売って日用品を購入するための資金とする。その際，実際に行われる農業技術は次の条件によって異なってくる。

近代的な農業技術に対する農民の知識

農業に投資する資金

農業機械

日本の農民は近代的農業技術について充分な知識を持っており，このことが彼らが裕福である理由である。それ故，更に農業に投資でき，それが単位面積当りの生産コストを下げることに役立つ。タンザニアでは，農民は教育レベル及び収入が低く，農業機械を買うことが出来ない。彼らは，政府所有の数台のトラクターを賃貸しで利用するだけである。いまだに多くの農民は手鋤や畜力を使っている。

日本の農協は適切に機能していて，政府は農民を保護してくれる。タンザニアの農民は，近代農業について低い知識しかなく，それが不利益を生み出す。政府は彼らをあまり援助しない。農民は政府によって決定された低価格で生産物を売らなければならないので，高価な農業用資材を充分に買うことが出来ない。日本の米の生産コストは高いが，政府買い上げ価格も高いので利益は充分ある。日本のヘクタール当りの米の収量は高い。なぜなら，圃場管理が良いからだ。灌漑・排水がほとんどの水田で行われ，このことが農業の機械化を可能にしている。タンザニアでは，水田の基盤整備は行われていない。