

MECHANISED RICE SHARE FARMING IN PERMATANG PAUH SEBERANG PERAI, MALAYSIA - A MANAGEMENT EXPERIENCE

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ABSTRACT

Individual farming involving small land parcel (0.5 to 1.0 ha) is declining because it is uneconomic and unable to incorporate modern technological innovation to improve its production efficiency. A centrally managed medium scale mechanised rice share farming was implemented at Permatang Pauh, Seberang Perai, Malaysia in 1988-1991 for eight seasons on a contiguous 57 ha rice land rented from 100 owners. Ten participants were chosen to participate in this project which perpetuated from revolving fund of MR 165,000. The objective of the project was to overcome problem of production efficiency and to provide a stable income to farmers operating on a medium and full time basis. Mechanisation was given prime emphasis to optime and reduce labour requirement and meeting the targeted crop scheduling. Direct seeding and mechanical transplanting methods of crop establishment were adopted. Land preparations, crop establishment and crop care were done using machineries purchased by the group. Selected participants were trained to operate machineries which composed 2 and 4 wheel tractors, mechanical transplanters, motorised seeders and sprayers. Harvesting and transportation of rice to the mills were done on contractual basis using combine harvesters and bulk handling via 3-4 ton lorries respectively. The net clean yield (less 10-20 percent deduction at rice mills) obtained from the 8 seasons crop ranges from 2.7-4.7 t/ha. Resource, time and risk sharing in such project has contributed to stabilise the production and income of participating farmers.

Key Word: Mechanisation, Rice share farming

INTRODUCTION

Traditional method of rice cultivation, involving small land parcel (0.5 to 1.0 ha) is not only uneconomical but non-sustainable. Modern technological innovations become difficult to penetrate and to be easily adopted. As a result of which, land abandonment become more widespread, whatmore with increasing labour displacement to the industrial sectors which is now problematic in Malaysia.

Rice production can be as lucrative as other economic sectors provided a suitable land size is made available for cultivation to the prospective farmer. Small land parcel should be consolidated and modern method of production be adopted to achieve the economics of scale. Mechanisation is necessary to reduce labour requirement and to ensure that the crops are established and harvested as scheduled.

Rice production through share farming will optimise resource utilisation, improve efficiency of production and contributes to cost effectiveness.

CONCEPT OF RICE SHARE FARMING

Rice share farming operates as a co-operative venture and is managed by a central body. The farm is considered as one unit and there is no land subdivision to individual participant. Resources are shared and participants receive wages from farm operations done. The profit obtained will be divided based on their contributions to the project (The current yardstick used is daily attendance).

Advantages of rice share farming

1. Crop planning and operations can be centrally managed
2. Timeliness in crop scheduling
3. Effective water control and crop care
4. Risk sharing of crop losses
5. Participant receives monthly wages and profit division after each crop harvest

MATERIALS AND METHODS

A centrally managed medium scale mechanised rice share farming was implemented at Permatang Pauh, Seberang Perai, Malaysia in 1988-1991 for eight seasons on a contiguous 57 ha rice land rented from 100 owners. Ten participants were chosen to participate in this project which perpetuated from revolving fund of MYR 165,000. About half of the fund was used to purchase machineries and farm implements (Table 1). The project was managed by a project manager and assisted by one supervisor. A steering committee consisting of persons of various expertise and disciplines was set up to advise and monitor the project.

The objective of the project were

- 1) To derive an annual return of RM 8,000 per participant (RM 700 monthly)
- 2) To overcome problem of unstable and inefficient production
- 3) To fully mechanise farm operation
- 4) To make rice farming a full-time occupation

Mechanisation was given prime emphasis to optime and reduce labour requirement and meeting the targeted crop scheduling. Direct seeding and mechanical transplanting methods of crop establishment were adopted. Land preparations, crop establishment and crop care were conducted using machineries purchased by the group. Selected participants were trained to operate the machineries which comprised 2 and 4 wheel tractors, mechanical transplanter, motorised seeders and sprayers. The participants received daily wages corresponding to the nature of works conducted. A point system was used for differential wage payment scheme in job needing specialised skills or heavy work load. Harvesting and transportation of rice to the mills were done on contractual basis using combine harvesters and bulk handling via 3-4 ton lorries respectively.

RESULTS AND DISCUSSIONS

Yield and return

The net yield obtained for 8 seasons ranged from 2.7-4.7 ton/ha. The average yield was 3.3 ton/ha. Low yields were obtained in the fourth season due to outbreak of 'Tungro' and in the eight season due to brown planthopper outbreak. The total return

and expenditure of the project is as shown in Table 2. The total profit after the deduction of 'tithe' (a religious obligation) amounting to RM 36,211.83 was RM 284,689.30. If all the wages were included, the total return with labour was RM 502,849.59. This gives an equivalent income of RM 1048 per month per participant exceeding the targeted RM 700 per month per participant. Such income was adequately attractive for farmers to sustain rice cultivation and making the enterprise a full time occupation. In addition to this, the project has gained RM 76,877.50 worth of machineries and farm equipment at purchased price.

Crop establishment option

Direct seeding and mechanical transplanting methods of crop establishment were used from season 1 to season 5. However the higher establishment cost of mechanical transplanting (Table 3) compared to direct seeding as opposed to the marginal yield increase from the former method (Table 4), caused direct seeding to be preferred and practiced from season 6 to season 8.

Problems and Prospects

The success of share farm is very much dependent on group cohesiveness and leadership. Participants should be able to work together to ensure project success above self interest. The 'work point' system, whereby wages are paid according to nature of work performed will help to reduce dissatisfaction and quality of work done.

Machine owning is important to reduce cost and total dependence on contract services which sometime is not available in time needed. Several units of similar share farms, when established, can be merged and sharing of big machineries such as combine harvesters are possible.

CONCLUSION

Rice farming through resources, time and risk sharing as practised in Permatang Pauh, Malaysia ensure a stable yield and income to participant. With an average of about 6 ha per participant, rice farming can be devoted as a full-time occupations. Mechanisation reduces the labour requirement and drudgery of farm operation and is made possible through share farming.

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Table 1. Machineries and equipment inventory

Item	No.	Cost (RM)
MACHINERIES		
Transplanter	1	12986.00
4W tractor	1	34660.00
2W tractor	2	16310.00
SPRAYER		
Sprayer system	1	5500.00
Power sprayer	3	3450.00
Mist blower	1	900.00
Knapsack sprayer	3	245.00
Spray gun	1	35.00
Carpet blow pipe	5	62.50
OTHERS		
Bushcutter	2	1129.00
Rotary weeder	2	240.00
Hoe	11	123.00
Scythe	9	335.00
Metal rake	2	90.00
Grease pump	1	33.00
Threshing bin	3	234.00
Fertilizer container	15	210.00
Stapler gun	2	85.00
Rake	2	21.00
Wooden land smoother	2	140.00
Saw	1	7.00
Oil drum	2	50.00
Tool kit	1	22.00
Spanner	1	10.00
Total		76,877.50

Table 2. Cost and return of rice share farm, Ptg. Pauh (RM)

No.	Item	Season 1	Season 2	Season 3	Season 4	Season 5	Season 6	Season 7	Season 8	Total	Mean
1.	Yield (t/ha)	3.20	3.10	4.70	2.70	3.20	3.40	3.50	2.70	26.50	3.31
2.	Return	116575.67	115161.16	169814.84	112773.90	128334.71	141017.97	143552.30	110643.17	1037873.72	129734.22
3.	Expenditure	97016.87	80398.69	138731.13	93956.40	87776.58	78608.95	72677.16	67836.81	717002.59	89625.32
4.	Profit	19558.80	34762.47	31083.71	18817.50	40558.13	62409.02	70875.14	42806.36	320871.13	40108.89
5.	Zakat (ithe)	4322.96	4324.04	6374.87	3758.86	4277.55	4700.28	4765.43	3687.85	36211.83	4526.48
6.	Profit after zakat	15235.84	30438.43	24708.84	15058.64	36280.59	57708.74	66109.71	39118.51	284659.30	35582.41
7.	Wages	24500.00	22836.50	27065.50	26494.50	27290.25	35037.74	31430.80	23535.00	218190.29	27273.74
8.	Return with labour	39735.84	53274.93	51774.34	41553.14	63570.84	92746.48	97540.51	62653.51	502849.59	62856.20

Table 3. Establishment cost of mechanical transplanting and direct seeding per ha

No.	Item	Mechanical transplanting	Direct seeding
1.	Land preparation ^a	275	275
2.	Nursery preparation	190	50 ^b
3.	Transplanting/ seeding	75	15
Total		540	340

^a 2 rounds of field rotovation followed by land levelling

^b seeds only

Table 4. Average yield of mechanical transplanting direct seeding, (Main season 1989/90, Permatang Pauh, Malaysia)

Block	Direct seeding			Mechanical transplanting			
	Size (ha)	Total (kg)	Av.yield (kg/ha)	No.	Size (ha)	Total (kg)	Av.yield (kg/ha)
1	0.77	3960	5143	1	0.94	5651	6012
2	2.40	12579	5241	2	3.17	15208	4797
3	3.10	18494	5998	3	2.97	14823	4991
4	2.81	15762	5609	4	2.75	13829	5029
5	1.95	8440	4328	5	2.50	11847	4739
6	2.80	10874	3884	6	3.46	15113	4368
7	2.68	9809	3660	7	2.56	13909	5433
8	3.16	13697	4334	8	3.12	13343	4469
9	2.62	11309	4316	9	4.29	18927	4412
10	2.80	11259	4021	10	2.90	12231	4217
11	1.82	7797	4284				
12	0.97	3492	3600				
Total	27.88	127573	4576		28.66	135482	4727
Block mean			4535				4878
Range			3600-5998				4217-6012
Std.deviation			746				522
C.V(%)			16.5				10.8