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**COSTS OF PRODUCING HIGH YIELDING RICE VARIETIES  
AND TRADITIONAL RICE VARIETIES IN SUPHAN BURI  
WET SEASON 1970, AND DRY SEASON 1971**

by

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INTRODUCTION

During this past year the authors have been conducting field research in Changwat Suphan Buri on the economics of producing high yielding varieties (HYV) of rice. The senior author's interest has focused on the costs of producing HYV, while the junior author has investigated the productivity and distributive effects of growing HYV in the Suphan Area.

The information presented in this paper is based upon a series of interviews with approximately one hundred and thirty farmers in six villages. Forty farmers were randomly selected from two villages in a deep water, broadcasted rice area of Amphoe Bang Pla Ma where floating rice is grown. Ninety farmers were randomly selected from four villages in a transplanted rice area of Amphoe Sri Prachan where both traditional and HYV are grown.

CHARACTERISTICS OF HIGH YIELDING VARIETIES

Three high yielding varieties were observed in the sample area, RD-1, RD-3, and C4-63. RD-1 and RD-3 are HYV recommended by the Rice Department and were developed in Thailand. C4-63 is not recommended but is popular with some farmers. It was developed at the University of the Philippines.

All three varieties respond well to high levels of fertilizer and can yield as high as 8 or more tons per hectare under conditions of good water control and intensive cultural practices.

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The varieties and cultural practices required for maximum production have been discussed elsewhere (1, 2).

## COSTS OF PRODUCTION

### A. Wet Season 1970

Costs of producing broadcasted rice are given in Table 1. Average yield was 37 tang per rai. Only cash costs are included and no attempt has been made to impute values for land, family labor, etc. Credit costs also are not included. Most of the farmers in this area rented at least part of their land with an average rental rate of 14 tang per rai. If the rice was sold for 1,000 baht per kwien, and one-half the land was rented (a common situation), then an additional 70 baht should be added to the cost of production per rai. This would be larger than the actual cash costs and demonstrates the high cost of rental farming in this area.

Harvesting costs are by far the largest single expense item, followed by tractor plowing. Most farmers hired custom operators to plow their land and thresh the paddy after harvest. Most farmers also used some weedicides, but few used fertilizers or insecticides.

**Table 1: Costs of Producing Broadcasted, Floating Rice, Suphan Buri, 1970, Wet Season.**

	<u>฿/Kwien</u>	<u>฿/Rai</u>
Production (Tang)/rai	37	
I. Land Preparation	29.25	10.86
Fertilizer	-	-
Weedicide	-	-
Insecticide & Pesticide	-	-
Plow - Tractor	29.25	10.86
Harrow - Tractor	-	-
Puddle	-	-
Plow - Animal	-	-
Harrow - Animal	-	-
Puddle - Animal	-	-
II. Plant & Grow	13.20	4.90
Fertilizer	2.94	1.09
Weedicide	9.21	3.42
Insecticide & Pesticide	1.05	0.39

		<u>฿/Kwien</u>	<u>฿/Rai</u>
Pull	- Hired labor	-	-
Transplant	- Hired labor	-	-
Hand weeding	- Hired labor	-	-
III. Harvest		112.29	41.68
Harvest	- Hired labor	82.67	30.68
Carry	- Hired labor	2.21	0.82
Thresh	- Hired labor	6.87	2.55
Thresh	- Tractor	8.26	3.07
Carry	- Tractor	11.45	4.25
Thresh	- Animal	-	-
Carry	- Animal	-	-
Carry	- Truck	0.83	0.31
IV. Other		0.10	0.04
Gas for power pump		-	-
Seed		0.10	0.04
Grand Total		154.84	57.48

Costs of producing high yielding and traditional rice varieties are given in Table 2. Average yield for traditional varieties was 34 tang per rai and for HYV, 46 tang per rai. Once again, only cash costs are included. The rental situation is not as bad in this area as in the broadcasted study area, but still the value of 6 tang should be added to the cash cost per rai. This would be a typical situation and would result in a marked increase in costs.

Most transplanted rice farms used fertilizers and insecticides or pesticides, but few used weedicides. Buffalo were generally used for plowing and threshing rather than tractors.

From the data analyzed thus far, there does not appear to be a difference between prices received for transplanted traditional or high yielding varieties. This may not be true for other regions of Thailand and/or may have been the case only in 1971 in the Suphan area. Prices received for the 1971 dry and wet seasons have not yet been tabulated.

There was a difference between prices received from transplanted and prices received for broadcasted rice. Transplanted rice from the 1970 wet season sold for an average of 900 baht per kwien, while broadcasted rice sold for an average of 800 baht per kwien. Factors such as cleanliness, amount of weed seed, moisture content, etc. seemed to be more important in determining the price received than the particular variety being sold.

During the study year rice prices were very low. If a value were imputed for family labor, land and so forth and included in the

costs of production, negative incomes would probably have been recorded for many farmers. Farmers who were required to pay rent on a fixed baht per rai schedule were in a particularly difficult position.

Table 2: Costs of Producing Traditional and High Yielding Transplanted Rice, Suphan Buri, 1970, Wet Season.

	Traditional		Traditional	
	<u>HYV</u>	<u>Varieties</u>	<u>HYV</u>	<u>Varieties</u>
	-----	β/Kwien ----	-----	β/Rai -----
Production (tang)/rai	45	36	45	36
I. Land Preparation	19.95	15.25	8.90	5.54
Fertilizer	4.10	2.88	1.83	1.05
Weedicide	-	-	-	-
Insecticide & Pesticide	--	-	-	-
Plow - Tractor	3.99	5.08	1.78	1.85
Harrow - Tractor	-	5.49	4.79	1.99
Puddle	10.75	1.72	0.50	0.62
Plow - Animal	1.11	-	-	-
Harrow - Animal	-	-	-	-
Puddle - Animal	-	0.08	-	0.03
II. Plant & Grow	111.92	104.01	49.93	37.80
Fertilizer	64.40	37.03	28.73	13.46
Weedicide	1.15	0.92	0.51	0.33
Insecticide & Pesticide	3.16	3.84	1.41	1.40
Pull - Hired labor	12.72	21.49	5.68	7.81
Trans-plant - Hired labor	27.54	40.36	12.28	14.67
Hand weeding - Hired labor	2.95	0.37	1.32	0.13
III. Harvest	51.21	80.01	22.85	29.08
Harvest - Hired labor	36.16	63.61	16.13	23.12
Carry - Hired labor	-	0.14	-	0.05
Thresh - Hired labor	6.23	0.22	2.78	0.08
Thresh - Tractor	4.39	1.94	1.96	0.70
Carry - Tractor	0.48	2.28	0.22	0.83
Carry - Truck	3.95	11.82	1.76	4.30
Thresh - Animal	-	-	-	-
Carry - Animal	-	-	-	-
IV. Other	9.42	14.55	4.20	5.29
Gas for power pump	8.36	13.70	3.73	4.98
Seed	1.06	0.85	0.47	0.31
Grand Total	192.50	213.82	85.88	77.71

### B. Dry Season 1971

Costs of producing transplanted rice during the 1971 dry season are included in Table 3. Yields averaged 51 tang per rai and virtually all the rice was of high yielding varieties. Costs appeared to be much higher, off-setting the increased yield over the wet season. Increased costs revolved around the irrigation requirements, but most other costs were higher as well. The particular village with the largest dry season area also was the village with the greatest tractor usage and this raised average costs. Threshing baskets were widely used in the dry season with hired labor and added to the total costs.

The whole subject of dry season costs of production for rice needs more study. Kasetsart University has initiated one such study for the upcoming year.

Returns for growing rice in the 1971 dry season have not yet been analyzed.

Table 3: Costs of Producing High Yielding Transplanted Rice, Suphan Buri, 1971, Dry Season.

	<u>฿/Kwien</u>	<u>฿/Rai</u>
Production (Tang)/rai	50	50
I. Land Preparation	27.20	13.54
Fertilizer	5.67	2.82
Weedicide	0.13	0.06
Insecticide & Pesticide	0.56	0.28
Plow - Tractor	7.05	3.51
Harrow - Tractor	1.13	0.56
Puddle	7.89	3.73
Plow - Animal	3.05	1.52
Harrow - Animal	0.18	0.09
Puddle - Animal	1.54	0.77
II. Plant & Grow	130.83	65.16
Fertilizer	74.09	36.70
Weedicide	0.64	0.32
Insecticide & Pesticide	2.33	1.16
Pull - Hired labor	13.78	6.86
Transplant - Hired labor	33.87	16.87
Hand weeding - Hired labor	6.12	3.05

		<u>฿/Kwien</u>	<u>฿/Rai</u>
III. Harvest		82.65	41.15
Harvest	- Hired labor	49.88	24.84
Carry	- Hired labor	1.33	0.66
Thresh	- Hired labor	28.07	13.98
Thresh	- Tractor	0.49	0.24
Carry	- Tractor	0.02	0.01
Carry	- Truck	2.86	1.42
Thresh	- Animal	-	-
Carry	- Animal	-	-
IV. Other		44.20	22.01
Gas for power pump		30.97	15.43
Irrigation Association Fee		11.19	5.57
Seed		2.04	1.01
Grand Total		284.88	141.86

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APPENDIX I  
 RATES FOR HIRE  
 1970 Wet Season

<u>Broadcasted Area</u>			
<u>Activity</u>	<u>Unit</u>	<u>Most Common Charge</u> Baht	<u>Range</u> Baht
Labor for:			
Broadcasting	per rai	2	-
Harvest	per 100 bundles	125	120-130
Carry bundles	per 100 bundles	8	5-10
Tractor:			
1st plow	per rai	13	10-15
2nd plow	per rai	10	10-11
Carry bundles	per 100 bundles	20-25	10-30
Thresh	per 100 bundles	12	10-15
<u>Transplanted Area</u>			
Labor for:			
Pulling seedlings	per 100 bundles	10-12	7-15
Transplanting	per day	10	7-15
Weeding	per day	8	7-10
Harvesting	per day	12	8-15
Threshing basket	per day	20	20-25
Tractor:			
Plow	per rai	18	15-20
Thresh	per 100 bundles	10	10-15
Puddler	per rai	24	20-29

APPENDIX II  
 RATES FOR HIRE  
 1971 Dry Season

<u>Transplanted Area</u>		<u>Most Common Charge</u>	<u>Range</u>
<u>Activity</u>	<u>Unit</u>	Baht	Baht
Labor for:			
Pulling seedlings	per 100 bundles	10	8-15
Transplanting	per day	8	6-12
Weeding	per day	8, 10	8-10
Harvesting	per day	10	8-12
Threshing basket	per day	20	20
Tractor:			
Plow	per rai	20	18-29
Thresh	per 100 bundles	10	10-12
Puddler	per rai	25	20-35