Rainfed and Irrigated Rice Farming on the Savannakhet Plain

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The aim of this study was to characterise rice production in the Savannakhet Plain, which has long been a major rice bowl for Laos. As this is one of the most productive and commercialised rice-growing regions in the country, an understanding of farmers' circumstances and strategies can give a good indication of how rice policy is working out in practice. If rice farmers in this region face substantial constraints on production, those in other settings will be even less able to meet government policy targets.

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THE STUDY AREA

Savannakhet Province is the largest in Laos, covering 21,774 km², bordered by the Mekong River in the west and the Annamite Range in the east (see Fig. 5.1 in Chap. 5). The Province is drained by the Banghiang River, which originates in the mountains of Vietnam and empties into the Mekong about 90 km south of Savannakhet City. The river system has a comparatively steep fall and is subject to flash flooding in the upper catchment and longer-term flooding in the lower catchment, where several irrigation schemes have been established. The major rice-growing areas are found along the alluvial plain adjacent to the Mekong, with secondary areas on the residual terraces in the central part of the Province. The Province is traversed by three national roads—Route 13, which runs north-south along the Mekong corridor; Route 9, which runs on an east-west trajectory from Savannakhet City to the Vietnam border; and Route 1, which runs north-south along the eastern border range. Most of the provincial roads connecting district towns with major villages are unpaved, and most local roads are in poor condition and unusable during the wet season.

In 2011–2012 Savannakhet Province accounted for 23% of the country's rice production and 25% of irrigated rice production. Within the province, rainfed wet-season (WS) rice accounted for 78% of total production and irrigated dry season (DS) rice for 22%.¹ The yield of rice in Savannakhet averaged 3.4 t/ha for WS rice and 4.1 t/ha for DS rice, above the national average. Among the 15 districts of the Province, by far the largest rice producers were the five districts in the Mekong corridor, which together accounted for 60% of the total rice area in the Province and 86% of the irrigated area. The average WS yield in these five districts was 3.7 t/ha and the average DS yield was 4.5 t/ha, somewhat higher than the provincial average.

The survey was conducted in six villages in Champhone District, the second largest rice producer in the Province, accounting for 16% of total production (Fig. 7.1). The District lies just to the east of Route 13 and the south of Route 9 and spans the middle reaches of the Champhone River, a major right-bank tributary of the Banghiang. Several irrigation schemes have been constructed along the Champhone River to service rice farmers in the district. Given its irrigation infrastructure of reservoirs and canals,

Fig. 7.1 Savannakhet Province showing Champhone and other districts and lowland rice-growing areas. (Source: Thavone Inthavong)

Champhone produced more DS rice than any other district, accounting for 41% of the Province's irrigated rice output in 2011–2012.

The villages were selected based on being located within this important rice-producing area and having potential to produce rice for the market. The characteristics of the villages and sampling details are presented in Table 7.1. The survey households were selected randomly from a list of all households in each village. The survey questionnaire focused on rice production in each season, including the area cultivated, the working calendar, input costs, production, sales, constraints, and potential. The survey was conducted in March 2012 by staff of the Faculty of Agriculture at the National University of Laos.

Table 7.1 Characteristics of survey villages

<i>Village</i>	<i>No. of households</i>	<i>No. inter-viewed</i>	<i>Characteristics of village</i>
Phalaeng	142	38	<ul style="list-style-type: none"> • Most farmers produced rice for market • Rice Seed Farmers Group • Irrigated DS rice in lowland areas near canal • Easy access in both seasons (1 km from main road)
Phiaka	66	22	<ul style="list-style-type: none"> • Irrigated DS rice in lowlands and along river • Some low-lying paddies flooded in WS in some years • Farmers with large area and DS rice produced for market
Beukthong	187	42	<ul style="list-style-type: none"> • Access to village very difficult in WS • Most farmers grew WS rice • Some grew DS rice near reservoir or small stream • Some farmers sold rice surplus after harvest • Rice Seed Farmers Group
Dondaeng	154	50	<ul style="list-style-type: none"> • Can access village in both seasons • Most farmers grew WS rice • Some grew DS rice near stream (using pump or tractor) • Some farmers sold surplus rice
Khaokad	127	32	<ul style="list-style-type: none"> • Can access village in both seasons • Most farmers grew WS rice, a few grow irrigated DS rice near natural ponds • Very few farmers sell rice after harvest
Khamsida	178	44	<ul style="list-style-type: none"> • Can access village in both seasons • Farmers grow WS rice only • Low yield due to infertile sandy soil in upper paddies • Most farmers produce rice for home consumption; some have insufficient rice in DS
Total	854	228	<ul style="list-style-type: none"> • Can access village in both seasons

VILLAGE AND HOUSEHOLD PROFILES

The six villages were representative of the range of conditions in Champhone District. Ban Phalaeng was located in the Champhone Village Cluster about 10 km from Champhone Town and 1 km east of Route 13. Phalaeng was established in 1809 by two groups that migrated from other

villages in the region. In 2011, the village had 142 households and 192 families, with a total population of 971. All but a few households owned land and those without land rented fields for cultivation. Phalaeng had a total area of 825 ha including about 500 ha of cultivated land. Rice farming was the main source of income. WS rice was cultivated on about 440 ha and around 150 ha were used for irrigated rice and vegetables in the dry season. Water for irrigation was sourced from the Sou and Champhone reservoirs. The livestock in the village included an estimated 118 cattle, 57 water buffaloes, 83 pigs, 169 goats, and about 1800 ducks and chickens. The primary land use in the village was rainfed and irrigated rice cultivation, some cash crop cultivation, fishing, and livestock production (cattle and buffaloes). In the wet season, rice and fish culture were the main activities. Irrigated rice was grown in the dry season in the fertile floodplain near the reservoirs and along the canals. Vegetables were grown in the houseyards and in irrigable paddy fields after harvesting the WS rice crop. As the village was close to the main road and Champhone town, the villagers were quite commercialised. They could take their surplus rice and other produce to sell in Kengkok Market in Champhone every day. Moreover, local Lao and Vietnamese traders came to the village to provide fertiliser on credit. The villagers had set up a farmers group to produce rice seed for other villages with the assistance of a government agency. More than half the farmers had joined this programme.

Ban Phiaka was established more than 200 years ago about 15 km north of Champhone. The village had 66 households and a total population of 566. The village area was 520 ha, supporting 218 ha of rainfed rice in the wet season and 92 ha of irrigated rice in the dry season, as well as 30 ha of vegetable gardens and fruit tree orchards. Livestock included 319 cattle, 167 water buffaloes, 69 pigs, 75 goats, and around 10,000 poultry. More than half the villagers had their own hand tractor and there were two rice mills, six threshing machines, and three water pumps. The village had a diversity of rice ecosystems. Water for DS irrigation and WS supplementary irrigation was pumped from the adjacent Champhone River. With this source of irrigation, rice farming was the main source of income in both seasons. However, WS rice was affected by flooding in some years, though these flooded areas had fertile soil and were suitable for irrigated DS rice. Phika had also established a farmers group to produce rice seed, which provided a good income for the farmers involved. Fishing and other agricultural activities also contributed to household income. Local and Vietnamese traders came to the village to buy rice and other products.

Vietnamese traders often provided fertiliser to farmers on credit early in the season.

Ban Beukthong was located 16 km from Champhone. The village had 187 households and a population of 1306. The village area was 3997 ha, including 436 ha of rainfed lowland rice. Livestock included 312 cattle, 218 buffaloes, 211 pigs, and about 2000 poultry. The landscape in Beukthong ranged from middle-level lowlands to floodplain. DS rice could be cultivated in parts of the floodplain area with irrigation from natural ponds or a small stream. Rice farming was the main source of income. A seed production group had also been established in the village. As with the above villages, Vietnamese traders came to Beukthong early in the season to provide fertiliser on credit, with the cost being repaid after harvest, including interests of 20%.

Ban Dondaeng was established in 1937 and about 8 km east of Champhone. It was the result of a merger of smaller villages to comply with government policy. At the time of the survey the village had 154 households and a total population of 1328. The village territory was 4100 ha, with 710 ha of rainfed rice in the wet season and 147 ha of irrigated rice in the dry season. The landscape comprised two zones—a middle-level lowland area and a floodplain area. In the former, farmers used land for rainfed rice and animal raising in the wet season. In the latter, flooding prevented some areas from being used for rice in the wet season but they could be used for irrigated rice in the dry season. The source of water for irrigation and supplementary irrigation was the Talong reservoir; some farmers used water from natural ponds and small streams for their DS rice. Dondaeng had good road access to both the Kengkok markets in Champhone and the market in Xounabouly to the south. Farmers sold surplus rice as their main source of income. However, some farmers had low yields due to water shortage in the wet season and low soil fertility in the middle-level lowlands.

Ban Khaokad was established more than 300 years ago. It was located 7 km north-west of Champhone. There were 127 households and a total population of 802. The village territory was 591 ha, including 268 ha of rainfed paddies. The landscape was similar to the other villages, ranging from upper-level lowlands to lowlands, but with no irrigated rice. Rice production was mainly for household food security. Some farmers grew watermelon and vegetables in the paddy fields after the rice harvest. These activities enabled villagers to earn income to contribute to village develop-

Table 7.2 Distribution of survey households by farm size

<i>Farm size (ha)</i>	<i>No. of households</i>	<i>% of households</i>
<0.5	14	6.1
0.51–1.0	39	17.1
1.01–2.0	87	38.2
2.01–3.0	54	23.7
>3.0	34	14.9
Total	228	100.0

ment. A village fund had been established to lend money to villagers to develop a business or buy agricultural inputs.

Ban Khamsida was established about 200 years ago. There were 178 households and a total population of 1284. The territory was 590 ha, with 300 ha of rainfed rice (some of which could be irrigated), a garden area of 80 ha, and a forest area of 70 ha. The village was located in the upper-level lowlands and had poor soil. Hence some households had insufficient rice for two to ten months of the year. Only a few paddy fields had access to water in the dry season to grow irrigated rice. With poor soils and limited irrigation, farmers needed capital to buy inputs to increase the yield of rice.

Of the households interviewed, 80% were Lao or Phouthai and 20% were Khmu. The Khmu and related groups were the earlier settlers in Savannakhet, while the Lao and Phouthai had begun moving into the region from further north in the sixteenth century. The modal household size was 6–7 and the range was from 2 to 15. The modal number of workers per household was 3, ranging from 1 to 8. Households had from 1 to 5 plots of land. The mean farm size was 2.8 ha and the range was from 0.3 to 11.2 ha. The distribution of farm size is shown in Table 7.2, indicating that 38% of respondents had between 1 and 2 ha and 62% had between 1 and 3 ha. Almost all households (96.5%) reported that they worked on their own land, while four worked on their parents' land and only two rented land from other villagers.

RICE PRODUCTION IN THE WET SEASON

All survey farmers cultivated WS rice in 2011. The cropping calendar for WS rice is shown in Table 7.3. Nursery preparation began in April, preparation of the paddy field in May, transplanting in July, and harvesting in November. The mean area cultivated with WS rice in 2011 was 1.9 ha but

Table 7.3 Cropping calendar for wet-season and dry-season rice production

Activity	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Fertilizing												
Sowing												
Land preparation 1												
Land preparation 2												
Transplanting												
Fertilising												
15-15-15												
16-08-08												
16-20-00												
46-00-00												
Management												
Harvesting												
Post-harvest												

Key: Wet season Dry season

Table 7.4 Mean area and yield of wet-season rice in survey villages, 2011

<i>Village</i>	<i>Mean area cultivated (ha)</i>	<i>Mean yield (t/ha)</i>
Phalaeng	1.90	2.43
Phiaka	2.27	2.45
Beukthong	2.79	2.29
Dondaeng	1.36	1.81
Kaokad	1.99	2.24
Khamsida	1.34	1.67
All villages	1.94	2.24

varied between villages, from 1.3 ha in Khamsida to 2.8 ha in Beukthong (Table 7.4). The range was from 0.3 to 7.5 ha.

Hand tractors were almost universally used for land preparation. Over two thirds (68%) of households reported that they used their own hand tractor, 18% hired a hand tractor, 10% borrowed a hand tractor from a relative, and only 4% still used a buffalo-drawn plough. This traditional practice was found among some of the poorest farmers in Dondaeng and Khamsida.

Farmers reported using 16 different rice varieties in the wet season, almost all glutinous, including 14 improved varieties that had been bred and distributed by Ministry of Agriculture and Forestry (MAF) research

Table 7.5 Rice varieties used by respondents in wet and dry seasons, 2011–2012

<i>Variety</i>	<i>Wet season</i>		<i>Dry season</i>	
	<i>No. of households</i>	<i>% of households</i>	<i>No. of households</i>	<i>% of households</i>
<i>Improved varieties</i>				
Thadokham 1	8	3.5	2	1.7
Thadokham 5	5	2.2	22	19.0
Thadokham 6	25	11.0	9	7.8
Thadokham 7	5	2.2	2	1.7
Thadokham 8	30	13.2	15	12.9
Thadokham 10	73	32.0	25	21.6
Thadokham 11	10	4.4	9	7.8
Phonengam 1	2	0.9	–	–
Phonengam 3	35	15.4	9	7.8
Phonengam 5	21	9.2	9	7.8
Phonengam 6	–	–	2	1.7
Thasano 3	2	0.9	8	6.9
Thasano 6	–	–	2	1.7
Thasano 7	4	1.8	2	1.7
Glutinous Mali	8	3.5	–	–
Non-glutinous Mali	7	3.1	–	–
<i>Local varieties</i>				
Dodaeng	24	10.5	–	–
Phanpac	2	0.9	–	–
<i>Other</i>	–	–	9	7.8
Total	228	100.0	116	100.0

stations (Table 7.5). Most farmers (86%) reported using an improved variety, with 32% using Thadokham (TDK) 10 (a recent release) and 15% using Phonengam (PNG) 3 (an IRRI cross released in 2005 that was high-yielding and relatively drought-tolerant). The major reason given for using improved varieties was that they yielded better than traditional varieties.

Most farmers (85%) used chemical fertilisers for WS rice production, including urea (46-00-00) (34%), ammonium phosphate (16-20-00) (46%), and compound fertilisers such as 10-08-08 (16%) and 15-15-15 (4%). The quantity used varied between households depending on the fertility of their land and their working capital.

The mean yield was 2.2 t/ha, well below the reported mean for Savannakhet as a whole (Table 7.4). Four villages averaged 2.3–2.4 t/ha

Table 7.6 Representative enterprise budget for one hectare of wet-season rice

<i>Item</i>	<i>Quantity</i>	<i>Price (LAK/ unit)</i>	<i>Value (LAK)</i>	<i>% of gross revenue</i>
Gross revenue	2.24 t	2000/kg ^a	4,480,000	100.0
Seed	75 kg	3500/kg	262,500	5.9
Fertiliser	150 kg	6780/kg	1,017,000	22.7
Fuel			500,000	11.2
Threshing/hauling	50 bags	5000/bag	250,000	5.6
Land tax		35,000/ha	35,000	0.8
Other costs			100,000	2.2
Family labour	50 days	30,000/day	1,500,000	33.5
Hired labour		720,000/ha	720,000	16.1
Total paid-out costs			2,884,500	64.4
Total costs			4,384,500	97.9
Gross margin 1			1,595,500	35.6
Gross margin 2			95,500	2.1
GM1/day of family labour			31,910	

^aFarm-gate price in 2012; USD 1 = LAK 1653 (24 April 2019)

but in Dondaeng and Khamsida the mean yield was only 1.7–1.8 t/ha due to lower soil fertility and the impact of drought where farmers did not have access to supplementary irrigation.

A representative enterprise budget for WS rice was prepared based on the survey data (Table 7.6). Given a yield of 2.2 t/ha and a farm-gate price of LAK 2000 per kg of unhusked rice, the gross revenue was LAK 4.48 million per ha. Enterprise expenses or paid-out costs (i.e., excluding the opportunity cost of family labour) totalled LAK 2.89 million per ha, or nearly two thirds of gross revenue. Fertiliser was the largest item, accounting for a third of expenses.

Subtracting paid-out costs from gross revenue gave a gross margin (GM1) of LAK 1.60 million per ha (Table 7.6). Calculated as a return to the input of family labour, this resulted in a figure of LAK 32,000 per day, roughly equal to the prevailing agricultural wage. Thus if the opportunity cost of family labour is valued at LAK 30,000/day, total enterprise costs were LAK 4.39 million, consuming almost all of the gross revenue and giving a gross margin (GM2) close to zero (LAK 95,500 per ha).

The observed farm-gate price in 2011 was LAK 2000 per kg, which was just enough for farmers to break even, given an average total cost of LAK

1950 per kg. However, the government subsequently introduced a minimum farm-gate price of LAK 2500 per kg for paddy rice. If this price is applied to the budget in Table 7.6, GM1 increases to LAK 2.72 million per ha and LAK 54,000 per day. A 25% increase in price thus results in a 70% increase in the return to the family's resources of land and labour.

However, the WS crop is traditionally seen as providing the household's own rice supply rather than as a major source of cash income (Fig. 7.2). With little or no alternative use of paddy land and farm labour during the wet season, to break even while ensuring the staple food supply would be considered a satisfactory outcome. In fact, many farmers also sold surplus rice from the WS harvest, converting otherwise unpaid family labour into a source of cash income for the household.

Farmers identified the major constraints facing their WS rice production. The most frequently mentioned constraints were biophysical, notably insect and pest infestation (27%) and drought (22%), followed by socioeconomic constraints such as lack of capital (13%) and shortage of labour (13%).

Fig. 7.2 Sun-drying paddy before storing for household consumption.
(Source: Rob Cramb)

RICE PRODUCTION IN THE DRY SEASON

Just over half the survey households (51%) reported that they grew irrigated rice in the 2011–2012 dry season. The cropping calendar for DS rice is shown in Table 7.2. Nursery preparation began in December, straight after the WS rice harvest. Land preparation and transplanting occurred in January and harvesting in April–May. Hence the DS crop was on a tighter schedule than the WS crop.

The area of DS rice cultivated averaged 1.0 ha and ranged from 0.2 to 5.0 ha. However, 25% of those with DS rice cultivated less than 0.5 ha and 51% cultivated between 0.5 and 1.0 ha. Only 20% had 1–2 ha and 5% had more than 2 ha. Given the lower incidence of DS rice cultivation and the smaller area cultivated by each household, the total area cultivated was around a quarter of that in the wet season.

Farmers used only improved varieties in the dry season (Table 7.5). The most popular of these were, as in the wet season, TDK10 (22%), TDK8 (13%), TDK11 (8%), TDK6 (8%), and PNG3 (8%). However, TDK5, which only 2% of farmers used in the wet season, was also relatively popular due to its short duration, with 19% of DS farmers reporting its use.

Almost all farmers growing DS rice (96%) applied chemical fertiliser. As mentioned above, Vietnamese traders came to most villages at the beginning of the season to supply fertiliser on credit, to be repaid with interest at harvest. The same types of fertiliser were used as in the wet season, including ammonium phosphate (39%), urea (38%), and the compound fertilisers 16-08-08 (18%) and 15-15-15 (8%).

Another representative enterprise budget was prepared for DS rice, again based on the survey data (Table 7.7). With a higher yield of 3.0 t/ha but a lower farm-gate price of LAK 1800 per kg, the gross revenue was 20% higher at LAK 5.4 million per ha. Paid-out costs were 35% higher, totalling LAK 3.9 million per ha, or nearly three quarters of gross revenue. The major cost was again for fertiliser, accounting for 24% of revenue, but there was also an irrigation fee and higher post-harvest costs due to the higher yield.

Subtracting paid-out costs from gross revenue gave a gross margin (GM1) of LAK 1.74 million per ha, only marginally higher than for the WS crop (Table 7.7). The return to family labour was LAK 29,000 per day, marginally lower than in the wet season and just below the agricultural wage. This reflected the higher labour input for the DS crop. Thus costing family labour at LAK 30,000 per day meant that total enterprise

Table 7.7 Representative enterprise budget for one hectare of dry-season rice

<i>Item</i>	<i>Quantity</i>	<i>Price (LAK/unit)</i>	<i>Value (LAK)</i>	<i>% of gross revenue</i>
Gross revenue	3.0 t	1800/kg ^a	5,400,000	100.0
Seed	90 kg	3500/kg	315,000	5.8
Fertiliser	200 kg	6500/kg	1,300,000	24.1
Fuel			500,000	9.3
Irrigation fee		300,000/ha	300,000	5.6
Threshing/hauling	75 bags	5000/bag	315,000	5.8
Other costs			150,000	2.8
Family labour	60 days	30,000/day	1,500,000	27.8
Hired labour		720,000/ha	720,000	13.3
Total paid-out costs			3,960,000	73.3
Total costs			5,460,000	101.1
Gross margin 1			1,740,000	32.2
Gross margin 2			-60,000	
GM1/day of family labour			29,000	

^aFarm-gate price in 2013; USD 1 = LAK 1653 (24 April 2019)

costs exceeded gross revenue, resulting in a gross margin (GM2) close to zero (–LAK 60,000 per ha).

If the government's minimum price of LAK 2500 per kg was applied, the calculated returns became more acceptable. The GM1 per ha increased to LAK 3.54 million and the GM1 per day to LAK 59,000, almost double the farm wage. The GM2 per ha was LAK 2.04 million.

The major constraints reported for DS rice were similar to those for the wet season—pest and insect infestation (34%), drought and inadequate water supply (24%), lack of capital (19%), shortage of labour (10%), and the absence of an irrigation scheme in the village (9%).

HOUSEHOLD RICE CONSUMPTION AND SALES

Of total annual rice production, over half (56%) was retained for household consumption and about a third (32%) was sold, including 1% as seed. About 6% was given to relatives and 6% kept for seed and poultry feed.

Nearly two thirds of households interviewed (62%) reported that they sold rice in one or both seasons. The average quantity of rice sold was 2.3 tons. The quantity sold varied with farm size and season (Table 7.8). For those selling only WS rice (46% of all sellers), the mean quantity varied

Table 7.8 Quantity of rice sold by farm size and season

<i>Season</i>	<i>Farm size (ha)</i>	<i>% of those selling</i>	<i>Sales per household (tons)</i>		
			<i>Maximum</i>	<i>Minimum</i>	<i>Mean</i>
Wet season only	<1.5	20	0.7	0.1	0.5
	1.51–2.5	15	2.8	0.4	1.4
	2.51–4.5	9	7.4	0.9	2.6
	>4.5	2	10.0	1.3	4.0
Dry season only	<1.5	3	3.0	1.4	2.7
	>1.5	1	4.0	1.8	3.4
Both seasons	<1.5	6	4.5	0.2	1.7
	1.51–2.5	20	5.2	0.4	2.7
	2.51–4.5	18	6.6	0.6	3.0
	>4.5	6	10.8	1.1	4.5

from 0.5 tons to 4.0 tons as farm size increased from less than 1.5 ha to more than 4.5 ha. Only a few households (4%) sold only DS rice, averaging around 3 tons. Half of the rice sellers sold both WS and DS rice, the mean quantities varying from 1.7 tons for those with less than 1.5 ha to 4.5 tons for those with more than 4.5 ha.

Nearly half of households selling rice did so in August and September (Fig. 7.3). Farmers sold rice at this time as they had enough rice in storage for household consumption and the price of paddy rice tended to rise to LAK 2000 per kg during these months, preceding the WS rice harvest. During 2012 the price fluctuated from LAK 1500 to LAK 2000 per kg for eating rice and from LAK 3000 to LAK 3500 per kg for rice seed.

On the other hand, about a fifth of households (19%) produced insufficient rice for their consumption needs, especially in Ban Khamsida and Ban Kaokad. These households experienced a period of rice shortage from one to eight or more months (Fig. 7.4). Of these rice-deficit households, most (55%) experienced a shortage of one to four months, but as many as 31% were short of rice for more than half the year. The main reasons given for facing a rice shortage were limited land (26%), poor soil (26%), and drought in some years (19%). Other problems affecting yield were pests and diseases, flooding, lack of water, and weeds. Ban Khamsida was especially prone to these problems, with mainly upper-level paddies with sandy soils that were more drought-prone and lacked irrigation. However, farmers in other villages with small holdings (23% had 1 ha or less) may also have struggled to meet their subsistence needs.

Fig. 7.3 Incidence of selling rice throughout the year (% of those selling, $n = 141$)

Fig. 7.4 Duration of rice deficit (% of households with deficit, $n = 43$)

CONCLUSION

The survey villages had been growing rice on the Savannakhet Plain for centuries, gradually expanding the cultivated area as population increased. Though situated in this generally favourable environment for rice, the villages encompassed a variety of agroecosystems. Upper paddies with sandy soils were drought-prone and without irrigation, hence could only support WS rice with lower yields. Lower paddies were more fertile and often had access to pump irrigation from rivers, canals, or ponds; hence, they could often support WS and DS rice crops with somewhat higher yields. Lower paddies along the floodplain of the Champhone River also had fertile soils but were frequently flooded in the WS; hence, only DS rice could be cultivated, depending for moisture on the receding floods and irrigation. The villages had different combinations of these agroecosystems, affecting their surplus-producing potential.

Farms were generally small. The mean size was 2.8 ha and 62% of households had 1–3 ha. Almost all farmers planted WS rice, cultivating about 2 ha on average, while only half of them planted DS rice, averaging about 1 ha—a function of access to reliable irrigation. Hence the total DS cultivated area was about a quarter of the WS area. Despite widespread use of improved varieties, fertiliser, and, where available, irrigation, the WS yield averaged only 2.2 t/ha and the DS yield, 3.0 t/ha—well below the Ministry of Agriculture and Forestry's target yield of 4.2 t/ha. Farmers highlighted pest infestations, drought, and insufficient irrigation as the main constraints on yield, and, less frequently, shortages of land, labour, and capital.

For the yields and prices encountered in the survey, the returns to rice cultivation were low. Given a price of LAK 2000 per kg of paddy, the WS crop gave an average gross margin (without imputing a cost to family labour) of LAK 1.60 million per ha and LAK 32,000 per day, enabling a household to just break even. At the government's minimum price of LAK 2500 per kg, the gross margin was LAK 2.72 million per ha and LAK 54,000 per day, a somewhat more attractive return. With a higher yield but a lower price of LAK 1800 per kg, the DS crop gave a gross margin of LAK 1.74 million per ha, but only LAK 29,000 per day due to the higher labour input. In this case a household would just fail to break even. Once again, at a price of LAK 2500 per kg, the gross margin jumped to LAK 3.54 million per ha and LAK 59,000 per day, making the crop somewhat more profitable.

Though more than half (56%) of total rice production was for subsistence, most of the survey farmers were highly commercialised, taking fertiliser and other inputs on credit, hiring labour and machinery, paying for irrigation, and regularly selling rice. Nearly two thirds (62%) of households sold rice; nearly half of these sold only from the WS crop and half sold from both the WS and DS crops. Overall, about a third of total production was sold. The quantity sold by each household was directly proportional to farm size—about 0.7 t/ha for those selling only WS rice and about 1 t/ha for those selling in both seasons. Farmers sold throughout the year, but half (presumably mainly DS producers) sold at the time of highest price in August–September. Farmers in some villages produced seed rice which they sold at almost double the price for eating rice.

However, even in this surplus-producing district, about a fifth of surveyed households with less-favourable resource endowments (mainly smaller, less-productive farms) were unable to meet their subsistence requirements, let alone produce a marketable surplus. In most cases (55%) the shortage was for one to four months. While the surplus producers would benefit from higher paddy prices, these net purchasers of rice would be worse off.

Overall, the survey shows that, even with low yields and low returns, rice production in the Savannakhet Plain can generate a sizeable surplus for marketing within Laos and internationally. However, farmers are going to remain poor unless they can achieve higher yields and obtain higher and more stable prices. Low incomes will increase the incentives for younger household members to migrate to Vientiane or to Thailand for employment, adding to the shortage of farm labour. Nevertheless, given its comparative advantage in rice production, the Savannakhet Plain is a good focal area for increased investment in research, extension, input supply, mechanisation, and infrastructure to boost productivity and farm incomes.

NOTE

1. A small area of upland rice is produced in the hilly interior towards the Vietnam border, though this is probably under-reported.

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