

**LAND TENURE PATTERNS AND AGRICULTURAL
DEVELOPMENT IN N.E. THAILAND: A CASE STUDY
OF THE LAM PAO IRRIGATION AREA IN
CHANGWAT KALASIN**

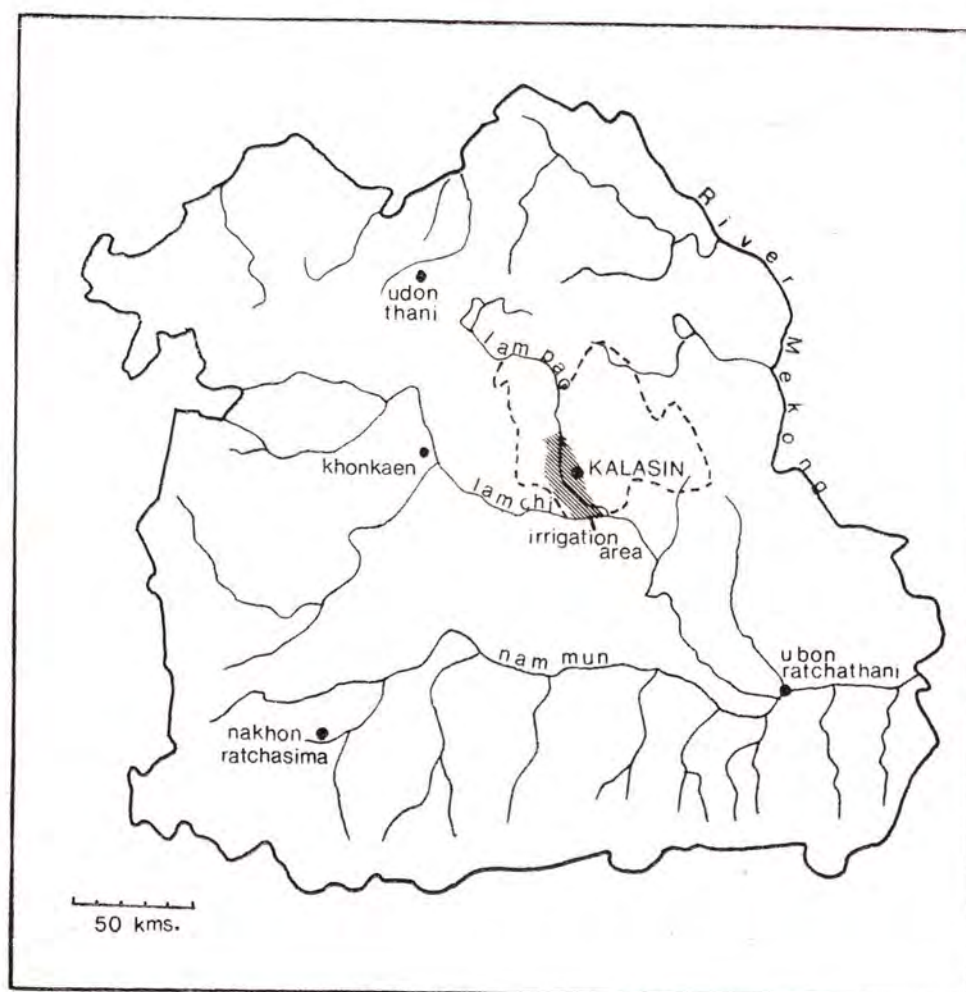
by

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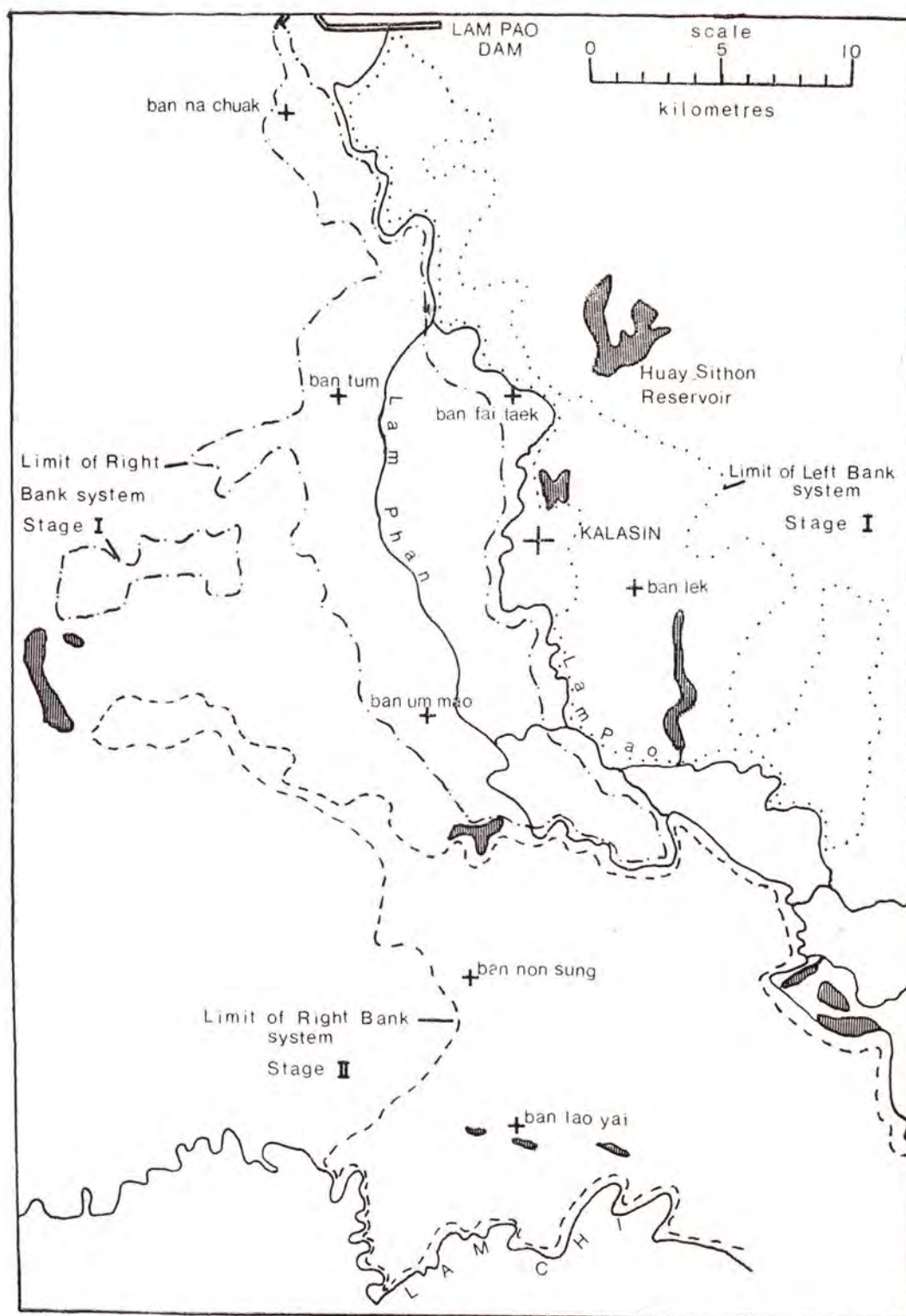
The Lam Pao Irrigation Scheme in Northeast Thailand began in 1957 and is one of a number of schemes sited on the Nam Mun and Lam Chi drainage systems (see Map 1). It is hoped that these tributary projects will not only aid the economic development of the region but also provide invaluable guidelines for the eventual development of the entire Mekong Basin.

This paper is based on field investigation conducted in the Lam Pao irrigation area during the months of April, May and June 1971. The study was made in seven villages located throughout the area, selected to include a cross section of the physical, economic and social characteristics of the area. The location of these villages in relation to the planned stages of development of the irrigation system is shown on Map 2. An attempt is made here to examine the existing pattern of land-holding and the implications for the development of irrigated agriculture. To date, little has been published concerning the land-holding pattern of Northeast Thailand. The lack of large scale maps and the very heavy consumption of time and manpower involved in the surveying and mapping of the land-holdings have discouraged work in this field. Experience of field work in the Lam Pao area has revealed that rapid and economical mapping of land-holdings can be carried out by means of large scale aerial photographs. In general it was found that farmers, and in particular the village headmen, had an excellent knowledge of the holding pattern which through the identification of land marks could be translated onto the photographs. Additional information on the nature of the land tenure and manner of acquisition was obtained by means of a questionnaire. The examples of holding patterns presented in this paper are taken from the originals drawn on the photographs in the field.

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Map 1



Map 2

Although the construction work on the main distribution system is well advanced in the Lam Pao area it is only the first step in the administration of an irrigation project. Extension work is needed to assist the adaptation of the existing, traditional agricultural system towards an acceptance of new practices, a process which involves a revaluation and reorganization of basic socio-economic relationships. Central to this need for readjustment are the attitudes of the farmers to the land which is the basis of their livelihood. These attitudes to land and the land tenure pattern in the Northeast are conditioned by the special physical background of the region.

The annual rainfall total of the Northeast is not markedly lower than in other parts of Thailand but its effectiveness is reduced by its unreliability and the extreme porosity of the sandy soil. As a result the region is, with the exception of the alluvium of the main valleys, a marginal area for paddy cultivation. The average monthly rainfall figures for Changwat Kalasin (Table I) demonstrate that rainfall variability is high in every month of the year.⁽¹⁾ Variations in climatic conditions can, to a great extent, explain the annual fluctuations in yields

TABLE I
Mean Monthly Rainfall and Variability, Changwat Kalasin¹
1957-1967

	mm	Coefficient of Variance		mm	V
	Mean	(S/ \bar{x})		Mean	(S/ \bar{x})
January	0.8	2.87	July	199.9	0.44
February	8.0	1.55	August	250.4	0.76
March	32.6	1.03	September	333.9	0.51
April	5.63	0.61	October	63.1	0.57
May	231.4	0.54	November	9.5	1.74
June	171.6	0.44	December	0.1	3.70

Mean Annual Rainfall 1357.6mm.

1) National Statistical Office, *Data Book for Changwat Kalasin*, National Statistical Office, Office of the Prime Minister, Bangkok 1971.

and production totals.⁽²⁾ The dominance of climatic factors as a cause of crop damage may be seen in Table IIa and b. Some degree of flood or drought damage is accepted as a normal occurrence by many north-eastern farmers. The variability of rainfall in the March to June period ranges from 44 per cent to 103 per cent. In May for example, the average total rainfall is 231.4 mm but in any one year the figure may range from 539.7 mm to 81.4 mm. This is a crucial factor in the success of the crop year. Rainfall sufficient to enable preparation and planting to proceed may occur as early as the end of March or in some years not until June or even later. In years of late rainfall farmers may be left with insufficient time for preparation and planting, resulting in poor land preparation and a reduction in the planted area. Thus, in such years the level of production may be severely reduced.⁽³⁾

TABLE II a
Percentage of Planted Area Damaged. Kenaf

Village	Drought	Cause of Damage		Other
		Flood	Insects	
Na Chuak Nuea	4.5	4.5	9.1	6.1
Ban Tum	12.1	0.0	8.6	8.3
Um Mao	0.0	16.7	0.0	20.0
Fai Taek	10.0	0.0	10.0	10.5
Ban Lek	10.5	0.0	5.3	19.2
Non Sung	3.8	3.8	53.8	11.1
Ban Lao Yai	22.2	22.2	11.1	31.8

TABLE II b
Percentage of Planted Area Damaged. Glutinous Rice

Village	Drought	Cause of Damage		Other
		Flood	Insects	
Na Chuak Nuea	22.0	19.5	9.8	0.0
Ban Tum	35.1	6.8	5.4	8.8
Um Mao	8.2	32.7	12.2	6.1
Fai Taek	45.6	14.8	3.7	3.7
Ban Lek	31.5	21.5	17.8	6.8
Non Sung	14.3	16.7	2.4	0.0
Ban Lao Yai	8.3	50.0	0.0	0.0

2) J.H. Assen, *Field Observations on Agriculture in North-east Thailand and Laos*, Table VII p. 15, Bangkok, 1968.

3) R.C.Y. Ng, "Some Land-Use Problems of North-east Thailand", *Modern Asian Studies* No. 4 Part 1 1970, pp. 31.

The provision of irrigation in the Lam Pao area has not as yet introduced any marked change to the agricultural economy. The farmers' first consideration is still to produce sufficient glutinous rice to meet the needs of household consumption. Only when this first priority has been satisfied is attention given to the production of a marketable surplus. Since the 1930's outlets for the sale of surplus rice have spread slowly into the Northeast but few farmers can be considered regular producers of rice for the market. Similarly, secondary farm activities of growing fruit, vegetables, cotton and kapok, primarily for subsistence needs, are providing a marginal surplus in response to market opportunities. However, the spread of kenaf production from the late 1950's occurred along somewhat different lines. It has, by contrast, brought many farmers and much previously uncultivated land into the market economy. The virtue of kenaf is that it does not compete, except in a very few cases, with paddy for the lower land, nor does it normally compete with rice for labour at the crucial times of the farm year. Although Chaiyong⁽⁴⁾ states that there is competition for labour at harvest time, Long⁽⁵⁾ working in Changwat Khon Kaen found no evidence of such competition and our research in Changwat Kalasin tends to confirm Long's findings. In most cases kenaf has been grown on newly cleared land. Table IIIa demonstrates the dominance of clearance as a method

TABLE III a

Manner of Acquisition of Plots (by percentage). Kenaf

Manner of Acquisition	Na Chuak Nuea	Ban Tum	Um Mao	Fai Taek	Ban Lek	Non Sung	Lao Yai
Purchase	36.4	20.7	33.3	20.0	15.8	11.8	0.0
Inherited	45.5	41.1	33.3	30.0	47.4	73.1	100.0
Rented	0.0	0.0	0.0	0.0	15.8	0.0	0.0
Free Use	9.1	6.9	25.0	10.0	15.8	15.4	0.0
Cleared	9.1	31.0	8.3	40.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0

4) Chaiyong Chuchart, Norman L. Wake and Satchee Suthasathien, *An Economic Study of the Production and Marketing of Thai Kenaf*. Applied Scientific Research Corporation of Thailand, Bangkok, 1967, p. 2.

5) J.F. Long et al., *Economic and Social Conditions Among Farmers in Changwat Khon-kaen*. Kasetsart University Economics Report No. 22, Kasetsart University, Bangkok, 1963, p. 42.

of acquiring kenaf land. This contrasts strongly with the method of acquisition of the rice land which is predominantly inherited (Table IIIb). The majority of suitable rice land was cleared some years ago, whilst, until kenaf became more widely grown, there was little use for upland areas which were consequently left as forest. The farmers' continuing attitude towards production for the market is well illustrated in years of late rainfall or labour shortage. Under such conditions farmers first cut back on kenaf growing and then on surplus rice area. Subsistence rice production remains the basic and most important element of the farm economy. The land holding pattern reflects the attitude towards subsistence cultivation already described.

The system of inheritance in Northeast Thailand is normally through the daughter (and son-in-law) rather than through the son. Where there is more than one married daughter in a family, subdivision of the holding may be expected. The household head normally retains control of the family holding for as long as he is able. This system enables the household to benefit from his long experience of rice cultivation under precarious natural conditions. Although the household head's authority may be contested by the younger generation it is less likely that such a challenge will come from the son-in-law, waiting to inherit, than from the son. The son-in-law faces much uncertainty concerning his inheritance; not only does he not know when he will obtain control of the land, but, if he is one of several sons-in-law, he may not even know which part of the holding he will eventually inherit. Such uncertainty prevents the younger generation from planning ahead and puts a brake on their challenge to the household head's authority.

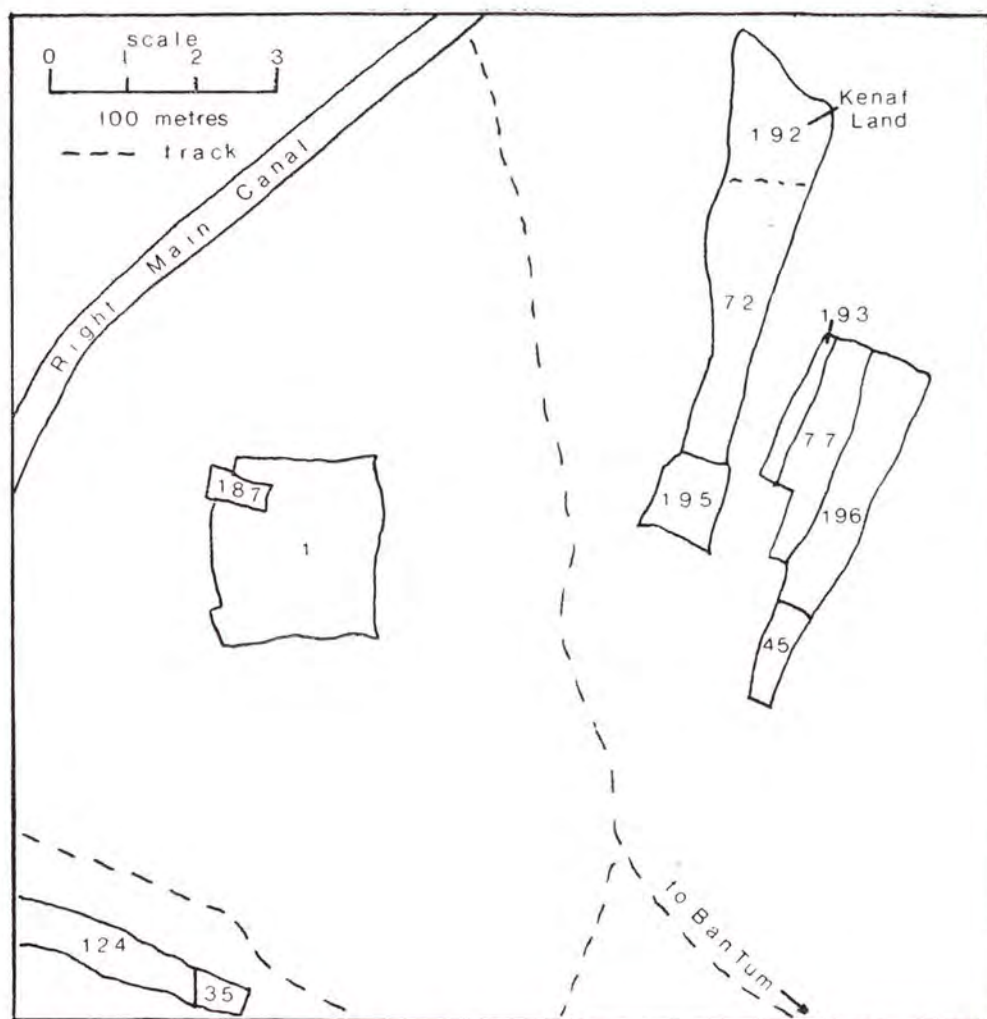
TABLE III b

Manner of Acquisition of Plots (by percentage). Glutinous Rice

Manner of Acquisition	Na Chuak Nuea	Ban Tum	Um Mao	Fai Taek	Ban Lek	Non Sung	Lao Yai
Purchase	12.2	16.2	14.3	7.4	11.0	2.4	2.3
Inherited	70.7	81.1	75.5	55.6	72.6	78.6	97.7
Rented	0.0	0.0	0.0	3.7	0.0	2.4	0.0
Free Use	17.1	2.7	10.2	29.6	15.1	16.7	0.0
Cleared	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	3.7	1.4	0.0	0.0

Since the heir to the land may wait a long time before he is given ultimate control of the rice land, it may be that he has long before established his own household but he still continues to work for his father-in-law. However, it is quite common for the young man to be allowed to take over the working of all or part of the family upland. This is illustrated in Map 3 where a kenaf plot (192) has been separated from a combined rice and kenaf plot (72) and is now farmed by a son-in-law. The upland is not part of the traditional holding and is considered marginal to the production system. As a result the transfer of control to the younger generation does little to erode the authority of the household head, nor is his expertise as a farmer, based as it is on rice cultivation, questioned. With the increased acceptance of kenaf as part of the farm economy the situation may well change and the heads of households, which derive a regular income from kenaf, may become reluctant to release control of the upland, as they have done to date. However, in villages such as Na Chuak Nuea where uncleared forest still remains close to the village, the younger men may continue to obtain upland plots in a more independant manner, by clearing the forest. In cases where the son-in-law has been able to set up his own household and the family has rice land to spare, a small plot may be separated from the main holding and given to the new family. A number of examples of this process may be seen in the village of Ban Tum (Map 3). Plots 35, 195, 193, 187 and 45 have been separated from the main holdings 124, 72, 77, 1 and 96 respectively and are now operated by sons-in-law. The real degree of control that a son-in-law has over these separated plots is often difficult to ascertain. Deference to the opinion of the household head may continue to be important even after formal control has been given to the young man. Similarly, it may be that the household head may be nominally in control, the vital decisions being taken for him by the son-in-law. For the investigator or extension worker there are clearly many problems associated with the identification of the decision taker.

The importance of the subsistence element in the economy of the Lam Pao irrigation area is reflected not only in the differing values placed upon rice land and kenaf land, but also in the attitudes to the paddy land itself. Even within the individual holding there is, as a

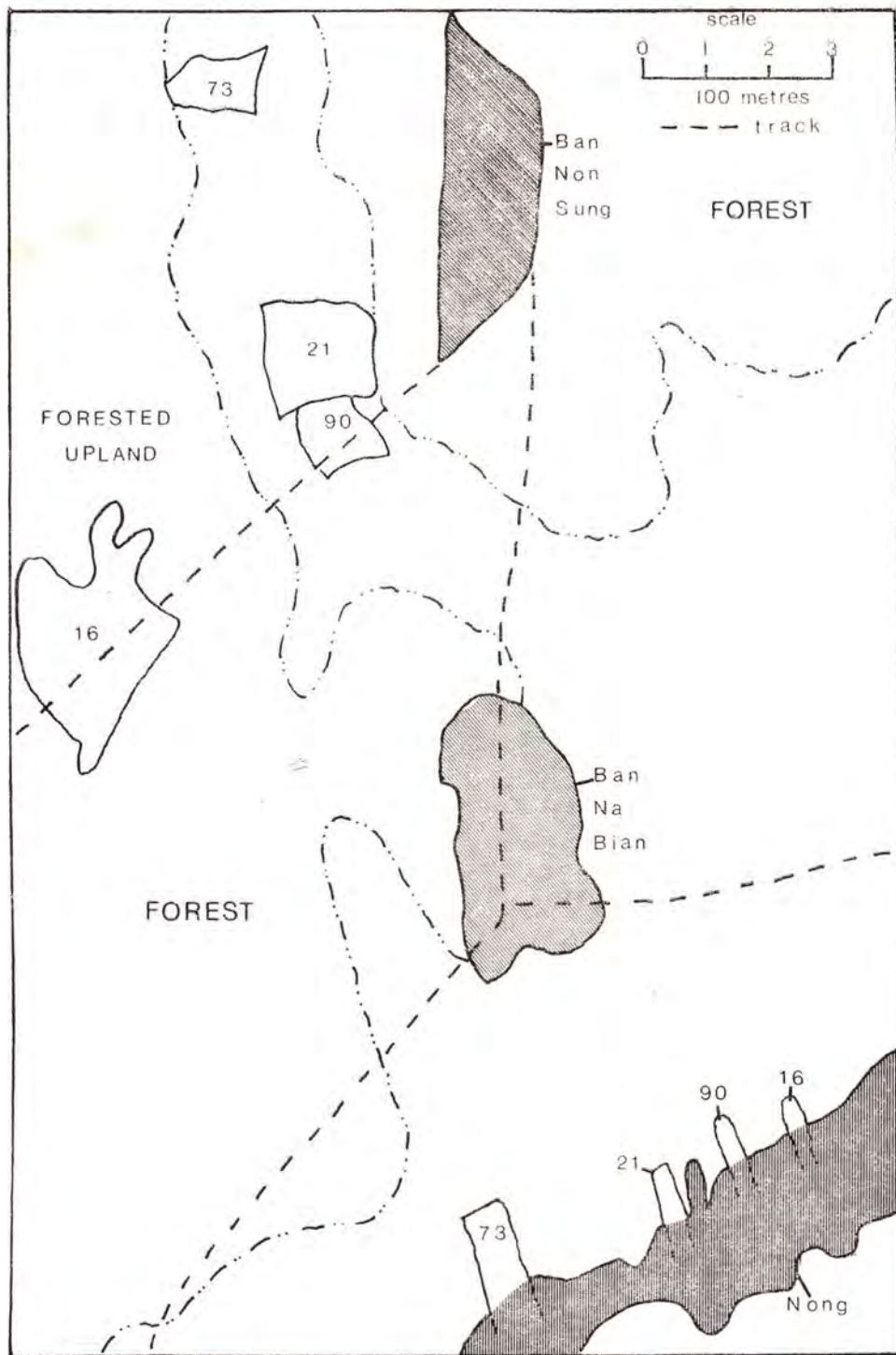


Map 3

consequence of the unreliability of the climate, a marked reluctance among farmers to put all their eggs in one basket; that is to say, it is common to find farmers owning not one, but a series of paddy plots. This is by way of an insurance policy, so that in different climatic conditions the farmer may insure some return sufficient to feed the household.

Typical of this situation is the case of Ban Non Sung (Map 4). Here the village land consists of a series of plots situated on the low lying land of the flood plain of the Lam Chi and slightly higher land cleared from the woodland which still surrounds the village. The former area includes a number of plots adjacent to a *nong** which does not dry up completely even at the height of the dry season. This is a favourite site for seed beds but many villagers have larger plots beside the lake which yield up to 80 tang per rai (5000 Kgs. per hectare). Such farmers, however, also hold plots on the higher land which yield only 20-25 tang per rai (1250-1500 Kgs. per hectare) as an insurance policy. In wet years the low lying land is flooded and farmers have to depend on their upper plot for the subsistence crop; in really dry years this latter is too dry to be worked whereas the lakeside plot can be relied upon to provide for the family. In Non Sung the danger of flood appears to be greater than that of drought and as a result many farmers concentrate their effort on the lower yielding but more reliable higher plots. One farmer interviewed (No. 73) said that his low land was flooded two years out of three so he had purchased an upper plot three years previously. Last year he was concentraing on this plot completely, having arranged for his younger brother to work the lake plot. A second farmer (No. 16) with a plot near the *nong* was in the process of clearing a higher plot on which he intended to concentrate in the future. It is, in fact, a common practice within the region for the low lying, unreliable plots to be used as cash crop land for non-glutinous rice for sale. In the same way as kenaf, this is treated as a bonus and may indeed be broadcast sown rather than transplanted. Most farmers in Ban Non Sung have a lower yielding plot at a greater elevation on which they can rely, but in the near-by village of Lao Yai there is a lack of higher rice land. Many

* shallow lake



Map 4

farmers in this village expect to lose two out of three crops, the successful crop being sufficient to compensate for the two years of loss. Such villages are characterized by very large rice barns sufficient to hold a three year supply of rice.

A somewhat similar situation to Ban Non Sung is present in Ban Tum (see Map 5). Plots of high yielding land located close to a *nong* are again subject to flood, even without abnormally high rainfall. At Ban Tum, however, the ground rises more steeply from the lake so that, although some farmers do own plots in other parts of the village as well as beside the *nong* (for example 130 and 55), others have sought to compensate for the flood danger by extending their plots in a sinuous fashion onto the higher land north of the *nong* (119, 43 and 39). These long narrow strips are a common feature wherever a *nong* is found adjacent to an area of higher land. On occasions a very long and narrow plot will result from the ownership of a stream bed, as is the case with plot 155. The naturally complex pattern of these plots has in many cases been emphasized by subdivision amongst two or even three sons-in-law. Plots 39 and 43 and plots 4 and 165 are the result of this process. Such subdividing is necessary if each farm unit is to have the desirable range of land elevations to ensure a subsistence level of production under fluctuating climatic conditions. There is, however, no evidence to suggest that fragmentation of holdings through inheritance is in any way a problem in the study area as a whole. In areas of level and more uniform land, as at the village of Lao Yai in the flood plain of the Chi, a less complex and more compact pattern of holding is present. The flood plain lands of Ban Non Sung, located away from the lake, exhibit a similar pattern.

Such a system of land holding, arising in response to climatic unreliability is sure to be challenged by the presence of irrigation water which will remove the rationale of the system. At present, in the Lam Pao irrigation area, only a few villages are actually receiving the irrigation water but already in one of these, Ban Na Chuak Nuea, there are signs of changing attitudes towards land holding. Progressive farmers in the village, aware of the importance of the new facility, have been ready to speculate in land within the village. The headman of the village, for example, had the foresight to rent land from the village teacher (No. 59

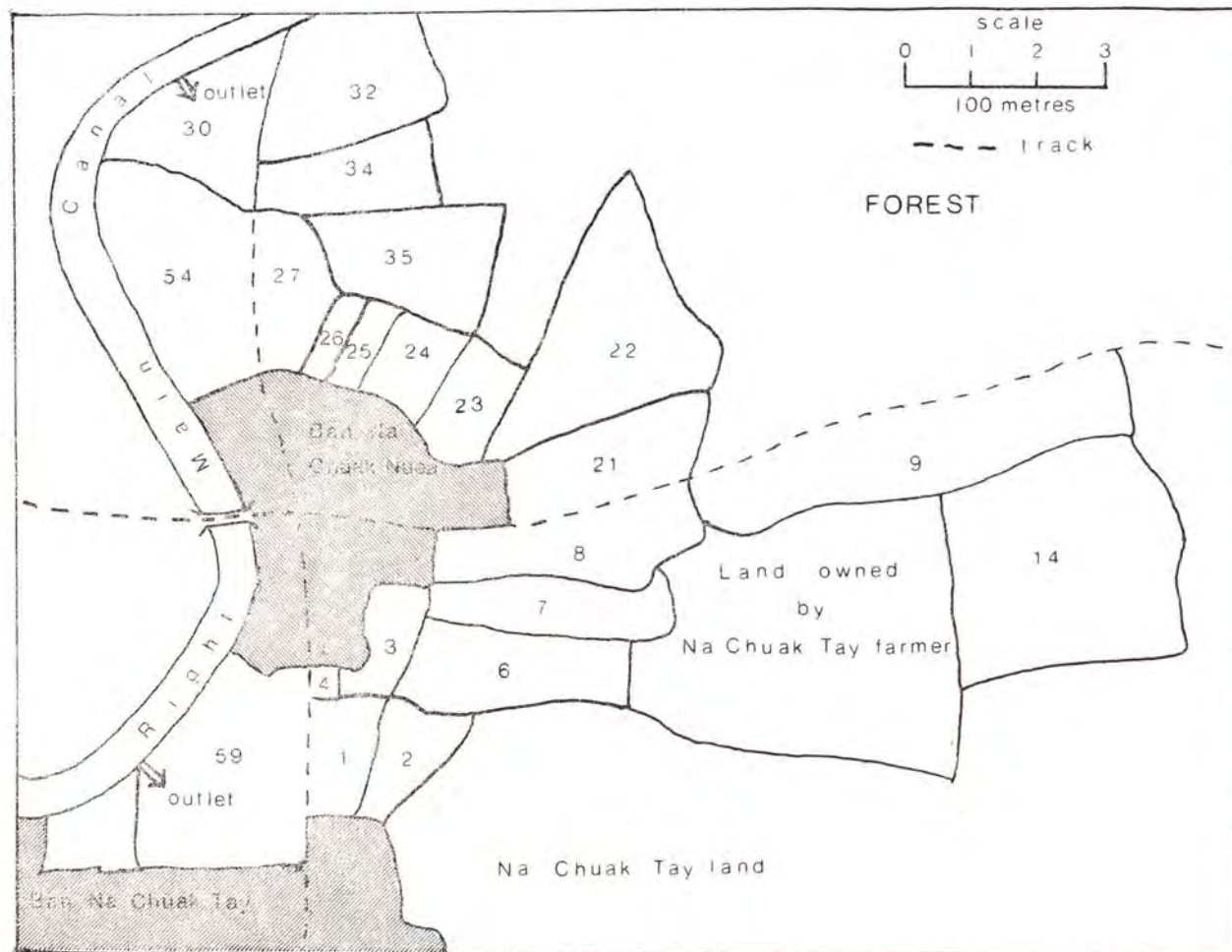


Map 5

Map 6) at the outlet from the canal; another large land owner (No. 14) in the village has been, in the last few years, shifting the main focus of his agricultural activity from his traditional family holding, on the higher ground to the west of the village, to land to the east of the village with access to irrigation water. This second plot was purchased from his brother as forest some eight years ago and has been slowly cleared since then. However, the activities of this progressive farmer have been curtailed, at least temporarily, by problems arising from the land tenure pattern. It is the farmer's hope to concentrate production on his irrigable lowland plot, not only for paddy but also, tentatively, for soya beans. To reach his land, however, the water must cross the land of other farmers who are unable to decide the line the main village ditch should take. Despite having been appointed ditchrider* by the Royal Irrigation Department, the farmer in question is powerless, dealing as he must with farmers who have had, to date, little experience of cooperation outside of family groups. As Map 6 shows, in order for water to reach the plot from the nearest outlet, agreement must be reached not only with farmers in his own village but also with villagers from neighbouring Na Chuak Tay. Had the canal planners been more aware of such organizational problems, it might have been that the system from the outlet further north could have been extended to provide access across Na Chuak Nuea land alone.

The present pattern of land holding within the Lam Pao irrigation area is closely adjusted to the needs of the rain-fed subsistence cultivation under conditions of unreliable rainfall. The recent penetration of the market economy in the form of rice marketing and the expansion of kenaf as a cash crop has done little to change the pattern and, to date, population increase has been compensated by the extension of the cultivated area through forest clearance. There is little incentive to adopt more intensive methods of cultivation as long as levels of production remain at the mercy of climatic fluctuation and there is no shortage of land. The overall lack of pressure on land is reflected in the lack of concern over land titles and the general absence of dispute over land ownership. Moreover, the inheritance system incorporates a built-in resistance to change in that it denies the younger farmers control over the land for as long as possible.

* A farmer appointed by the irrigation authority to supervise the use of irrigation water, by a group of farmers, from a particular farm ditch.



Map 6

The establishment of a successful irrigation system calls for a reassessment of the values which produced the present system. The premium will be, in the future, not on the most reliable land, but on the land which combines high inherent fertility with ease of access to irrigation or drainage facilities. The practice of elaborate subdivision of land between heirs to ensure that each secured a share of each different type of land will be less important; indeed the very nature of the organized irrigation system may make this subdivision both difficult and undesirable as each plot becomes an integral unit of the system.

This revaluation will lead to increasing pressure on the traditional system. The more progressive farmer is likely to find himself frustrated by the less far sighted members of the village; this has been demonstrated in Ban Na Chuak Nuea. Such farmers are likely to attempt to overcome this situation by buying up the land of smaller and less progressive farmers. At present, as may be seen from Table IIIa and b, the Lam Pao farmer is essentially an owner occupier. This pattern is comparable with many other areas of the Northeast⁽⁶⁾. The example of the Central Plain of Thailand suggests that, as irrigation is introduced and socio-economic values change, the incidence of owner-occupation declines. In the Central Plain the increase in renting has been associated with absentee landlords, large scale debt and loss of land by farmers.⁽⁷⁾

It is hoped that the present study of land tenure patterns has highlighted some of the problems of developing irrigated agriculture. A thorough knowledge of the land tenure pattern and the organization behind it is a necessary prerequisite for the establishment of an efficiently functioning system of water distribution. The experience in other areas of Thailand where irrigated agriculture has been established serve as both a pattern and a warning. There are many undesirable side effects of irrigation and a thorough investigation of the holding pattern and organization within an irrigation area should enable measures to be taken to smooth the transition from rain-fed, subsistence agriculture to irrigated, market-oriented cultivation.

6) Chamlong Tohtong, *Benchmark Socio-Economic Survey of Nong Wai Irrigation Area*, Bangkok, 1969, pp. 9.

7) Udhis Narkswasdi, *Farmers Indebtedness and Rice Marketing in Central Thailand*, Bangkok, 1958.