

PJ-ABP-469

PROGRESS REPORT ON THE
USAID/LAOS - PGNU PROJECT FOR OPIUM POPPY CROP
SUBSTITUTION IN HOUA KHONG PROVINCE



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Ban Houei Sai

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Progress Report on USAID/Laos-PGNU Opium Poppy Crop
Substitution Project for Houa Khong
Province-Ban Houei Sai

I. Introduction:

A. Background:

In 1971 the Royal Lao Government enacted legislation prohibiting the commercial production and marketing of opium and its derivatives. This legislation effectively eliminates the main cash crop and economic base of many hilltribes of Laos. In order to minimize resultant economic and social trauma among the population of the opium growing regions, the Lao Government requested USAID assistance to develop a program to redirect the hilltribes' agriculture towards more productive cash crops.

The project's goal is to develop alternate agricultural crops or systems which will supplement income lost from opium production. An experimentation-extension approach was selected for implementation in Houa Khong Province. This province was selected because of favorable security conditions plus the fact that it is the home of some 25,000 traditionally opium growing tribes people.

The project employs a three-fold approach to the goal of agricultural redirection:

1. Experimentation and testing of new crops and techniques.
2. Extension activities to introduce new crops and techniques to hilltribes.
3. Paddy development assistance to hilltribes.

A crop suitable as a one-to-one replacement for opium poppies in all areas has not been immediately available. A number of promising substitute crops do exist and likely different crops will be suited to different areas.

Opium, though a very important factor in hilltribe's economy, is not essential. Few opium growers are wealthy and social problem, such as addiction, probably outweigh the benefits of cash income from opium. Often tribes living adjacent to opium growers maintain as high a standard of living without cultivating poppies.

Tradition is perhaps the greatest obstacle to overcome in introducing a new economic base for hilltribes. A short term solution has not yet been found.

B. Summary:

1. Crops with Greatest Potential as Substitute for Opium:

The crop with the greatest initial potential as a substitute for opium in the hilltribe economy is rice. Many current opium producing villages are rice-deficient and must pack rice up to their villages. In many cases these villages can be relocated to areas suited to paddy rice where they can feed the village and have surplus rice for sale.

However, potential paddy areas may not be sufficient for the expanding hilltribe populations, thus upland substitute crops are still required. Crops with best possibilities as high value cash crops are: ginseng, shiitake mushrooms, and silk. All three of these require further verification trials to determine adaptability to local conditions. In very remote areas (1-3 days walk from a market) forages and cattle production are the best substitute at present. In relatively accessible areas (1-2 hours walk from a road) coffee, cardamom, tea, or possibly other nut trees are best. In these areas, corn,

and beans are feasible cash crop substitutes but require slash-and-burn cultivation as does opium.

In all areas fish ponds, vegetable gardens, and dry season upland crops of sorghum can improve health and living standards but do not fit the role of cash crops.

2. Estimate of Poppy Area Substituted in Houa Khong Province:

Some reduction of poppy planted area has occurred due to villager uncertainty resulting from the anti-narcotics law and to village movements caused by war and insecurity. Plantings will likely increase in 1975 when refugees become established and respond to increased prices for opium caused by decreased supplies.

Crop substitution efforts to date have redirected the agricultural efforts of approximately 152 hilltribe families. This equates with reduction in opium planting of about 51 ha. (340 kg.) annually. Work is under way with an additional 240 families.

II. Phou Pha Deng Crop Introduction Center:

The "Crop Introduction Center" is located at Ban Phou Pha Deng, a white Meo village at an elevation of 3,000 ft. The Center provides facilities and land for test planting of new crops. The Center and its operation is intentionally simple and unsophisticated. This is in keeping with available resources, transportation and manpower. This simplicity, though making work more difficult, may contribute to eventual success of the Center.

Work was begun at the location in March 1973. Eleven hectares have been cleared by hand in five plots at elevations between 3,000 ft. and 4,000 ft. The RLG Provincial Agriculture Research Chief manages the station. USAID employs four technicians and local labourers.

A dry season jeep track (8 km) connecting Phou Pha Deng to Nam Kheung was completed to facilitate work at the Center and allow villagers easier market access for other crops.

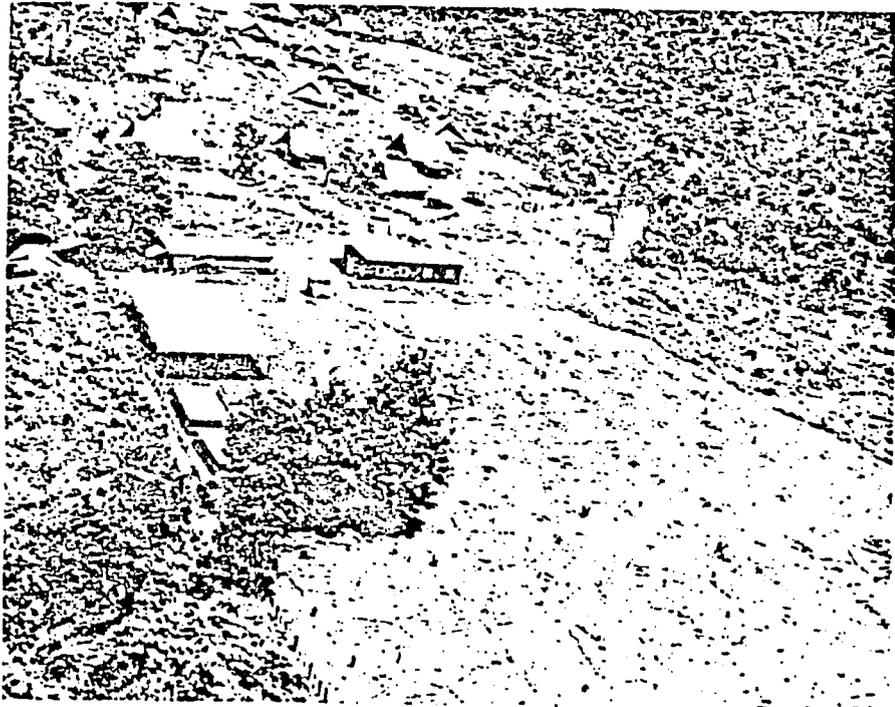


Fig. 1: Aerial view of Crop Introduction Center in Meo village of Phou Pha Deng (elev. 3,000 ft.). Garden site No. 1 with intercropping of field crops and long-term tree crops. (August 1973).

The work of the Center can best be described as verification/propagation-test plantings of crops to verify adaptability and provide stock for propagation and distribution of suitable planting material to hilltribe villages. Labourers are recruited from different tribes and learn on an "apprentus basis". More formal training will be initiated later. Tentative results to date, however, are summarized below:

A. Fruit and Nut Tree Project:

Sixty-six varieties of 29 species of fruit and nut tree have been planted at two elevations: 3,000 ft. and 4,000 ft. Most of these have been planted for less than a year and a half, so no yield data is yet available. Growth is generally much better at the lower elevation.

Tree crops are ideally suited to upland areas, as they are soil and watershed conserving. They have the considerable drawback of requiring much investment and time prior to initial harvest. This makes acceptance by hilltribes more difficult, but carry the advantage of making tribes less migratory.

Observations, thus far are:

<u>Crop</u>	<u>No. Varieties</u>	<u>No. Planted</u>	<u>Growth</u>	<u>Comment</u> (6 rai = 1 ha)
Avocado	1 (seedlings)	38	Good	Valuable for home consumption.
Cardamom	3 (2 wild)	½ rai; 100	Good	Wild variants sent for analysis Seedling of commercial variety (Guatemalan) ready to transplant
Citrus	15	97	Good	250 rootstock seedlings started for propagation.
Chinese chestnut	1	3	Fair	Insufficient number for good indication of adaptability.
Coffee	11	1 ha.	Good	Very promising; Rust resistant varieties obtained from CRRC.
Fig	1	1	Good	Insufficient number for obser- vation.
Grape	2	94	Poor	Considerable disease problem, esp. downy mildew. Probably beyond the ability of small farmer to control.
Guava	1	14	Good	For home consumption.
Litchee	6	78	Fair	For more accessible areas.
Longan	5	66	Good	200 seedlings started for pro- pagation. For home consumption.
Mango	4	35	Fair	100 seedlings started for pro- pagation.
Pear	1	11	Good	Burmese variety planted. Im- proved varieties on order.
Peach	1	3	Good	Burmese variety planted. Im- proved varieties on order. 200 seedlings started for rootstock.
Sapori- dilla	1	8	Good	For home consumption.
Tea	1	½ rai	Good	-----

In addition to the above, the following crops proved unadaptable to the high elevation environment: custard apple, durion, jackfruit, mangosteen, ranbutan, and rose-apple.

Many of the local fruit crops are of commercial value only in limited accessible areas. Nut crops and fruits that can be dried or preserved have greater commercial potential. Exotic, high-value fruits, such as apples and peaches, have commercial potential for marketing as fresh fruit.

Tamperate zone fruits on order for planting in 1975 season are: apples, peaches, pears, prunes, plums, apricots, macadamia nuts, walnuts, pecans, and chestnuts.

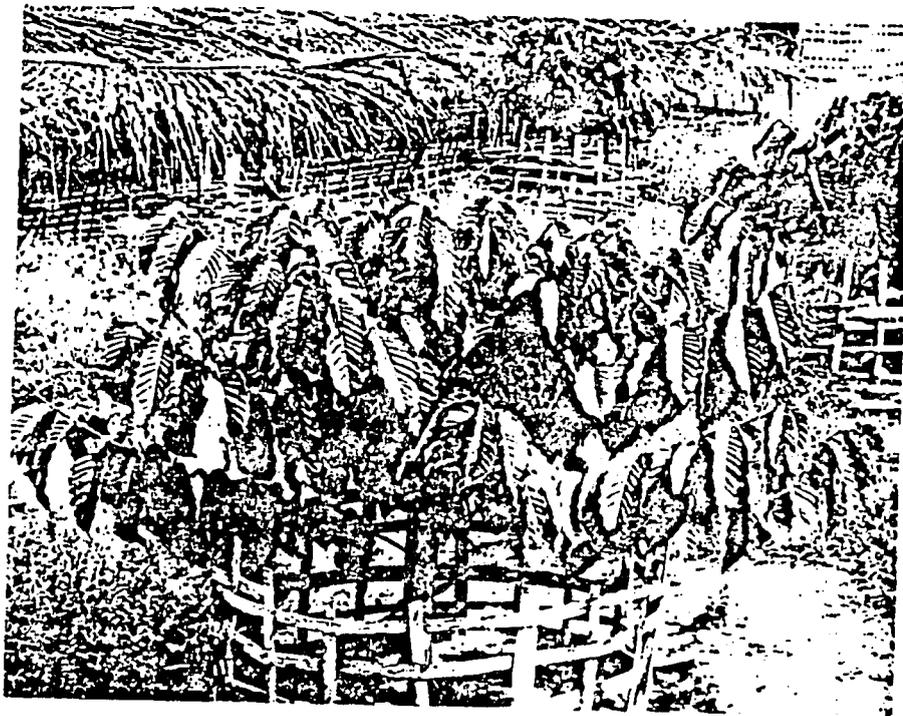


Fig. 2: Two year old Robusta coffee tree.

B. Medicinal Plants

A large market demand exists for Chinese medicinal plants-many of which are of high value. Three medicinal plants being test planted are listed below. Collections of indigenous tribal medicinal plants are being collected and will be sent for analysis.

<u>Crop</u>	<u>No. Varieties</u>	<u>Planted</u>	<u>Growth</u>	<u>Comment</u>
Ginseng	1	400 m ²	Good	Root used as general conditioner and aphrodisiac; value up to \$80 per kilo; top growth satisfactory but value dependant on root quality; generally 3-5 yrs. to harvest now planted 2 yrs.
Kek-huai	1	40 m ²	Good	Actually, menthol an essential oil plant; leaves used to make tea which is a general tonic-conditioner; a local demand developing but growth may also be good in lowlands.
San-si	1	-	-	Root used as medicine by Chinese; also high value; a wild variant occurs locally; cultivated form only newly obtained.

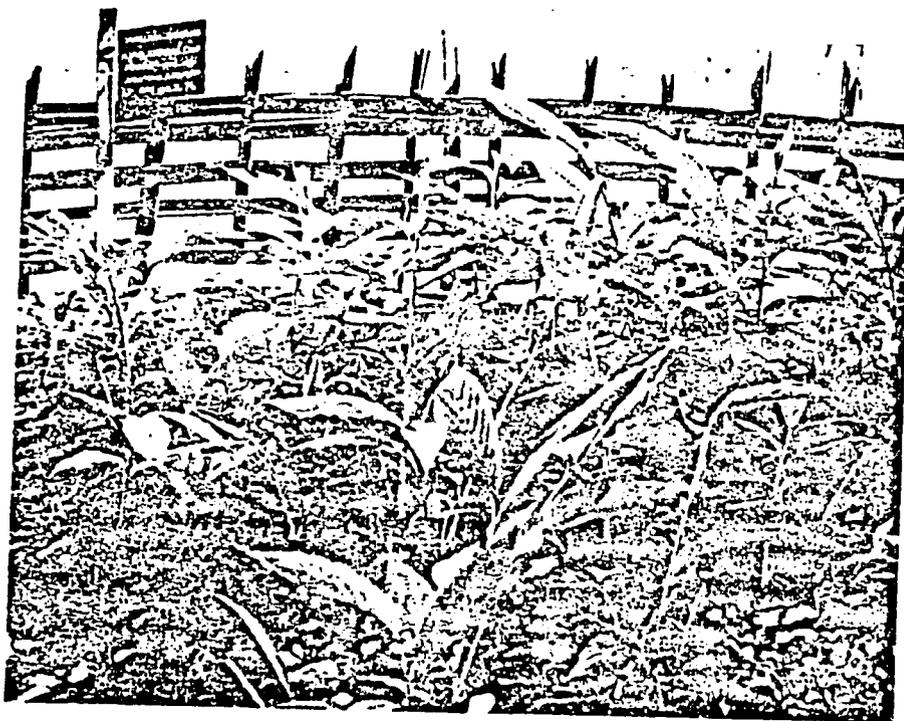


Fig. 3: Guatemalan cardamom seedlings in seed bed.

C. "Shiitake" (Tong-ku) Mushroom

"Shiitake" or Japanese black mushrooms have been trial planted to determine feasibility of culturing on Lao woods under upland climatic conditions. Dried these mushrooms can be stored and sell for 35,000-45,000 kips per kilo. Two plantings have been made, but spawn used for first planting was suspect. Harvest is generally 6-12 month after planting. Logs of three species of local oak (Quercus sp.) and chestnut (Castanopsis sp.) were used.

<u>Planting Date</u>	<u>Log Species</u>	<u>No. Planted</u>	<u>Total</u>
7/4/74	Mai Koh Heen	15	
	Mai Koh Pheuak Deng	53	
	Mai Koh Pheuak Heed	102	170
4/8/74	Mai Koh Pheuak Deng	20	
	Mai Koh Pheuak Heed	125	<u>145</u>
			315



Fig. 4: Logs planted to shiitake mushroom spawn under natural shade at Phou Pha Deng.

D. Field Crop Trials

Adaptability trials and variety comparisons have been done with a number of field crops. Field Crops, require

slash-and-burn cultivation and thereby damage soil, timber reserves, and watershed. Prices for field crops are generally low on a value per weight basis, thus making them unsuited to remote areas. Current high prices for some crops, ie beans, make production feasible in relatively accessible areas (within 2-3 hours walk of a market).

Wet season adaptability trials over the past two seasons give the following results:

<u>Crop</u>	<u>No. Varieties/Years Tried</u>		<u>Observation, Wet Season</u>
Soybeans	13	2	Yields generally poor due to fungus disease problems. Young seedlings may rot or mature grains sprout during ripening. Alter planting dates. Wayne was the best variety but Bathet and TK-5 also show promise.
Mungbeans	1	2	Poor yield. Change planting time.
Bushbeans	2	2	Average yield, but have fungus disease problems.
Redkidney-beans	1	1	Average yield, but sprout in pod during rain. Drying a problem.
Peanuts	1	1	Average yields, but sprout in pod. Drying a problem.
Corn	3	2	Good yield. Probably best rainy season alternative to rice.
Potatoes	2	1	Too wet, too much disease problems.
Sesame	2	1	Poor. Need to change variety and/or planting time.
Wheat	2	1	Too wet, sprouts in head.
Castorbeans	1	1	Seedling rot. Will try dry season planting.
Upland Rice	3	1	Two South Vietnamese varieties planted. Have not yet harvested.

Day Lily	1	1	Growth good, production good. Limited market. Can be dried.
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Wet season cultivation entails problems with most of the above crops; except corn and rice. These are already "staples" for wet season cultivation. What is needed is a crop, other than opium, for double cropping. Dry season plantings of the following are in process: soybeans, wheat, sorghum, peanuts, potatoes, and kidney beans.

Saffron bulbs are on order for trial plantings.

E. Forage Trials

Five rai of land has been planted to propagation plots of sixteen varieties of forage and cover crops. Initial villager skepticism turned to interest when the growth and palatability of these crops become apparent.

<u>Forage</u>	<u>Growth</u>	<u>Comment</u>
Napier	Very Good	- For cut and carry
Hybrid Napier	Very Good	- For cut and carry
Molasses grasses	Very Good	- Died back from frost, but came on strong again.
Pangola grass	Poor	- Difficult to establish.
Colonial guinea	Good	- -
Guinea grass	Good	- -
Hartley plicatum	-	- Newly planted
Glycine, tinaroo	-	- Newly planted
Setaria	-	- Newly planted
Greenleaf desmodium	-	- Newly planted. Hogs ate original planting.
Silverleaf desmodium	Fair	- Newly planted. Original planting very small area.
Siratro	-	- Newly planted
Centrosema	Good	- Comes on well after dry season.
Townsville Stylo	Fair	

Cooks' stylo - - Newly planted
Schofield stylo - - Newly planted



Fig. 5: Station manager in six month planting of molasses grass pasture.

F. Essential Oils Crops

A two rai plot of lemon grass has been planted. Small plantings of mint, menthol, and patchouli are also started. During the dry season a village level extraction process will be tried.

III. Extension Program

An extension program was initiated to introduce new agricultural techniques to hilltribe villages of Houa Khong

Province. Initial efforts involved village vegetable production training programs, introduction of improved swine breeding stock; fish pond projects; and increasing government extension capabilities.

Subsequent activities have been as follow:

A. "Key Villages"

Experience from initial activities led to selection of eight "key villages" in the province from which to work, introduce new crops and agriculture techniques. The eight villages include the four major hilltribe groups-Hmong, Yao, Lahu, and Akha. The villages are:

<u>Village</u>	<u>Ethnic Group</u>	<u>Pop. (Families)</u>	<u>Walk to Rd/River</u>	<u>Elevation(m)</u>
Kho Haw	Akha	90	30 min.	500
Mak O	Yao	45	3 hrs.	1,100
Houa Nam Kheung	Lahu	125	2 "	500
Houei Mak Kheua	Yao	212	1 "	400
Nam Oi Mai	Yao/Hmong/Lahu	120	3 "	1,000
Houei Nok Kaeng	Hmong	60	30 min.	600
Nam Phat	Hmong	60	1 hrs.	700
Chomchook	Hmong	40	30 min.	850

Accomplishments to date have been:

- Hand development of 4 ha. paddy
- Construction of 80 fish ponds
- Planting of 2 rai of forages
- Planting and improving of 6 rai of fruit trees
- Planting of 18 rai of coffee and tea
- Planting of 12 crop demonstration plots



Fig. 6: Agriculture field worker advising villager on fruit orchard management.

B. Training

Training of hilltribe farmers must be an integral part of the program to redirect upland agricultural production. The training is necessary, not only to introduce new agriculture techniques, but also to assist in integrating them into the larger Lao society and economy. Training activities have been:

1. Xieng Ngeun Training Center.
Since the opening of the Agriculture Redirection Training Center in Xieng Ngeun, forty-eight trainees have attended from Houa Khong Province.
2. Sericulture Training.
Eight Hmong trainees (3 men; 5 women) undertook an intensive two month course in sericulture at Sai Fong Sericulture Center in Vientiane. Upon returning to their village these trainees planted four rai of mulberries.



Fig. 7: Hmong sericulture trainees observing 12 day silkworms at the Sai Fong Sericulture Center.

3. Hilltribe Leader Tour.

As informal training, forty-seven hilltribe leaders (Naibans and Tassengs) have taken six day tours of agriculture development centers around Vientiane.

IV. Paddy Development

A. The Nakong Pilot Project

The background of the pilot project at Ban Nakong was discussed in detail in the first progress report in January of this year. To review briefly, this project was initiated to assist several Yao villages in developing the approximately 180 hectares of lowland in the area into rice paddies. Assistance given included land clearing by bulldozer (USAID/PWD), construction of a two-room school, installation of a small clean-water system and the carrying out of a topographical survey of the area to determine the feasibility and desirability of constructing an irrigation system.

Developments at Nakong since the time of that first progress report have been as follows:

1. A committee from the Provincial Offices of Land and Social Welfare has visited Nakong to distribute land and issue cultivation permits.
2. Approximately 10% of the newly-cleared land at Nakong has been planted to paddy rice during the 1974 wet season. As it was originally envisioned that all of the land would be developed as paddy. This ten percent seems a poor beginning, but the low percentage is attributable partly to the not inconsiderable change-of-life-style necessitated in switching from slash-and-burn to paddy cultivation.

Supplemental irrigation may well be the solution to further paddy development, and a plan for irrigating this land is being studied.



Fig. 8: Nakong villager in his paddy rice field.

3. A small rice mill has been installed at Nakong, not by USAID or the Lao Government, but by one of the villagers. This represents an investment of more than $\text{P}26,000$ (approximately \$1,300) and seems to be an indication that some people at Nakong are convinced that their move was a good one and will be permanent.



Fig. 9: Ricemill purchased and installed by Nakong entrepreneur.

4. Attitudes shown by other members of the village, though, are not always positive. Certain tensions have been created by moving two villages together at one location, and further problems seem to have developed between two factions within one of these former villages. Although there will always be factions and disputes in any village, it becomes a particular threat to the success of a project like Nakong when part of the village, in dispute with the rest, threatens to leave.

B. The Houei Mak Kheua Project

A number of factors preclude doing further relocation activities in the same manner as at Nakong, the high cost of mechanical land clearing being perhaps the most important. At Houei Mak Kheua, however, there are real possibilities for assistance to former opium-producing villagers who have already settled there, but who, as yet, have no permanent means of supporting themselves. A topographical survey of the area has been completed and shows that two irrigation projects are feasible for the area. With supplemental irrigation soils in the area are suitable for development into paddy. Up to 200 hectares may be developed in this area.



Fig. 10: Aerial view of Houei Mak Kheua area.

Assistance to several villages in this area is planned. This will take the form of "agricultural support," for which approximately \$1,500 and K 5,000,000 have already been approved by USAID, and at least one irrigation system has been tentatively approved by USAID. Some assistance has already been given to villagers here, a paddy trainer having been posted there to work on paddy development and tests/ demonstration of other crops, such as sorghum and vegetable gardens. During the dry season additional activities and joint PGNU/USAID assistance to Houei Mak Kheua will become more tangible.

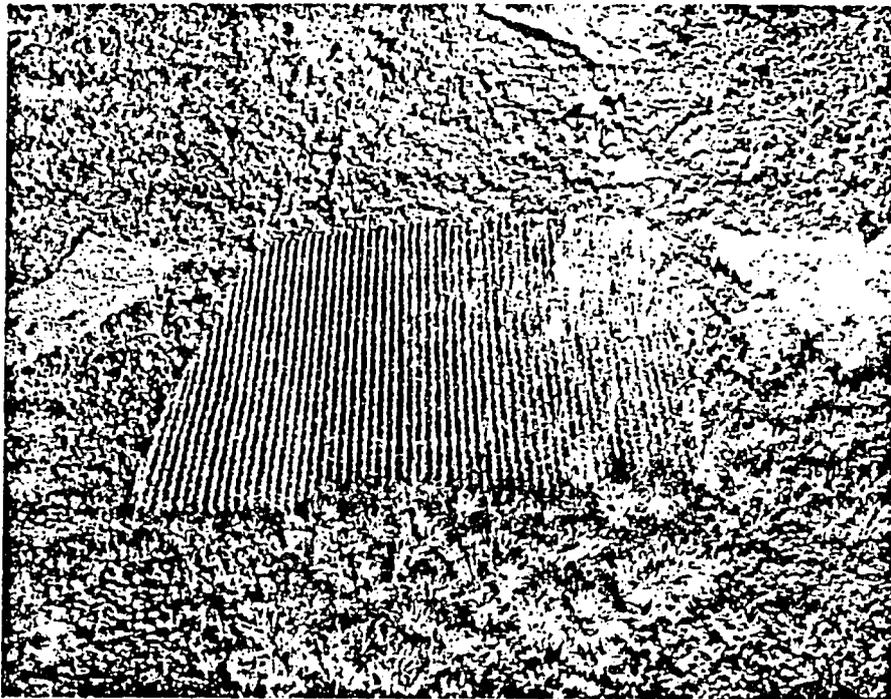


Fig. 11: Sorghum field demonstration planted at Houei Mak Kheua.

C. Topographical Surveys

Topographical surveys have been proposed for several areas to determine suitability/possibilities for paddy development and irrigation. A survey team is now working in the Thong Phao Hao area-about 25 kilometers southeast of Ban Houei Sai. Of a total plain area of about 4,000 hectares, this survey will cover the four hundred hectares which may be suitable for paddy development when the nearby stream, Houei Sai Noi, is tapped for irrigation.



Fig. 12: Survey team and Hmong villager inspecting first year paddy rice crop at Houei Sai Noi.

A further possibility for the survey team will be the area immediately around the village of Nam Ma, some 15 or more kilometers northeast of Houei Sai. The purpose of such a survey would be to determine possibilities for irrigation, with an eye towards assisting hilltribe opium growers in developing paddy on lowland areas.

D. Farm Tractor Operation

Three farm tractors belonging to the Lao Government's Ministry of Social Welfare are being supported by the Project in an effort to aid hilltribe villagers who have settled in lowland areas in developing their new land. A small charge is made for plowing services in order to pay drivers salaries and get spare parts, with fuel and oil being provided by USAID. Most of the plowing has been and will be done in the Nam Ngam/Houei Mæk Kheua/Houei O/Ban Khouane area. Approximately 100 hectares of land has been plowed.

E. Irrigation Assistance

Two irrigation dams which have been constructed are the Nam Chang and Nam Nyong. Together these dams can now supply water to some 200 hectares during the wet season and possibly 60 hectares for dry season crops.

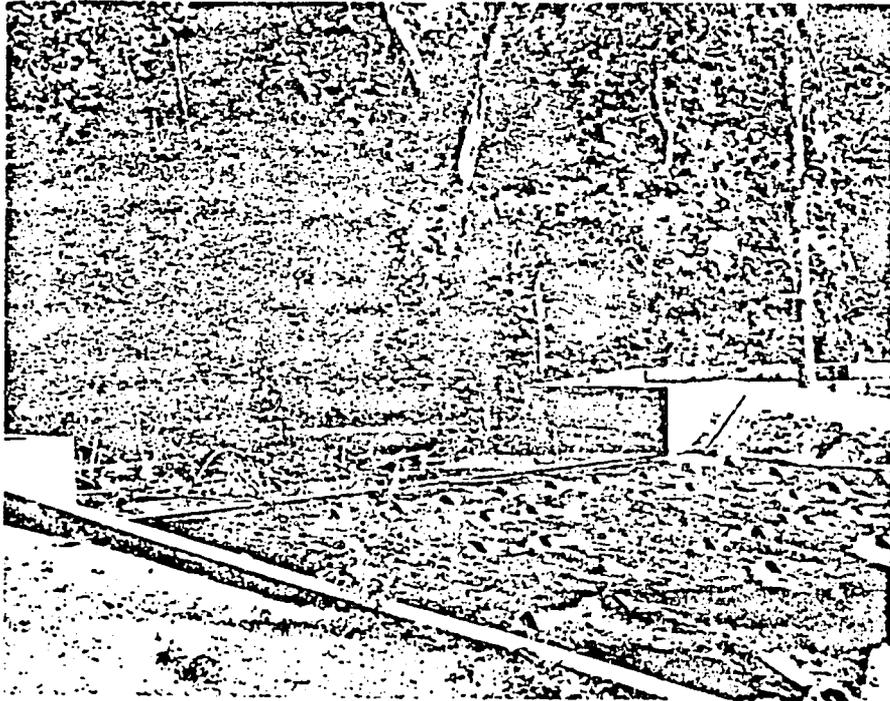


Fig. 13: Nam Chang diversion dam capable of providing supplemental irrigation to 80 hectares.

Addendum

<u>Page</u>	<u>Paragraph</u>	<u>Line</u>	<u>Correction</u>
1	1	5	Mimize should be minimize
2	5	10	Cardamom should be cardamon
5	3	2	Cardamom should be cardamon
6	3	1	Tamerate should be temperate
8	Fig. 3	1	Cardamom should be cardamon
16	4	4 & 5	Omit period, next line uncapitalized t