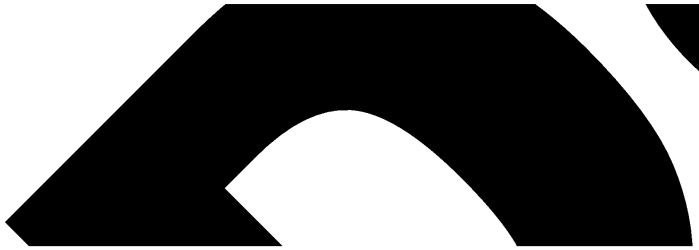

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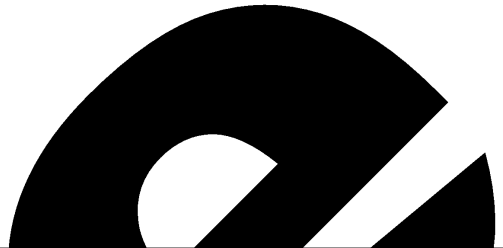

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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

International Narcotics Series No. 5

Opium Poppy Cultivation in Northern Thailand

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October 1971

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
October 1971

INTELLIGENCE MEMORANDUM

OPIUM POPPY CULTIVATION IN NORTHERN THAILAND

Conclusions

1. We estimate that Thailand produces a maximum of 150-200 metric tons of the approximately 700 tons of opium produced annually in the Burma-Laos-Thailand border area. Practically all of this is produced in northern Thailand by seven hill tribes -- the Meo, Yao, Lisu, Lahu, Akha, Karen, and Kha Haw/Htin. Of these seven tribes, the Meo reportedly account for about half of the opium produced.

2. All seven tribes practice slash-and-burn agriculture, generally regarded as one of the most primitive of traditional agrarian technologies. Yet over a long period, slash-and-burn techniques, properly applied, have proved quite effective in providing a livelihood to the tribal people. On a year-to-year basis, however, output of the main crop -- rice -- varies extremely. Not only do variations in weather cause yields to fluctuate, but also untimely rain or drought resulting in crop failure is a constant threat for the hill tribe cultivator. Over the years the risks associated with rice cultivation have led to diversification into opium poppy cultivation.

3. More importantly, opium has become the chief source of "foreign exchange" for the tribes. While the hill tribes are relatively self-sufficient, they do require certain "import" items. Steel for axe and hoe blades is one such item; salt, rice, and dried fish are others. These goods must be paid for in some widely acceptable medium of exchange, which, in northern Thailand, is silver. Opium is the source par excellence of a reliable inflow of silver. The demand for opium has been relatively stable over the years, it can be stored in times of good harvests, and it is easily transported.

Note: This memorandum was prepared by the Office of Economic Research and coordinated within the Central Intelligence Agency and with the Bureau of Narcotics and Dangerous Drugs.

These features, plus the fact that the cultivation of the opium poppy complements, rather than conflicts with, rice cultivation make the poppy an ideal crop for the hill tribes.

4. Since the early 1960s, various United Nations experts and Thai officials have sought a crop that could be substituted for opium poppy. Livestock, tea, and coffee have been considered, but invariably the proposed crops are inferior to poppy. Indeed, given the environmental factors and the specific needs of the hill tribes, there may be no suitable alternative to opium poppy. This, of course, means that it will be nearly, if not entirely, impossible to seriously curtail or end opium poppy cultivation in northern Thailand by simply encouraging the tribes to adopt alternative crops. It suggests that some other form of suppression of poppy cultivation will have to be developed for this area.

Discussion

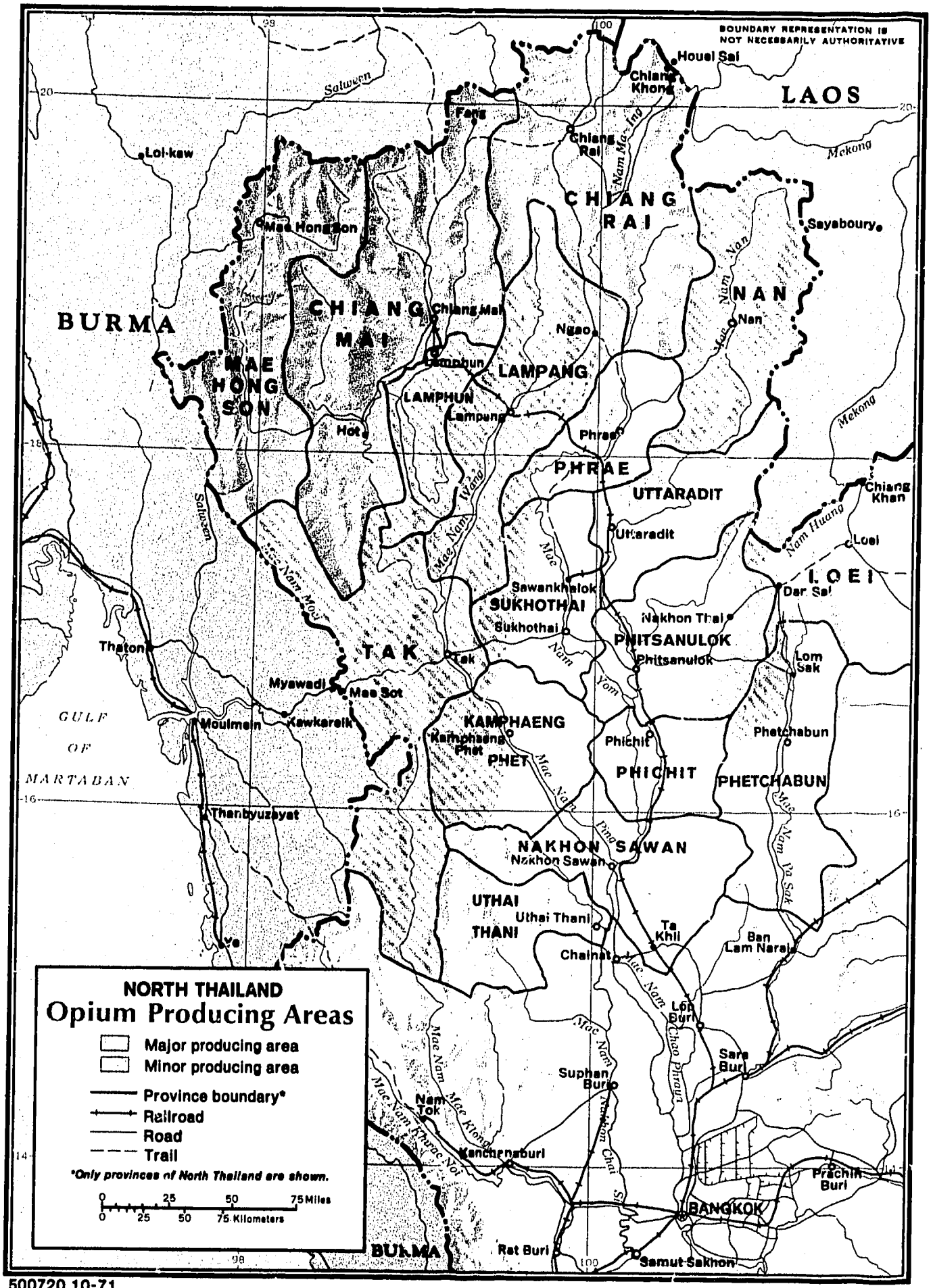
Introduction

5. The Burma-Laos-Thailand border area (the "Golden Triangle") is one of the world's largest opium-producing regions, producing annually some 700 tons of opium – about one-half of the world's total illicit output. Historically, this area has not been an important source of opium-based narcotics for the US market. This is no longer true. The Golden Triangle has become the source of heroin for the US troops in Southeast Asia, and there is evidence that increasing amounts of opium derivatives from Southeast Asia are finding their way to the US domestic market. Turkey's recent announcement that it will cease opium production with the crop harvested in the summer of 1972 will likely increase Southeast Asia's importance as a supplier to the US market.

6. This memorandum summarizes the information available on the cultivation and production of opium in Thailand, describes the importance of the crop to the producers, and outlines the problems of estimating opium output in the area. Although the memorandum focuses on Thailand, cultivation practices differ only slightly from country to country in the Triangle, and much of the discussion is equally relevant to practices in Burma and Laos.

Geography of Northern Thailand

7. Northern Thailand's rugged hill country contrasts markedly with the vast arable flatland of the central plain (see the map). Mountain ranges with peaks rising to an average of more than 5,000 feet run parallel in



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a north-south direction. Separating these are fertile riverine basins, some large enough to support heavy concentrations of population. The largest are along the four major rivers (the Nan, Yom, Wang, and Ping) which merge in the south to form the Chao Phraya.

8. The riverine basins, generally lying between 1,000 and 1,200 feet above sea level, form one of several ecological zones which mark the topography of the North. Above 1,200 feet, the fertile soils of the valley jungles fade into the dry, porous soils of the deciduous forests. Along the lower margins of these hill forests, Thai peasants have here and there tried their hand at dry-rice cultivation using slash-and-burn methods.(1) With these exceptions the deciduous zone has been little used by the valley dwellers.

9. At altitudes approaching 3,000 feet, the deciduous zone gives way to more fertile soils and evergreen forests which, despite their greater fertility, are rarely frequented by the Northern Thai. Into these lands have migrated various non-Tai tribal peoples. For example, villages of Karen and Kha Mu tribesmen can be found at the lower elevations of between 2,000 feet and 3,000 feet; and villages of Lisu, Meo (or Miao), and Haw at the higher elevations – some at over 5,000 feet; in the middle region live Lahu, Yao, Akha, and Lawa.

10. Some Karen and perhaps a few Kha Mu are old inhabitants of the area. But the majority of tribal people are more recent immigrants from farther north, from what is now Laos and Burma. They have arrived only within the last hundred years, with most of them arriving as recently as the 1940s. Most tribes have a number of subdivisions. In Thailand the Meo can be subdivided into two major groups – Blue Meo and White Meo. The most obvious distinction between them is a difference in costume, but there are also differences in language and customs. The Lahu have four subdivisions: The Black Lahu (Lahu Na), the Red Lahu (Lahu Nyi), the Lahu Shehleh, and the Lahu Shi. The Karen have two subdivisions: the Skaw Karen and the P'wo Karen. As with the Meo, the differences are most obvious in costume but extend also to language and customs. The Yao, Lisu, and Akha appear to have no major cultural subdivisions.(2)

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1. *The terms* **slash-and-burn**, **swidden**, *and* **shifting cultivation** *are all used to designate the traditional agrarian technology characterized by clearing fields in the forest, burning the cleared growth, cultivating for two or three years, and then abandoning the fields for 20 or more years, until the forest can grow back and the cycle be repeated.*
2. *For a more detailed description, see Gordon Young,* **The Hill Tribes of Northern Thailand**, *Bangkok, 1962.*

Hill Tribe Population

11. The total number of hill tribe people in the border areas of northern Thailand has been variously estimated at between 200,000 and 500,000. Perhaps the most accurate estimate was made by the Thai government in 1965-66. The hill tribe population, including only those people living at elevations of 2,000 feet and above, was estimated at approximately 275,000 persons.(3) The approximate tribal distribution is given in the table. There are a number of minority groups in northern Thailand who live below 2,000 feet and who are sometimes referred to as "tribal" peoples. But, with the exception of the Karen, these groups are not opium producers; therefore, not all of the tribal peoples in the North are dealt with in this memorandum, only those listed in the table. Today, the hill tribe population probably exceeds 325,000, concentrated in the provinces of Mae Hong Son, Chiangmai, Chiangrai, Lampang, Nan, and Tak. Anthropologists believe that there is significant migration south into Thailand from Burma and Laos, but it is impossible to estimate these flows.

Northern Thailand: Population of Certain Hill Tribes

Tribe	Population in 1965-66
Meo	53,031
Yao	16,119
Lahu	15,994
Lisu	9,440
Karen	123,380
Akha	57,285
Kha Haw/Htin	19,096 a/

a. *As of November 1960.*

3. Not included in this estimate are the Kha Haw/Htin who, while not major opium producers, do produce a small amount, according to Gordon Young.

Agriculture in Northern Thailand

12. Northern Thailand's hill tribes practice what is commonly regarded as one of the most primitive of agrarian technologies. There is a complete absence of modern agricultural inputs -- chemical fertilizers, hybrid seeds, and machinery. In the absence of these inputs, swidden agriculture has nonetheless maintained the productivity of the land on a long-term basis. Year-to-year, however, a great deal of uncertainty exists. Weather, always a critical factor for any farmer, is even more critical for the slash-and-burn practitioner. Crop failure from untimely rain or drought is a constant threat. This point is most important, for the opium poppy is cultivated, in part, as a hedge against the failure of the rice crop.

13. Aside from weather, two other factors bear critically on swidden agriculture: land and labor. Large expanses of suitable land must be available; just how large depends on the regenerative speed of forest cover on recently abandoned land. Forest clearing and swidden management require a sizable labor input per unit of land. Thus output is constrained by labor rather than by land.

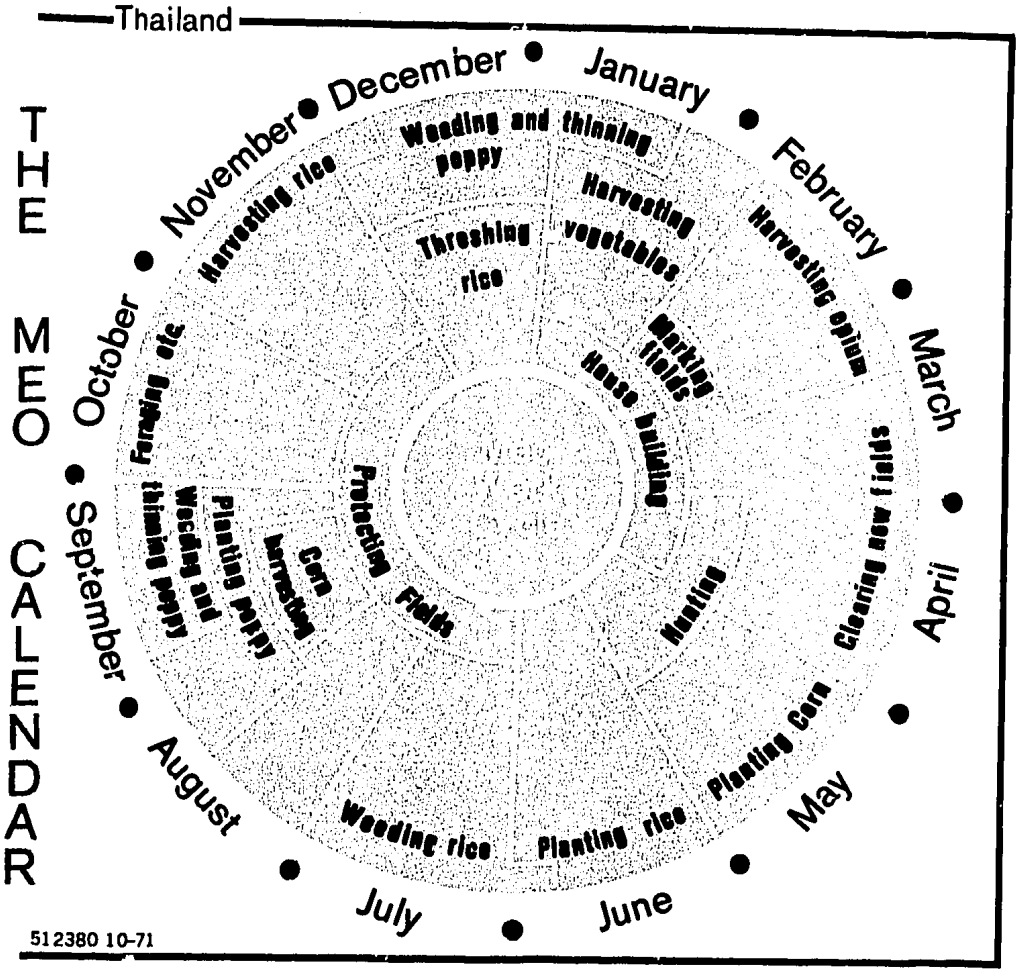
14. Both the particulars and the productivity of slash-and-burn vary from village to village, from field to field, and from year to year. Generalizations, therefore, are not especially useful. Hill tribe swidden technology can be divided into two distinct agronomies; one can be termed "domestic", the other "foreign". Each of these complementary agronomies centers on the cultivation of a single staple. The "domestic" crop is dry rice; the "foreign" crop is the opium poppy.(4) The significance of this distinction will be brought out below.

The Agricultural Cycle

15. Seasonal changes, in particular the months of maximum rainfall -- July, August, and September -- determine the work and living routines of the hill tribe cultivator far more than of the sedentary cultivator in the lowland villages. The shifting cultivator must adapt his agricultural timetable quickly to the vagaries of weather. Out of necessity, he becomes acutely sensitive to the wind, the moon, the sun, the soil, the slope of a hillside, and the flora in his environment.

16. The White Meo calendar (see the chart) is adapted to the most important events in the agricultural cycle, for example, the rice harvest.(5)

4. This is not to say that opium poppy is the sole "foreign" crop.
5. Many of the following specifics on the agricultural cycle and opium poppy cultivation were taken from an anthropological study of two White Meo villages, Mae Nai and Khae, in Chiangmai Province. The Meos apparently produce about half of the Thailand's yearly opium output.



Almost everyone in the village is aware that rice should be planted during the sixth month and that if the corn is not harvested in time there will not be time to plant poppy and still cultivate rice.

17. The five most critical events in the agricultural calendar are rice planting during the sixth month, corn planting during the fifth month, corn harvest in the eighth (and ninth) month, poppy planting in the eighth (and ninth) month, and opium harvesting during the second month. The period from the end of February through April is used to select, clear, and burn new field sites. Coming at the height of the dry season, these months are advantageous for slash-and-burn chores. Only clearing residual debris, dividing fields into household plots, and constructing field huts and fences remain before the first rains signal that planting may begin in soils fertilized by the ashes of the fired growth.

18. The consensus within a village determines whether the coming year's crop will be planted at new field sites or continued on the old. Rice fields typically are occupied for two to three years, but poppy fields may last as long as 20 years before serious declines in output appear.(6) Decision-making is complicated by the fact that opium poppy and rice need different kinds of sites: poppy thrives in cooler and "thinner" air (that is, higher elevations), drier terrain (that is, steeper inclines to ensure rapid moisture runoff), and limestone soils (greater alkalinity). Often, however, these requirements are not met, and poppy is cultivated in swiddens formerly used for rice. Furthermore, the villagers must decide whether field-site relocation will also require village relocation. Whereas fields are shifted every few years, village sites may remain the same for two generations.

19. Rice is always planted in newly-cleared swiddens for the first two or three years, then corn and opium poppy are intercropped for the next five, until the soil has lost much of its fertility. Then the swidden is cultivated exclusively in opium poppy.

20. Much of the hill tribe cultivator's time in June and July is spent weeding newly-sown rice and corn/poppy swiddens. These are also months for hunting and foraging in the surrounding jungles, a major means of supplying supplementary food. These pursuits are interrupted in August, when corn, vegetables, and early-maturing rice are harvested. Also in late-August and September the opium poppy is sown. Following a period of weeding and thinning the poppies, the cultivator turns his attention to the main rice harvest in November and early December.

Opium Poppy Planting

21. The White Meo cultivators designate four major phases in the cropping of poppy: broadcasting the opium poppy seed; the first weeding; the second weeding; and cutting the poppy pods to allow the milky white sap to collect on the exterior of the pod and dry. In each stage, intensive labor is necessary to ensure a good crop.

22. Opium poppy grows best in a cool and relatively dry climate, but loose, moist soil is necessary for germination. For these reasons, poppy

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6. The fact that poppy can be grown in the same plot for as long as 20 years postpones the date at which a village is forced to relocate. Those villages growing potatoes rather than opium poppy must move more frequently, an onerous task for the tribesmen – one which interferes with the demands of the agricultural calendar and may cost the village a season's crop.

is not broadcast until the monsoon season ends. Poppy seeds are then sown in the corn fields during the fortnight preceding the corn harvest. To prepare the corn swidden for poppy, the soil is hoed to a depth of four to six inches and weeded during the end of the eighth month. This work, mostly by the women and older children, proceeds at a rapid pace between the stalks of corn, some more than 12 feet high. Men participate in the broadcasting, which is effected by an overhand, shoulder-high throw. Those who do the broadcasting usually begin at the upper margins of the swidden, transversing and then doubling back at a lower level. Four broadcasters can complete a swidden of five rai -- about two acres -- in less than three hours. Because the different varieties of corn ripen over an extended period ranging from 90 to 115 days in both Mae Nai and Khae, many cultivators harvest corn before broadcasting poppy seed. In 1966, 23 Khae households began harvesting certain varieties of corn before poppy sowing. Harvesting here was interrupted by two or three days of broadcasting, followed by continued harvesting.

23. Most cultivators stress the importance of having a lot of activity in the corn/poppy swidden just after the broadcasting so that the seed will become embedded in the soil. The goal is to seed every square foot of the swidden surface area. As with corn and rice planting the work unit is the household. Occasionally, as illustrated by two households in Khae village during the 1966-67 planting, outside labor was recruited. In the first example, members of the household were incapacitated by illness and the household head was forced to call upon his younger brother's sons to help complete the broadcast. In the second case the household was wealthy and wanted to sow a larger crop than household labor resources would allow, so two Karen and one indigent White Mao were hired.

Weeding

24. Opium poppy requires more weeding and attention than any other crop. Great care is necessary because the poppy grows more slowly than weeds and leafy vegetables and is therefore a poor competitor for available soil nutrients and sunlight. To achieve maximum yields, careful attention must be given to thinning. A space between plants of no less than one foot is required. The swiddens are weeded and thinned twice during their growing season. The first weeding is done by hand, approximately four weeks after planting. Crowded poppy and vegetable plants are also selectively pulled at this time. The second weeding occurs at the end of the 12th and the beginning of the first month. Before hoeing, the leafy vegetables left in the swidden are picked. This weeding is important because the plants are reaching maturity and the pods which produce the opium sap are filling out.

Harvesting

25. The opium harvest involves two distinct phases: (a) the poppy pods are cut to allow the sap to secrete, and (b) the raw opium is gathered from the exterior of the pod. These phases are separated in time and technique, since the gathering or scraping of the opium must not be attempted until the sap has dried for a minimum of four hours.

26. During cutting the weather must be dry. It is not necessary for the opium sap to dry in the sun, but windy and dry weather are required for coagulation and drying. A majority of cultivators feel that the best opium is produced by overnight drying. They indicate that sun-dried opium becomes darker brown and loses much of its glutinous quality. The second month and the beginning of the third month are the time of opium gathering and are ideal for the type of weather preferred.

27. Cultivators vary in the importance they place on classifying and segregating sub-varieties of opium poppy. In Mae Nai the poppies are consistently white, with rare splotches of red and purple. Khae cultivators, however, tend to mix their seed, so that many swiddens are a profusion of colors. Within the color categories there are various sub-varieties, some with deeply serrated petals and others with smooth rounded petals. All varieties, however, have similar growing periods and are harvested at the same time.

28. White Meo cultivators disagree on the quality of the opium produced by the different colored plants. In Mae Nai, most cultivators hold that the white-flowered poppy produces a more abundant and finer quality of opium. Khae cultivators tend to be more explicit, ranking them as follows: (a) red-flowered, (b) white-flowered, (c) pink, and (d) bi-colored. Over 80% of the poppies grown in Chiangmai Province by White Meo are of the white-flowered variety, partly because of the difficulties of growing the preferred red-flowered variety. One category of poppy is ranked apart from the others in both villages, and this is based on its use. This lavender-petalled poppy is considered to be the only type suitable for producing opium eaten for stomach ailments.

29. The flowering of the poppy heralds the approach of harvest. Soon the lower petals of the flower begin to fall and harvest begins. At this stage the plant should be approximately three feet in height, and each plant should have three to five pods. Twenty pods should produce 60 grains – about 2 ounces – of opium. The stem length and pod size of poppy plants vary considerably from swidden to swidden in the same area.

30. Three implements are used for opium cropping (see the photographs). A small tridentated knife – 10 inches long consisting of three

Gathering the raw opium

Khae village swidden

Cropping poppy swidden

Incising the poppy

small curved blades bound with cord to a bamboo handle – is used to make incisions in the poppy pod to allow the sap to exude. A four-inch blade, similar to an artist's palette knife, is used for scraping the partially dried but glutinous opium from the incised poppy head. Most of these blades are 3 to 4 inches wide. Small tin cups are used to hold the raw opium. Raw opium is also kept in small wooden boxes, but most cultivators prefer tin cups for hidden, underground storage because this protects the opium from moisture.

31. Timing is more critical for opium harvesting than for most other crops. The White Meo cultivators prefer to complete gathering opium over a 10-day period, although such a rapid harvest is rare. They are never certain when this ideal period for gathering will be. It might occur early in the second month or as late as the third month. Weather conditions during the growing season and particularly at the gathering period are the primary determinants. An unusually dry growing season can inhibit growth, while rain at the time of gathering will halt work. Delays of more than ten days in cutting and gathering will affect the yield and quality of the crop. About two weeks after the flowering of the poppy, the milky white sap ceases to flow and changes its chemical consistency. The third critical factor in timing is that the second cropping is made six or seven days after the first. Smaller pods which were passed over during the first cropping and already incised pods which remain green are cut at this time. Any lengthy delay prohibits a second cropping, causing a substantial loss. The White Meo in Khae and Mae Nai villages seldom practice tertiary cutting.(7)

32. The most immediate and routine aspect of timing involves the coordination of incising and gathering. Scraping of the incised pods must be completed in the late afternoon of the day of the cutting or in the morning of the following day. Most cultivators agree that overnight drying produces a better quality opium, but any delay in scraping on the following morning may result in over-drying. Similarly, an unexpected light rain during the night will cause the sap to run, resulting in the loss of the entire cutting. Thus a poppy cultivator must make a number of critical judgments about the timing of his cropping activities. Although there is no strict division of labor, except for weighing and storage (done by the men), it is common to see more women and girls cutting and scraping than men. The evident reason is that often the men have begun felling trees at new swidden sites.

Cultivated Area and Output

33. In the village of Mae Nai, household production averaged about 6.2 kilograms during the 1967 harvest (1 kilogram = 2.2 pounds).(8) One household produced as much as 11.2 kilograms and many harvested less than 3.2 kilograms. Opium production per household in the village of Khae averaged 5.9 kilograms in 1967, down from 6.4 kilograms the previous year even though the area in cultivation increased in 1967. This may have been

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7. This practice accords with the custom in most other opium-producing countries. The leading exception is India, where three and four incisings are common.

8. 6.2 kilograms per 8.7 rai gives a yield of approximately 4.4 kilograms per hectare, quite low in comparison with yields in countries outside Southeast Asia.

the result of climatic conditions during the 1966 growing season, when the cool months of November and January were drier than usual and when a light rain fell during the cropping period. The average size of swidden cultivated in corn/poppy per household in Mae Nai was 8.7 rai (about 3.4 acres); in Khae the average household cultivated 7.5 rai (3 acres) of opium poppy. It is impossible to tell how representative these data are for the total population of poppy growers.

Income from Opium

34. Most opium is traded directly for goods from traders who either reside in the villages or come from lowland towns. Most resident traders are small shop-keepers, however, and their dealings in opium are frequently negligible. The big dealers live in the towns and operate through Haw Chinese who visit villages expressly to buy opium. The trader may extend credit to the opium producer during the year, thus assuring himself of a source of opium.

35. The income from opium varies greatly according to the fertility of the various areas, the weather of different years, the skill of the cultivators, and other factors. Estimates both of production of and income from opium differ according to the investigator and the villages investigated. For this reason the following should be considered as illustrative only.

36. In October 1971, opium could be purchased from the grower for 520-625 baht ($25-$30) per kilogram, somewhat higher than prices prevailing in neighboring Burma. If this price can be taken as representative of the yearly average,[9] an average household producing 6.2 kilograms could earn the equivalent of 3,225-3,870 baht ($155-$186). The amount received in cash is considerably less since (a) much trade is barter trade; (b) perhaps 10%-15% of the crop is consumed by the grower, at least partly for medicinal purposes; and (c) a portion of the crop may be used for wages-in-kind. If the crop is better than average, some of the opium may be held in reserve. Despite high incomes in some especially productive years, an average income for Meo households, allowing for years in which there is almost no production, may be 3,120-3,640 baht ($150-$175).[10] Practically all of this is derived from opium production.

9. There are indications that these prices are somewhat lower than the yearly average.

10. This does not include such items as rice and vegetables that are produced and consumed by the household.

Other Agricultural Activities

37. Other agrarian pursuits fill the slack season for the hill tribes. Foraging provides a number of edibles such as nuts and fruits, as well as fibers for cloth, grasses for thatch, and bamboo and wood for house walls and supports. Hunting and fishing also add variety to the diet. Chickens, pigs, and other livestock are raised by the tribesmen in small numbers; livestock often is held as a form of conspicuous wealth and is raised for consumption at feasts and for sacrificial offerings.

Household Handicrafts

38. Tribal agriculture is supplemented by a variety of village handicrafts, some performed on a small scale in all households and others by a few specialist households. A diversity of tools and utensils, clothing, toys, ornaments, shelters and household furniture, and religious artifacts are domestically manufactured. These pursuits give the tribal economy a misleading appearance of self-sufficiency. In fact, such activities remain subsidiary to the swidden technology, which is the economic mainstay and the sole guarantee of economic independence.

Opium as a "Foreign Trade" Item

39. Despite the variety of goods and services produced by each household and by village specialists, the tribal economy is not totally isolated. First, crop failures occasionally devastate large upland areas, and certain vitamin, protein, and mineral deficiencies are endemic. Thus an intermittent trade is carried on with lowlanders for such items as salt, rice, and dried fish. Second, the hill tribes require certain capital imports from the lowlands, the most important of which is steel for use in a variety of tools: axes, bush-knives, hoe blades, the tridentated opium tapping knife and broad-bladed scraping knife, and the cutting edge of the rice sickle. Third, trade with the valley peoples has generated a strong demand among the tribesmen for various "luxury" goods, including matches, kerosene, enamel and ceramic pots and cups, blankets, cotton cloth and some clothing, rifles and ammunition, livestock, an occasional transistor radio, and silver ornaments. Such goods have become important to the tribal economy. They rank as symbols of household wealth and provide an interesting clue to the evolving tribal conception of the good life.

40. The problem is that imports from outside the tribal economy must be paid for in some commonly accepted medium of exchange. Unlike intravillage and intervillage transactions where a sense of social reciprocation is present, the foreign sector – featuring a culture gap and trade in an atmosphere of uncertainty if not outright mistrust and latent hostility – requires that imports be paid for in cash or some other highly liquid asset

demanded in the lowlands. In the hills, cash is limited to silver -- either coins or ornaments – which is a symbol of economic and social standing and is conspicuously worn as necklaces, bracelets, and other personal adornments. But even silver must be initially purchased in the lowlands; its use as a medium of exchange in foreign trade depends in the first instance on some good of highland origin.

41. Various products have been employed for this purpose. Individual villages have attempted sporadically to sell cotton, rice, tobacco, and livestock in the lowlands. Jungle products such as foraged roots and herbs have been sold, as have animal skins and tribal artifacts. None of these has provided an adequate or dependable cash income. Furthermore, the labor required for transport alone limits such trade to villages located along the peripheries of the uplands. Only opium has proved to be a reliable "export" commodity.

42. Various characteristics of opium make it particularly suitable to the requirements of the foreign sector. First, its cultivation and harvesting during the dry cool months does not conflict with the rice crop. The labor force thus has its work distributed more evenly over the agricultural year than would be the case for almost any feasible alternative. Second, the opium poppy's suitability to field sites not suitable for rice permits more efficient land use by avoiding intensive cultivation (and thus rapid soil depletion) of the upland reaches most suitable for rice. Finally, the harvested product is of high unit value, forming a concentrated, divisible, and not readily perishable putty-like substance. These last qualities facilitate its smuggling out of the hills and into the world wholesale narcotic trade. The ease with which opium can be transported is extremely important, for transport over the rugged terrain of the uplands is a time-consuming and arduous – that is, high-cost – activity.

43. The overwhelming advantages of opium over all previously attempted alternatives are compounded by its drawing power. For no other tribal product would lowland traders find it worthwhile to journey deep into the hills, searching out the farthest villages for supplies. For no other commodity would they be willing to risk carrying the goods most sought by the tribes -- steel, seed, silver, and a variety of "luxury" goods -- into the mountains.

44. These services by the lowland traders carry a cost which the tribes pay in the form of lower realized prices for their opium and higher purchase prices for goods of lowland origin. But it is a cost they are willing to bear, for it permits them to avoid the lowlands, which means not only escaping the trouble of travel itself but of travel into an alien world. Trade in the tribal village also allows them to avoid the problem of smuggling the opium

to market, a problem much greater for the tribesman than for the trader, who knows the ways of the police and blends into the lowland landscape.

45. In its own way, then, opium is as critical an element of the tribal economy as rice. It serves as the primary tribal means of offsetting the vagaries of the rice harvest. Slash-and-burn agriculture is particularly vulnerable to weather, and in years of rice crop failure, opium acts as the first asset liquidated to pay for food imported from the outside. In years of plenty, it can be hoarded in anticipation of future crop failures or traded for other forms of liquid wealth as well as for the usual import items. Those villages that do not produce opium are forced to reside on the periphery of the hills in order to trade in a variety of goods of lesser value in lowland market places. If they live far into the hills they must inevitably suffer from the vagaries of the rice harvest.

Estimates of Opium Production in Northern Thailand

46. From the above discussion it is clear that opium yields per unit of cultivated land are likely to vary greatly from village to village and even within villages. The fragmentary numerical data available do indeed reflect wide variations in yields. In the absence of comprehensive statistics, estimates of total production must rely on these reports of yields in individual villages or even in individual swidden. Despite this extremely fragile statistical base, estimates of hill tribe opium production do exist.

47. In 1967 a UN survey team estimated that opium production in northern Thailand was 145 tons. This figure is based on a cultivated area of approximately 114,000 rai (45,000 acres), estimated by aerial survey, and an average yield per rai of approximately 3 pounds.

48. In the report, **The World Opium Situation, 1970**, prepared by this Office, it was estimated that Thailand produced some 200 tons of opium per year. This estimate was based on the UN acreage data cited above and a yield figure that seemed consistent with yields obtained in other countries – 10 kilograms per hectare (approximately 3.5 pounds per rai).

49. Another procedure, relying on the 1965-66 hill tribe population survey and data on opium production per household (taken from a recent anthropological study and compared with data in other studies), suggests that total output in 1970-71 was approximately 120 tons.

50. Thus there is a great disparity in the estimates, reflecting the difficulties involved in determining total acreage in opium cultivation, average yields per unit of land, and average output per household. There are, however, additional factors which suggest that the higher estimates,

150 to 200 tons, represent a reasonable range of **maximum** annual output. These include: (a) a significant migration south from Laos may have occurred in the past few years, thus increasing the number of opium cultivators; (b) hill tribe peoples heretofore not engaged in opium production possibly have begun to cultivate the crop as a result of its increasing profitability; and (c) a small number of cultivators may be applying fertilizers and insecticides to their opium crops. The literature on hill tribe opium production indicates that these possibilities do exist. Therefore, opium production in northern Thailand may reasonably be estimated to be 150-200 tons annually. This is an estimate of **maximum** output; actual output in any given year may well be 150 tons or less.