Crop Substitution in the Andes

Office of National Drug Control Policy

December 1993

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THAILAND NARCOTICS STUDY

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March 18, 1994

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EXECUTIVE SUMMARY

By most indicators Thailand has compiled an extraordinary record in curbing domestic production of illicit narcotics. Though still a significant conduit for and consumer of Golden Triangle heroin, Thailand is no longer a significant world producer of opiates; net opium cultivation has declined by at least 60 percent since the early 1980s, and possibly (according to less reliable data) by 80 to 90 percent since the 1960s and 1970s.

Thailand's success in narcotics control derives from a fortuitous combination of political, economic and geographical circumstances. Politically, Thailand had already conceived and begun implementing a long-term nation-building strategy by the early 1960s. A growing threat from communist insurgent groups added urgency to the nation-building effort. Manifestations of this effort in the northern highlands -- construction of road networks, and extension of social welfare services to hilltribes -- greatly facilitated the Thai government's penetration and control of the North. Moreover, by the mid-1960s, Thailand had come to view opium control as a prerequisite to successful political and economic development in the highlands. Beginning in the early 1970, the Thai government, with substantial foreign support initiated a number of development projects aimed at replacing illicit drug crops and at accelerating the integration of hilltribespeople into Thai society. An estimated $125 million was spent on these projects, most of it since the early 1980s. The relative contribution of foreign donors to these projects was approximately 60 to 65 percent. Third, Thailand, unlike most narcotics-producing states, has been willing to target its principal narcotics crop for destruction and to conduct eradication on

an annual basis. While eradication statistically is weakly related to cultivation trends on a year-to-year basis, farmers' risk of losing their opium has almost certainly influenced cultivation decisions over the long term.

Other factors have contributed to the Thai success story: one is a rapidly growing economy -- per capita GDP growth has averaged approximately 4 percent since the mid 1950s, 8 percent since the beginning of the 1980s and 11 percent since 1988. The Northern region, where almost all of Thailand's opium is grown, has also registered respectable, if slower growth rates in recent decades. Economic growth has opened new markets for alternative agricultural products, and in general, has widened income opportunities for hilltribes. Overall, the superior performance of the Thai economy was crucial to the success of the highland development effort; Thailand's own contribution to the foreign donor-assisted projects was not inconsiderable -- amounting to some 35 to 40 percent of the $125 million that was spent on these efforts.

Geopolitical circumstances also have contributed to Thailand's success. Massive uncontrolled expansion of opiates in Burma has helped to raise opportunity costs of opium production in Thailand. Since the early 1980s farmgate prices for opium have fluctuated in the 3,000 to 4,000 Baht ($130 to $160) per kilogram. Yet only half as much opium is produced in Thailand today as in the 1981-1983 period. Both production and prices declined somewhat between 1990 and 1993. At the same time, the UNDCP office in Chiang Mai reported a decrease in the rate of heroin to opium prices in the highlands from 25:1 in the late 1980s to 10:1 or less at the beginning of 1994. The apparent "convergence" of opium and heroin prices

is revolutionizing drug addiction patterns in Northern Thailand and opium markets have suffered as a result.

Questions arise, however, concerning the sustainability of the Thai model. As noted earlier, the cost-effectiveness of both eradication programs and highland development initiatives is diminishing rapidly. Opium farmers' countervailing strategies -- scattering of fields, movement of cultivation to remote areas and off-season planting -- have contributed to this trend. The international community clearly is losing interest in the Thai opium problem -- scarce narcotics assistance funds are being directed to higher-value targets elsewhere. Moreover, the secondary effects of opium reduction -- increasing heroin addiction, ecological fallout from some commercial farming ventures, and the emergence of new class divisions in the hills are weakening domestic support in Thailand for the country's anti-opium policies. At the same time, continuing population pressures in the hill in combination with other factors such as reforestation and the growth of tourism are reducing the supply of land suitable for commercial farming; opium's relatively benign environmental characteristics may make it the crop of choice for some land-buying hilltribe farmers. Economically, politically and ecologically the process of opium substitution in Thailand may have reached the outer limits of its effectiveness. Possibly the Thai leaders may view further reduction as unprofitable or even as undesirable. Under such circumstances, containment of poppy cultivation within the current range of 2,000 to 3,000 hectares probably is the most that can be expected from a Thai-financed and led opium control effort.

Still, Thailand's past record in curbing narcotics production has been almost unique internationally. Thailand's past successes deserve scrutiny by narcotics policy- makers in the United States and elsewhere. Yet the Thai "model" contains few specific lessons and prescriptions for "hard-case" countries such as Peru, Bolivia and Burma. Indeed, Thailand's achievements merely serve to highlight the dismal performances of the others. Thailand's superior record of economic growth since World War II and its successful nation-building policies of the 1960's and 1970's provided a foundation for the anti-opium initiatives of the 1980's and 1990's. Also opium-farming arguably never was a significant activity economically in Thailand. In contrast, the "hard-case" countries face conditions incomparably worse than Thailand's in the early 1980's -- depressed economies, national integration crises, and powerful and well-entrenched narcotics industries. Ultimately, the main lesson of Thailand is that drug control is not simply about drugs; policies that target narcotics cultivation and trafficking infrastructures must be linked closely to policies that promote stability, growth and general political development.

OVERVIEW

Thailand's achievement in controlling opiate production is an anomaly in the otherwise dismal record of international counter-narcotics efforts. Other narcotized areas of the world -- the Andean countries, Southwest Asia and Burma's Shan state -- have registered massive increases in drug crop production in the past 10 to 15 years; yet Thailand's net opium cultivation has declined by 60 percent since the early 1980s, according to U.S. government estimates. Thailand's present (1992-1993) cultivation, some 2,000 to 3,000 hectares, represents one percent or less of total world cultivation. Similarly, Thai heroin refining has declined to insignificance in recent years. Only two laboratories were discovered (on the border between Chiang Mai and Chiang Rai provinces) since 1992, compared to approximately 10 per year in the mid-late 1980s. The bulk of opium produced in the Golden Triangle, including some percentage of Thai production, is refined into morphine and heroin in Burma and subsequently trafficked though Thailand to the international market.

Yet Thailand's "success story" of a real and enduring reduction in opium production has little impact on world heroin supplies. The Thai achievements have been dwarfed by the massive and uncontrolled expansion of Burmese production. Burmese cultivation averaged approximately 160,000 hectares in 1991-1993, compared to 75,000 ha in 1981-1983, according to U.S. State Department figures. Furthermore, even in the early 1980s, Thai poppy hectarage was relatively small by Golden Triangle standards -- at most, 8 to 9 percent of Burma's -- though possibly the proportion was higher in earlier years. Various United Nations

and Thai government estimate indicate possible extensions of 10,000 to 20,000 hectares of poppy in the 1960s and 1970s. However, both U.S. and Thai crop survey experts question the accuracy and reliability of surveys of Thai opium prior to 1980. For example, opium production estimates of nearly 18,000 hectares and 146 tons produced by a United Nations team in 1965-1966 are widely thought to have served a political purpose -- i.e. to focus Thailand's attention on the seriousness of its opium problem. Indeed, the principal architect of the survey, the Australian anthropologist William Geddes, revised his original estimate downward to 100 tons in a seminar on Northern Thailand development problems held in Chiang Mai in September 1988. With respect to heroin, most refineries along the Thai-Burmese border have operated in Burma, at least since the early 1970s. Burma's chronic political weakness has proved hospitable to the development of both large-scale refinery enterprises and of associated trafficking "armies" that effectively control vast reaches of the national territory.

Finally, Thailand's performance in narcotics control is reciprocally related to production trends in neighboring Burma. The risk and costs (including opportunity costs) of growing opium in Thailand are high compared to those in Burma's Shan state; hence, some opium-farming enterprises have, in effect, relocated across the border. The virtual absence of Burmese government controls on poppy cultivation as well as Burma's weak economy (which makes for low farm labor costs) tends to encourage such a shift. Indeed, this writer was told by Thai government narcotics officials that some Thai opium farmers residing in border regions of Chiang Mai and Mae Hong Son provinces maintain extensive poppy fields on the Burmese side of the border. A further possibility is that the almost unlimited supply of cheap Burmese opium

and (more importantly) of heroin -- a narcotic increasingly in vogue among Thailand's hill tribes -- has depressed opium prices in Thailand. Since the early 1980s, opium prices have fluctuated in the 3,000 to 4,000 Baht ($120 to $150) range; yet opium output has decreased by half according to U.S. and UN estimates. According to Thailand's Office of Narcotics Control Board (ONCB), average opium prices of raw opium in Chiang Mai, Chiang Rai and Mae Hong Son provinces actually declined nearly 15 percent between 1993 (the current price is approximately $125 per kilogram). At the same time, opium production also decreased from 40 to 17 tons, almost 60 percent. Thus, the conclusion seems warranted that Burmese opiate production has exercised a moderating influence on Thai's opium prices. As a result, poppy growers' profit margins have declined and alternative modes of farming have become economically more attractive.

Aside from the above-described "Burma effect," explanations of Thai crop reduction successes center on decades-long processes of economic and political development in Northern Thailand and in the Thai nation as a whole. Take, for example, Thailand's generally enviable record of economic growth: Gross Domestic Product (GDP) has increased an average of 7 percent per year since the Second World War. Real per capita GDP growth has averaged more then 74 percent annually since 1985, more the 8 percent since 1981 and more than 11 percent since 1988. In Northern Thailand, the site of virtually all the country's opium cultivation, growth has been less spectacular but still respectable -- approximately 6 percent since 1981 and 7.5 percent since 1988. Rising prosperity has revolutionized economic activity and lifestyles in the more accessible parts of the opium zone, in general reducing farmers' economic dependence

on poppy cultivation. Hilltribe populations today can earn cash income from many sources: among them legal cash crops, wage employment, trade, tourism and handicrafts. Rising Thai affluence has created new "middle-class" markets for legal agricultural products that grow well in some highland locations -- for example for cabbages, coffee, strawberries and zucchini. Some farmers have responded to changing economic circumstances by selling their farms and moving to the cities. Young people have left the hills to seek employment in factories and service industries or -- less fortunately -- in urban sweat shops and brothels.

Equally importantly, Thai successes in limiting opium cultivation derive from the Thai government's overall developmental strategy vis-a-vis the northern highlands. The strategy was driven initially by national security concerns, especially by a communist-led insurgency lasting roughly from the mid-1960s to the early 1980s; the insurgents, who were based mainly in the Northeast region, also capitalized on the northern hilltribes economic grievances and their weak sense of nationhood. In the late 1960s armed clashes occurred between the Thai military and Miao (Hmong) tribespeople in Chiang Mai, Chiang Rai, Nan, Tak and Mae Hong Son provinces -- i.e. in all the principal opium-growing provinces. Also contributing to Thai fears was the specter of Burmese-type ethnic separatist movements emerging in Northern Thailand; possibly with the backing of Shan State heroin warlords such Khun Sa and Lo Xinghan. Such considerations prompted extraordinary efforts in the 1960s and 1970s to establish physical and political control over the highland regions, to reduce political terrorism along the Thai-Burma border and to integrate non-Thai hilltribe minorities into the Thai socio-economic system.

Thai government efforts to achieve national political integration were reflected in a number of areas. One was an intensive road building campaign that spanned an approximately 30-year period from the early 1960s to the early 1990s. Partly supported by the U.S. Agency for International Development, construction of new road networks opened up the northern highlands to development and increased Thai government access to hill tribe villages. By the early 1990s, density of road networks in the northern region country including only roads built by the Royal Highway Department and by the Office of Accelerated Rural Development (i.e. mainly regional, provincial and district level arteries) -- was .122 kilometers per square kilometer; this compared favorably to the national average of .146 kilometers per square kilometer. In addition, thousands of kilometers of tracks, tracks and feeder roads were built by the Royal Forestry Department, the Thai military and other government agencies. Another manifestation of the integration policy was the attempt to saturate the northern highlands with government workers and service, and with "outsiders" generally. As of 1983, according to one American observer, 43 Thai government agencies and 27 non-government organizations (NGO) were involved in some type of development actively in Northern Thailand.[1] By the mid-1980s, according to the government's National Statistical Office, slightly more than 50 percent of the (then) estimated 3,200 villages in Northern Thailand were receiving ongoing service coverage from at least one Thai government agency or NGO.

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[1]Richard Crooker. "Opium Production in Northern Thailand: A Geographical Perspective." Ph.D. Dissertation, University of California at Riverside, 1986. p. 307.

National integration and (on a limited scale) extension of social welfare were the dominant themes of Thai hilltribe policy in the 1960s and 1970s. Opium reduction per se was not a priority objective. Indeed, during the 20-year period of Communist insurgency, the Thai government viewed the destruction of drug crops as running counter to the objective of gaining the loyalty of hilltribe farmers. "We could not afford to provoke the farmers and besides we needed them to give us information about the guerrillas' whereabouts" explained an officer of the Border Patrol Police in a recent interview with this writer.[2] Yet the opium problem did receive some high-level attention: the Thai government commissioned two United Nations surveys, in 1961-1962 and in 1965-1966, to determine the extent of national poppy cultivation. In 1969 the Thai Royal family launched the so-called "Royal Northern Project" -- an initiative designed to provide income alternatives for hilltribe poppy growers and to encourage "a wise and proper balance" in conserving the nation's land and forest resources. More significantly, the physical infrastructure and government service networks established in the 1950s and 1960s provided a foundation -- and a justification -- for the intensive crop reduction efforts of the 1980s and 1990s.

Ultimately, Thai successes in opium reduction resulted from a conscious Thai-foreign strategy that emphasized both socio-economic development of high-density poppy areas and active suppression of poppy growing. The development side of the equation comprised some 13 "donor-assisted" projects which spent at least $125 million dollars -- of which the foreign share was an estimated 60 to 65 percent -- over the 20-year period from 1973 to 1993. At least

[2]Interview. Border Patrol Police, Bangkok. January 1994.

$100 million of these funds have been spent since 1980 (eleven of the thirteen projects were initiated in the early or mid-1980s). As of mid-1992 according to ONCB, the development projects compared approximately 45 percent of the opium-producing area in Northern Thailand.[3] The projects conveyed many direct benefits and service to hilltribe communities -- including agricultural extension, roads, marketing activities, irrigation works, schools, and health facilities.

The other side of the equation -- enforcement of a 1959 law outlawing poppy cultivation -- was initiated formally in the 1984-1985 crop season. (In fact, small amount of poppy were destroyed by the Thai military in the early 1980s but these operations were not publicized). Like most countries with sizeable extensions of drug crops, the Thai government introduced eradication reluctantly, fearing that destroying drug crops would precipitate rural unrest. Several considerations prompted the move: first, the threat from communist insurgents had tapered off by the early 1980s (all the major insurgent bases had been destroyed by the military by early 1983); thus removing an important political constraint on eradication. Second, production of replacement crops in some of the highland development areas was sufficient to guarantee villagers with adequate food and income. Third, national opium cultivation trends did not yet reflect the impact of development programs -- indeed the cultivated area increased more than 40 percent between 1981 and 1985. Apparently, hilltribes receiving development aid were simultaneously cultivating opium and the new cash crops. Finally, considerable armtwisting by the international community -- especially the United States -- and a 130 percent increase in the

[3]Sorasit Saengprasert. "Supply Reduction Measures Through Integrated Highland Development Approach in Thailand." ONCB, Bangkok, 1992. p. 9.

State Department's crop control funding for Thailand between 1983 and 1985 contributed to Thailand's enforcement decision.

Much controversy surrounds the question of whether the Thai success story is attributable principally to development and crop replacement initiatives or to enforcement measures. This issue is discussed at some length in this report. That farmers would reduce cultivation of opium in response to increased risk of losing their plots seems a plausible assumption. On the other hand, as the analysis in the study shows -- eradication does not correlate well with cultivation on a year-to-year basis: that is, the percentage of poppy hectarage reported eradicated in a given year is not significantly related to the change in cultivation in the following year (indeed the correlation coefficients are negative). Probably the development versus enforcement debate will never satisfactorily be resolved. In any case, the debate is irrelevant in a sense; the Thai government would not have embarked on an eradication strategy without significant prior commitment of international funds to development of the opium zone.

The foregoing discussion suggests that Thailand's success in curbing opiate production derives principally from the following factors:

- Superior macroeconomic performance: decades of sustained and (by international standards) relatively rapid economic growth at national and regional levels

- A long-term Thai government commitment to integrating northern hilltribe populations into the Thai economic and political mainstream

- Successful government penetration and control of most of the national territory, including the opium zone

- Massive infusion of Thai and foreign (including United Nations) funds into highland development and crop replacement projects over nearly a quarter - century

- Thai government willingness to supplement long-range development measures with annual campaigns to survey and destroy hilltribe poppy holdings

- Thai responsiveness to international, especially U.S. concerns regarding cultivation of illegal narcotics crops

- Competitive production in a neighboring country: specifically the moderating effect of Burmese opiate production on opium markets and cultivation decisions in Thailand

Opium farming today is an economically marginal industry in Thailand. In the 1990s, domestic opium production was probably only a $4 to $5 million business employing at most

30,000 to 50,000 highland dwellers. Such figures are trivial in the context of the Thai national economy ($90 billion) and labor force ($30 million). Crop replacement programs have produced visible successes. Large fields of cabbages, coffee, red kidney beans, potatoes and specialty vegetables now grow on the same sites formerly planted in opium. Some of the replacement crops yield higher returns per unit of land than poppy. The hilltribe development projects have raised incomes and living standards in many of the targeted areas, and in general, have helped promote the Thai government's national integration objectives vis a vis the hilltribe population.

Yet questions arise concerning sustainability of the Thai "model". International support for Thai opium reduction efforts is fading; this reflects both increasing budget constraints in the industrialized countries and of a growing belief (at least in the United States) that scarce development and drug enforcement dollars should be focused on "high value" targets -- such as Burma, Laos and the Andean countries. Indeed, this report presents clear evidence that both development projects and crop destruction programs are yielding diminishing returns vis a vis opium cultivation; that is, the opportunity costs of such efforts per unit of opium land replaced or destroyed have become high relatively to what can be accomplished as other narcotics-source countries. Most of the donor-assisted highland development projects of the 1980s are winding down; some have ceased operations entirely. U.S funding for crop eradication programs dropped by 60 percent between FY 1993 and FY 1994; in two years the program may be phased out altogether. Other troubling signs loom on the horizon as well. One problem is the rapid growth of the population of the northern highlands; (estimated to be anywhere from 3.5 to 6.0 percent compared to the national average of 1.4 percent) -- a result both of natural increases and

immigration from the lowlands and from neighboring states. Population inflows preempt the supply of land ecologically or geographically suitable for replacement crops; thus forcing hilltribes people to move further into the hills where the only cash crop that can be successfully cultivated is opium. Population pressures also shorten crop rotation cycles, and reduce yields of legitimate crops, especially rice. As one U.S. geographer notes, a region-wide land shortage during the past two to three decades has forced the hilltribes to "increase opium production to offset shortfalls in rice production and the threat of increased poverty."[4] Contributing to pressures on land are the Royal Forestry Department's (RFD) efforts to restrict hilltribes' settlement in forest areas and also a concerted tree-planting campaign encompassing some 125,000 hectares in the highlands since the mid 1960s.[5]

Furthermore, Thailand's domestic consensus regarding opium reduction efforts shows signs of fraying. One factor is the astronomical rise in heroin addiction among Thailand's hilltribes -- a rise attributable both to the reduced availability of opium in the hills (many new addicts are former opium addicts), and -- as the report shows -- to the increasing "convergence" of opium and heroin prices in recent years. As heroin increasingly floods the North, a number of Thai opinion leaders have advocated openly retaining sufficient opium cultivation to satisfy domestic demand -- an area which might amount to 7,000 to 8,000 hectares, according to current consumption estimates. A second factor is the obvious environmental degradation caused by

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[4]Richard Crooker. "Forces of Change in the Thailand Opium Zone." The Geographical Review. Volume 78, Number 3, July 1988, pp. 249-251.

[5]Interview. Royal Forestry Department, Bangkok. February 1994.

poorly planned and executed ventures with replacement crops. While hilltribe opium growers' "slash and burn" agricultural practices are held responsible for deforestation, soil erosion and the degradation of watersheds; opium is, in fact, a relatively "friendly" crop environmentally compared to some legal alternatives. As noted in the report, Thailand now faces the troubling possibility that commercial legal agriculture (and commercial enterprises such as logging and mining) may cause more damage to forests and watershed areas than opium farming.

The prognosis for further opium reduction in Thailand -- especially in circumstances of reduced foreign funding -- depends on a number of factors: the "political will" of the Thai government, the government's internal spending priorities, the perceived negative externalities of crop replacement programs, and opportunity costs of eradicating small opium plots in remote and inaccessible locations. A number of ONCB officials suggest that hilltribe enforcement and development initiatives should aim at containing opium cultivation at its current level of 2,000 to 3,000 hectares[6] rather than at eliminating opium entirely. Much also depends on future U.S.-Thai dialogues on narcotics issues -- Thailand's long and successful history of cooperation with the United States as well as Thailand's asymmetrical dependence on United States for markets, imports and investments guarantee a continuing U.S. role in the formulation of Thai's counternarcotics policy. Perhaps the two countries can agree that 2,000 to 3,000 hectares represent an "acceptable" level of cultivation. Overall -- despite some pessimistic signs -- the possibility for a major resurgence of opium in Thailand seem limited. On the contrary, increasingly unfavorable economic prospects for the Thai opium industry (determined partly by

[6]Interviews. ONCB, Chiang Mai. January 1994.

the "Burma effect" described above) may prompt farmers to participate in legal commerce and to join Thailand's economic mainstream.

The propositions outlined above will be explored in detail in this report. The report will consist of five chapters. Chapter I will describe the international significance of Thailand as a narcotics-source country and also will define the socio-economic and ecological settings of opium farming in Thailand. Chapter II will examine cultivation trends in different provinces and districts in the northern region and also analyze the factors affecting these trends. Chapter III will discuss the organization, dynamics and performance of U.S.-Thai opium eradication efforts. Chapter IV will examine the record of the various donor-assisted highland development projects of the past 25 years. A concluding chapter will evaluate the successes and failures of the Thai model and also examine the relevance of the Thai experience to "hard case" narcotics-producing countries such as Burma, Peru, and Bolivia.

CHAPTER I. THE SETTING

Thailand plays a comparatively minor role internationally as source country for illicit drugs. As Table 1 shows, in 1992-1993, Thailand was the world's seventh largest opium producer, and accounted for approximately one percent of production worldwide. As noted in the overview section above, heroin refining also is not a significant industry in Thailand. Since 1988, the Thai percentage of Golden Triangle cultivation has declined from 2.4 percent to 1.5 percent -- arguably a casualty of the staggering quantities of opiates produced in neighboring

Table I
Development Indicators of Principal Narcotics-Producing Countries

Country	Hectares of Gross Cultivation (most recent years)	Pop Density per sq. km.	Total Length of Roads (km.)	Country Land Area (sq. km.)	ROAD DENSITY Road km./ sq. km.	Average Annual Growth Rate 1985-1992	Per Capita GNP 1992	Average Percent Per Capita Growth 1985-1992
Thailand[1]	2,860	108.0	74,972	511,770	0.146	5.8	$1,840	8.3
Laos[1]	26,040	17.0	27,527	230,800	0.119	1.8	$250	1.8
Burma[1]	165,800	60.0	27,000	657,740	0.041	NA	$530 (1991)	1.8[5]
Bolivia[2]	49,600	6.0	38,836	1,098,560	0.036	1.0	$680	1.0
Colombia[2]	72,823	28.0	106,218	1,038,700	0.102	2.4	$1,290	2.4
Peru[2]	108,800	16.0	69,942	1,280,000	0.05	(4.3)	$950	(4.3)
Afghanistan[1]	21,080	31.0	21,000	647,500	0.032	NA	$200 (Ca. 1991)	NA
Mexico[4]	38,420	41.0	225,684	1,958,000	0.115	1.1	$3,080	1.1
Pakistan[1]	6,280	137.0	111,237	778,720	0.143	1.7	$410	1.7

1 opium only
2 coca only
3 cannabis, opium, coca
4 cannabis, opium
5 1965 to latest available year

Sources: The World Bank Atlas 1994
The World Bank: Social Indicators of Development 1993
CIA. The World Factbook 1992
Royal Highway Department, Thailand
Office of Accelerated Rural Development, Thailand
U.S. State Department: Bureau of International Narcotics Matters (INM)

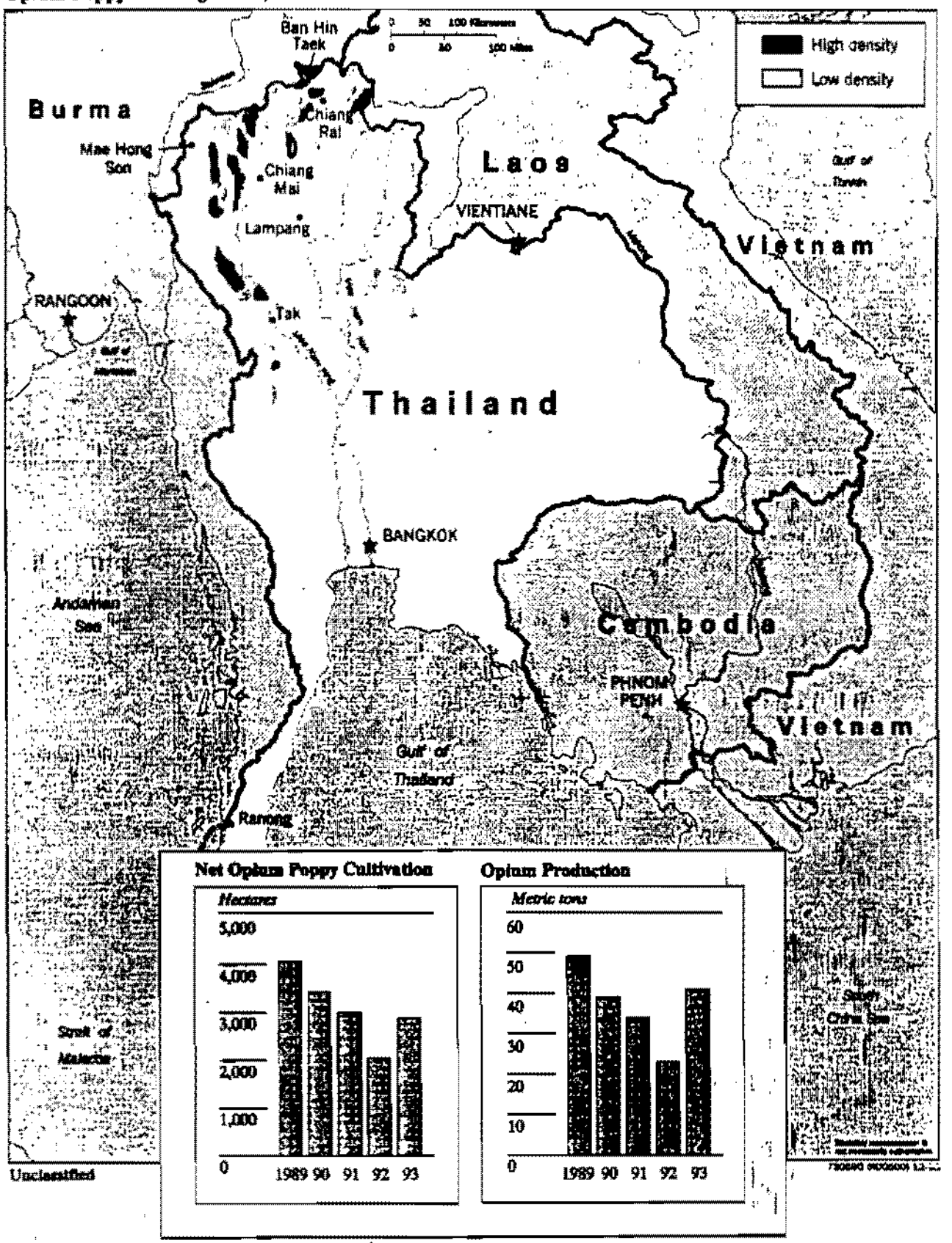
Burma. A similar "Burma effect" partly explains Pakistan's declining share of cultivation in the Golden Crescent, from 36.6 percent to 18.7 percent in the past five years; Pakistan's "Burma," is of course, Afghanistan -- a country that does not even have a central government, much less a narcotics control program.

Economically and developmentally Thailand is in a different class from other narcotics-producing countries. As Table 1 indicates, Thailand's economic growth record is far superior to that of eight other narcotics producers. Its per capita income is higher than that of any producer except Mexico. Its road network is superior to that of the others. Also, Thailand is a relatively small country -- approximately half the size of Colombia, Bolivia and Peru and four-fifths the size of Burma -- and is more densely populated than most other producing countries. Such factors probably make for better economic and political control by the central government. These indicators do not add up to a theoretical statement on the relationship between development and narcotics control. For example, Colombia, which has more such crops under cultivation than any country except Burma, ranks second in the group of nine in per capita GNP (1992) and per capita GNP growth (1985-1992), and Mexico's per capita GNP is twice that of Thailand's. Still, Thailand's overall success ranking on key economic dimensions appears to exceed that of the other members of the group.

Within Thailand, opium is cultivated almost entirely in the northern region, the second poorest region in the country (see Maps 1 and 2). Insignificant amounts of opium also are grown in Loei province in the northeast. Total gross cultivation in the 1990s averaged slightly

Map 1

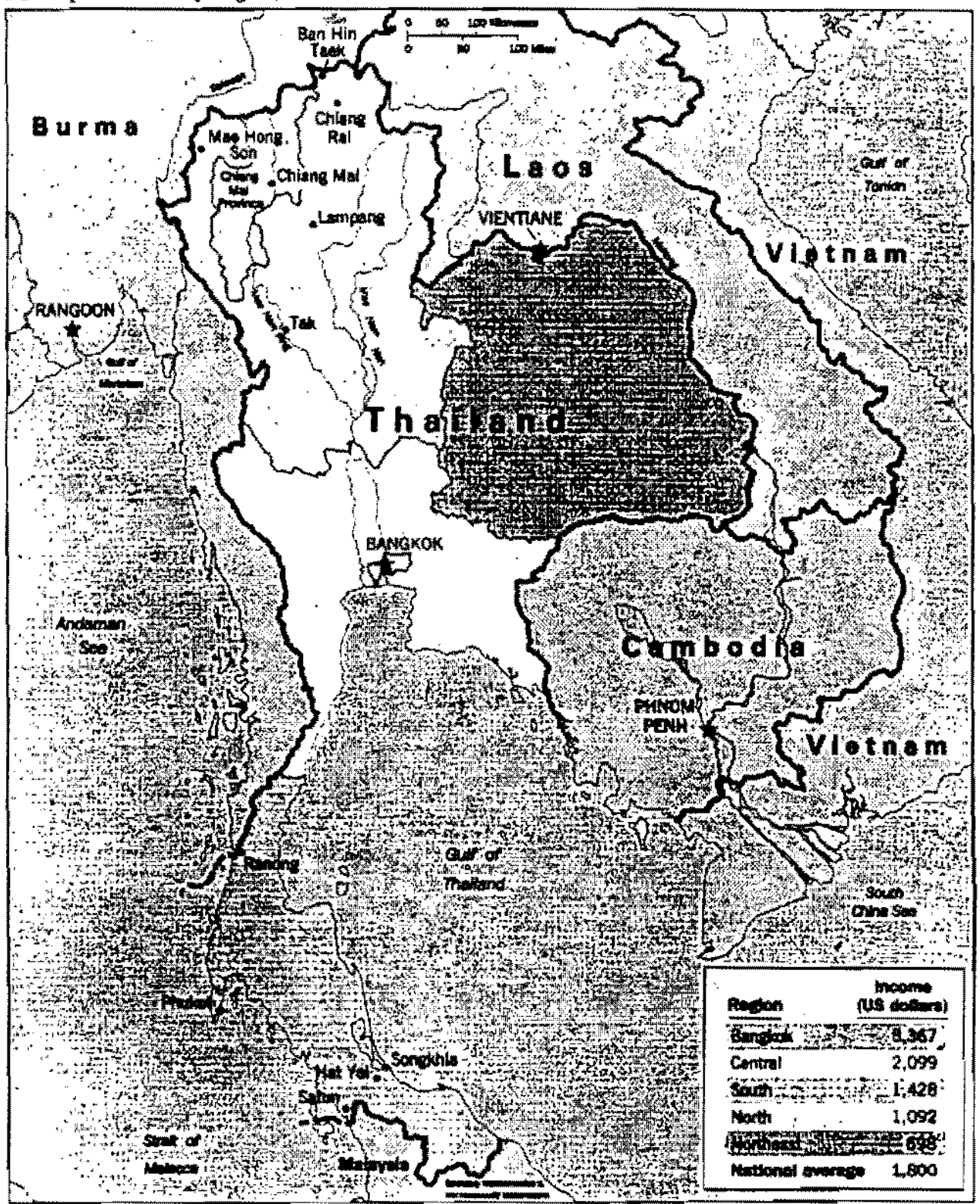
Opium Poppy Growing Areas, 1993



Unclassified

Map 2

Per Capita Income by Region, 1992



Unclassified

over 3,000 hectares, comprising only 0.15 percent of the total Thai land area potentially adaptable to poppy farming (an estimated 2.2 million hectares). Five provinces in what is called the "Upper North" -- Chiang Mai, Chiang Rai, Mae Hong Son, Tak and Nan -- account for the lion's share of total Thai cultivation: 97 percent in 1991-1993 and 93 percent in 1981-1983. In general, these provinces have high proportions of land area above 600 meters -- i.e. land particularly suitable for opium cultivation -- and relatively large hilltribe populations. Some three-quarters of the land area of Mae Hong Son province, the only province to register an increase in opium cultivation between the early 1980s and the early 1990s, is above 600 meters; and more than half of the provincial population is composed of hilltribes. (See Tables 2 and 3)

Opium is a cash crop that fills an important ecological niche in highland agriculture. Two aspects of this function can be noted here. First, Thai opium poppy grows best at high altitudes, at elevation 1,200 meters and above. A 1979-1980 ONCB survey of 158 opium producing villages in Chiang Mai province found that about 60 percent of the poppy area of the province was situated at elevations of between 1,200 and 1,700 meters. The average cultivated areas per village also increased with altitude, with 1,200 to 1,400 meters on the optimal range. (See Table 4) Temperature, rather than altitude per se, seems to be the governing factor. Opium "prefers" relatively cool (though not cold) temperatures and historically has thrived in low altitude settings with suitable climate conditions -- for example, in the Yangtze River Valley in China and in the Fergana Valley in Uzbekistan. At the same time, other crops do not necessarily grow well in the higher reaches of the Thai opium zone. For example, studies have shown that in the case of rice -- the most important staple food crop -- high altitude tends to

Table 2
Opium-Source Provinces in Thailand

	Opium Cultivation 1991-1993 (in rai)	Opium Cultivation 1981-1983 (in rai)	Percent Reduction
Chiang Mai	8,212	17,689	54
Mae Hong Son	6,842	6,093	(13)
Chiang Rai	2,252	8,678	74
Tak	1,058	2,119	50
Nan	663	2,208	70
Lampang	167	1,140	85
Phayao	119	1,322	91
Pitsanulok	30	224	87
Loei[1]	26	–	–
Phrae	4	–	–
Kampaengphet	245	–	–
Phetchabun	53	–	–
TOTAL	19,671	39,473	498

[1] In Northeast Thailand

Sources: ONCB, Author's Calculations

Table 3 - Provincial Data for Northern Thailand
Socio-Economic Indicators

Province	GPP Per Capita 1991	Area 1000 sq. km.	Percent Land Above 600 Meters	Population Density per sq. km. (1991)	Percent Hilltribe Population (1985-1987)
Upper North					
[Chiang Mai][1]	1,479	20.1	80.4	68.0	10.89
Lampang	1,131	12.5	28.4	61.3	1.29
Tak	929	16.4	51.1	21.4	21.53
Lamphun	855	4.5	36.5	92.4	5.30
[Chiang Rai][1]	794	11.7	19.2	11.8	9.97
[Mae Hong Son][1]	718	12.7	75.2	13.6	52.67
Phayao	669	6.3	NA	78.9	2.26
Phrae	669	6.5	5.8	74.8	1.76
[Nan][1]	643	11.5	50.3	17.9	21.53
Lower North					
Kampaengphet	1,107	8.6	15.9	77.4	1.57
Nakhon Sawan	978	9.6	0.9	112.3	None
Uthei Thani	948	6.7	56.3	45.0	0.86
Uttradit	943	7.8	24.1	58.5	None
Pitsanulok	870	10.8	10.4	72.4	0.69
Phichit	774	4.5	0	123.1	None
Sukhotai	678	6.6	6.2	89.1	0.48
Phetchabun	669	12.7	26.5	74.9	0.93
Average North	874	--	--	64.2	--
Total North	--	169.5	37.5	--	18.7

1 [ ] = principal opium province

Sources: National Statistical Office (NSO); Office of Narcotics Control Board (ONCB); National Economic and Social Development Board

Table 4

Altitude and Poppy Cultivation Patterns of
158 Opium Producing Villages in Chiang Mai Province
1979-1980

Altitude	Number of Villages	Percent of Villages	Village Cultivation (rai)	Percent of Total Cultivation in Province	Average Village Cultivation (rai)
1400 to 1700 meters	26	16.4	2,460	22.4	94.6
1200 to 1399 meters	39	24.6	4,239	36.0	108.7
1000 to 1199 meters	40	25.3	2,557	22.3	63.9
500 to 599 meters	40	25.3	1,895	10.3	47.4
Unknown	13	8.2	333	7.9	25.6
TOTAL	158	99.8	11,484	98.9	340.2

Source: ONCB 1979-1980 Opium Survey

induce sterility and to lengthen the growth cycle; very little rice is cultivated above 1,100 meters. Not surprisingly, studies have shown that the percentage of farmers' crop cash income derived from opium increases with altitude.[7] As a consequence, many highland development schemes encourage hill tribes to resettle at lower elevations (where land is available); such schemes also promote frost regeneration or agroforestry instead of cash cropping in the high opium zone.

A second significant feature of opium-farming is that it is a relatively undemanding activity ecologically -- opium requires fewer nutrients and exhausts the soil less rapidly than other annual crops. According to the geographer Richard Crooker, poppy fields remain in production from four to six years on the average; by contrast, upland rice depletes the soil's fertility after two years. According to a sample of 190 opium plots conducted during the 1995-1966 United Nations survey, in 64 cases or 34 percent, the same pieces of land had been cultivated in poppy for periods of 5 to 20 years.[8] In general, the length of cultivation is inversely related to the acidity of soils. Also, poppy activity in the same field with other crops, such as maize and potatoes, farmers sow and harvest between April and August. Poppy usually is planted after the monsoon season in September and October and harvested in January and February. (See Figure 1) Opium cultivation also allows considerable intercropping -- as

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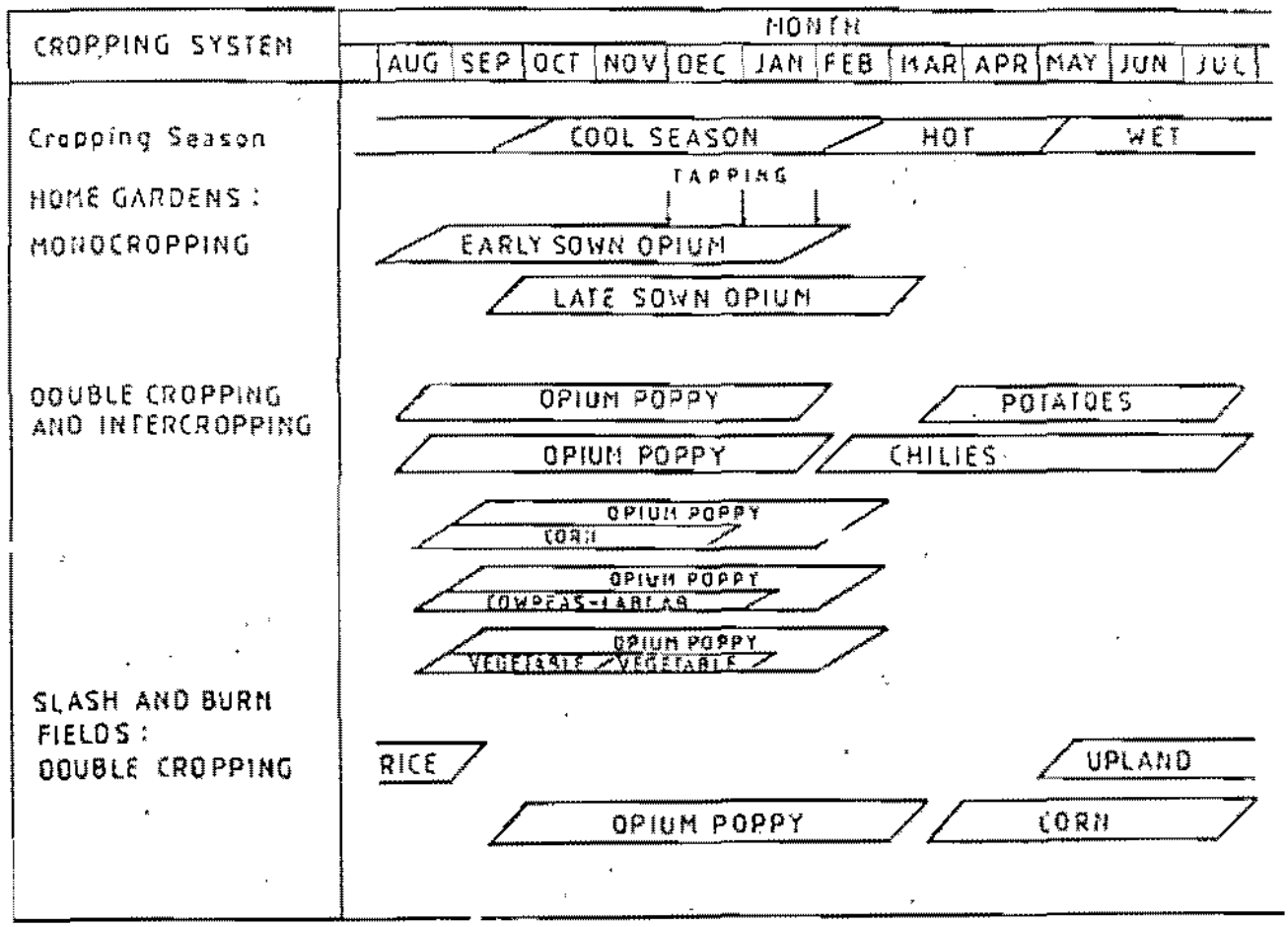
[7]See for example Gerald Hickey and Jesse Wright. The Hill People of Northern Thailand: Social and Economic Development. AID/ASIA-C-1310. June 1978, p. 179.

[8]Crooker. "Dissertation." *op. cit.*, pp. 238-244. United Nations. Report of United Nations Survey Team on the Economic and Social Needs of the Opium-Producing Areas in Thailand. Bangkok: Government Printing House. 1967, p. 139.

Figure 1

Poppy-Based Cropping Systems of the Hilltribes in Northern Thailand



Source: Kanok Rerkasem et.al. Highland Development as a Narcotics Control Strategy. Chiang Mai 1987, p. 12.

Crooker notes, "Vegetables consumed by highlanders are usually sown, mixed with poppy seed [and] are then produced at virtually no cost in labor and time to the farmers."[9]

Sociologically and economically opium farming is closely associated with the livelihoods of Thailand's highland populations. Most opium in the hills is grown by six non-Thai ethnic groups -- so called hilltribes -- that inhabit the higher altitude geographical zones of Northern Thailand, between 800 and 1700 meters (Figure 2 indicates roughly the regional disposition of the tribal groups). These groups include the Miao (Hmong), Yao, Lahu, Akha, and Karen tribes. The Karen tribe accounts for approximately half of the estimated 600,000 hilltribe population, the Miao for 15 percent and the others for smaller percentages. Hilltribes differ in their commitment to opium. An ONCB survey of hilltribe villages in 1979-1980 indicated that the percentages of Lisu, Miao and Yao villages cultivating opium was higher than that for the other three tribes and that the cultivated opium area per capita was also higher. The Lisu had the largest percent of opium villages (67.4 percent), and the Karen the lowest (3.0 percent); the Yao have the highest per capita cultivation (0.13 rai). The sociology of opium farming may be changing somewhat. In USAID's Maechaem Watershed Development project (Chiang Mai province) in the late 1980s, for example, lowland Thai farmers relying on Karen laborers were responsible for a larger share of the poppy cultivated area than were tribespeople; yet opium cultivation still is overwhelmingly practiced by ethnic non-Thai's -- i.e. by out-groups within Thai society.

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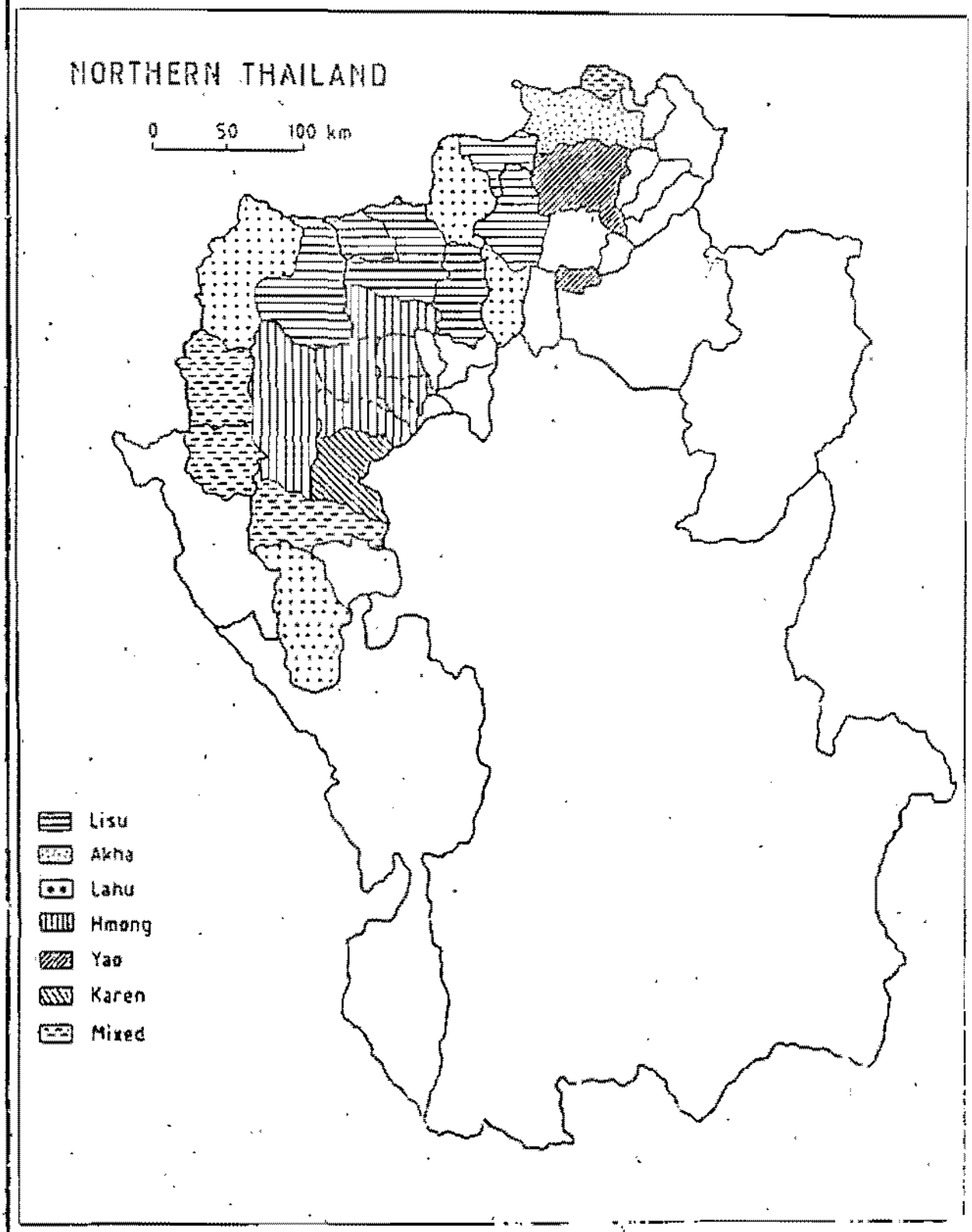
[9]Crooker. Dissertation, p. 242.

Figure 2
Opium-Growing Areas by Ethnic Tribe



Source: Richard Crooker. Opium Production in Northern Thailand: A Demographic Perspective, p. 10.

The hilltribes have posed significant ecological, social and economic challenges to the Thai authorities. The principal opium-farming groups have traditionally practiced an inefficient form of "slash-and-burn" agriculture; the tribes clear and burn forest lands, cultivate crops until the soil is exhausted, relocate their settlements and then proceed to destroy new virgin forest. A study by Thailand's National Security Council circa 1985 estimated that hilltribes farming population encroached on some 100,000 to 200,000 rai (16,000 to 32,000 hectares) of forest annually. Such statistics have generated considerable alarm: removal of forest cover interferes with the watersheds of rivers that irrigate the rice plans of Central Thailand -- creating dangers of silting, flooding (during the rainy season), reduced stream flow (during dry season). While population pressures, government reforestation efforts and various development programs are increasingly inducing hill population to settle in permanent villages, the "slash-and-burn" label has stuck to the hilltribes; in recent years, however, commercial logging, and (legal) farming operations have contributed as much if not more to the loss of forest in opium cultivation.

The hilltribes also traditionally have been poorly integrated into Thai society and the Thai economic system. From the Thai government's perspective, low socio-economic status presents both a potential security threat -- northern tribal groups are considered a potential source of recruits for guerrilla or ethnic separatist groups -- and a cause of Thailand's opium cultivation problem. Thai-foreign development efforts have improved conditions in the hills; however, a survey of hilltribes by Thailand's National Statistical Office in 1985-1987 underscored the tribes' backwardness and isolation. For example, only 55 to 60 percent of all tribespeople held Thai citizenship; just 40 percent, 26 percent and 9 percents of the Lisu, Lahu and Akha groups

respectively were citizens. Almost three-quarters did not even have a primary school education and almost 90 percent were illiterate. Less than half of the villages were accessible by automobile, even during the dry season. Only 7 to 8 percent of hilltribe households had electricity. Up to 70 percent do not grow enough food to meet their needs. As of 1987, average annual per capita income in the hills ranged from $71 to $168; by comparison, the per capita income of the then-poorest northern province, Nan, was $470.[10]

In sum, the socio-economic setting and the ecological condition of the northern highlands are generally conducive to cultivation of drug crops. Opium is well-adapted to altitude and soil conditions in the region. It grows easily and mixes well with other crops. Opium farming is both a cause and a consequence of hilltribes' "out-group" status in Thai society. Opium sales provide essential income for food and household necessities and for some entrepreneurial farmers, a modicum of prosperity. For these reasons, ingredients of Thai anti-opium strategy have included both socio-economic integration of the northern highlands and compulsory eradication of illicit crops.

CHAPTER II. THAI OPIUM CULTIVATION: NATIONAL AND REGIONAL DYNAMICS

[10]For a discussion in Englisb of the Survey see Kanok Rerkasem et.al. Highland Development as a Narcotics Prevention Strategy. UNISERV. Chiang Mai Utiversity, 1989, pp. 1-18 and *ibid*. Appendix, pp. 39-80.

An essential assumption of the Thai "model" is that development is good for drug control -- that superior overall economic performance and directed crop replacement efforts independently affect farmers' calculation of whether or not to illicit drug crops. Long-term cultivation trends in Thailand seems to support the development hypothesis; a significant reduction in cultivation had already occurred by the early 1980s -- i.e. before Thailand formally initiated annual eradication campaigns. For example, a 1961-1962 United Nations survey for Thailand's Department of Public Welfare reported a figure of approximately 12,000 hectares (75,700 rai); a second United Nations survey team in 1985-1990 produced a higher figure of nearly 18,000 hectares (112,000 rai). Estimate of the UN Projects Coordination office estimated cultivation to be approximately 10,000 hectares in the mid- and late-1970s. However, estimates of total cultivation in Thailand prior to the 1980-1981 crop year are viewed with much skepticism by U.S. counter-narcotics analysts. "Forget the earlier surveys and the theory of a big drop before the 1980s," notes one Bangkok-based U.S. analyst. "Those numbers were politically motivated."[11]

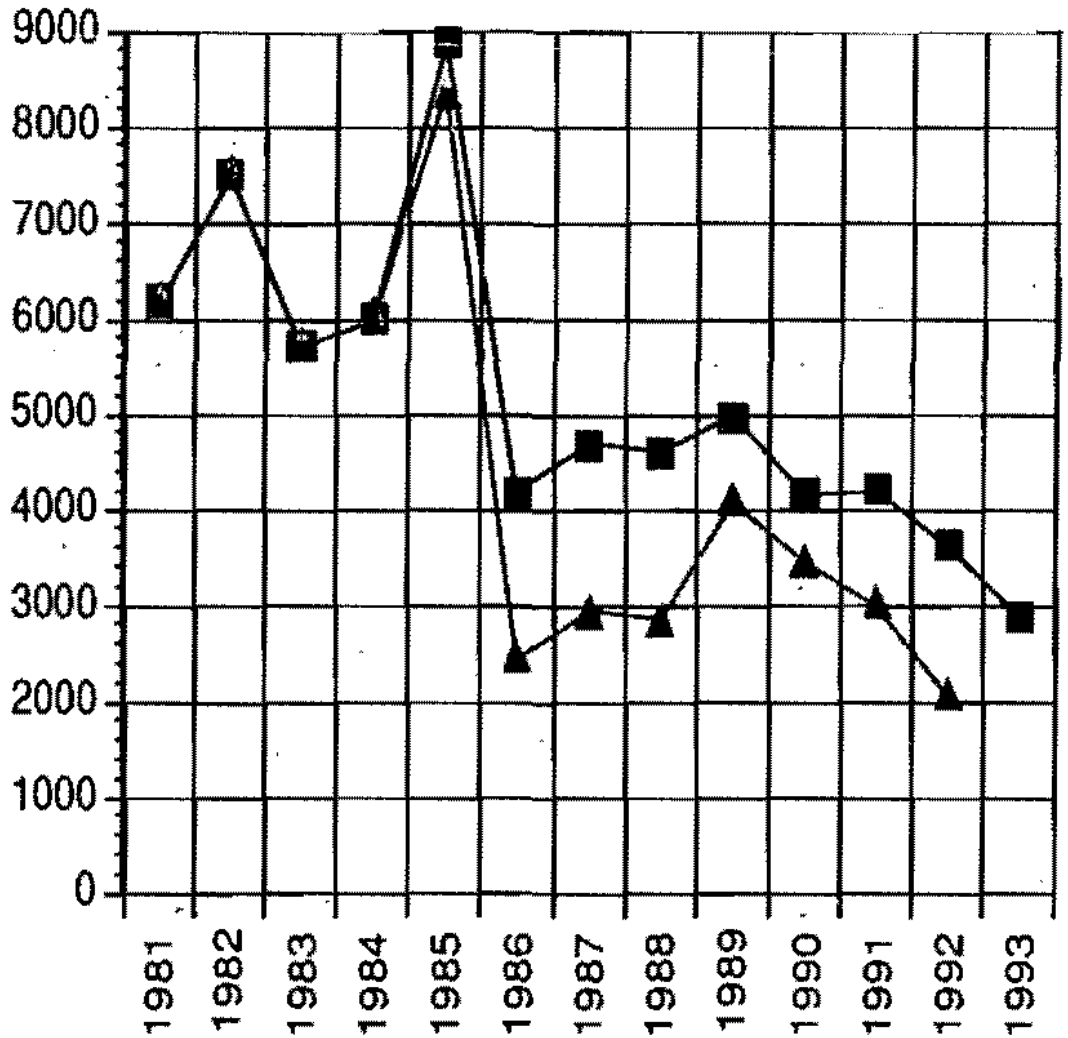
More accurate -- or at least methodologically more sophisticated surveys -- were introduced in 1979-1980 but a number of then-important opium provinces -- e.g. Nan, Tak and Lampang -- were not included in the surveys until the following crop year. The conclusions in this report hence are based principally on the survey data for the 1980s. These data also partly support the "development hypothesis;" between 1981-1983 and 1991-1993, total cultivation (pre-eradication) area for poppy dropped by 45 percent or 50 percent, according to U.S. government

[11]Interview. U.S. Embassy Bangkok, February 1994.

(INM) and Thai government (ONCB) estimates respectively. However, an increase of approximately 30 percent in poppy area between 1981 and 1985 (the first year of formal eradication) and a two-thirds decline from 1985 to 1993 indicates that eradication programs exercised some deterrent effect on opium growing. Figures 3 and 4 underscore these trends; the former shows U.S. estimates of total and net poppy hectarage since the early 1980s; the latter indicates Thai estimates of total cultivation (Thai chances of annual poppy eradication are considered highly exaggerated and are not recorded here). In addition, figure 4 identifies regional dimensions of Thai poppy cultivation -- a subject which will be discussed below.

While overall poppy cultivation in Thailand has diminished since the early 1980s, significant disparities exist in rates of poppy reduction from province to province and from district to district within provinces. Different reduction rates for the five principal opium-producing provinces are shown in figure 4. An important exception to the general downward trend is Mae Hong Son, Thailand's most rugged and remote province where opium cultivation actually increased between the three-year average periods of 1981-1983 and 1991-1993. Different socio-economic profiles of these provinces provide clues to the difference in cultivation dynamics. As figures 5 and 6 indicate, the provinces vary widely in rates of economic development and population growth between 1981 and 1991. Mae Hong Son has the slowest-growing economy in per capita terms and the fastest-growing population. Chiang Mai's per capita product grew almost 75 percent faster than those of Nan and Tak over the 1981-1991 period.

Figure 3



Gross and Net Opium Poppy Cultivation in Thailand 1981-1993

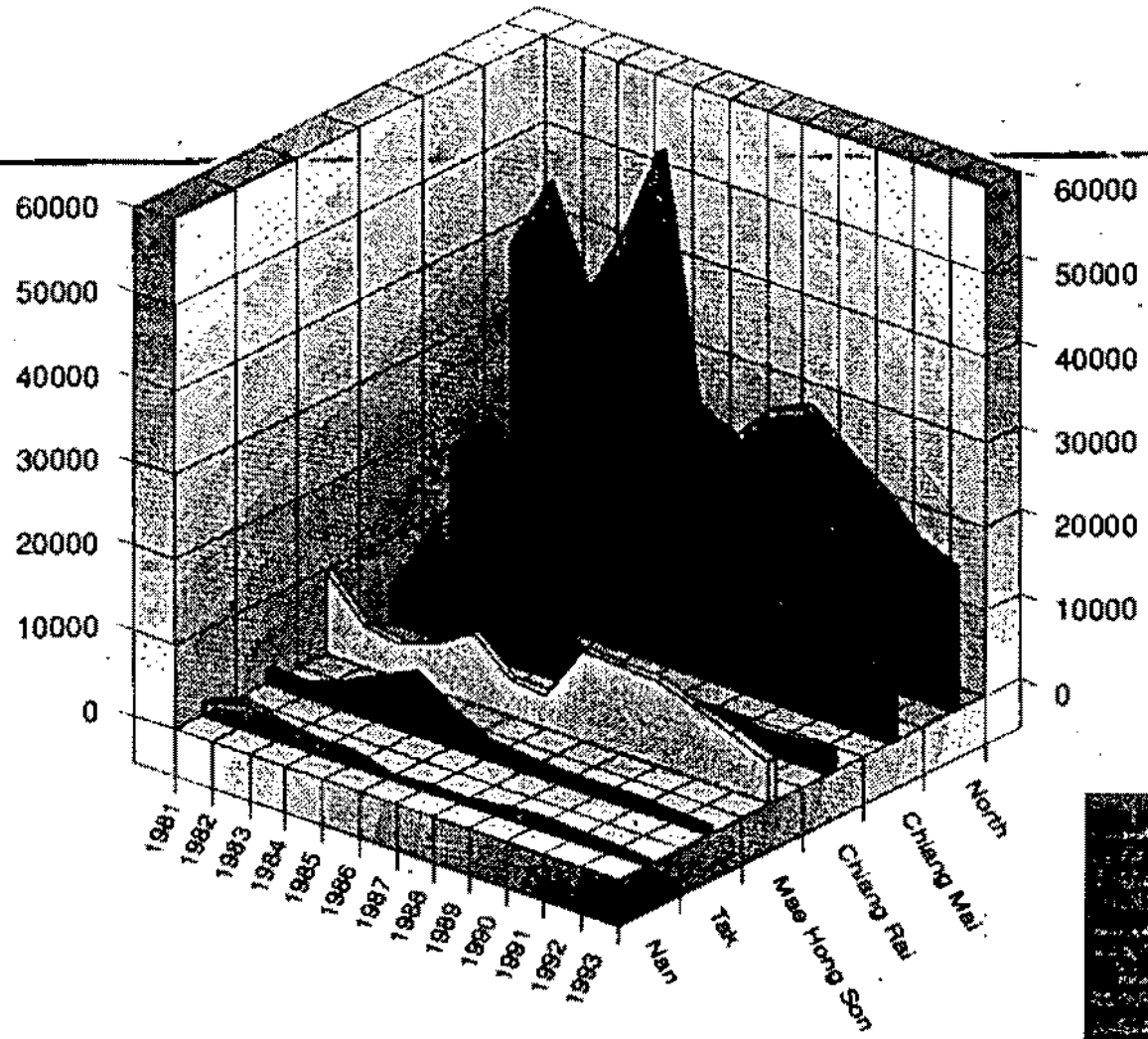
Gross Cultivation

Net

Source: U.S. Department of State

Figure 4

Opium Cultivated (in Rai) by Year for Five Provinces and the Northern Region

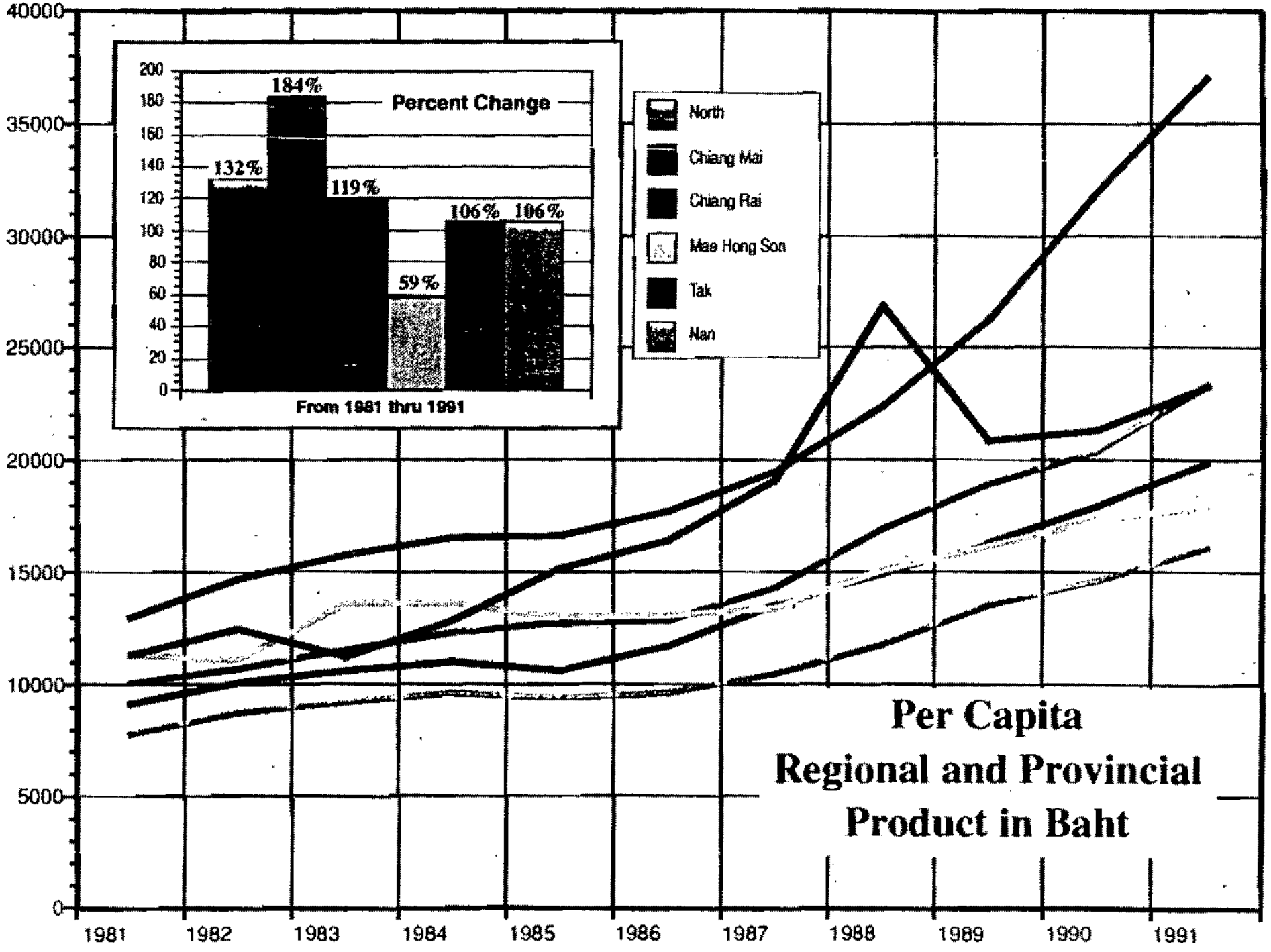


One hectare = 6.25 Rai

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	37661	17234	4318	9549	1767	1583
[illegible]	46196	22216	11458	4772	1664	3128
[illegible]	34568	13618	10262	3959	2925	1914
[illegible]	43333	17946	11760	5680	4978	1380
[illegible]	54254	24402	12389	8253	7377	1220
[illegible]	25789	12263	4603	4259	4078	35
[illegible]	23470	13646	3023	4078	1889	458
[illegible]	28443	11701	3648	10737	1576	439
[illegible]	30100	14024	2523	10411	1357	897
[illegible]	26109	10047	2586	10120	1319	1236
[illegible]	23295	9788	2047	8496	1304	945
[illegible]	18854	7627	2259	6983	926	664
[illegible]	16909	7220	2451	5088	943	382

Source: ONCB

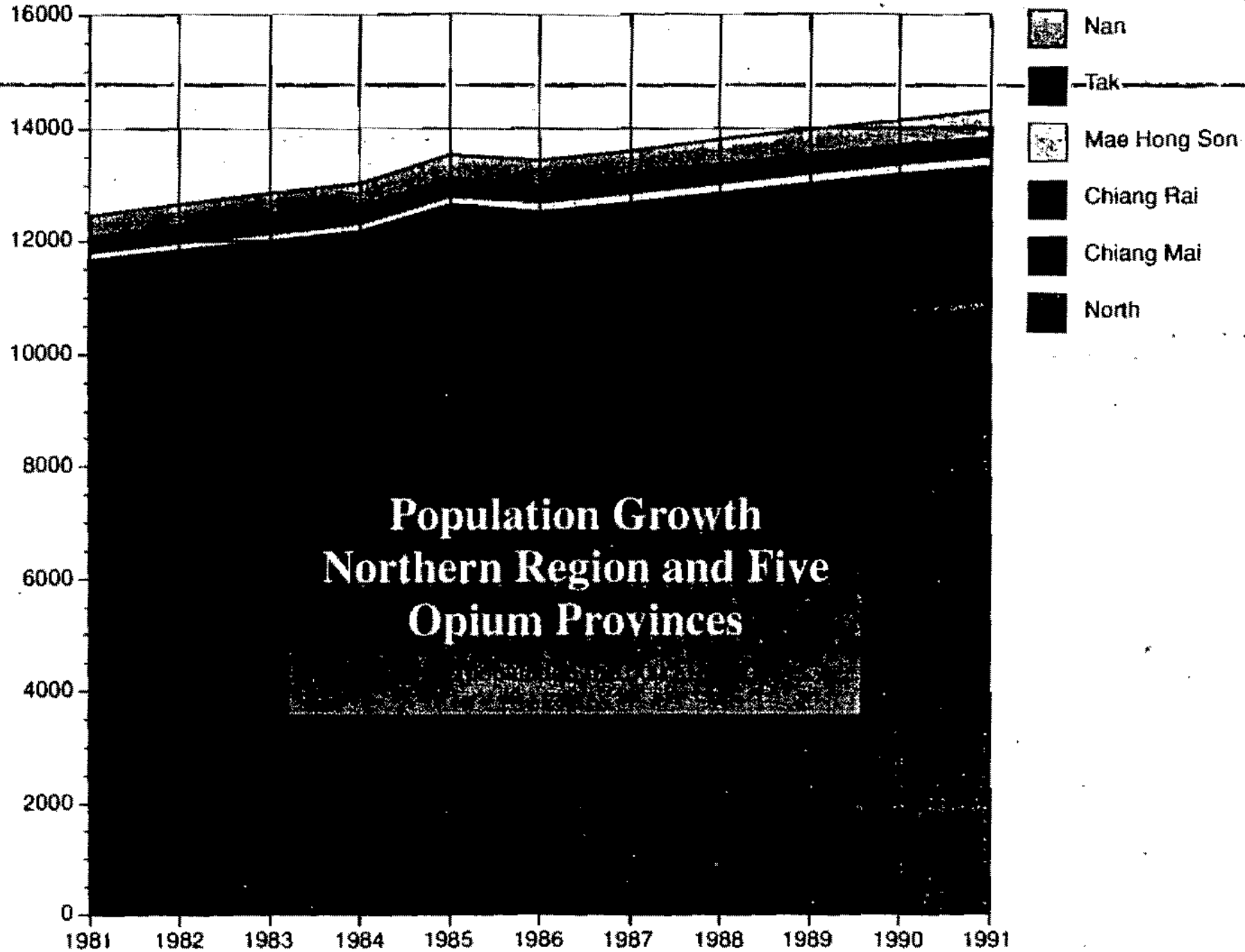
Figure 5



Source: National Economic and Social Development Board (NESDB)

Approximately 25 Baht = One U.S. Dollar

Figure 6



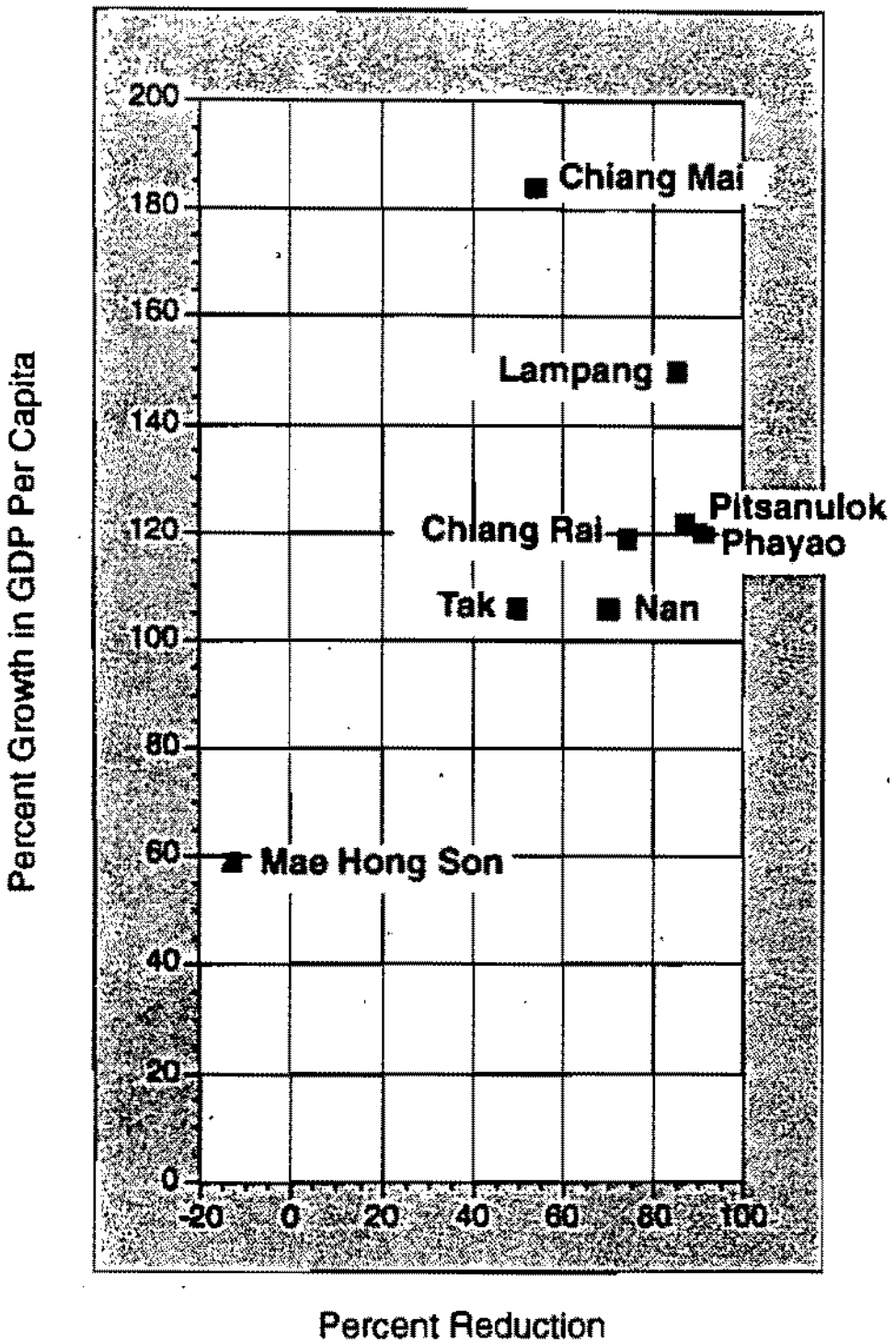
Source: National Economic and Social Development Board.

Figures 7 through 9 provide a more detailed statistical portrait of relationships among opium reduction, per capita GDP growth, population growth and an additional variable, the estimated percent (1985-1987) of the provincial population comprised of hilltribes. The results of the analysis indicate modest but not significant (in a two-tailed test of statistical significance) positive correlation between opium reduction and per capita GDP growth. However, a highly significant negative correlation was found between cultivation trends and both population growth and hilltribe saturation. As noted in the overview section, population growth exerts pressure on the available supply of land suitable for cultivating legal cash crops; furthermore, declining soil fertility -- also a consequence of population pressures -- may favor cultivation of opium over other crops. Hilltribe percentages also correlate negatively with opium reduction; this is not surprising because the growth rate of the hilltribe population, estimated at 3.5 percent or higher, greatly exceeds that of the Thai population as a whole (1.4 percent in 1991).

Efforts were made to compare and to highlight both provinces and districts within a single province (Chiang Mai) that have performed relatively well or poorly in reducing opium cultivation since the early 1980s. Tables 5 and 6 summarize these efforts. In Table 5, pairs of successful and unsuccessful provinces are compared on general economic and demographic indices; and also on several other dimensions: The percent of provincial villages receiving social services from government or non-government agencies, the average number of development projects per village served, the percentages of villages with road access and the percentages of hilltribespeople holding Thai citizenship. Though the relevant statistics were compiled from an NSO survey of hilltribe villages conducted during 1985-1987, the data set probably is

Figure 7

Growth in GDP Per Capita
vs
Percent Reduction

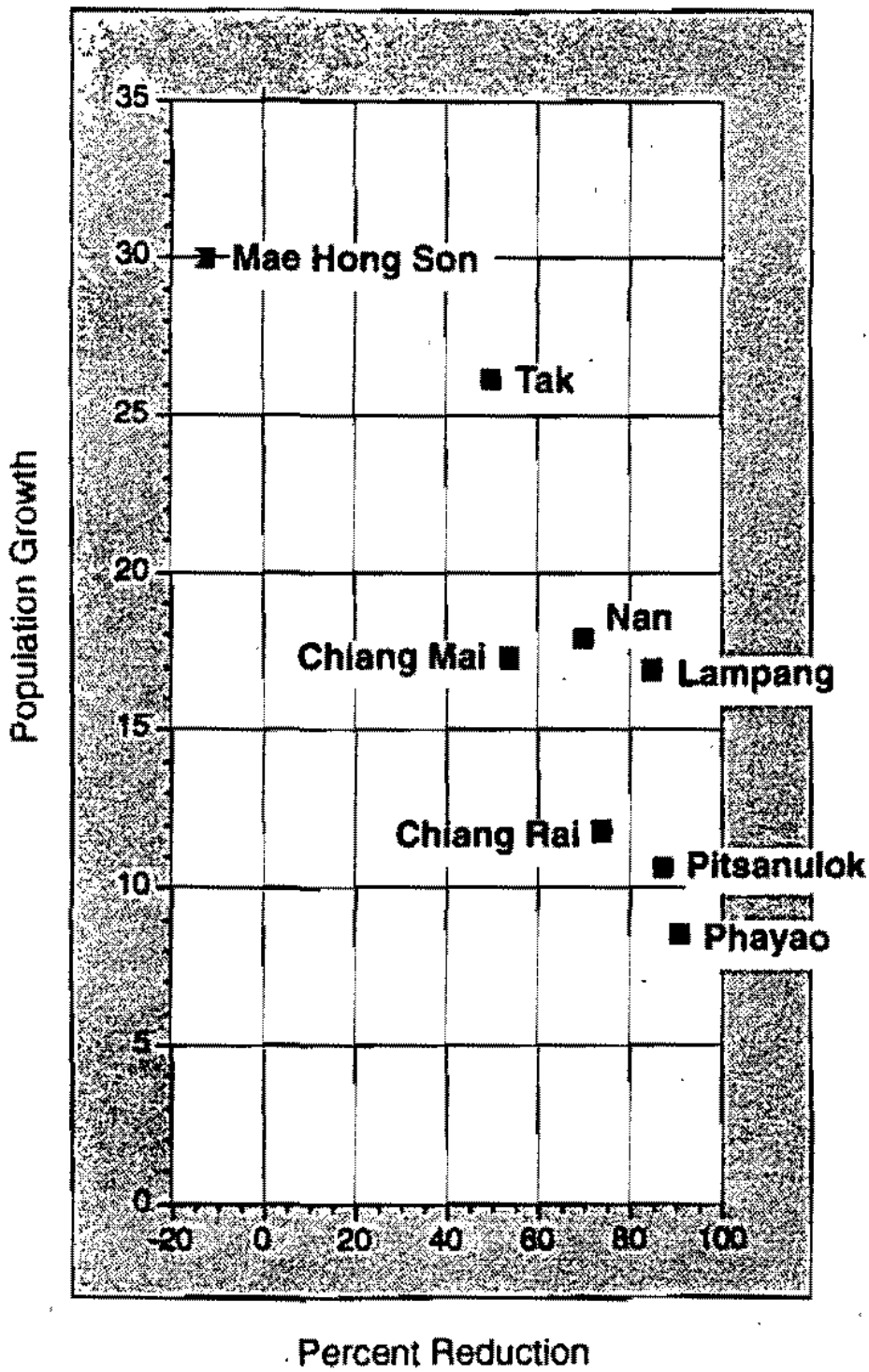


R = -.566

Significant at .05 level or lower

Figure 8

Percent in Population Growth
vs
Percent Reduction



R = -.873

Significant at .05 level or lower

shown in Table 9: the seven projects combined registered a very modest 19 percent decrease from 1991 to 1993; in two formerly successful projects -- Thai-Germany and Thai-Norway -- extensions of poppy actually increased over the period.

A related point is that crop replacement -- the centerpiece and the principal justification of most highland development programs -- probably has limited utility as an anti-opium weapon. To be sure, the crop substitution efforts of the projects have produced remarkable results: At current market prices some alternative cash crops are commercially attractive enough to compete with opium. In the 1992-1993 crop season, cabbages, potatoes, tomatoes and a promising new tree crop, Japanese apricots, also earned higher returns than opium per unit of land. (See Table 10). The profit margins of flowers and exotic vegetables produced mainly in Royal project areas, are even more impressive, even if based on calculations of very small plots. (See Table 11).

Yet opium retains important advantages vis-a-vis legal crops. Poppy cultivation does not require high inputs -- for example, fertilizer, pesticides and irrigation (although some farmers employ those inputs to maximize yields). The opium farmer does not need roads, refrigerated trucks or sophisticated packaging and marketing systems. As a high-value, low-volume and non-perishable commodity, raw opium can be transported over mountainous terrain on the backs of men and animals. Although opium prices are depressed, farmers can dispose of their entire product -- whether selling to hilltribe addicts, to the addict population in the lowlands, or to Burmese heroin refiners; by contrast, mass markets have yet to develop for some of the new

Table 9

Cultivation Trends: Highland Development Projects, 1991-1993

Project/Year	1990/91	1991/92	1992/93
1. UN/Thai Norwegian Church Aid	72	69	149
2. UN/Thai German HDP	1,169	1,472	1,197
3. UN/Thai Sam Mun HDP	2,015	1,776	1,593
4. UN/Thai Wieng Pha HDP	845	950	898
5. UN/Thai Pae Por HDP	1,073	1,053	841
6. Un/Thai Doi Yao-Pha Mon HDP	480	310	458
7. UN/Thai IPAD	2,483	1,328	1,478
Total Within Project Areas	8,137	6,958	6,614

Source: UNDCP, Chiang Mai.

Table 10

Comparison of Net Returns to Farmers for Different Crops
1992-1993 Crop Season

Product	Yield kilogram per rai	Price per kilogram Baht	Gross Income Baht per rai	Net Income Baht per rai
Opium	2	3,000	6,000	4,000
Red kidney beans	70 to 140	10	700 to 1400	540 to 640
Upland rice[1]	220	3.0	660	615
Maize (improved)	400	2.65	1,000	930
Cabbage				
Red	1,544	7	10,808	8,868
White	3,041	1.4	4,257	3,152
Chinese	2,694	1.8	4,849	3,672
Lettuce	1,080	4.8	5,184	3,977
Tomatoes	3,600	4.0	14,400	9,989
Potatoes	3,000	8.0	24,000	15,000
Coffee Arabica[2]	120	32	3,840	2,632
Japanese Apricot[3] (rainfed)	1,500	16	24,000	23,431

Sources: ONCB, Thai-German Highland Development Project

[1] for crop year 1991-1992
[2] 2 years to maturity
[3] 5 years to maturity

Table 11

Net Income for Different Crops Per 100 Square Meters
Crop Year 1986-87

	Gross Income	Net Income	Net Increase Per ____-day
Chrysanthemum (standard)	28,815	21,714	435
Fennel	1,551	1,178	245
Zucchini	888	638	106
Opium	391	391	98

Source: William Bourne. "Vegetable Cash Crop Data Base for Opium Replacement in the Highlands of Northern Thailand," Chiang Mai, 1988, Table 6.1.

crops. "About 70 percent of all project vegetable crops have restricted markets and low consumer demand," noted a consultant for the Royal Project in 1988.[19] The Royal Project has consistently oversupplied its small customer base -- a practice which both raises project subsidies and cuts into producers' profits. Indeed, the relative novelty and uncertainty of legal agricultural markets may induce farmers to cultivate opium as a fall-back crop. As Hagen Dirksen, the director of the Thai-German project noted in a recent paper:

> "To date, opium fills an insurance function . . . even in areas where alternative crops have been introduced, farmers may revert to opium poppy cultivation when they lose their cash crop production due to natural hazards or when they are unable to market their production."[20]

Possibly diversification of agriculture to include more high-value crops -- cabbages, tomatoes, apricots and the like -- can diminish the "insurance" function of opium. Yet the near-term outlook for commercial farming is largely conditioned by geographical and ecological factors. In the paper cited above, Dirksen acknowledges that the introduction of legal cash crops in the Thai-German project areas in remote Mae Hong Son province "has proven very difficult."

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[19]William Bourne. "A Review and Evaluation of Market and Production Performance of Opium Replacement Vegetable Cash Crops Extended in the Highlands of Northern Thailand Between 1984 and 1988." Chiang Mai. 1989, p. 19.

[20]Dirksen. *op. cit.*, p.12

Such calculations suggest that opium will continue to play a role -- albeit an increasingly marginal role in highland agriculture -- for some time to come.

By most indicators Thailand has compiled an extraordinary record in curbing domestic production of illicit narcotics. Though still a significant conduit for and consumer of Golden Triangle heroin, Thailand is no longer a significant world producer of opiates; net opium cultivation has declined by at least 60 percent since the early 1980s, and possibly (according to less reliable data) by 80 to 90 percent since the 1960s and 1970s.

Thailand's success in narcotics control derives from a fortuitous combination of political, economic and geographical circumstances. Politically, Thailand had already conceived and begun implementing a long-term nation-building strategy by the early 1960s. A growing threat from communist insurgent groups added urgency to the nation-building effort. Manifestations of this effort in the northern highlands -- construction of road networks, and extension of social welfare services to hilltribes -- greatly facilitated the Thai government's penetration and control of the North. Moreover, by the mid-1960s, Thailand had come to view opium control as a prerequisite to successful political and economic development in the highlands. Beginning in the early 1970, the Thai government, with substantial foreign support initiated a number of development projects aimed at replacing illicit drug crops and at accelerating the integration of hilltribespeople into Thai society. An estimated $125 million was spent on these projects, most of it since the early 1980s. The relative contribution of foreign donors to these projects was approximately 60 to 65 percent. Third, Thailand, unlike most narcotics-producing states, has

been willing to target its principal narcotics crop for destruction and to conduct eradication on an annual basis. While eradication statistically is weakly related to cultivation trends on a year-to-year basis, farmers' risk of losing their opium has almost certainly influenced cultivation decisions over the long term.

Other factors have contributed to the Thai success story: one is a rapidly growing economy -- per capita GDP growth has averaged approximately 4 percent since the mid 1950s, 8 percent since the beginning of the 1980s and 11 percent since 1988. The Northern region, where almost all of Thailand's opium is grown, has also registered respectable, if slower growth rates in recent decades. Economic growth has opened new markets for alternative agricultural products, and in general, has widened income opportunities for hilltribes. Overall, the superior performance of the Thai economy was crucial to the success of the highland development effort; Thailand's own contribution to the foreign donor-assisted projects was not inconsiderable -- amounting to some 35 to 40 percent of the $125 million that was spent on these efforts.

Geopolitical circumstances also have contributed to Thailand's success. Massive uncontrolled expansion of opiates in Burma has helped to raise opportunity costs of opium production in Thailand. Since the early 1980s farmgate prices for opium have fluctuated in the 3,000 to 4,000 Baht ($130 to $160) per kilogram range. Yet only half as much opium is produced in Thailand today as in the 1981-1983 period. Both production and prices declined somewhat between 1990 and 1993. At the same time, the UNDCP office in Chiang Mai reported a decrease in the rate of heroin to opium prices in the highlands from 25:1 in the late

1980s to 10:1 or less at the beginning of 1994. The apparent "convergence" of opium and heroin prices is revolutionizing drug addiction patterns in Northern Thailand and opium markets have suffered as a result.

CONCLUSION: REFLECTIONS ON THE THAI MODEL

Thai-foreign development and crop replacement initiatives have produced dramatic socio-economic changes in the northern highlands. The programs have brought the benefits of modern civilization -- schools, health services, sanitation, citizenship rights -- as well as high-value commercial farming to the hills. Living standards have increased; at least in the more accessible parts of the highlands. In the villages of Mae Sa Mai, 40 kilometers from Chiang Mai city-- a focal point of several development projects -- farmers' conversion of opium fields to cultivation of cabbages and Japanese garlic is associated with an increase in annual household income from $200 to more than $2,000 in the past several years. In villages within the areas of the Royal Northern Project, according to a 1989 study, household income averaged almost 3 times the income of households in adjacent areas not covered by the project.[21] Also, marketing arrangements for legal crops have become self-sustaining in many villages receiving development assistance. (The Royal Project, which still undertakes to purchases, transports and sells the farmers' output is a prominent exception). The old stereotype of highland agriculture -- the opium caravan organized by Yunnan Chinese ("Haw") traders -- has been replaced by Miao-owned pick-up trucks driving loads of cabbages and other produce to lowland markets. Commercial farming has definitely "arrived" in the opium zone, bringing with it a measure of prosperity for many hilltribespeople.

Yet modernization in Northern Thailand -- as in all societies -- has come at a

[21] Rerkasen, et. al. p. 49.

price. One extremely undesirable side-effect of economic change in the highlands has been the growth of heroin addiction, possibly at the expense of opium addiction. For example, in 1970-1977 the Northern Drug Dependence Treatment Center in Chiang Mai treated a total of 8 heroin abusers compared to 1,374 opium abusers. In 1992 the center treated 833 opium and 323 heroin cases -- a rate of 2.6 to 1. A 1991 survey of 25,655 hilltribespeople in Royal Project areas found an opium to heroin addict ratio of 4 to 1 although the total addiction rates were small -- respectively 3.8 and 0.9.[22] Rising prosperity, the spread of new consumer lifestyles and -- significantly -- reduced supply of opium are cited as the cause of this trend. Scattered evidence seems to support the shortage hypothesis. In Mon Ya, a cluster of villages in the Thai-Norwegian project, the number heroin abusers increased from 5 in 1985 to 101 in 1991 (the latter figure represented 4 percent of the total population of Mon Ya in 1990). Over this period, total annual income from opium in Mon Ya declined from approximately $52,000 to zero. In one village in Mon Ya, two-thirds of the 72 heroin addicts were former opium users. In a 1990 survey of 38 heroin addicts at the NADTC 45 percent cited difficulty in obtaining heroin as the principal reason for use.[23] Reports from several UN highland development projects suggest that traffickers have "primed" the heroin market -- passing out free samples of the drug to hilltribespeople during peak poppy eradication periods. In any case, a reported decline in heroin prices from 100,000 baht ($4,000) in 1988 to 32,000 baht ($1,280) in early 1994 obviously has

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[22]Thai-German Project. "Drug Abuse in Pang Ma Pha: Genesis and Current Situation." Internal Paper No. 169, August 1993, p. 3.

Narcotics Affairs Section. "Sentinel Study of Drug Abuse in Hilltribe Villages. 1992-1993, Executive Summary.

[23]Wanat Bhruksari et. al. "Heroin Addiction in Mon Ya." Chiang Mai, 1991, pp. 10-11, 22-28.

facilitated the shift in addiction patterns.[24] This trend is viewed with considerable alarm in Thailand -- partly because intravenous heroin use is associated with high rates of HIV infection -- and as a result the government's crop-reduction policies are provoking widespread criticism. A number of prominent figures in North Thailand, among them the head of the Tribal Research Center, Chantabun Sutthi, are calling for legalization of poppy cultivation for personal consumption.[25] Yet annual opiate consumption in Thailand is estimated by ONCB to be approximately 45 tons of opium equivalent, approximately twice what has been produced in Thailand during the 1990s. Hence, legalizing poppy along the lines proposed would imply a considerable increase in the amount of poppy under cultivation in Thailand, perhaps to a level of 7,000 to 8,000 hectares.

Opium replacement efforts also have produced environmental ills -- a complication apparently not anticipated by many Thai and foreign development strategists. Some commercial cash crops -- red kidney beans, improved maize and (at current prices) coffee -- require significantly more land per unit of income than opium; more extensive cultivation contributes to erosion and deforestation. All commercial crops require special inputs and marketing services. The massive application of pesticides and fertilizer poses health risks to users (in one Thai-German project area in Chiang Rai in 1989 20 villagers died from mishandling chemical pesticides); also, the runoff of chemicals has aggravated water pollution in downstream villages. The added irrigation needs of hillside agriculture are blamed for recurring droughts in the lower

[24]Interview. Gary Suwanarat. UNDCP. Chiang Mai. January, 1994.

[25]Interview. Chiang Mai. January 1994.

reaches of watercourses. Truck farming and commercial logging require road building which in turn accelerates soil erosion. As a result of these problems, development programs have faced rising opposition from ecologically-minded Thai's and also have provoked significant conflict between highlanders and lowlanders over the use of natural resources. Take, for example, the celebrated case of Pa Kluai, a Miao former opium village that -- after receiving extensive agricultural extension aid from the Thai-Norway project -- converted successfully to commercial farming. Since the late 1980s, a coalition of ecology activists, populist, lowland politicians, and lowland villagers living directly downstream from Pa Kluai have sought to evict the Miao from the village. The effort so far has failed, but the conflict lingers on. "It seems you catch blame if you plant poppies and catch blame if you don't," remarked one Pa Kluai farmer in a 1990 interview with the *Far Eastern Economic Review*.[26]

Finally, modernization in the highlands has produced new class divisions among different hilltribe groups. The principal opium-farming tribes, the Yao and the Miao, also were the principal targets of highland development projects -- hence they benefited disproportionally from these projects. For example, according to a 1985-197 NSO hilltribe survey, Miao and Yao villagers were more likely than other tribes to have electricity, own a motor vehicle, and to hold Thai citizenship. Miao and Yao villagers also enjoyed better road access than other tribes settlements. (See Table 12). Furthermore, the transition to commercial farming has probably been easier, economically and psychologically for the Miao and the Yao than for subsistence rice

[26]Lincoln Kaye. "Of Cabbages and Cultures." Far Eastern Economic Review. December 1990, pp. 35-37.

Table 12

Development Indicators
Main Opium-Producing Tribes

	Hilltribe Percent of Households			
	Using Electricity (1985-1987)	Owning Truck or Motorcycle (1985-1987)	Thai Citizenship Granted	Percent Villages with Motorcar Route
Miao	17.2	16.8	57.6	82.1
Yao	15.7	17.0	68.7	80.3
Karen	6.5	5.2	62.1	38.9
Lisu	2.7	4.2	34.5	54.5
Lahu	1.6	2.0	16.8	40.8
Akha	1.0	2.8	8.6	43.2
Average Hilltribe[2]	8.3	NA	55.6	44.6[3]

1 Chiang Mai, Chiang Rai, Mae Hong Son for Miao, Karen, Lisu, Lahu tribes.
2 Average includes hilltribes other than those listed.
3 Chiang Mai, Chiang Rai, Mae Hong Son only.

Source: NSO

farmers such as the Karen. Such stratification patterns could have unhealthy effects on the narcotics control environment in the highlands. Possibly the poorer tribes might wish to emulate the richer ones -- to cultivate more opium and thus to receive a larger share of the development "pie".[27]

Questions arise, moreover, concerning the sustainability of the Thai model. As noted earlier, the cost-effectiveness of both eradication programs and highland development initiatives is diminishing rapidly. Opium farmers' countervailing strategies -- scattering of fields, movement of cultivation to remote areas and off-season planting -- have contributed to this trend. The international community clearly is losing interest in the Thai opium problem -- scarce narcotics assistance funds are being directed to higher-value targets elsewhere. Moreover, the secondary effects of opium reduction -- increasing heroin addiction, ecological fallout from some commercial farming ventures, and the emergence of new class divisions in the hills are weakening domestic support in Thailand for the country's anti-opium policies. At the same time, continuing population pressures in the hill in combination with other factors such as reforestation and the growth of tourism are reducing the supply of land suitable for commercial farming; opium's relatively benign environmental characteristics may make it the crop of choice for some land-buying hilltribe farmers. Economically, politically and ecologically the process of opium substitution in Thailand may have reached the outer limits of its effectiveness. Possibly the Thai leaders may view further reduction as unprofitable or even as undesirable.

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[27]On these points, see Anchalee Renard. "Socio-economic and Political Impact of Production, Trade and Use of Narcotics Drugs in Thailand. Chiang Mai. 1993, p. 128.

Under such circumstances, containment of poppy cultivation within the current range of 2,000 to 3,000 hectares probably is the most that can be expected from a Thai-financed and led opium control effort.

Yet sustainability of the Thai model is not the principal point at issue. Thailand's past record in curbing narcotics production has been almost unique internationally. The larger question is whether Thailand's successes can be replicated elsewhere -- whether elements of the Thai experience can be distilled and generalized to "hard case" narcotics-producing states such as the Andean countries, Pakistan and Burma. Unfortunately, factors that explain Thailand's success serve also to explain the dismal performances of other narcotics producers. In this sense, the Thai model has little prescriptive value. A number of arguments can be advanced to illustrate this proposition.

First, Thailand simply is in a different class economically from the "hard case" countries. Thailand's relative prosperity, large internal market and well-developed road system provide both a foundation and a justification for the country's anti-opium policies. Also, Thailand's superior economic performance has enabled the Thais to assume a significant share of the costs of crop replacement; in countries where the outside donor role is relatively larger, such efforts acquire a political stigma -- an odor of foreign "interventionism."

Second, Thailand never has ranked as a major world producer of opium. The country accounted for only 6 to 7 percent of the Golden Triangle's opium output in the early 1980s.

More important, opium production never was a significant factor in the Thai economy. In the late 1970s and early 1980s, sales and domestic opium probably did not amount to more than $20 million -- less than one tenth of one percent of Thailand's GDP in 1980. At that time, opium farming employed at most 100,000 to 150,000 farmers, less than one percent of the labor force. By contrast, in Bolivia and Peru, coca farming employed some 8 to 10 percent of the labor force in the early 1990s and sales of coca leaf alone (prior to conversion to cocaine) represented 1.5 to 2.0 percent of Gross Domestic Product in those countries. Furthermore, when Thailand started its main crop reduction drive (at the beginning of the 1980s), the country's opium cultivation base probably did not exceed 10,000 hectares; by contrast, two hard-core states, Peru and Burma, have well over 100,000 hectares of drug crops under cultivation.

Third, Thailand is successful as a nation-state. The Thai government faces no serious challenges to its legitimacy or to its control of territory. By contrast, the government of "hard-case" states are weak, power is diffused, and instability and lawlessness are rife, severely limiting opportunities for counter-narcotics operations. Indeed, the drug trade itself contributes in no small measure to problems of governability. In Colombia, for example, the government in Bogota shares de facto control over broad swathes of its territory with drug kingpins, who own an estimated 10 to 15 percent of the agriculturally productive land in the country, and with Marxist guerrilla groups that earn a majority of their income from taxing the coca or opium trade. In Pakistan, the opium and heroin businesses are intertwined with the political ambitions of tribal separatist groups -- and, indeed, of elements in the political mainstream: According to a recent CIA report, reputed drug lords and narcotics traffickers sit in the National Assembly

and in the provincial assemblies of the Northwest Frontier Provinces, Punjab, and other regions. In Burma, Khun Sa's Shan United Army controls significant enclaves along the Thai-Burmese border, financing its activities -- declaredly aimed at preserving an "Independent Shan State" -- almost entirely from opium and heroin sales.

Fourth, and related to the above, Thailand had resolved key problems of nation-building prior to initiating compulsory eradication of narcotics. The insurgency problem was under control and Bangkok had extended its authority successfully to the remote hinterlands of the north and the northeast. In contrast, in South American countries that face festering insurgencies or powerful grower-trafficker complexes, the political space for eradicating coca, the main drug crop, is relatively limited. Peru's leaders, for example, argue that the anti-coca policies of the 1980s produced a rich harvest of recruits for the Sendero Luminoso guerrillas -- an argument that Thai counter-insurgency strategists of the 1960s and 1970s would have understood perfectly.

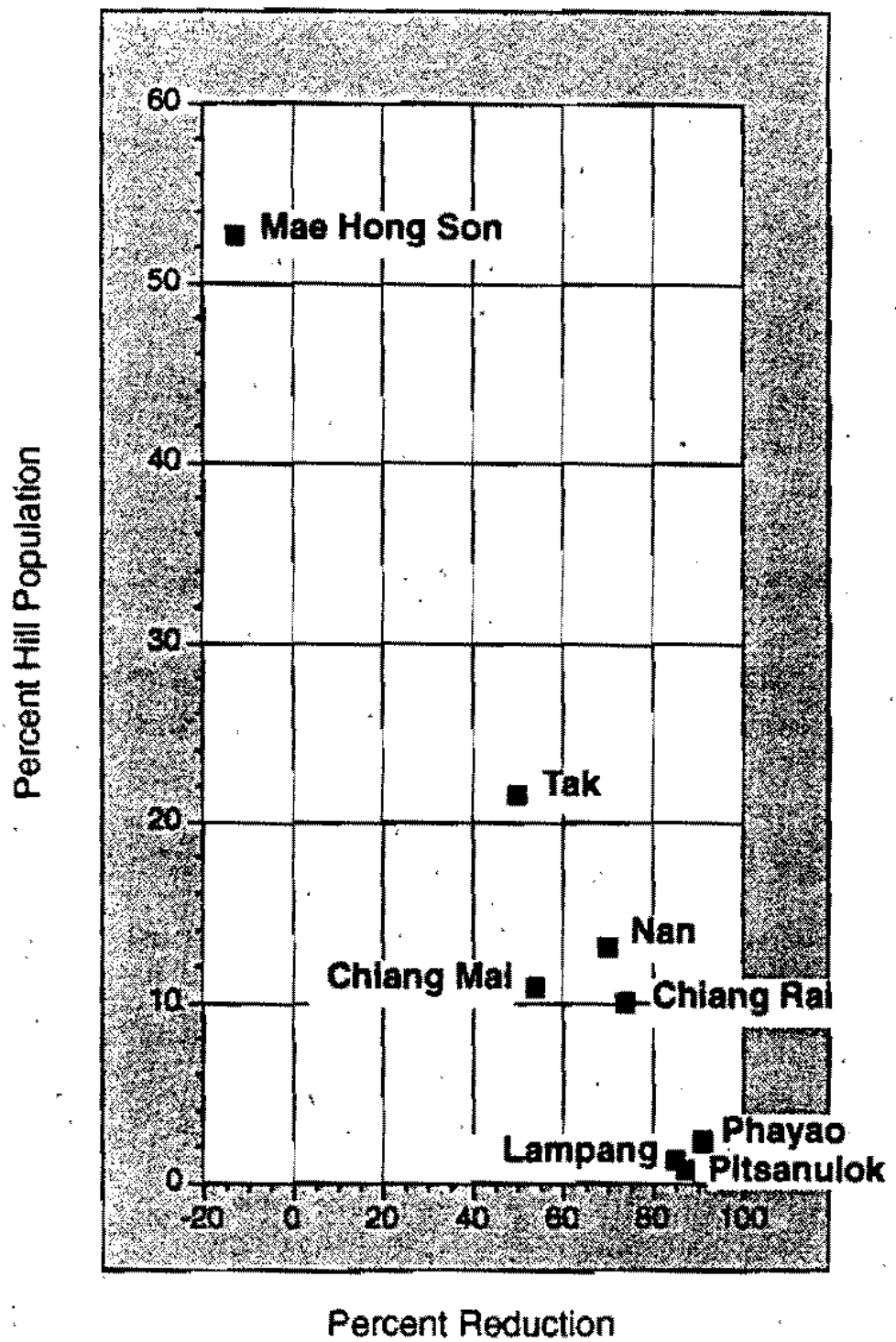
Ultimately, Thailand's experiences point to the primacy of economic and political factors in successful narcotics control.[28] Countries with depressed economics and unresolved national integration crises are likely to perform poorly on the narcotics front. Surging South American coca and cocaine production in the 1980s, despite extensive U.S. anti-drug assistance to the Andes, clearly underscores this reality. This issue is largely one of timing. U.S. anti-drug

[28]Differences in drug crops also affect the chances of successful eradication and substitution. Coca, a perennial crop, grows well in soil, topographical and climatic conditions that are inhospitable to most legal crops. Opium, which is sown and harvested annually, "prefers" good limestone soils and coexists well with other crops such as corn and vegetables. Coca, a bush that can grow to heights of 10 to 15 feet, is also much more difficult to destroy than opium.

policy in Peru, Colombia, Burma and elsewhere traditionally has emphasized support for front-line operations to dismantle laboratories as to eliminate drug crops. As the Thai example suggests U.S. policy cannot separate the narcotics issue per se from general requirements of nation-building -- strengthening central political institutions and promoting stability and growth in drug-torn countries.

Figure 9

Percent Hill Population
vs
Percent Reduction



R = -.981

Significant at .05 level or lower

Table 5

Profiles of Provinces with Relatively High and Relatively Low Rates of Opium Production Since Early 1980s

	"Losers" (Worst Performances)		"Winners" (Best Performances)	
	Mae Hong Son	Tak	Lampang	Phayao
Percent reduction (income) 1981-1983 & 1991-1993	12.5	50.0	85.0	91.0
Per Capita GDP Growth 1981-1991 percent	59.4	106.0	150.0	120.0
Population Growth 1981-1991 percent	30.1	26.2	16.9	8.5
Percent Hilltribe (HT)	52.7	21.53	1.3	2.3
Percent HT villages with service coverage[1]	38.5	38.9	78.2	100.0
No. development projects per village served	1.13	3.17	6.08	3.29
Percent HT villages with motor car	33.0	NA	57.5	86.9
Percent HTs with Thai citizenship	17.9	54.2	81.0	10.0

[1] Service coverage by at least one Thai government or non-government organization.

Sources: NSO, NESDB

Table 6
Profile of 10 Opium Districts in Chiang Mai Province

	Cultivation 1980 rai	Cultivation 1993 rai	Percent Reduction (Increase) 1980-1983	Distance from Chiang Mai	Percent Registered with Thai Nationality 1985-1987	Predominant Hilltribes 1985-1987 (percent)	
Worst Performing							
Wiang Haeng	0	667	(66,700)	145	40	Lisu	58
						Karen	40
Om Koi	34	693	(1,938)	177	26	Karen	40
						Lahu	58
Phrae	222	372	(36)	94	37	Lahu	22
						Lisu	36
Mae Taeng	498	576	(16)	40	54	Karen	44
						Lisu	21
Mae Chaem	3,328	3,138	6	156	84	Karen	83
						Miao	12
Best Performing							
Mae Rim	365	136	49	8	82	Miao	82
						Karen	9
Sa Muang	1,042	50	95	48	83	Karen	20
						Miao	13
Sa Pa Tong	938	42	96	28	85	Karen	77
						Miao	23
Chom Thong	1,159	27	97	59	90	Karen	83
						Miao	17
Hot	187	4	98	88	69	Karen	79
						Miao	6
Average Province	11,484	7,220	54	75	56	Karen	61
						Lahu	15

Sources: ONCB Surveys

obviously, inferences concerning development processes and cause-and-effect relationships are difficult to draw from the status of tribal minorities at single points in time -- an exercise that presents obvious problems methodologically and substantively.

Furthermore, factors other than development benefits and general economic growth affect farmers' decisions on whether to cultivate more or less opium. One possible such factor is climate: various studies of opium farming suggest that farmers might anticipate higher yields in wetter crop seasons and thus plant more opium;[12] however, a statistical analysis covering the period 1979 to 1992 (including crop years 1979-1980 and 1992-1993) in Chiang Mai, Chiang Rai and Mae Hong Son provinces disclosed no significant correlation between rainfall levels and poppy cultivated areas. For the period 1980 to 1988, opium yields per unit of land also proved to be unrelated to rainfall. (After 1988, ONCB surveys calculated the same average crop yield for each of the three provinces.) Interestingly, of the three provinces, the two with highest and lowest average rainfall -- Chiang Rai and Chiang Mai -- respectively had the lowest and highest opium yield, between 1980 and 1988, 0.82 and 1.00 kilograms per rai. However, the hypothesis that rainfall affects planting and yields cannot be discarded. Much depends on when rain occurs during the crop season (late rains could affect the timing of cultivation or threaten maturation of poppy plants already planted). Also, micro climates and hence cultivation patterns vary significantly within a given province. Finally, farmers might plant more opium in years of excessive rainfall or drought as insurance against failure of legitimate crops. Unfortunately, available data do not permit exploration of these possible relationships.

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[12]See, for example, Crooker. "Dissertation." p. 220.

Furthermore, prices of opium in a given year can greatly influence farmers' cultivation and production decisions. Unfortunately, consistent and reliable data sources for farmgate opium prices do not exist for most of the 1981 to 1993 period. Scattered data sources suggest that opium prices rose only slightly between 1981-1983 and 1991-1993 from $130 to $150 per kilogram, or 15 percent; at the same time, estimated opium production according to U.S. and UN estimates declined from 47 to 25 tons or 47 percent over the period. As noted in the overview section above, farmgate opium prices and production both decreased from 1990 to 1993. At the same time, a flood of cheap heroin into Thailand from neighboring Burma and resultant shifts from opium to heroin addiction among hilltribes (issues to be discussed below) may be undercutting opium prices. Overall, opium farming is becoming less attractive -- prices are under pressure at the same time that highland development projects and overall economic growth have extended new income opportunities to farmers. Furthermore, opium farmers' risks have increased as a result of a moderately successful eradication program since 1985 -- a subject to which we will now turn.

CHAPTER III. THE ERADICATION PROGRAM

Thailand is one of the few narcotics-producing countries that conducts sustained annual campaigns to destroy narcotics crops. In the period 1985 to 1992, Thailand eradicated an average of 38 percent of its opium crop according to U.S. estimates and 53 percent according to Thai estimates. (Even if exaggerated, the higher Thai figure -- if publicized -- might have a salutary deterrent effect against opium growers.) Consider, by comparison, the situation elsewhere in East and Southeast Asia: Burma's government does not even control most of the Shan State, where nearly all of that country's opium -- and possibly 60 percent of the world's -- are cultivated. Laos still has not introduced laws against poppy cultivation. In China, opium farming -- almost wiped out in the Maoist period -- has spread to 17 provinces in the past decade. The current leadership dislikes eradication; only 40 hectares were eliminated over the two-year period 1991-1992. Moreover, local Chinese officials, unable to control the proliferation of poppy fields, are pressuring the Beijing region to legalize cultivation of poppy for household use. Only in Vietnam is the government (which reportedly promoted poppy cultivation in the 1980s as a means of earning hard currency) now making serious efforts to control cultivation; the government reportedly is paying farmers 200,000 dong ($20) and 180 kilos of rice for each hectare of opium destroyed. However, these efforts of this program on Vietnamese cultivation, estimated at 4,000 hectares in 1991-1992, have yet to be determined.[13]

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[13]Interview. Steve Carson. United Nations Drug Control Programs (UNDCP). January 1994.

Elsewhere in the world, Pakistan has eradicated an average of only 7 percent of its poppy crop annually since 1989. Cultivation in Afghanistan is out of control -- there is not even a government, much less an eradication program. The economically troubled Central Asian states of the former USSR have few resources to devote to eradication projects; poppy growing is said to be expanding exponentially in the region. In South America, governments have made little effort to eradicate the main illicit drug crop -- coca -- although Colombia has shown considerable determination in targeting and destroying opium and marijuana fields. Only Mexico seems to have a crop control program comparable to Thailand's: since 1989, the government has destroyed annually more than 20 percent of Mexico's marijuana crop and more than 50 percent of the country's opium poppy cultivation.

Thailand formally initiated annual eradication of opium poppy fields in the 1984-1985 crop season; small "demonstration" exercises to destroy opium fields were conducted (principally by the Third Army) in the prior crop season but the total area destroyed was insignificant. The timing of the decision to introduce eradication is worth noting. By the mid-1980s, Thailand had largely broken the back of the communist insurgency; from 1979 to 1984 the number of communist party rebels had fallen from approximately 12,000 to 1,000 to 2,000. All major communist insurgent bases had been destroyed by the end of 1983. Since the Communist threat had abated, the perceived political costs of compulsory destruction of peasants' crops also had diminished. Also, there were signs that highland development projects initiated at the beginning of the decade had not yet taken hold -- opium cultivation actually increased 40 to 45 percent between 1981 and 1985. In addition, U.S. pressure on the Thai government and a major

expansion of U.S. funding for Thai crop control efforts (which rose 130 percent from 1983 to 1985) also contributed to Thailand's decision.

Four different Thai government entities: The Third Army, the Border Patrol Police (BPP), the "provincial and district authorities," and the provincial police are charged with carrying out the physical destruction of poppy crops. Also, the BPP, local governments, the provincial police and a fourth group, the Army Rangers, share responsibility for combatting a small-scale marijuana industry located mainly in northeast Thailand. The organizations' different roles in eradication and their internal (Thai government) budgets in the 1991 and 1993 crop seasons are depicted in Table 7. For the 1991-1992 and 1992-1993 crop seasons, Thai government spending averaged $287,000. The U.S. contribution, by contrast, averaged $1,148,000. As the table suggests, the Thai military spends by far the most crop control funds and eradicates the most opium of all Thai enforcement agencies. Cost effectiveness of the programs appears to vary widely: for example, in the 1991-1992 and 1992-1993 crop years, the Thai military had on average four times the eradication budget of the Border Patrol Police but eliminated only 75 percent more opium. Both organizations operate in "remote, security-sensitive" border regions. The disparity is difficult to explain. Although the Third Army supposedly is charged with destroying larger and higher-density plantations than the police, the Army's much higher budget should reflect this division of labor.

The ONCB provides critical planning and guidance for Thailand's annual eradication programs. ONCB has primary responsibility for crop estimates. These are derived from several

Table 7

Thai Opium and Marijuana Eradication: 1991-1992 and 1992-1993 Crop Seasons

Organization		Eradication in Rai[1]		Budget (Baht)[1, 2]	
3rd Army	Opium	5,514	(7,716)	6,000	(4,160,929)
Army Rangers	Marijuana	11	(NA)	66,255	(NA)
Border Patrol Police	Opium	3,182.3	(4,343)	1,466,355	(1,112,340)
	Marijuana	87	(187.5)	147,105	(358,851)
Provincial Police	Opium	1,176.5	(1,205)	465,871	(423,512)
	Marijuana	10	(50.5)	90,280	(324,271)
Provincial & District Authorities	Opium	857.13	(409)	487,250	(226,745)
	Marijuana	26	(22)	158,000	(378,500)
TOTAL	Opium	10,729.93	(13,673)	8,419,476	(5,927,526)
	Marijuana	134	(260)	511,640	(1,061,622)

[1] Figures in parentheses for 1991-1992.
[2] One Baht = $0.04 U.S.

Sources:

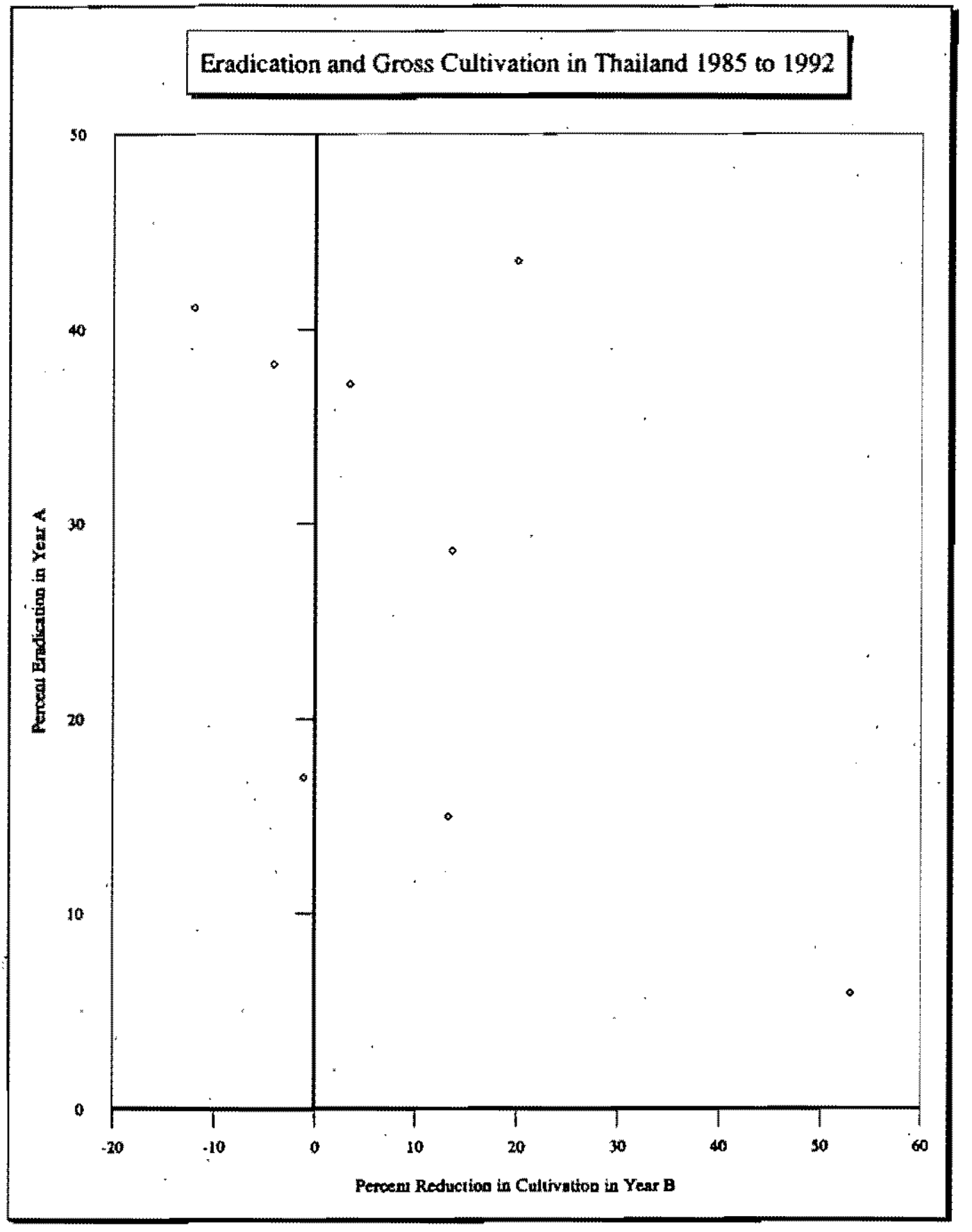
sources: 1) fixed-wing aerial surveys conducted between October and January -- i.e. during the opium season; 2) interpretation of LANDSAT data; 3) "ground surveys" -- mainly interviews with villagers -- conducted in the summer, while opium fields are in preparation, and 4) low-altitude helicopter flights, also designed to estimate the extent of land preparation for opium cultivation. No figures have been published on ONCB's crop survey budget, which reportedly is supported by the U.S. Consulate in Chiang Mai, rather than by INM's Narcotics Affairs Section in Bangkok.

Thai enforcement agencies seemed determined to minimize eradication's human and environmental costs. The government's stated policy has been to limit eradication to areas and hilltribe groups that have received prior development assistance. This policy is not always followed in practice -- in remote, underdeveloped border regions, for example; the military distributes emergency relief support -- food, medicine and the like -- to eradicated farmers and attempts to initiate community development projects locally. In the areas affected by "donor-assisted" projects, the Thai government sometimes warned farmers several years in advance that their crops would be destroyed. In the early years of the eradication program, the government allowed farmers to retain small amounts of opium land (perhaps one or two rai) for household consumption; this toleration policy, however, has largely been discontinued. Finally, the Thai government, unlike some other opium-source countries (Mexico, and Colombia, for example), has refused to use chemical herbicides against opium poppy. The plants are not even eradicated in the sense of being pulled out of the ground but rather beaten with sticks or severed with special cutting tools.

How successful is the Thai government's eradication policy? Clearly, the policy has increased the farmer's risk of losing his crop and probably has made opium cultivation less attractive in economic terms. However, distinguishing the impact of eradication from the impact of development projects that target opium farmers is a different exercise. Probably -- as in the case of development benefits -- the effects are long term rather than immediate. Third Army offices interviewed by this writer claim that eradicating poppy fields in a given crop year reduces cultivation in the following crop year, but this assertion is absolutely not borne out by the evidence. As figure 10 shows, no positive statistical relationship exists year-to-year between the intensity of eradication efforts and changes in poppy cultivated areas; indeed, the correlation is inexplicably negative. Such results suggest the eradication is only one of a list of factors that affect the opium farmers' production decisions.

Furthermore, Thai opium farmers, like drug crop farmers elsewhere, have responded to enforcement measures in time-honored ways. As figure 11 shows, ONCB estimates that potential opium yields per unit of land have increased since the early 1980s. Between the 1980 and 1983 and 1990-1993 periods, average yields doubled from 1.06 to 2.11 kilograms per rai. ONCB officials attribute the increase to technologically more advanced farming -- to farmers' use of fertilizer, sophisticated irrigation systems and other modern agricultural techniques to increase yields. Furthermore, the period since 1985 has witnessed a "scattering" of opium cultivation. While there is less opium grown in Thailand today than in mid-1980s, opium is grown in more provinces -- 12 in 1993 as opposed to 8 in 1985. Farmers are attempting to reduce the probability of eradication by cultivating poppy on smaller plots and by locating fields

Figure 10

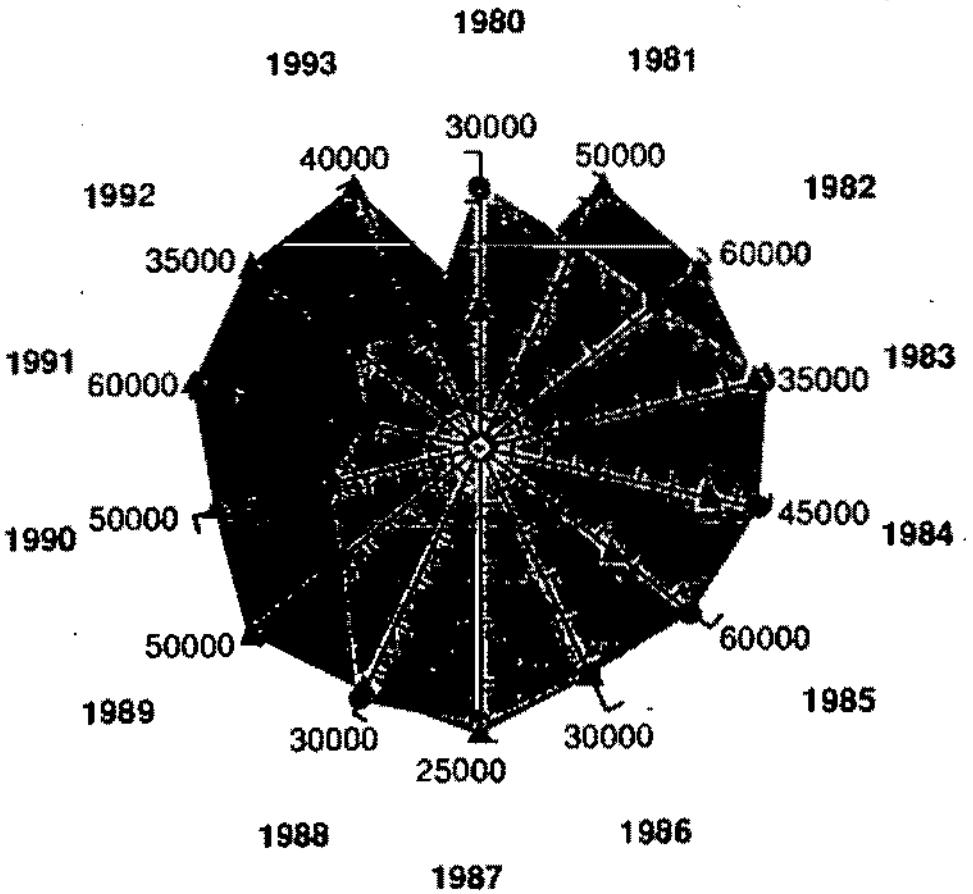

Eradication and Gross Cultivation in Thailand 1985 to 1992
Percent Eradication in Year A
50
40
30
20
10
0
-20
-10
0
10
20
30
40
50
60
Percent Reduction in Cultivation in Year B

	% Eradication	% Reduction (Increase) Gross Cultivation (Year Following)
1985	5.9	53.00
1986	41.1	-12.00
1987	37.2	3.40
1988	38.2	-4.10
1989	15.0	13.30
1990	17.0	-1.10
1991	28.6	13.60
1992	43.5	20.10

r = -612

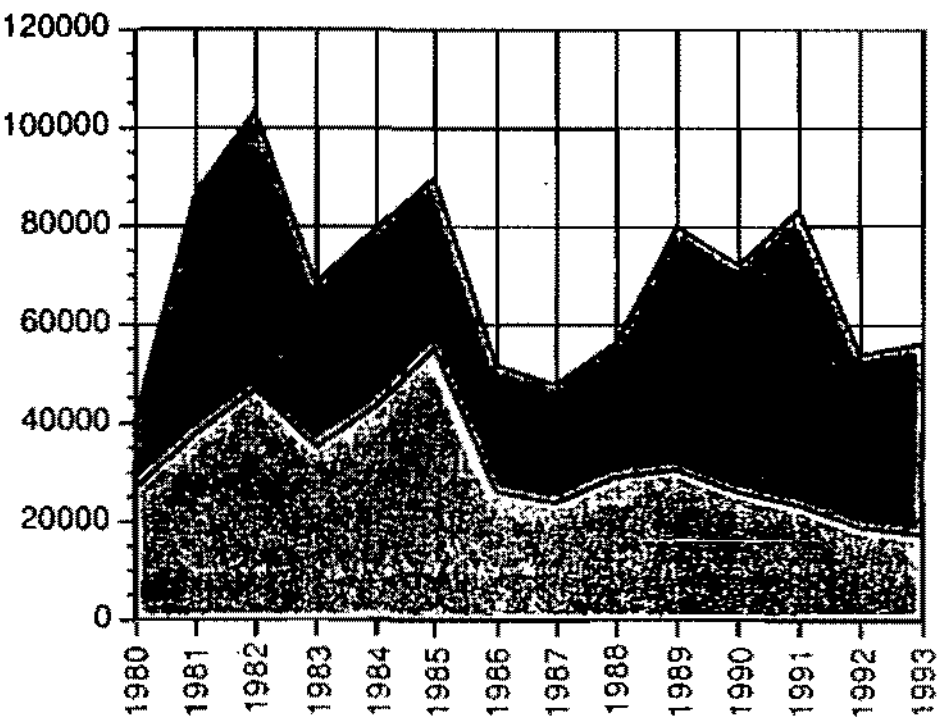
Figure 11

Opium Cultivation and Yields



Yield	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
*0.5	1.29	1.24	0.97	0.83	0.63	1.00	1.03	0.96	1.66	1.76	2.56	1.84	2.30	

* For Chiang Mai, Chiang Rai, Mae Hong Son, and Phayao



G ross Cultivation (Rai)

Potential Production in (Kilograms)

Yeild (Kilograms per Rai)

Source: ONCB

further from villages and main roads. (About two-thirds of the plots found in 1991-1992 growing season was less than 2 rai -- one-third of a hectare -- in size.) These peasant strategies obviously have raised enforcement costs per unit of poppy area. With limited manpower and resources, the Thai authorities simply cannot chase down and destroy every tiny opium field. (One such field that "escaped" the authorities in the 1993-1994 crop season is shown in Exhibit 1.) Finally, a relatively new method of deception practiced by farmers is to plant opium in off seasons -- for example, in April, just before the rainy season, or in January, several months into the dry season. This practice is designed to counter the government's relatively fixed (indeed rigid) crop estimation and eradication schedules. In 1991-1992, 100 rai of off-season cultivation were detected in Northern Thailand, in Chiang Mai, Mae Hong Son and Tak provinces. Of course, this is a sub-optimal method of cultivation. Growing opium during the monsoon rains increases the likelihood of crop damage; growing during the dry season requires inputs such as sprinkler systems and fertilizer to obtain acceptable yields. Yet some farmers may accept such trade-offs to reduce the risk of losing their crop.

Perhaps the Thai eradication program is reaching its outer limit of effectiveness -- a threshold beyond which further anti-poppy measures are no longer cost-effective. The number of high-value targets is fast diminishing. The dispersion of poppy plots to rugged and remote areas far from rural road networks poses dilemmas for eradication teams. If teams cannot reach poppy areas by road they must resort to using helicopter transport or to aerial spraying (a step Thailand has hitherto refused to take). Operating cost for helicopters, including pilot, fuel and maintenance, are in the range of $900 to $1,000 per hour, according to a Third Army source.

Exhibit 1

Opium field, approximately one rai, Pa Lo Village, Chiang Dao District, Chiang Mai Province.

Source: Dr. Lee's field trip.

Exhibit 1 Continued

With U.S. support for the eradication declining rapidly, available resources for helicopter missions against minuscule poppy fields are likely to be extremely limited. The good news, of course, is that Thailand's campaign against opium largely has been successful -- poppy growing has been relegated to the outer margins of Thai society and is no longer a "visible" problem from the perspective of most Thais. The bad news is that the opium disease could recur unless the Thai authorities remain committed to eradication and learn to respond successfully to the changing tactics of opium growers.

CHAPTER IV. THE DEVELOPMENT PROJECTS

The preceding analysis suggests that opium farmers respond both to enforcement and to economic incentives in making cultivation decisions. This chapter focuses more closely on the issue of "carrots" versus "sticks," examining the record of Thai-foreign highland development projects in the past quarter century. The general picture is that the development projects have produced significant achievements in terms of crop replacement and improved welfare for hilltribe villages. However, the costs -- estimated conservatively at $125 million -- have been substantial. Furthermore, there is some evidence that development programs, like eradication programs are faced with the problem of diminishing returns -- that is, over time fewer hectares of opium can be replaced per development dollar expended. These propositions and perspectives will be explored in detail below.

Since the early 1970s, the Thai government and various foreign donors have cooperated in implementing at least 13 major highland development projects. The projects, titles, foreign sponsor, the duration, estimated expenditures, and estimated Thai and foreign contributions are identified in Table 8. As the table shows, most of the development projects have been launched since the beginning of the 1980s. As of 1992, according to Sorasit Saengprasert, the director of ONCB's narcotics crop division, the donor-assisted projects extended to 45 percent of the total opium cultivated area in Thailand. The geographical scope of the highland development effort is highlighted on the map in Exhibit 2.

Like coca substitution efforts in South America, Thailand's hilltribe development projects have over time produced increasingly complex strategies for inducing drug farmers to switch to legal crops. The UN's Crop Replacement and Community Development Project (CRCD), for example, focused principally on identifying possible replacement crops; CRCD and its successor, the Highland Agricultural Marketing and Production Project (HAMP), tested 836 varieties of 155 kinds of replacement crops. Of these only 8 still were being cultivated commercially in the mid-1980s. (Of these 8, red kidney beans, potatoes and coffee, comprised most of the new cultivated area.) CRCD did undertake to purchase the new cash crops from farmers, but marketing arrangements were hardly ideal. In some cases, project administrators had to rely on helicopters to transport the harvest to lowland markets, thus, incurring huge losses not contemplated in CRCD's budget. The successor project, HAMP, emphasized improvement of marketing mechanisms, even while continuing the agricultural extension initiatives of CRCD. HAMP negotiated prices and delivery terms with lowland buyers, arranged transport of harvests

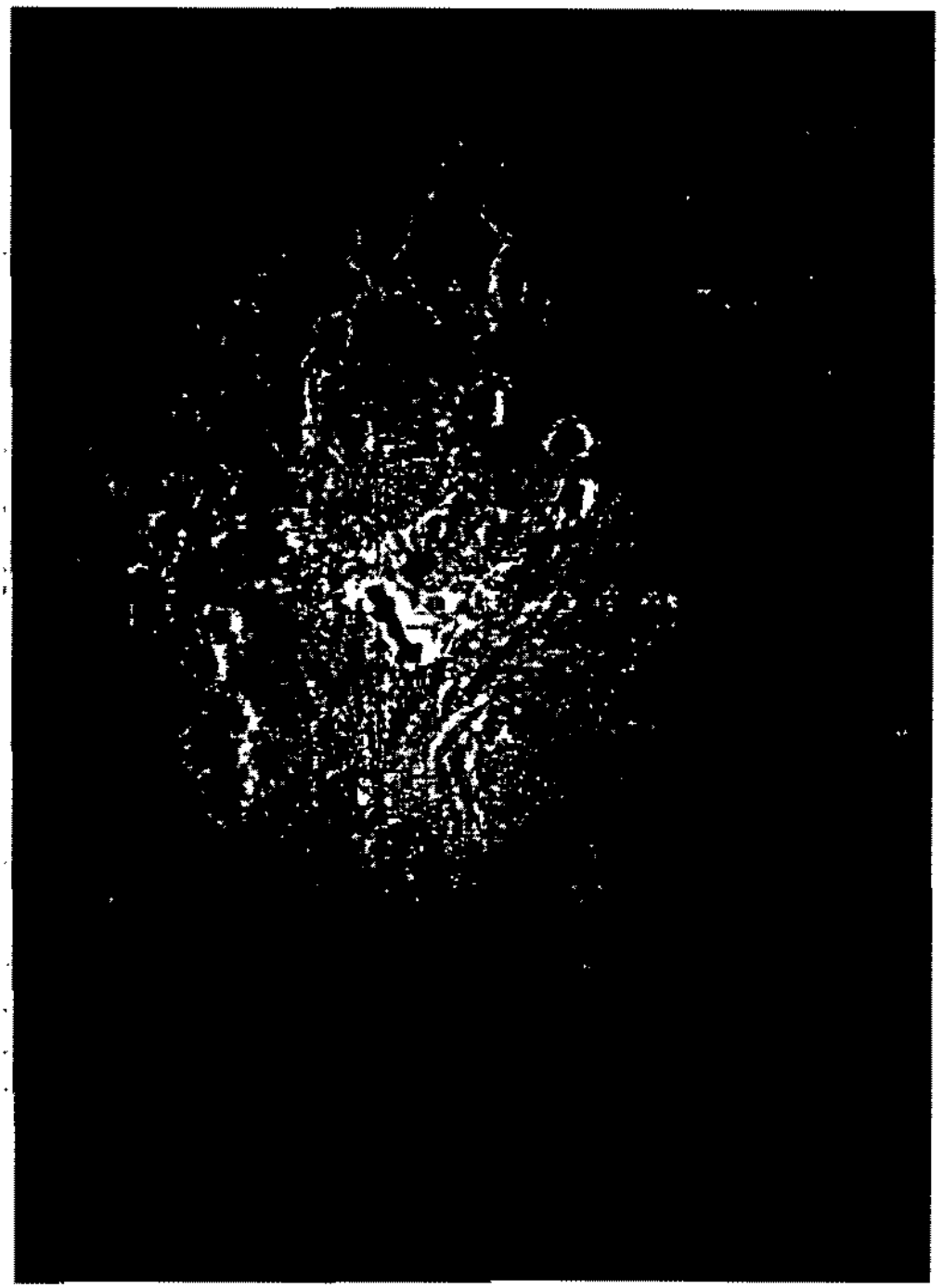
Table 8
Summary of Expenditures on Highland Development Projects Through 1993

Project	Time Period	Foreign Sponsor	Foreign Government Contribution (USD)	Thai Government Contribution (USD)	Total
Crop Reduction and Community Development (CRCD)	1973-1979	UNFDAC	3,386,960	2,771,150	3,386,960
Highland Area Marketing (HAMP)	1980-1984	UNFDAC	3,704,300	3,030,790	3,704,300
3rd Army		INM	640,000	NA	6,400,000
Thai-Norwegian Church Aid Highland Development Project (TN-HDP)	1985-1992	NORWFG	4,250,000	1,863,630	6,113,630
Mae Chaem Watershed Development	1980-1989	USAID	8,300,000	800,000	1,630,000
Thai-Australian Agricultural and Social Development (TA-HASD)		Australian Government	7,200,000	3,000,000	10,200,000
Thai-German HDP	1981-1994	German Government	17,583,350	3,928,480	21,511,830
Pae Por HDP	1987-1991	UNDCP	2,091,000	3,418,280	5,509,230
Wieng Pha HDP	1988-1992	UNDCP	3,104,130	5,565,760	8,669,890
Sam Mun HDP	1987-1992	UNDCP	3,094,500	9,902,400	12,996,900
Doi Yao HDP	1990-1994	UNDCP	458,000	687,000	1,145,000
Integrated Pocket Area Development Project (IPAD)	1991-1995	UNDCP	3,947,390	4,736,870	8,684,260
Royal Northern	1969-Date	USDA	4,000,000	11,500,000	15,500,000
TOTAL			79,456,810	46,467,490	125,923,670

Sources: ONCB, UNDCP, Kenneth Kampe

Exhibit 2

Map Showing Highland Development Project Areas, Circa 1992.



Source: ONDCP, Chiang Mai

and, in cooperation with Thai authorities, and constructed 144 kilometers of roads to link project villages to the outside world.[14]

In the early 1980s, a new generation of projects was launched. These projects -- both UN-Thai, and bilateral Thai-foreign efforts -- emphasized a more comprehensive approach to the problem of crop replacement, an approach summarized in the term "integrated rural development." These projects introduced a variety of initiatives not contemplated or emphasized in CRCD and HAMP: Agricultural measures included soil conservation techniques (soil erosion was a greater problem with some replacement crops than with opium); agroforestry and construction of terraces and dams. Tribal farmers were encouraged to allow high-altitude fields of opium and other crops to revert to forest. Perhaps equally significant were the social welfare benefits extended to farmers. Some of these had important demand-reduction implications: for example, basic sanitation facilities -- toilets and water wells, medicine banks (opium of course, is a multi-purpose medicine in the hills) and treatment stations. USAID's Mae Chaem project built an opium detoxification center to serve Mae Chaem's addict population. Wisely, most projects promoted instruction in family planning -- population growth, as noted repeatedly in this report, is the base of opium control efforts. Also emphasized were measures designed to improve hilltribes' ability to function in the legal Thai economy -- for example, village learning centers, mechanisms for expanding citizenship rights and (in the Mae Chaem project) granting

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[14]Ronald Renard and G. Lamar Robert. "Opium Crop Replacement Without Tears or Terror. The Case of Northern Thailand 1971-1989." Prepared for the 1989 UNFDAC Regional Seminar Replacement of Opium Cultivation, pp. 12-48 and No author. "The Failure of Good Intentions. The United Nations in the War Against Drugs." Amsterdam/Antwerp, November 1993, p. 7.

of land use certificates -- in effect, the right to farm land without fear of being uprooted and expelled.[15]

How successful were the various projects in eliminating opium production? The record appears to be mixed. With respect to CRCD, the results are controversial: One United Nations Fund for Drug Abuse Control (UNFDAC) documentary review of the CRCD-HAMP experience claimed reductions in poppy areas of 20 to 95 percent in organized CRCD villages from 1973 to 1984. However, a senior field advisor for UNFDAC noted in 1987 that CRCD had "a negligible effort on opium cultivation" in the project villages. With respect to HAMP, a decrease in poppy areas was recorded, but it was insignificant -- from 2,450 rai to 2,508 rai or 5.8 percent from 1981 to 1984. Viewed in narrow crop control terms, the project was a disaster: $6.7 million were spent to replace 142 rai or 23 hectares at $291,000 per hectare within the project area, which compared sites in Chiang Mai and Lampang provinces. Combined cultivation in HAMP's Chiang Mai sites actually increased 36 percent, compared to a one percent increase in the total provincial production over the period. Estimated output of opium declined much more significantly from 3.85 to 2.73 metric tons but the drop was largely attributable to weather conditions and to declining soil fertility.[16]

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[15]Renard and Robert. *op. cit.*

[16]"Terminal Report of The Thai-UN Highland Agricultural Marketing Project 1980-1984," p. 23 and Annex 11.

Jurgen Gammelgaard. "UNFDAC's Role in Support of Crop Replacement Programs in Asia." Paper prepared for regional seminar on replacement of opium poppy cultivation, Chiang Mai, December 1987, p. 141.

By contrast, the first of the new generation of development project -- Thai-Germany, Thai-Norway, Thai-Australia and Mae Chaem -- reported large -- 50 percent or more -- reductions in poppy cultivation during the 1980s. In the case of Mae Chaem, and Thai-Australia, the results incorporate areas eradicated by the Thai authorities; however, in the Thai-German and Thai-Norwegian projects, the effects of development per se are clearly viable: pre-eradication cultivation declined, 77 percent in Thai-Germany and 89 percent in Thai-Norway in the periods 1981-1990 and 1986-1990, respectively. Such successes, however, should not obscure certain basic problems associated with crop replacement and development programs. One is the problem of shifting cultivation. Take, for example, the case of Mae Chaem.[17] According to the project advisor, Kenneth Kampe, the poppy cultivated area in Mae Chaem declined by 54 percent from 1987 to 1989, from 3,690 rai to 1,107 rai.[18] Yet ONCB surveys of Mae Chaem district (see Figure 12), 80 to 90 percent of which is included in the project area, show 4,025 rai in 1988 and 4,700 in 1989. Either the project was contoured to exclude the principal concentrations of poppy or -- more likely -- growers simply moved their plots outside the project boundaries. A related problem concerns the diminishing returns from development programs -- declining efficiencies associated with the movement of poppy cultivation and of project target areas into relatively inaccessible regions. Preliminary cultivation data from the 1990s seem to support this point. Note, for example, the trends in pre-eradication poppy areas

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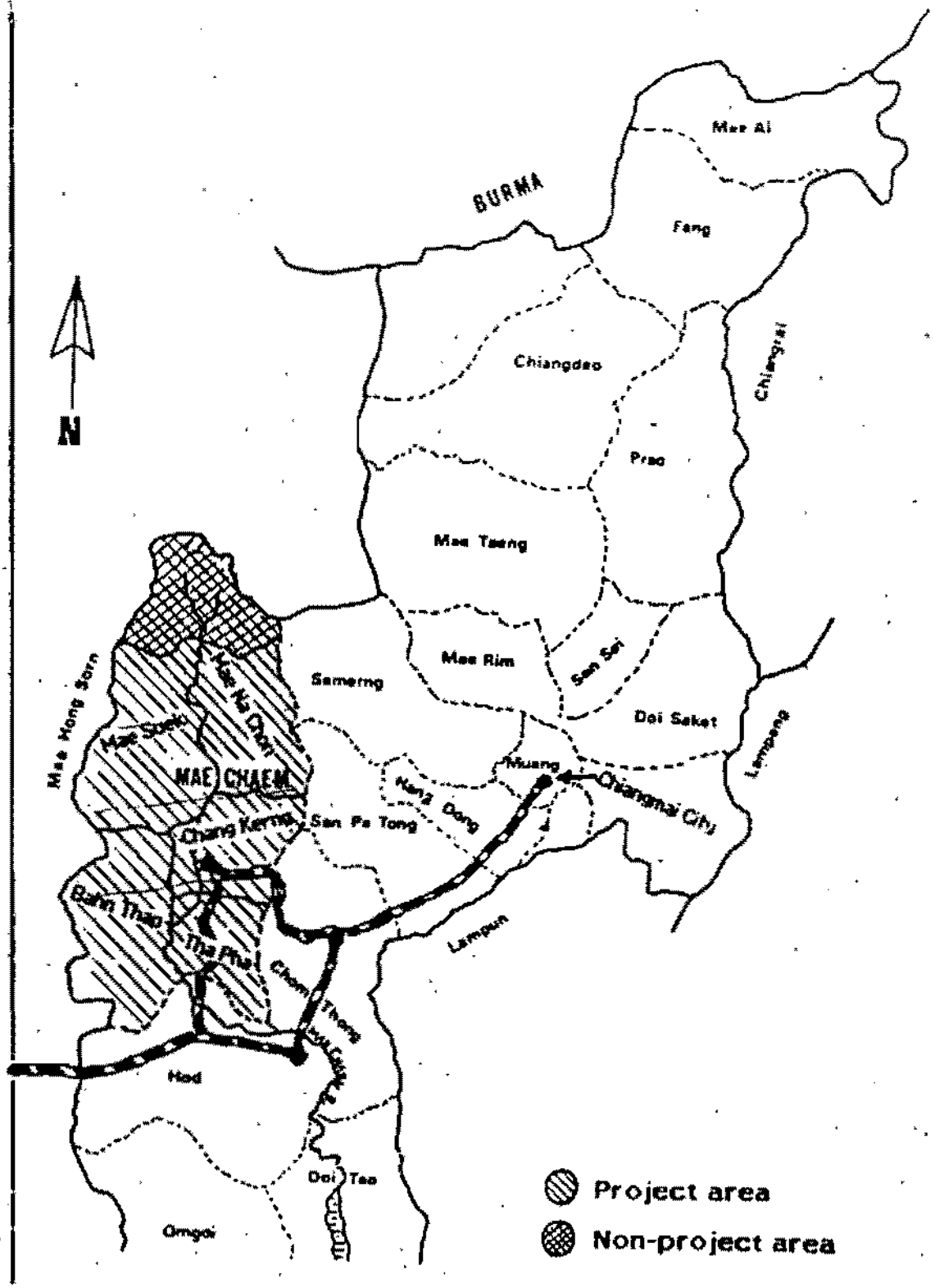
[17]UNFDAC Thai-Norwegian Highland Development Project. An Evaluation Report. p. 8. Hagen Dirksen. "Solving Problems of Opium Production in Thailand. Lessons Learned from the TG-HDP." Chiang Mai. January 1993, p. 8.

[18]Kenneth Kampe. "Reduction of Opium Cultivation in the Mae Chaem Watershed Project Development Area," during 1986-7 and 1988-9." December 1988, p. 5.

Figure 12

Map of Mae Chaem District, Chiangmai