submitted to Agenda, 15/4/81

Indonesia

PN-AAX-858

Some Observations on Home Gardening in East Kalimantan

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In efforts to improve nutrition and to provide additional sources of cash income to poor families, home gardening is being increasingly seriously considered by developers. In light of this burgeoning interest, I offer the following "case study" of home gardening efforts in an East Kalimantan village (Long Segar).* Although providing information on the specific constraints to effective home gardening endeavours in that area is my stated purpose, I have a hidden agenda as well. I am hopeful that the holistic presentation of factors influencing home gardening in one location will provide convincing evidence that development efforts in general must be more participatory, decentralized, and integrated. I hope that the multiplicity of factors affecting the success or failure of these home gardening efforts and the impossibility of recognizing, let alone attending to, such factors from a central planning office, will be set out in broad relief. I suggest that some of the recurrent problems with agricultural development projects in general can be minimized by using a "farming systems approach,"

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*I lived and worked in Long Segar, East Kalimantan from October 1979 through August 1980, doing ethnographic research as part of a project entitled "Interactions Between People and Forests in East Kalimantan" (Vayda, Colfer, and Brotokusumo 1980). The grant supporting the project was awarded by the U.S. Forest Service - U.S. Man and Biosphere (MAB) program "Consortium for the Study of Man's Relationship with the Global Environment" and was administered by the Environment and Policy Institute of the East-West Center. The project was carried out in association with the Indonesian MAB program (LIPI) and with the cooperation of Mulawarman University (Samarinda).

as outlined by CID (1980). The three most important constraints to home gardening activity in Long Segar are 1) inappropriate definition of target audience or recipients for training and other agricultural inputs, 2) specific production-related problems, and 3) marketing difficulties. These will be elaborated below.

Long Segar, East Kalimantan (Indonesian Borneo) is located two days and two nights by riverboat from Samarinda (the provincial capitol and nearest "urban" market), and is populated by approximately 1000 Christian Dayaks (Uma' Jalan Kenyah subgroup) who voluntarily settled there from the Apo Kayan, an extremely remote area near the Malaysian border, between 1963 and 1972. Between 1972 and 1980 Long Segar was officially a Resettlement Village, administered by Resetelmen Penduduk (Respen).* This means that a comparatively large amount of government aid has been available to the community in the form of seeds, seedlings, seed stock of pigs, cows and water buffalo, tools, village machinery, pesticides, fertilizers, medicines, money for house construction, as well as agricultural extension personnel, teachers, and training opportunities.

Governmental concern specifically with home gardening is obvious from the following recent inputs. In November 1979, the Vice President of Indonesia, Adam Malik, came to the village. When he left, he made a gift of cabbage, spinach, green beans, eggplant, and cucumber seeds. These are typical vegetables being encouraged for home gardens.**

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*Resettlement and Transmigration both involve movement of people by the Government, but Resettlement refers to intra-province movement, and Transmigration refers to moves from Java and Bali to the less densely populated Outer Islands.

**Evidence has recently surfaced from Java (Chapman 1980) on the important role of the cabbage (Cruciferae) and bean (Leguminae) families as factors encouraging goitre. Such factors need attention in home gardening projects.

After about one-third of the rice harvest was lost in a flood in December 1979, the government provided several kinds of herbaceous legumes for the people to plant as supplemental, emergency cash crops and food supplements. In February 1980, fifteen villagers went to Samarinda (the provincial capitol) to receive training in a variety of agriculture-related spheres, including gardening, and following these training sessions, the trainees shared their training in village meetings with other interested villagers. In July 1980, a German aid team (TAD) began planning some experimentation (using a farming systems approach--see e.g., CGIAR 1978:8 or McIntosh 1980) with multiple cropping systems there and expected to provide seeds and possibly other inputs deemed necessary for success. And in August 1980, a pilot home gardening project focusing on income generation for women was proposed by the same aid team, with Long Segar as one of two possible sites. Both the Indonesian Government and the most important aid team in the region are pushing home gardening. Furthermore, seeds, other inputs, and opportunities for training are seized avidly by the villagers who participate readily in these various trials.

A one-month research trip to Long Ampung, the remote village from which the people of Long Segar came, uncovered a curious fact. The children in Long Ampung are healthier, fewer die in childhood. The people's diet includes more "lekai," or rice-supplementing dishes, including garden produce and forest plants and animals. There are many more gardens in the village and these are well tended (Colfer 1981a). The -- at first blush -- anomalous reality is that Long Segar, with all the above-mentioned official activity to stimulate home gardening, is <u>less</u> involved in home gardening than Long Ampung, which gets none of the kinds of help available to Long Segar.

Rice, Money and Vegetables

Currently the only reliable cash crop in Long Segar is rice. But nutritional requirements are met through two additional sources: Cultivation of secondary crops either interspersed in or adjacent to the ricefield, or in special gardens usually closer to the house, and the collection of wild produce (including animal) from the surrounding tropical rainforest environment. Both of these could theoretically serve as the basis for the development of further cash cropping and/or attempts to improve the nutritional status of the people of the community; and such surely was the intent of both the government of Indonesia and the German aid team involved in crop experimentation. But why, in the face of all these external inputs and well-intentioned development efforts, does home gardening (and indeed forest product collection as well) seem to be declining?

First, we must note that these people have moved from a situation where money is almost never used (only for paying taxes on the rare consumer item brought home--via a long, arduous hike of several weeks, carrying the item on one's back) to one where money is used for many many things. They have also moved from a situation where one could meet one's needs by hard work or by the indulgence of one's family--but only to a very minor extent, by trade. Most things were fairly equally available to all, the price being hard work. The possibility in Long Segar, of accumulating goods for sale, is new; the possibility of buying a variety of commodities and services is new; and labor specialization is new. Indeed, the main reason these people moved to Long Segar was precisely to avail themselves of the opportunity for access to such goods and services. And further, in a situation where money is the medium of exchange it becomes very difficult to subsist without it. So the people exhibit a not-unexpected interest in earning money

(though let me quickly point out that most of this money is spent on things like medicine, education, and capital investments like chainsaws, rice hullers, and outboard canoe motors--not on "consumer items" per se).

In that environment where everyone eats rice three times a day, and indeed cannot imagine life without rice three times a day, there is always a market for rice. It can be stored for long periods of time (in huts built high off the ground and further protected by downcurving planks that inhibit the entry of rats and mice); and if by some flukey circumstance it shouldn't sell, it can be consumed the next year or be divided among the needy relatives and friends who have a deficit this year because of flood or drought or pests or illness in the family, and who can then be counted on to feed you when you're in need another year. The cultivation of rice is traditionally part of Kenyah ethnic identity; and it is particularly closely affiliated with female sexual identity (the people say, "Girls make ricefields; boys go on expeditions," though actually males do a great deal of agricultural labor too*).

But vegetables are a whole different ball game. Although home gardens have been part of the Kenyah adaptation to life in the rainforest, they haven't taken on a whole series of cultural symbols in the way that rice production has. People can tell you exactly how many kalengs (an 18 liter container that holds 11 kilos of unhulled rice) of rice they planted and harvested for the past 17 years (and perhaps longer?). But they don't remember where they made their vegetable garden last year or even how many such gardens they had. It's just not important to them.

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*A 10-month Time Allocation Study showed that females did 54% and males did 46% of the agricultural labor (Colfer 1981b).

My own observations of numerous vegetable gardens are presented below: Some vegetables are planted mixed in with the rice seeds. Maize and cucumbers are available for harvesting interspersed in the rice throughout much of the weeding season, easily accessible for snacks during weeding (cucumbers) or to bring home at the end of the day (maize). Wild foods grow in the ricefields as well (mushrooms are available on the rotting, half burned tree trunks that litter ricefields; grasshoppers can be collected easily in the wee hours of the morning, their bodies still heavy with dew). Other supplementary crops are planted haphazardly, in areas smaller than $5m^2$ in most cases, near the field huts for easy access during peak agricultural seasons (chili, squash, onions, eggplant, cabbage, cassava). Crops with longer growing seasons are planted for use in the years to come (pineapple, sugarcane, bananas, cassava). Immediately following the rice harvest, ricefields are sometimes burned and replanted with legumes (groundnuts, cowpeas, green beans, soybeans) intended largely for use as cash crops. There are a few garden areas within the village proper, and people tend to plant a few seeds right around their houses. Fruit trees are planted in house yards and in the forest near the village (soursop, pumello, papaya, Mandarin orange, Seville orange). Everyone has access to some garden produce; and sharing of food is probably the most important value held by Kenyah. But the lush garden areas characteristic of Long Ampung have disappeared in the Long Segar area.

Home gardening is pursued desultorily by everyone; and possibilities for additional cash income from gardening are in people's minds. Seeds that are donated to the community are taken and planted by everyone. But why hasn't the potential of home gardening been realized in this village of willing innovators with governmental help? Why is home gardening on the decline?

Constraints

There are three major areas that I can readily identify which have caused problems. These are 1) inappropriate definition of target audience for training; 2) specific production-related problems; and 3) marketing constraints. I will deal with each in turn.

The seeds were brought to the community and distributed to male "household heads"; village men were brought to Samarinda for training in vegetable production; and the key farmers for the German aid team's experiments were four men.* But tradionally women make the gardens. And furthermore, since men typically "go on expeditions" (which now includes wage earning sojourns in distant cities), once they're trained they may very well take off, taking their training with them. I should point out that this problem is somewhat less extreme in this community at this time than in many because of a very loose approach to the sexual division of labor and because of comparatively open communication between the sexes; Kenyah have comparatively egalitarian relations between the sexes at this point, based soundly on the women's traditional economic independence and autonomy. But the processes that are occurring in Long Segar, associated with formal and informal integration into the "modern sector" seem to be leading to a decrease in women's status (e.g., compared to men, women in Long Segar have reduced autonomy of movement because of difficulties maneuvering the outboard motor, reduced efficiency in agricultural labor because of the chainsaw which is too heavy for women to operate, comparative lack of access to moneymaking

*I acknowledge my involvement in this choice; but plead the necessity sometimes to bow to established practice. I feared (with good reason) they'd throw out the baby with the bath if I brought up women's possible involvement, and Long Segar would forfeit a possibly helpful project altogether.

spheres, reduced access to outsiders and their information because of the more exploitative attitudes towards women prevalent among other ethnic groups in the area, and so on). The official agricultural activities in Long Segar are part of these processes that are not-so-slowly functioning to increase women's dependence on men in a social setting where men have traditionally left women to manage competently on their own.

The above observations are not intended to minimize the difficulties of reaching women. Fewer women know the Indonesian language; women are reticent to deal with outsiders (partially because of differing expectations about cross-sex interaction); officials and extension workers often are fearful of trying to work with women. But if we expect to increase people's involvement in a particular agriculture sphere, it makes sense, it is more efficient, to work with those people who will be and have been doing the agriculture work. And for gardens, at least in Long Segar, that means dealing with women.

The second major set of constraints revolves around the actual production process. First of all, given that rice production is considered to be the core of the economic base in the community, other agricultural endeavours tend to be scheduled around the agricultural cycle of rice. Rice production is done by shifting cultivation. There are busy times of the year in the fall for planting and weeding, in the winter for harvesting, and in the late spring for clearing new fields for the next season. During these busy times, people tend to go to the fields and stay there all week, since the fields are at some distance from the village (the furthest field being cleared for the 1981 harvest was about four hours by outboard-driven canoe; an hour is a more typical distance). Since school children and many old people stay in the village it is sometimes possible to arrange for the care of vegetables; but often these arrangements aren't made, and vegetable gardens can get

minimal or no care during these busy times. People tend to make rational decisions about their allocation of time, and some of the following problems substantiate the rationality of people's opting for rice over vegetables.

Fertilizers and pesticides, more necessary for home gardening efforts than for rice, usually cost money which is in very short supply. Even when fertilizers and pesticides are promised to the people by the government as gifts, problems of supply enter in. Long Segar can be reached by plane in 35 minutes and by speedboat in 10 hours, but trade is carried on by means of the longboat which takes a minimum of two days and a night to go from Long Segar to Samarinda. Although boats come by fairly frequently, there is no set schedule, and if river conditions are bad, sometimes no boats will come for several days. And whether the longboats happen to be carrying the pesticide or fertilizer that the farmer needs when she/he needs it is a matter of luck. During the 1980 rice harvest there was an infestation of grasshoppers that the farmers were very anxious to control. They resorted pesticides they knew to be inappropriate, because they had nothing else and were fearful of the ravages of the insect.

The soils in the area were studied by the German aid team, and the best lands were deemed "marginally suitable for continuous dryland arable farming" (LEAP 1980); and various visiting experts have pronounced them typical of tropical rainforest in their fragility and infertility. Although only to be taken as anecdotal evidence, I did have the opportunity to compare the progress and health of a village cabbage crop with a crop planted at the nearby American timber camp, at the same time of the year. The timber camp crop had all the advantages of fertilizer and pesticide and far excelled the local village crop which was well-tended, but recieved no such inputs.

In addition to the above time constraints and lack of availability of fertilizers and pesticides, the role of animals must be addressed. Gardens that are not right near the house* are likely to be eaten by wild boar and deer. And those that are in the village are subject to a rather unusual pest---freely-roving water buffalo and cows. These 6 water buffalo and 11 cows were a well-meaning gift from the government of Indonesia; but the people were unused to such large animals, had no tradition of eating beef, no storage capability for slaughtered animals, and they could not transport them to their fields for use as draught animals. Yet the people feared government retribution should they dispose of them outright. The exact status of these animals has been in debate for several years, and only now that the Resettlement Project is over does there seem hope of resolving this problem (see Colfer, Soedjito, and Azier 1980 for a longer discussion of this), probably by selling the cows. But in the interim, their depredations have been an important factor in people's decisions about whether or not to devote energy to garden production. The animals have ruined many gardens since their arrival in 1975; and at least 8 have met an untimely death at the hands of irate gardeners.

The third important set of constraints to home gardening relates to marketing. I have already mentioned the newness of buying and selling, from the perspective of community menbers---but this doesn't hamper them in situations where profitability is clear. The uncertainty of timing using the river transportation system currently in use has already been

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*Village soils are relatively infertile anyway due to repeated use, and exposure to sun (which results in baking and hardening) and rain (resulting in leaching of soil nutrients). Additionally, the village layout, planned from Respen's central offices, discouraged gardens close to the houses.

mentioned with regard to the supply of pesticides and fertilizers, and it is an important factor in the marketing of perishable goods as well.

There is no refrigeration in the village (though there are four generators, three of which are currently used for freezing local-style popsicles and one of which is used for electricity), and vegetable produce does not last long there (Long Segar is almost exactly on the equator). So vegetables, once produced, must somehow be sold immediately.

The closest markets, outside the village (whose members at present buy almost no food) are two timber companies and one plantation, ranging in distance from 20 minutes upstream to an hour and a half downstream. The largest company is the most distant; and many's the time people have loaded up their canoes, expended time, gasoline, and human energy, traversing the dangerous rapids near the camp, only to discover that no one wanted cabbage that day. The people are then in the unenviable position of selling their perhaps carefully tended crop for a pittance, or returning home with an already decaying heap of cabbages to distribute to friends and relatives yielding no direct, tangible gain--indeed, sustaining a direct loss. The lack of any communication facilities among communities along the river other than the longboats exacerbates this problem.

In sum, the major constraints that affect home gardening efforts in this particular village are 1) inappropriately directed training efforts (training in gardening procedures and requirements is directly available only to men--who are not the major gardeners); 2) problems of crop production, such as inadequate or unreliable access to fertilizers and pesticides, conflicting human labor requirements, and pest problems; 3) marketing factors like susceptibility to spoilage in the absence of refrigeration and of good inter-village and village-city communications, unpredictable transportation

facilities, and discomfort with selling (particularly where price haggling is necessary, as in the case of vegetable produce---the going price for rice is known by everyone).

I would like to emphasize at this point that solutions to these problems are quite possible; indeed, many of these problems, taken individually, are demonstrably soluble locally. With rice, where the price is known, and with other crops when the price is high enough, the Kenyah discomfort with selling is regularly overcome, People who, for one reason or another, are genuinely concerned that a vegetable crop succeed, take the valuable time needed to construct fences to keep out the marauding cows. Pesticides and fertilizers could be stockpiled in the village if the economic value of the resulting crop were sufficiently high and certain. And so on. But the totality, the sum reality, is that right now the way these home gardening efforts have been organized to date, there are too many constraints for the people to overcome simultaneously. They themselves, when I questioned them in groups and alone about how development efforts to encourage home gardening and strictly cash crops could better be structured, reiterated the importance of attending to ALL the factors: durable fencing materials, availability of pesticides and fertilizers, help with marketing and credit. They wanted to avoid a repetition of their past experience, in which they felt the government had simply dumped the seeds in their laps, and then blamed them when they could not solve the other rather difficult problems on their own.

Recognition of the importance of getting the training opportunities to the women is less widely acknowledged within the community, partly because of Kenyah awareness of non-Kenyah attitudes towards women in general and

non-Kenyah stereotypes about Kenyah women in particular.* Kenyah of both sexes are reticent to expose the women to personally degrading situations. But community members are also aware of and value women's intense invlovement in agricultural activity; they are aware and concerned that the men leave and the women must manage on their own. My public discussions of possible projects designed to increase women's income generating capabilities were met with enthusiasm by men and women alike. And when I left, I asked the villagers what they would consider to be a valuable project that I could suggest to churches or other organizations in this country, should I have the opportunity. They suggested building a dormitory in Samarinda so that the Kenyah girls could pursue their education, living in safe and honorable conditions. This particular village would welcome projects directed at the women...including home gardening projects.

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*The freedom of communication between the sexes and female freedom of movement and independence among the Kenyah lead the members of other ethnic groups, characterized by a more rigid division of labor and less cross-sex interaction of a productive nature, to consider Kenyah women to be promiscuous. I should point out that the stories of "free love" and "wife swapping" one hears city-dwellers tell about Dayaks were not substantiated by my observations either in Long Segar or Long Ampung.

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