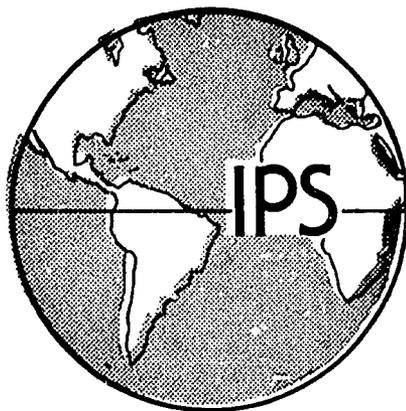




**Spontaneous Colonization  
in Peru and Paraguay:  
BIFAD Study Tour Report**

**by  
Clyde Eastman**



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## Introduction

The focus of this study tour was spontaneous colonization in two locations each in Paraguay and Peru. The specific purpose was to explore how spontaneous colonization may occur in remote locations under extremely harsh conditions with little or no governmental assistance while elaborate and expensive official colonization schemes are often less than totally successful in retaining settlers.

Previous experience with Peruvian agriculture consisted of an assignment from 1963 to 1965 with the North Carolina State University Agriculture Mission plus a six-month sabbatical at the International Potato Center in 1976. Previous experience in Paraguay consisted of four months with the New Mexico State University Agriculture Mission in 1972. Periodical visits to a country every few years to review the situation provide a longitudinal perspective of the development process and insights which can be gained in no other way. The agricultural situation in any country may change dramatically in only a few years' time, often in unanticipated ways. Peru, which seemed to have the technological base and governmental infrastructure in the late 1960's for a significant improvement in agricultural production, has not progressed. In contrast, Paraguay, whose prospects seemed very modest at the turn of the decade, has experienced through the 1970's one of the few agricultural booms in its history.

Peru and Paraguay have extensive areas where both directed and spontaneous colonization have been occurring for decades. They, therefore, provide excellent sites to investigate the phenomenon of colonization. Two locations were visited in each country where spontaneous colonization was occurring (figure 1). An overview of the agricultural situation in each area was obtained

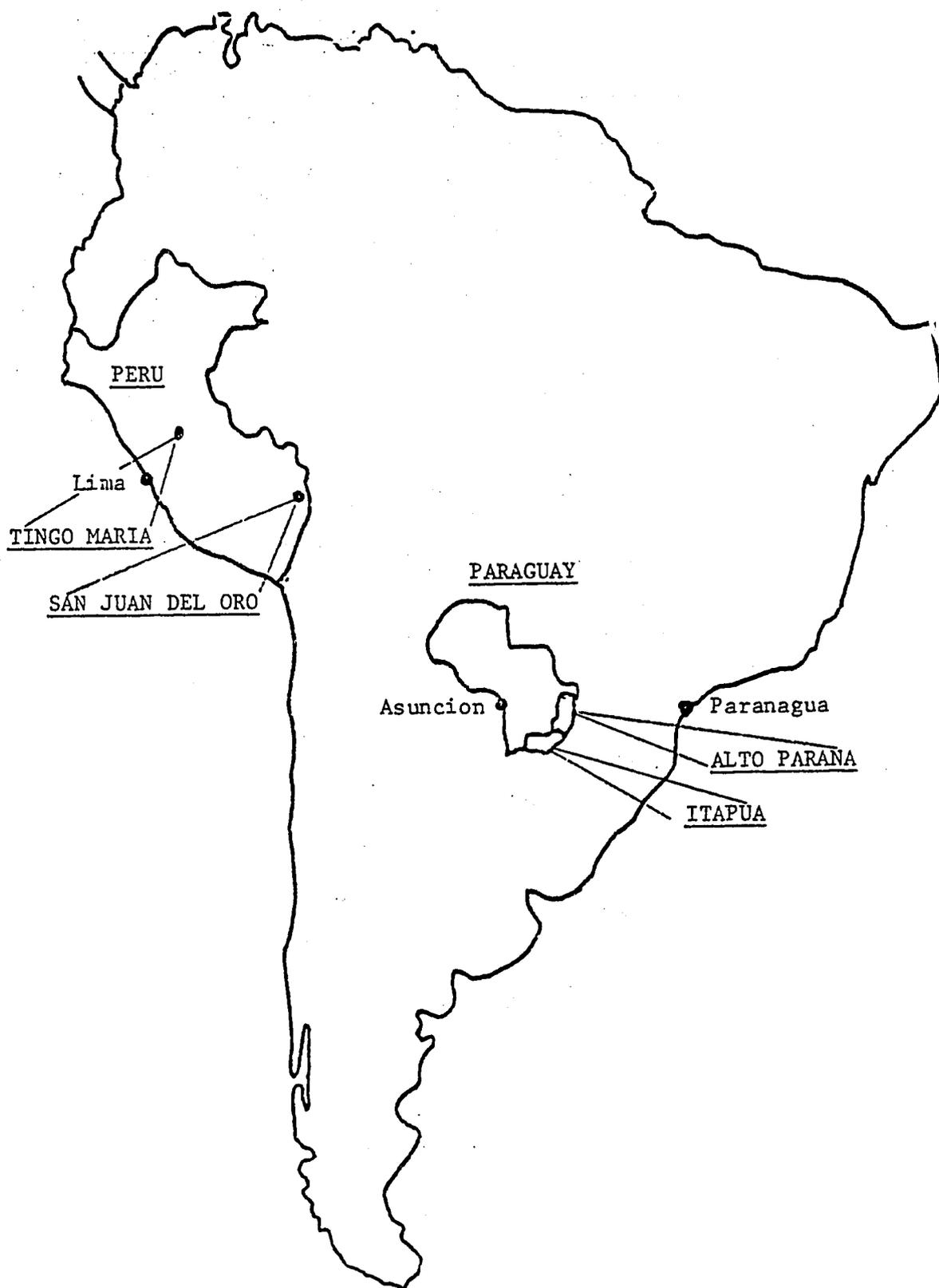


Figure 1. Colonization Sites in Peru and Paraguay

by interviews with local Ministry of Agriculture officials or university faculty. Unstructured, informal interviews were conducted with as many as a dozen farmers in each area. These interviews probed each farmer's personal life situation, e.g. birthplace, age, family size, aspirations, etc., and his farming operations, e.g. crops and livestock produced, markets, credit situation, technology employed, etc. National production data and information on specific national programs were obtained from Ministry of Agriculture offices in Lima and Asuncion.

Travel was by public transportation--planes, buses and canoes. Local agriculture officials who had vehicles generally invited me to visit field sites. In Puno, the Ministry provided a new pickup and chauffeur to travel to San Juan del Oro, a roundtrip of some 700 km, taking three days. Many farm visits were made by walking along trails and interviewing those farmers encountered around their farmsteads or in their fields. In one case, I attended a formal field demonstration at which I was able to interview national cotton experts and local farmers. Almost without exception, both farmers and officials were willing to take time to talk and be helpful. In some cases I relied on formal advance introductions, but in many cases an NMSU calling card and a brief verbal explanation of my purpose was my entree.

No claim can be made that the interview data obtained were in any sense a random sample. These are four case studies which may or may not be representative of some larger universe. Given the time and resource limitations, the work was necessarily exploratory in scope. These observations should be treated as tentative hypotheses which may guide more definitive study.

## Colonization Literature

Archeological and historical evidence indicates that humans have been migrating around the globe since their early days on earth. As cultural, political, and ecological climates have changed, people have moved in search of greater freedom, security, and/or material abundance. In addition to wholesale movements of extensive populations, there has also been substantial movement of individuals motivated by more particular concerns. The spontaneous colonization focused on here is, thus, nothing more than the end of the settlement of this hemisphere by Europeans, Africans and Asians together with the redistribution of Native American groups. In an even longer time perspective, this colonization may be viewed as only another episode in the continuous drama of human migrations back and forth across the globe.

A review of the literature on colonization revealed a modest number of articles in the disciplines of anthropology, economics, geography and sociology. The literature on Paraguay proved to be as sparse as that on Peru was ample. A 1980 review and bibliography of the Peruvian literature by Martinez contained 698 entries (13). This literature focuses on internal migrations to the cities, coast, jungle, and mining centers. Studies by Peruvian and international scholars were supplemented by a large number of student theses. Smith's extensive 1969 review stands as a landmark in the English literature. This excellent review is particularly notable for including important works published in difficult to access Latin American sources. Smith covered the potentialities for settlement, official projects and immigrant colonies in addition to spontaneous colonization.

Martinez concludes that economic factors constitute the principal motivation for recent migration in Peru (11). People desire to improve their material situation. For farmers this often means obtaining more land, better land, and/or

cheaper land. For urban-bound migrants, it means prospects for earning better incomes and access to educational opportunities. A second important factor--the family--lends psychic, social, and economic support to the migrants. Supportive relatives are very important in determining the migrants' destination. Family ties are more significant for women than for men and for urban than for rural destinations. Martinez estimates that one third of all Peruvians between 15 and 25 years of age have left their place of birth either to work or to study. Females recently outnumber male migrants and singles outnumber marrieds about 2:1 (11, pp. 237-239).

One study of emigration from the Mantaro Valley in the central Sierra revealed that Lima received 60 percent, the nearby mines 18 percent, the departmental capital 12 percent, and the jungle 6 percent of the migrants. Four percent went elsewhere (2, p. 24). Thus, only a very small proportion of total migration was directed toward the jungle where most spontaneous agricultural colonization occurs in Peru. Isolated rural areas have been much less attractive than bright city lights to the great majority of migrants.

Studies of specific colonization areas along the "ceja de la montana," or "eyebrow of the forest," cite a litany of problems. Land titles, distance to markets, lack of definitive settlement policy, lack of service infrastructure, technical problems of unfamiliar crops and conditions, and transportation difficulties are among the more commonly listed problems (3, 6, 10, 12, 15).

Several studies in addition to describing current conditions also provide historical perspectives on colonization in Peru, especially in the Huallaga and Puno areas (2, 4, 10, 15). While many residents are recent arrivals, settlement along the eastern Andes goes back to Incaic times. Mineral and vegetable products which could not be produced or were scarce

in the Sierra provided the attraction. However, large-scale settlements were not common and many Sierra Indians still harbor a distrust and fear, particularly of the fauna, of the Selva.

#### Huallaga and Ucayali Valleys, Peru

The cross-Andean penetration road reached Tingo Maria in the Huallaga Valley in 1936. It was extended some 200 km across a low range of mountains to the Ucayali River port of Pucallpa in 1943. Agricultural settlement along this road expanded slowly. Some industrial-scale tea plantations were established along with smaller cacao and coffee plantations. Small semi-subsistence farmers produced a wide variety of fruits, vegetables, field crops and some livestock (4, pp. 93-101). Coca was produced in small plots for sale to an international beverage company and in Sierra market places. As coca began to attract the attention of the illegal international trade in the early 1970's, production has increased rapidly. While it is a highly profitable crop for producers, most is produced in one- or two-hectare plots on steep mountainsides. Coca seems to do better on steep, rocky soils, and these locations keep it out of the easy reach of law enforcement officials.

Except for coca, and despite considerable attention from Peruvian and international agencies, the area's agricultural production has expanded at a very slow rate. In the 1950's, the North Carolina State University Mission focused on the Huallaga Valley around Tingo Maria and stationed several personnel there. More recently, international loans have underwritten large-scale agricultural development schemes and an excellent paved road through the valley from Tingo Maria to Aucayacu. In spite of this attention, the region's agriculture has never

expanded or reached the potential many technical experts saw for it. A local agricultural official described the region's agriculture as "completely stagnant" in 1981. He mentioned low and fluctuating prices plus a shifting official policy during and after the agrarian reform period as contributing factors.

While many settlers on the new lands were serious farmers, others proved to be opportunists who sold the timber from their 20- to 50-hectare allotments, then sold the land and moved on. In spite of restrictions on land sales imposed by the agrarian reform, there appears to be much movement by the colonists on newly opened land. In some cases the government has surveyed land before it was settled. On low-lying and heavily forested lands, the more common pattern seems to be settlement by squatters on long, narrow strips of land which front on access trails. On steep mountainsides, settlement spreads up or down the mountain away from the roads in a crazy-quilt pattern over any soil which is fertile enough to produce coffee, coca, potatoes, corn, bananas, or other subsistence crops.

Pucallpa is located on the banks of the navigable Ucayali River in a flat to gently rolling landscape. Much of the land around Pucallpa is too low and flood prone for many crops; however, good yields of water-tolerant crops are produced, some in a rather unusual fashion. For example, large extensions of rice are cultivated on the mud flats along the river during the low water season. During the rest of the year, these "fields" are covered by several feet of water, their location marked only by the thatched roofs of the little guard shelters. On somewhat higher land, trails running generally perpendicular to the river bank provide access to small farms which have been hacked out of the forest. The trail heads are marked along the river banks by a small landing cleared from

the forest and three or four steps dug into the clay bank. Motor-powered dugout canoes provide transportation for people and produce along the river.

The subsistence farmers in this area employ a simple and traditional technology. Since almost no machinery is used or could even be moved to plots off the main road, the small subsistence farmers can cultivate only part of the hectares they own. One farmer, Senor Garza, by virtue of being among the first settlers in his area, had title to 87.5 hectares. Most of this remained in virgin forest. He has been able to cultivate at most six or seven hectares in annual and perennial crops among the stumps and trunks of the cleared area. Senor Garza has been able to provide an ample and varied diet for his wife and seven children and feels reasonably secure on his land. He had experienced only one complete crop failure, due to a flood, in more than twenty years. However, his farm is located almost two hours by foot and dugout canoe from the nearest market, services, and amenities in Pucallpa. No services of any kind, not even a store, were available in the neighborhood. A committee was being organized in the neighborhood to petition for a school.

The Garza farm is a typical subsistence operation in that all crops are planted for the family's use. Extra production, e.g. a few bunches of bananas, a few kilos of upland rice, or a bag of manioc, is sold in Pucallpa to generate small amounts of cash. Recently this farmer has received supervised credit from the Agrarian Bank to increase rice production. He turned down at least one offer to sell his place. He explained at some length that he preferred the security of his current situation on his own land to that of having cash or a bank account which would soon be used up if he had to buy all of life's necessities. If Senor Garza felt the lack of services or amenities, he never indicated it.

A neighbor provided a somewhat different example. Senor Olivera had purchased a smaller farm in 1979, after living for eight years in Lima. The family decided to return to Pucallpa because Senora Olivera had never adjusted to Lima's winter climate. They lived in Pucallpa and Senor Olivera commuted to work the fields as the season required, accompanied by one or more pre-adolescent children when school was not in session. It was not clear what portion of the family's income came from agriculture and what might be derived from urban activities.

A visit to an agricultural production cooperative near the village of Aucayacu in the Huallaga Valley revealed a very different situation. The San Martin de Pucate Cooperative, born out of the wreckage of an earlier service cooperative, was in its second year of operation. The original cooperative split up because some members wanted to withdraw the land they had contributed to the collective part of the operation while others wanted to operate in a completely cooperative manner. Those inclined toward individual operations withdrew, leaving eight original members. This number has since increased to 34 with the addition of new members, most of whom came from the Department of San Martin further north in the Amazon basin. As the current membership has much more homogeneous origins, it is also apparently more harmonious. Former members still claim portions of the community land so that a threat of litigation hangs over the community.

In marked contrast to the simple thatch-roofed, bamboo-sided dwellings and very simple tools of individual operators, this cooperative possessed an impressive array of substantial housing, offices, warehouses, and animal shelters. There was also a large collection of machinery, including two self-propelled combines, three tractors, and a number of tillage implements.

However, of the motorized equipment only one tractor was operational on the day of my visit. The rust on the combines indicated they had been idle more than one harvest season. The cooperative had obviously been the recipient of a large number of loans or grants to finance such a quantity of buildings and machinery. It is currently operating with substantial assistance from an international agency.

The production enterprises were in the initial stages of establishment. A collection of cattle only partially contained in an unfinished system of pastures yielded an occasional animal for sale, whenever some money was needed. Several hectares of new cacao trees received sporadic weeding and attention. Chickens have been marketed in the past, but production was suspended pending renovation of the facility. The extent of subsistence production was not apparent. An expensive Peruvian Paso stallion was a source of great pride to the members; however, his value as a source of income was not clear. The extension agent's observation that the members of this cooperative were more effective at grantsmanship than at agricultural production seemed accurate.

A visit to the Central Cooperative in Aucayacu, of which San Martin de Pucate is a member, was also very instructive. The Centrals, or second-level co-ops, were established by the agrarian reform law to provide services to their member production cooperatives. This one was operating a rice mill, a cattle feedlot, an automobile/truck/tractor repair shop, and was selling gasoline, oil, and lubricants. It was establishing a dairy with a \$600,000 international donation. A small plant to separate soybean oil and meal was closed due to competition from cheaper imports. The Central employed 57 workers and operated at or slightly above the break-even point. Relations with the member cooperatives who govern the operation have been tenuous because members do not always

appreciate or identify with the Central's operations. Their actions and directives are not always ~~viewed with~~ favor by the Central staff. The undercurrent of organizational friction indicates the likelihood of some modification of the central cooperative structure in the future.

### San Juan del Oro, Peru

The Altiplano around Lake Titicaca has an extremely dense agrarian population. For decades scarcity of farm land has been a factor in the out-migration from this area. While many migrants went to Arequipa, Lima, and other coastal areas, a steady trickle has moved eastward across the Cordillera Oriental into the "ceja de la selva" (eyebrow of the jungle). Some became full-time residents while others move back and forth between their fields in the Sierra and those in the jungle. In the early years pack trains of burros or llamas carried most of the commerce. As the penetration road was lengthened and improved, muscle gave way to diesel-powered transport from San Juan to the Sierra. However, muscle, much of it human, still provides local transport from the fields to the road. Until the present time, settlement has taken place two to four days' walk beyond the point of the road.

As one crosses the Andes and descends the eastern slopes, one passes through several distinct ecological zones. On top, the high "Puna" is home to flocks of alpacas, llamas, and sheep--no cultivated crops are grown there. Below the Puna one encounters potatoes being cultivated on terraces of the steep mountainsides; a little further down one finds broad beans and other native grain crops. Still further down one encounters corn as the principal crop. Below the corn area is a subtropical zone where bananas, coffee, manioc, citrus, pineapples, and a wide variety of other crops are produced.

Both push and pull factors influence the colonists who settle along the eastern slopes of the Andes. On the one hand, extreme pressure on the suitable agricultural land in the Sierra pushes people to look for other opportunities. On the other hand, the possibility of producing subtropical crops and cutting lumber constitutes a pull factor. Sierra Indians have been venturing into the selva since the time of the Incas; however, the penetration has become markedly greater in magnitude in recent decades.

Before 1965 a road had been built to San Juan del Oro. However, the road was closed by landslides for most of the year so that an eight-hour walk was required from the point where motor vehicles could enter. In 1981 the road extended 15 km beyond San Juan; it is closed for hours or occasionally days, but no longer for months. With good weather and some luck, one may drive the 300 plus km from Juliaca, the nearest major commercial center in the Sierra, in 10 hours or less. The large trucks which provide most of the public/commercial transportation require about twice as long.

Since the area has always been isolated and much of the agricultural land located from one to four days walk from the road, only crops with a high value-to-weight ratio could be marketed. Coffee has long been the major money crop, and most farmers have a few hectares of coffee trees. One settler who arrived in the 1940's related how he used to barter coffee at the point of the road for salt and iron tools. In those days money often did not enter the exchange process.

Coffee production technology came from Bolivia where many southern Peruvians worked on coffee farms in a similar environment. Peruvians who owned farms in Bolivia were forced to either leave or become Bolivian citizens during the agrarian reforms of the 1950's. Many of those people established

new farms in the San Juan area and in valleys farther north. Coffee production is generally traditional, so yields degenerate after only a few years as the soil fertility declines, and because the trees are not pruned to maintain vigorous and productive growth. Fertilizer and pest control practices are applied sporadically, and the small, steep, rocky fields preclude mechanization. While high coffee prices have benefited these growers somewhat, expansion is limited by scarcity of accessible and appropriate lands. With more reliable transportation, some citrus and other fresh fruits now find their way to Sierra markets. Net flow of staples like corn and potatoes is estimated to be into rather than out of the valley.

Most farmers plant a variety of subsistence crops which satisfy their own needs and provide a small surplus for sale in local villages. A few specialize in other things. For example, one interviewee had two hectares of forage grass that he sells in the weekly market near San Juan. The forage is fed to the pack animals that bring coffee and other produce to the market. Most farmers keep several barnyard fowl; some keep two or three pigs. The few cattle seem to constitute a form of savings as much as production capital. With Peruvian currency inflating at 60 to 80 percent annually, any kind of property, especially something that will grow a little, is preferable to money in the mattress or even in the bank.

Although no figures were available, observation indicates that the population in this zone has increased markedly between 1965 and 1981. The sides of the valleys are now more densely settled and cultivated. Whole new villages have sprung up along the road that used to be reduced to a footpath by landslides. While many immigrants maintain close ties with their ancestral villages in the Sierra and reside there part of the year, a whole new native-born generation is coming of age. These people will have much stronger ties and commitment

to the emerging communities. The extension agent cited the lack of commitment of the part-time residents as a major barrier to community progress.

### The Department of Itapua, Paraguay

Encarnacion, one of the major Paraguayan gateways to Argentina, is also the capital and major trade center of a potentially rich agricultural region. The fertile forest soils of Itapua must have been a major attraction to German, Ukrainian and Japanese immigrants who colonized the region during the early decades of this century. Homogeneous communities or "colonies" of the descendants of those colonists still dot the landscape. In Encarnacion and some of the larger towns, all ethnic groups mix together with the Paraguayans in the economic and social life of the community.

In the German "colonias" German is still the preferred language even among the young people. Other remnants of the ancestral culture persist in the food, architecture of homes and churches, and even in farm implements. Of course, characteristic physical features distinguish European from Asian from Paraguayan even to the casual observer. At the same time, significant acculturation has occurred: nearly everyone speaks Spanish and many know a little Guarani.

Ethnic differences in material prosperity are not immediately apparent if indeed they exist at all. At the same time foreign immigrants were arriving, Paraguayans from more densely populated areas of the republic were also coming in search of more and cheaper land. One such farmer related how he arrived in 1950 from near Asuncion in search of land and opportunity. Buying a few hectares at a time, he had acquired 30 hectares, which he operated as a mixed livestock and grain farm. In 1980-81 he had 12 hectares of soybeans,

two of cotton, two of upland rice, a large extension of manioc, melons and other subsistence crops. He kept 10 or 12 cattle and horses, a litter of pigs, and assorted barnyard fowl. With his soybeans, cotton and rice, he had moved significantly beyond a subsistence operation. Income from the commercial crops had financed land acquisitions, and he had recently begun to explore the possibility of purchasing a tractor.

A neighbor of Japanese ancestry specialized in tomato production. This very intensive operation had 15 to 20,000 tomato plants in production throughout most of the year. Every plant was individually staked, and pressure hoses criss-crossed the field to quickly apply the appropriate chemical. The produce was sent to the fresh market in Encarnacion and its sister city of Posadas, Argentina.

A neighboring German-Ukrainian family had one of the few fish ponds producing tilapia and carp in the community. This pond provided the household table with a continuous supply of protein. This family had prospered enough from their soybean, cotton, plus subsistence operation to own a tractor and tillage implements and to have a refrigerator and television. Television and radio brought them market news and commodity price quotations throughout the year. They were kept abreast of soybean-growing conditions in the United States by these market news reports. Judging from the number of TV antennas around the community, this family was not unusual. In 1972 it would have been difficult to conceive of Paraguayan farmers getting international market news on television out on their farmsteads.

Colony cooperatives had obviously flourished with the agricultural boom. They ginned cotton, pressed tung oil, and marketed cotton, tung oil, soybeans, and other commodities. They also supplied inputs; the cooperative

supermarket in Coronel Obligado was large, even by Asuncion standards.

The cooperatives, especially in the ethnic colonies, apparently functioned very effectively, and 80 or 90 percent of the residents were reported to be members.

Many, if not all, of the immigrant cooperatives had the privilege to import machinery duty-free, amounting to a substantial advantage.

### Alto Parana, Paraguay

Since major access routes were only constructed through Alto Parana in the 1950's, colonization and development of this zone is still in its early stages. As was the case in Itapua, gently rolling forest lands extended to the horizon in all directions. As it is being cleared, this forest soil is proving to be very productive of soybeans, cotton, and a wide variety of other crops.

Although the soil is lateritic, there seem to be no unusual management requirements in the first years of use. Fertility and erosion problems could well arise after a few years of cultivation. In addition to the agricultural boom, another economic bonanza of even greater magnitude is occurring on the Parana River just north of Puerto Presidente Stroessner. The huge Paraguayan-Brazilian hydroelectric installation at Itaipu is providing an infusion of \$250 million in wages and salaries annually. Although the construction and agricultural booms are largely independent, competition for labor has tripled the daily wage rate of agricultural labor. Itaipu, which will begin generating power in the middle 1980's, will make Paraguay the world's largest exporter of electrical power. A somewhat smaller binational hydroelectric project with Argentina, below Encarnacion, is just beginning construction and a third project is in the early planning stages.

Aito Parana is being settled by migrants from all over Paraguay. In addition, substantial numbers of Brazilian farmers, multinational corporations, and wealthy individuals have purchased land. Cooperative and private soybean elevators and cotton gins are being built to handle the increasing volume. Whole unprocessed soybeans are moved by truck to the freeport of Paranagua, Brazil.

New land is allotted to settlers in units ranging from 20 hectares to hundreds of hectares. It takes considerable capital and several years to clear the forest and bring a new piece of land into soybean production. After the trees have been cut and the marketable logs removed, corn and subsistence crops are planted for a few years until the stumps and debris rot enough to facilitate removal. Once the land has been sufficiently cleared to be tilled with machinery, it is devoted primarily to cotton and soybeans. On the larger holdings, newly cleared lands may be planted to pasture grasses, then grazed by cattle until the stumps and debris can be more easily removed. The soil is acidic and responds in many cases to the application of lime and phosphorous. As with most new areas, there have been relatively few insect and disease problems in the first years of production.

Land prices decline as distance to roads and markets increases. While it was difficult to determine land prices, figures of \$1,000 to \$1,500 per hectare for cleared land near the asphalt road were sometimes quoted. There is an active market in land in most locations. There are plans to extend the asphalt road from Puerto Presidente Stroessner 200 km north to Salto de Guaira and south some 250 km to Encarnacion. This road would parallel the Parana River through the prime agricultural land. The southern leg would reduce the distance and cost of moving Itapua's produce into international markets significantly.

### Observations

Several points emerge as one compares and contrasts colonization in these four different settings. Roads and transportation are obviously important in stimulating colonization. However, when population pressures are great, as in the Peruvian Sierra, colonists will move ahead of the roads. The limit seems to be about four days' walk from the point of the road. Farms established under these conditions are primarily subsistence operations. Any cash crop has to have a high value-to-weight ratio, e.g. coffee. To move from subsistence to commercial agriculture, direct access to reliable and reasonably low-cost transportation is necessary. It is difficult to imagine soybean production on any commercial scale without the all-weather road, the international bridge, and the unrestricted ocean port.

Amount and quality of available land is also obviously an important factor which can stimulate colonization. However, very marginal lands may be opened and intensively cultivated when population pressures are great enough. Again, the example of San Juan del Oro comes to mind. However, the boom in coffee prices in the 1970's did not lead to a marked jump in production, probably partly because additional land suitable for coffee was scarce. By contrast, crop production in eastern Paraguay can be readily expanded into new and fertile areas. Thus, large-scale commercial expansion appears to be most likely when large amounts of suitable lands are available or can be readily converted from other uses. Even the expanded coca production, which does not require especially fertile soils, moved onto unused lands.

To move beyond subsistence production to large-scale commercial production, a profitable commodity is necessary. But profitability is not sufficient motivation; otherwise coffee production should have increased more rapidly

than it did (as indicated above, coffee expansion seemed to be limited by lack of suitable land). Of the three commodities whose production has significantly increased in the areas visited, all were highly profitable export-oriented crops: coca, cotton and soybeans. A more detailed analysis of these crops appears in another article.

Service infrastructures, e.g. medical and educational, receive considerable emphasis in official colonization schemes. Availability of services may be an important factor in determining initial destination of migrants, i.e. whether they move to an urban area or to a frontier. There have been many more migrants into urban areas throughout Latin America than to remote frontiers in recent decades. However, once the decision has been made to go to a remote area, colonists move well beyond the effective reach of every governmental service. In these situations even rudimentary medical help could be several days' walk away, e.g. the settlers beyond San Juan del Oro. In many cases schools were several hours' walk, or further, away. In one area of Alto Parana a neighborhood with more than 140 children had only one teacher and only 14 students enrolled in school. Most public services become tenuous outside established population centers and that is especially true in frontier areas. This is not to suggest that services are not important, but rather than colonists will settle beyond them. It may be that many services were effectively beyond the reach of many colonists in their communities of origin so that little was lost in migrating to the new communities.

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