

# PIONEERS OF THE AMAZON

By ROBERT CHARBONNEAU

**L**uis Vargas is not working today. There's no use going into the field when it rains because the reddish mud makes walking dangerous and any path impassable. In any case, the rice field is a long distance from the farmhouse and the highway.

This is Peru's Amazon region, that great expanse of woodland and forest covering 60 percent of the country's total area. The land that Vargas farms, called Fundo Berlin, runs along the only road connecting Lima, 1800 km to the west on the other side of the Andes, and the town of Pucallpa on the Ucayali River, a tributary of the Amazon. Here, trucks loaded with all kinds of merchandise line up to have their contents transferred onto barges that will travel down one of the most powerful rivers to AQUITOS and Manaus and then on to the Atlantic.

Vargas is new to farming. Like many others, he came from the mountains to settle on what is considered a land of the future. Wasn't it here in the Amazon that oil deposits and lodes of gold were discovered? The government is giving land to anyone who wants to farm it, a 100 or so metres along the Lima-Pucallpa highway. It is up to the farmer to clear the land westward toward the mountains, sometimes over several kilometres. The only condition is that 10 percent of the land be cultivated.

With his wife and sometimes his children, who go to school in Pucallpa, Vargas has managed to clear his land of brush. He planted 2 ha of rice (which sells well), a bit of corn and cassava, even a few orange and lemon trees near his house. Much of the land is pasture where Vargas grazes his 20 odd head of oxen and cows. His other livestock includes some hogs and poultry.

## LAND TURNED INTO PASTURE

Vargas practices what is called itinerant subsistence farming but his harvests are not what they used to be. The soil has grown poorer. In the beginning, rice yields were quite good—1500 to 2000 kg/ha—but after two harvests, "the soil has nothing more to give." He is letting the land turn to pasture and is clearing another section up along the hillside. Two harvests from now this plot too will become pasture for his animals.

The rice field is now far from the road. Taking the harvest to market has become an arduous chore, but this is nothing compared with the poor yields Vargas is getting. His pastureland is growing old and is becoming overgrown with weeds. With a productive life of seven to eight years, this land will eventually be abandoned and taken over by brush.

To support his small family, Vargas works a "fundo" of 50 ha; most of the neighbours have twice that amount. To maintain production and feed his livestock, Vargas finds himself moving farther and farther away from the highway.



*A typical farm in the Peruvian Amazon. Here the vegetation grows on a thin covering of arable soil, only 5 to 10 cm deep.*

There is only a thin, fragile layer of arable topsoil, 5 to 10 cm deep. Rain turns the clay earth into a quagmire. Erosion quickly takes its toll on the acidic soil, made poor by the aluminum and manganese it contains. Any amount of cultivation further weakens it. Soon Vargas will have to abandon another section on the hill.

If only Vargas could afford the fertilizers he sees advertised . . . As it is, he can just barely keep his family fed. He does get a good price for the little rice he grows, not to mention the one or two head of cattle he sells each year, but he can no longer sell all of his cassava. "Last season," he says, "the price for cassava was so low that nobody wanted to sell. Truckers from the city offered 150 soles/kg (one cent Canadian) for the entire harvest. It was either take it or leave it."

## AN OFFER OF HELP

Vargas wanted to find ways to improve his operation at Fundo Berlin. That was why he accepted an offer of help from researchers at the Instituto Veterinario de Investigaciones Tropicales y de Altura (IVITA). The IVITA research station is nearby, only a few kilometres from the Pucallpa highway. For years, teams of researchers at the station had worked on all kinds of solutions to help improve the livelihood of farmers like Luis Vargas. Taken one by one, the solutions required little work but would greatly increase income and improve profitability. Last year the station's director, Silos Gonzales, who is from the region, invited local farmers to visit the facility. There they saw experimental pastureland containing crossed varieties of grasses and legumes, and a variety of cows different from those raised locally, each with a numbered plastic ring in its ear. They also

visited a cowshed where milk is produced.

"It was all quite nice but it just wouldn't work for me," Vargas thought initially. And he was, in a sense, right. On his land at Fundo Berlin, there was not enough help available, no cowshed, no milking cows, just the local breed that all of his neighbours raised.

## A PROPOSITION

But IVITA researchers Guillermo Meini and Manuel de la Torre had devised a project to help farmers take advantage of the results of their research.

De la Torre visited each of the nearby farms or "chacras" and, in businesslike fashion, made Señor Vargas a simple, straightforward proposition. For one year, he and his research colleagues would visit Vargas to observe his farming methods, see what area was under cultivation, take a look at crop production and selling prices, and so on. All transactions, operations, and livestock sales would be studied. At the end of the year, the research team would propose ways in which Vargas could improve his production.

Vargas had little to lose. Given the serious decline in his production, it was better to try something, and right away, if he was to keep food on the table for his wife and three children.

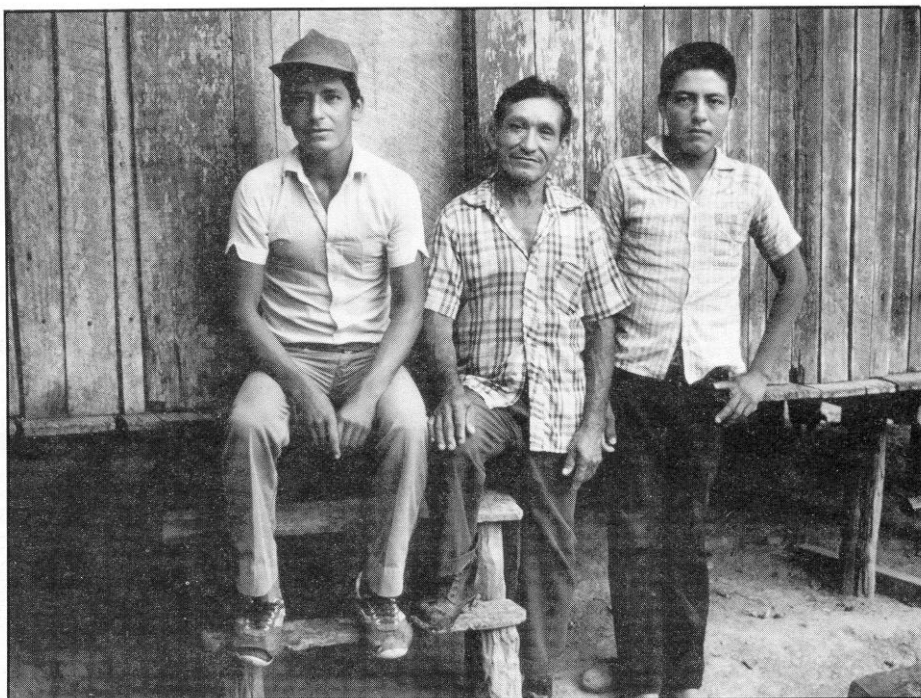
Vargas farms only a small portion of his land. Much of it is either natural pasture or land left fallow. The fallow period is at least 10 years and as much as 20. In three years, the shrubs and thickets had already grown tall, some more than 5 m high. Normally after eight or nine years, weeds take over natural pastureland, making it virtually impossible to use.

As part of its work, the IVITA research team put together a soil redevelopment plan to increase farm production at Fundo Berlin. The first thing they did was to focus on Vargas' needs. It was not a question of having him give up farming in favour of raising livestock, or vice versa. Manuel de la Torre and his team proposed the introduction of a new and better type of pasture system developed at their research station. It makes use of grasses to reduce erosion and nitrogen-fixing legumes to help regenerate the soil.

Such a changeover will have the double advantage of improving soil fertility and providing Vargas' livestock with a diet richer in protein. With natural pasture, no more than one animal can be raised per hectare. The new pasture system, combining grasses and legumes, makes it possible to graze two or three animals per hectare.

#### NEW VARIETIES OF LIVESTOCK

The cattle bred locally are of the Zebu variety. Though these require little attention and care, they take on weight slowly and produce no milk. The IVITA researchers



*Señor Vargas with two seasonal workers.*

therefore suggested crossing some of these animals with Brown Swiss or Holsteins in order to breed milk-producing stock. They also recommended grazing livestock in predetermined fields to ensure better control of feeding.

Vargas was advised to continue his multi-purpose use of the land. He still plants rice, cassava, corn, and beans, and has his pigs,

poultry, and 20 or so oxen and cows. Except for milk production, his farming operation for now will essentially be the same as before.

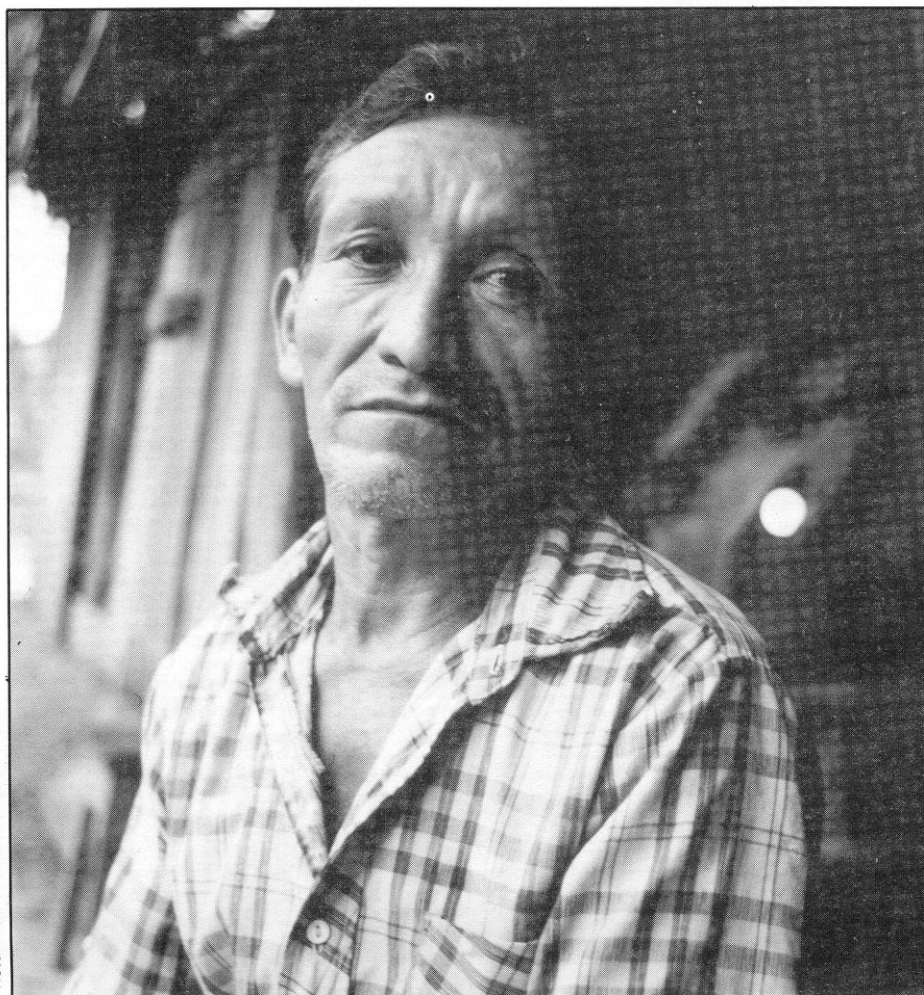
His new pastureland, however, will keep his soil fertile and help shorten production cycles. Instead of allowing trees and underbrush to occupy land for 5 to 20 years, he can now put land back into cultivation in less time.

The new pastures containing legumes (*Kudzu*, *Braquiaria*, and *Andropogon*) will help prevent weeds from taking over grazing areas and making them unproductive. As a result, Vargas may no longer have to open up new land to maintain production. He will be able to grow his rice closer to his house and the highway, thus saving himself the laborious job of moving his harvest over several kilometres of muddy wagon tracks.

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Many people around the world could benefit from incorporating new techniques into their farming operations. A total of 200 million farmers worldwide farm on land cleared by burning. Four-fifths of all arable land in Peru's Amazon region lies fallow.

For IVITA researchers, this project has been a true test. For years they had worked at their station developing new methods and techniques. They wanted to see if this technology could be adapted to the special needs and conditions of local farmers. "A genuine exchange took place," says senior IVITA researcher Guillermo Meini. "We observed their system of production and they studied ours. For us, this was the only means of verifying our research; for them, perhaps the only way of getting out of their predicament. Everyone benefited."



*Vargas needed to turn his "fundo" into a more viable and secure operation.*