

NORTHEAST INDIAN FARMERS AND CONSUMERS BENEFIT FROM NOVEL SEED TECHNOLOGY

POTATO FARMERS LOCATED IN INDIA'S POVERTY-STRICKEN NORTHEAST ARE BEGINNING TO REAP IMPORTANT BENEFITS FROM A SEED PRODUCTION PRACTICE THAT DRAMATICALLY INCREASES YIELD AND ELIMINATES THE NEED TO TRANSPORT TONS OF CONVENTIONAL TUBER SEED ACROSS RUGGED MOUNTAIN TERRAIN

True potato seed technology, which some observers believe was once used by the ancient Incas, is helping to resolve a series of longstanding problems and is providing significant cash income to the rural poor in northeast India, an area sometimes referred to as the Seven Sister region.

In Tripura, one of the Seven Sister states, women entrepreneurs working through self-help groups are opening bank accounts with the income earned from the sale of high-quality potato seed. Using TPS, or true potato seed (see *True Potato Seed*, page 65), Tripura's women are generating thousands of tons of potato seed each year and selling it to farmers eager to profit from yield increases that easily approach 35 tons per hectare, twice the national average. The quality of the women's product is said to rival the best seed available on national and international markets.

In the past, Tripura's state government purchased about 1,000 tons of certified seed tubers each year from sources outside the state and sold them to farmers at subsidized prices. The imports cost about 2 million rupees (US\$44,000) per year—a considerable sum in northeast India—but met only about 25 percent of the state's potato seed requirements.

The TPS hybrids used by the women of Tripura were developed in the 1990s by CIP scientists working in collaboration with researchers from India's Central Potato

Research Institute (CPRI), a longtime CIP collaborator. Approximately 30 percent of the 90,000 tons of potatoes grown each year in Tripura are said to be produced using TPS.

“Tripura’s success with TPS,” says researcher Sarath Ilangantileke, “is largely due to the savings and profits it provides to farmers. At the same time, local production of TPS solves a longstanding dependency on expensive and difficult to transport tuber seed.”

Ilangantileke, CIP’s Regional Representative for South, West and Central Asia, notes that TPS cuts production costs in half and is quickly finding a niche as a low-cost, high-quality alternative in places that lack the roads and the infrastructure needed to produce or distribute bulky tuber seed.

THE SEVEN SISTERS

Ilangantileke’s description is true not only of Tripura, but portrays much of the area covered by the Seven Sister states. A classic example is Nagaland, a remote tribal region of 20 million people, many of whom depend on slash-and-burn agriculture for subsistence.

Among the 16 ethnic groups that reside in Nagaland’s rugged mountain terrain, potato is a major part of the diet. In recent years, however, potato production has declined steadily because of the scarcity of quality seed tubers.

FARMERS IN NAGALAND HAVE BEEN QUICK TO ADOPT TRUE POTATO SEED AS A VIABLE ALTERNATIVE TO COSTLY, DIFFICULT TO TRANSPORT TUBER SEED.


“Nagaland does not produce potato seed,” says Ilangantileke. “The farmers depend on outside sources for their planting materials.” In the past, this has meant relying on tuber seed transported across 1,700 kilometers of mountain roads, from places as far away as Shimla in the north-central part of India.

According to Supong Kietzar, Nagaland’s Director of Agriculture, the two tons of tuber seed needed to plant a hectare of potatoes costs about US\$450, well beyond the means of most local farmers. Although the state government subsidized seed costs until 1999, those subsidies have since been withdrawn.

To compensate, in 2001 the State Agricultural Research Station (SARS) began experimenting with TPS produced in neighboring Tripura. Kietzar reports that in on-farm trials, SARS researchers recorded yields of more than 20 tons per hectare, nearly three times the amount produced by farmers who planted their crop with tuber seed.

“TPS is well suited to conditions in Nagaland,” comments Ilangantileke. “It’s easy to handle and





TRUE POTATO SEED, OR TPS, IS PRODUCED IN BERRIES THAT GROW AMONG THE PLANT'S FOLIAGE.

TRUE POTATO SEED

TPS—true potato seed—is harvested from the berries that grow among the foliage of potato plants. An average plant produces dozens of berries, each of which contains hundreds of tiny seeds.

Similar in appearance to tomato seed, TPS is usually sown in seedbeds three or four weeks prior to the potato planting season. The plants in the beds produce small tubers, sometimes called tuberlets, which farmers plant in the field much as they would conventional seed tubers.

This practice sidesteps much of the drudgery involved in handling heavy seed tubes, provides farmers with vigorous disease-free seed, and eliminates the need to store part of the previous year's crop for following year's planting. (Many of the production problems that potato farmers experience result from the deterioration of the seed tubers they save for planting, storing them for eight to nine months in inadequate storage facilities.)

TPS tuberlets, which are normally no larger than 2.5 centimeters in diameter, rival the best tuber seed produced by commercial seed companies. CIP-derived TPS hybrids are now widely used in Egypt, India, Indonesia, Nicaragua, and Vietnam.

move around, and it's virtually free of diseases and pests. Fifty grams of TPS contains about 80,000 seeds, an amount sufficient to produce enough tuberlets (see *True Potato Seed*, page 65) to plant a hectare." Farmers who use conventional tuber seed, Ilangantileke points out, have to plant approximately 2 tons of tubers to cover the same area.

According to Kietzar, the results obtained to date in Nagaland are so encouraging that the state government has begun sending SARS staff to Tripura for training in TPS production. The courses are conducted with assistance from the CIP Regional Headquarters in New Delhi.

In addition, the University of Nagaland recently announced plans to partner with CIP in an effort that will focus on TPS, as well as conventional seed development and varietal trials. According to Dr. G. B. Sharma, the University's Vice-Chancellor, a CIP liaison office will be established on the University campus sometime before the middle of 2004. The partnership is expected to accelerate technology development relevant to the needs of local farmers and promote better linkages with nongovernmental organizations and community-based organizations.