



## THE GREEN REVOLUTION

# The rich get richer

**Abundant crops, a result of successful plant genetics, bring Asia blessings and problems**

by Barbara J. Culliton

A one-lane highway stretches north from New Delhi to Pantnagar in the foothills of the Himalayas. Cathedral arches of giant trees shade travelers from the blistering sun that bakes half-naked farmers plodding behind teams of water buffalo in open fields. Bullock carts, guided by dozing drivers, drift to the side of the road to let an occasional car or battered truck pass by.

In the villages, peasants sell fruit and grain and warm Coke from narrow stalls and open carts. At night, women cook over dung fires that furnish light as well as heat. The scene is repeated throughout India as it has been for centuries.

**But today,** the traditional face of rural life conceals a revolution. Though water buffalo and bullocks remain the usual source of horsepower, the fields they plow are planted in new, genetically superior grains (SN: 7/6, p. 19); wheat in the north, in the fertile Punjab, and rice in the south. The new strains yield 10 times the harvest of traditional grains.

From scientists at centers like the Uttar Pradesh Agricultural University at Pantnagar, and the International Rice Research Institute in the Philippines, farmers throughout Asia are learning the advantages of planting the improved strains and how to grow them according to modern agricultural practices, using heavy doses of fertilizer. And the word is spreading. In 1964-65, only a few hundred acres of Indian soil

were planted with new varieties. More than 20 million acres were planted with high-yielding grains in 1967-68. Plans call for 40 million acres next season.

Official U.S. estimates predict that India will be self-sufficient in staple foods by 1974. The pattern of success is matched throughout Asia. Already West Pakistan, much of which is in the Punjab, claims self-sufficiency. For the first time since 1903, the Philippines this year grew enough of its staple, rice, to feed herself. Ceylon produced 13 percent more rice than ever before. Nepal sent 500,000 tons to wheat to India.

The forces behind this green revolution, according to Dr. Lester R. Brown of the U.S. Department of Agriculture's International Agricultural Development Service, are so powerful and so pervasive that "there is little prospect that it will abort." A constant visitor to Asia, he credits "solid technological progress" and new political commitments from Asian governments with the success. "Shortchanging agriculture," he says, "is no longer either feasible or fashionable."

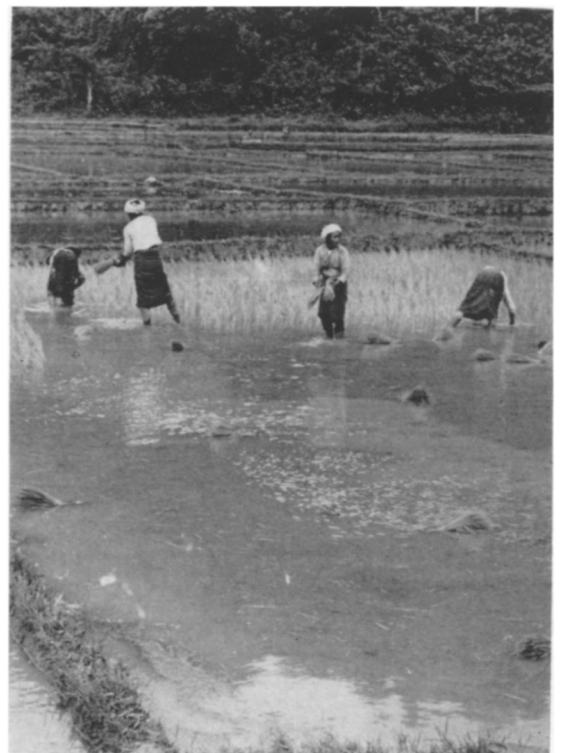
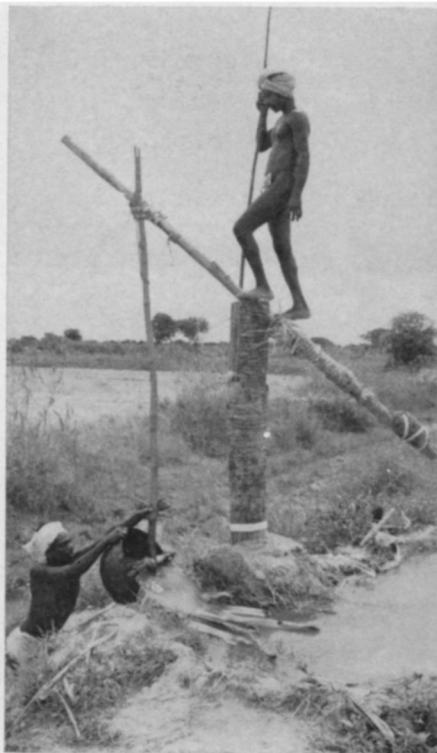
But the green revolution means more to Asian nations than more food. It is rapidly producing changes in the political, economic and social lives of developing nations.

Asian nations self-sufficient in food portend significant changes in trade patterns, for example. Dr. Clifton R. Wharton of the Rockefeller Foundation-supported Agricultural Development

U.N.

*In India hand laborers winnow wheat which grew plentifully last year while a Filipino rice farmer (top) gathers the rice grown from high-yielding grains that made his country self-sufficient in that staple for the first time since 1903.*

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*In Tanjore, modern and ancient irrigation methods exist side-by-side.*

*Burmese farmers grow a surplus.*

Council warns that problems must be anticipated now. "Miracle rice, miracle wheat and miracle corn have already made startling advances, but are we paying sufficient attention to the consequences of these efforts?" he asks. "If rice-deficit nations of the region become self-sufficient, what will happen to the rice-surplus nations like Burma and Thailand whose economies are heavily dependent on rice exports?" If Asia begins exporting on a large scale, there will be pressures in Japan and within the European Economic Community to reduce subsidies to farmers and permit imports. U.S. farmers whose grain now goes to Asia will be out of a market.

But these are projected problems. Within nations, particularly India, the effects of the green revolution are showing already—after progress that has really come only in the last five years. "The green revolution," Dr. Wharton points out, "means a redistribution of wealth within the country." In effect, the rich are getting richer, and though the poor are not getting poorer, the gap between the rich and poor is widening—in some places to the breaking point.

In the Tanjore district of rice-growing Madras State, progressive farmers are reaping high yields and high profits from new rice strains. Laborers are demanding a higher percentage of those profits and have unionized. Last December, a violent feud over wages led to the burning of 43 women and children. Each side blames the other for the killings and the unresolved wage dis-

pute has gone to court. Says Dr. Ronald W. Jones of the U.S. Agency for International Development, "It is the first (Indian) situation I know of in which laborers are sufficiently organized to take a wage-rate dispute to court. It's a classic labor-management dispute."

While laborers are organizing, farm owners are doing likewise, in an effort to gain a strong political voice. "For the first time," Dr. Jones observes, "they know what they want and can speak together." Among the things they want are favorable tax structures so that the Central Government does not reap all of their profits in taxes.

"Agricultural developments are leading farmers to a new concern with politics and their place in society," says Dr. M. S. Swaminathan, director of the Indian Agricultural Research Institute in New Delhi.

But the farmers who speak with one voice are a small minority of Indian farmers, a fact which gives rise to the need of Government intervention in other sections as well. Twenty million acres farmed by modern methods demand new seeds, heavy inputs of fertilizer, pesticides, machinery for efficient planting and harvesting, well irrigated land and, for profit, quick access to the market place—in short, money. The availability of water and the quality of the land, plus the skill of the farmer himself, to begin with, keep many of the small farmers, tilling India's other 80 million cultivated acres, outside the revolution. And sheer lack

of money to buy grain and fertilizer works against those whose credit is virtually nonexistent, who cannot borrow from established credit institutions and who are forced to borrow, if at all, from local money-lenders who may charge 20 percent to 100 percent interest. There is talk of a subsidized Government corporation to meet the need, but whether or not it will materialize is uncertain.

In the meantime, the majority of Indian farmers will continue to struggle with wooden plows and traditional, low-yielding crops that sometimes provide enough food for their families and occasionally yield a small residue that goes to market, while the few move into the 20th century.

"It may mean," Dr. Wharton declares, "that the small, basically subsistence farmer will lose his market altogether." And, he points out, even if the progressive farmers produce enough food quantitatively to feed the entire nation, unless the transportation and storage systems improve significantly, it may not be possible to move grain from one section of the country to another. At present, authorities agree, the Indian Government is paying little attention to these problems.

Today, for example, port cities are fed by grain imported from foreign countries including Thailand, Burma and the U.S. Unless there are adequate means for getting food from one place to another, an abundant harvest of wheat in the Punjab will mean little to residents of Bombay and Calcutta. ◇



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