

Blanckenburg, Peter

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Farming Development Problems

by Professor Peter von Blanckenburg, Berlin *

Until the middle of 1972, general optimism in assessing food supplies for the world was widespread. But since then, a more conservative view and a certain uncertainty in forecasting prospects have replaced the former high hopes. One of the crucial reasons for this change have been developments in India.

Up to mid-1972, successful efforts for increasing food production over a number of years seemed to have banned for good the spectre of recurrent famine in the second-biggest nation of the world — India. But the crop failure of 1972 appears to have replaced the earlier radiance by sombre clouds over the scene. Already in recent years, there had been critical voices which warned that earlier crop increases could not be permanent, and these have now been proved correct vis-à-vis the experts who had believed in a secular success of a farm policy joined to the introduction of new, high-yield grain varieties and the technology their cultivation requires.

Rising Food Production

After the disastrous harvests of 1965/66 and 1966/67, Indian farm output, and especially its food grain production, had registered striking increases. As shown in Table 1, between 1967 and 1971 the grain harvests showed higher growth rates relative to overall farm output increases. The trail-blazer was wheat, whose yield more than doubled in four years, whereas millet made the poorest showing. Rice, which is the most important of all food grains by volume, hovered midway between the extremes, regarding speed of expansion.

In 1970/71, food grain output reached 108 mn tons, thus beating all previous records. At the beginning of 1972, Indian government stores held 9 mn tons of grain. This was one of the main reasons why the Indian Government gave notice that it no longer needed relief food supplies under PL 480, and this kind of aid was consequently withdrawn in 1972. But farming suffered a new setback in 1971/72: during that year, food grain harvests totalled 104 mn tons, and the forecast for 1972/73

dropped even to 100 mn tons, about the same as the crop total recorded for 1969/70. By the beginning of 1973, government grain stores held only 3 mn tons, and the authorities had to plan quickly for buying at least 2 mn tons of grain in the world markets in 1973.

Table 1

Indian Food Production

(Index values, based on 1961-65 averages = 100)

	1967	1968	1969	1970	1971
Total Farm Output	104	109	113	119	122
Food Production	104	110	114	121	122
Food Grains	109	117	121	130	136
Wheat Harvest	102	148	167	179	208
Rice Harvest	107	113	115	121	125
Millet Harvest	115	103	115	123	120
Corn (Maize) Harvest	137	125	124	162	153

Source: FAO Production Yearbook, 1971; FAO, The State of Food and Agriculture 1972, Rome, 1972.

The main reason for India failing to continue its grain harvest growth was the weather, which was particularly unfavourable in 1972. That the monsoon did not come, as expected, in 1972 has not only caused severe losses of growing grain plants but also a water shortage in the whole country, thus reducing the output of hydroelectric power. In recent years, many Indian wells had been fitted with electric pumps, so that even where sufficient subsoil water exists water supplies were sharply reduced.

Introduction of New Wheat Strains

As already stated, these developments have revived the discussion about the crucial factors which determine the development of farm output. The actual crop increases were explained with the introduction of new, high-yielding varieties of grain, which have become available in the late sixties. In the case of *wheat*, these are new hy-

* Institut für ausländische Landwirtschaft, Technische Universität, Berlin (Institute of Overseas Agriculture, Technical University, Berlin).

Table 2
Indian Areas under Important Food Grains and Their Yields 1961-65 and 1971

	Area		Changes in p.c. against 1961-65	Yields per hectare			Overall Production		
	1961-65	1971		1961-65	1971	Changes in p.c. against 1961-65	1961-65	1971	Changes in p.c. against 1961-65
	mn ha			100 kg per ha			mn t		
Rice	35.6	38.8	+ 9	14.8	17.1	+16	72.7	66.5	+ 25
Wheat	13.4	17.9	+33	8.4	13.0	+55	11.2	23.2	+108
Millet	36.5	38.0	+ 4	9.1	10.3	+13	16.5	19.8	+ 20
Corn (Maize)	4.6	5.8	+26	9.9	12.0	+21	4.6	7.0	+ 53

Source: FAO Production Yearbook, 1971.

brids grown by CIMMYT, the International Centre for Plant Growth in Mexico, which were adapted to Indian farming conditions, mainly by the Indian Agricultural Research Institute in Delhi. The new strains require much more water, and irrigation has to be precisely timed; they also demand more fertilizer and more care, whilst the quantities of insecticides and pesticides needed remained unchanged. Because of their competitive advantage and the lack of problems in their introduction, the new varieties have made a fast advance into the wheat growing areas of North India. In 1970/71, 5.9 mn ha (about 16.8 mn acres), or 33 p.c. of the whole area under wheat, had been sown with high yielding varieties (HYV).¹ Areas under HYV are concentrated mainly in the states of Punjab, Haryana, and in parts of Uttar Pradesh. Through the new farm technology, the improvement of financial results caused by it, and the gain in purchasing power, these states experienced considerable economic growth.

No single other type of grain was so successful as the new wheat. The new varieties of *rice* are based mainly on the work of hybridisation carried out in the International Rice Research Institute (IRRI) in Los Banos in the Philippines. Their introduction to India has proved more difficult because, under existing conditions of production and marketing, they have been by far less superior to existing strains in India than the new to the old type of wheat. They require great care in handling and much more water than the old types, and they suffer also from the biologically caused disadvantage of having cooking qualities and a taste which are contrary to established habits of the consumers. As the many small rice farms use a major part of their crop for pure subsistence, these shortcomings are important. IRRI has recently started to market a number of novel strains of rice, which show more resistance to plant diseases and are likely to be more acceptable to consumers. Efforts to adapt the new rice varieties

to Indian conditions, which have been undertaken on Indian soil, point in the same direction. In 1970/71, 5.5 mn ha (nearly 15.8 mn acres), or 15 p.c. of the total area under rice, had been sown with HYV. Incidentally, HYV do not only compete with the traditional local strains but also with so-called improved varieties. Improved varieties are the result of hybridising traditional local strains, and their potential yield is midway between older local and high-yield varieties. Improved varieties have gained much ground in many areas.

Modest Progress of Other Food Grains

As to the remaining food grains, progress through hybridisation has been decidedly meagre. From some types of *millet*, including sorghum (Jowar) and pennisetum (Bajra), high yielding hybrids have been developed, but from both of these and from eleusine (Ragi), improved varieties have also been grown. *Corn (maize)* has also been successfully hybridised. But high-yield varieties of all these grains have been less successful in India than improved strains.

Least progress has been made by food *pulses* for shelling, whose cultivation usually takes place in rain-moistened fields. Of them, for example, the chick-pea (Gram) is an important protein food for the small farmer and other poor people. Pulses as well as some other crops (e.g. cotton) have had to cede large acreages, in some areas, to the expanding wheat, rice, etc., fields. Since their yields per acre have risen only slightly, total food output has not increased in recent years. Least progress has been made in growing cattle, a fact which, at last, attracts greater attention of the authorities and of research workers. But there is no space here for discussing this problem.

The question has been raised whether the frequently-used sobriquet of a "Green Revolution" may be justly applied to modern overall yields of Indian farming, or at least to the achievements of

¹ FAO, The State of Food and Agriculture 1972, Rome, 1972; p. 89.

raising food grain harvests. If by a revolution is meant a rapid and fundamental change, overall growth of farm production in India entitles us to doubt the justification of such fulsome praise. Through statistical reasoning, it becomes clear that hardly a difference can be found in India between the trends of growth in overall Indian food grain harvests before, and after, 1967. Quickest acceleration of growth, naturally, is shown for wheat. On the other hand, rice output produced a flattening of the growth curve after 1967. Likewise, other nationwide farming data, for example, on fertilizer consumption or investment rates, fail to show any significant changes in trends after 1967.

A Green Revolution?

Does this, then, mean that India has not experienced any kind of Green Revolution, as some persistent critics maintain? If the term of revolution is understood as all-embracing, fundamental, and rapid change in depth, then, indeed, the author cannot but agree that events in Indian farming over the last ten years do not deserve the name of a revolution. One of his own studies of conditions in a South Indian rice-growing and a North Indian wheat-growing area² confirms that technological developments in Indian farming have not been revolutionary, but that much more progress has been achieved through gradual, slowly plodding improvements in certain branches of production than through an all-pervading innovation process.

On the other hand, it can be confirmed that India has entered upon a new phase of agricultural-technological change which is structurally different from all that has happened in the past. But this is not true of farming as a whole: distinctions have to be made by groups of products, regions, and social strata. The deeper the breakdown of data, the clearer will be this diagnosis. Differences by product groups have already been

underlined. Distinctions by groups of producers will be discussed further below.

Of great significance are also the differences *from one region to the next*. The largest step forward was achieved in wheat growing in the North West, in Punjab, Haryana and the western parts of Uttar Pradesh, due to their favourable ecology and to technical advances in wheat raising. In many other states, regions showing scant progress lie side by side with others whose farm output has made conspicuous advances. Parts of them are those districts which were included in the Intensive Agricultural District Programme from the early sixties onward, and as a rule, they are areas with artificial irrigation. There is an overall effect of the fact that most development efforts have been channelled into irrigation farming. Much weaker planned work has been directed towards areas with rain-moistened arable, whose cultivation is, under all circumstances, more difficult. And in many states, special programmes for dry farming areas have only recently been initiated.

Changed Behaviour of Producers

In discussing the kind of new developments, it must not be forgotten to differentiate between harvest increases through extensions of the arable, and those caused by higher yields. As in most LDCs, growth achieved for many important crops could be explained, up to the beginning of the sixties, by an enlarged arable surface. But in recent years, higher harvest yields push into the foreground. As can be seen from Table 2, during the sixties, yields per hectare have mostly grown much more rapidly than the areas under grain. Over and above more investments in kind into the soil, a contributory cause of the growth in total yields has certainly been the improved expertise of many farmers, who have profited from better training and from advisory services. A great number of individual observations have proved that there is a marked change in the behaviour of the producers. They have more confidence in technological progress, and even smallholders are

² P. von Blanckenburg, Who Leads Agricultural Modernization? A Study of Some Progressive Farmers in Mysore and Punjab. In: Economic and Political Weekly (Bombay), Vol. No. 40, Review of Agriculture, Sept. 30, 1972.

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progressively more willing to take part in the market. This is not directly due to the introduction of new grain varieties but to the many years of advice given, to the aid of Community Development Agencies, to specialised support programmes and, last not least, to the government's price policy which favours the farmers.

Consequences of the New Agricultural Policy

All that has been achieved has also eased the national *food situation*. Self-sufficiency in home-grown foods seems near — unless a new series of crop failures is in the offing. But a better equilibrium in the food balance does not yet mean a thoroughgoing improvement of food supplies, especially for the lower strata of Indian society. What food they can buy ultimately depends on their purchasing power available for buying food, and this has increased only fractionally for an overwhelming part of the population.³ Only a higher employment rate—though this is made more difficult by the swift rise in population figures—and higher productivity can lead to significant improvements here.

From time to time, it is argued that the Green Revolution will lead to the displacement of tenant farmers and to a release of workers through mechanisation, and thus to a *deteriorating labour situation*. In the medium and long term, it is true that farm machinery will make farm workers superfluous. For the time being, however, this expectation is disproved by actual experience. On the contrary, up to now, more "hands" are now required because of the new developments, though this effect may not be powerful enough. It is true that, especially in the north western wheat-growing areas, mechanisation is definitely increasing significantly. Apart from irrigation pumps, peasant farmers are buying small sowing machines, mechanical threshers, and quite a number of tractors. Virtually the only workers who become redundant are those replaced by threshing machines. On the other hand, it is more important now that the new technology requires more workers than the old one, which leads to a higher employment rate. Moreover, the secondary employment effect must not be underrated, as it comes to fruition in the central areas of the Green Revolution, through the greater affluences of some of the farmers. Investigations in Uttar Pradesh and Punjab have, in fact, proved unambiguously that the demand for industrially-produced consumer goods and services has been greatly

enlarged there, thus increasing employment in the secondary and tertiary sector of the economy.

Income Distribution and Social Tensions

The most hotly contested question is whether *income differentiation* caused by the new developments will have *serious social effects*. It is frequently stated that the Green Revolution will make the rich richer and the poor poorer, and increasing income differentials would exacerbate social tensions. In view of the immense variety of social conditions in India, caution about such generalisations is advisable. It is certainly true that different rural strata are participating in the new developments to a different degree. Those who have gained least from them are the workers—there are about 50 million of them with their families—because widespread rural underemployment has prevented their wages from rising more than fractionally in most parts of India. Because of the strong recent increase of food prices, the standard of living may have declined for many farm workers. Among peasant farmers, as a whole, larger owners often adopted innovations first wherever there was a significant advance in development, which means they have benefited more from them than the smallholders. On the other hand, at the present time, differentiation right across the board of all sizes of farms seems to increase among larger, medium-sized, and small farms and their owners alike, according to whether they are more, or less, progressive.⁴ This means that large farmers will probably not retain a general superiority in development.

Incidentally, income differentials between progressive and traditionally operating farmers have not increased recently to such an extent that true polarisation or a two-way development are to be feared at present. It is a great question whether *social tensions* have grown at all in the countryside, in this context. Wherever rural unrest occurred in past years, it broke out before the introduction of new agricultural developments or took place in areas so far untouched by these developments. Nobody has yet been able to prove in India a connection between this unrest and the Green Revolution.

In conclusion, it must be admitted that the problems of India's rural development have not yet been overcome but that, on the other hand, agricultural improvements have brought about, on balance, more benefits than harm. In other words: if this kind of progress had not happened, none of the economic and social difficulties would have been mitigated, but in many areas, existing troubles would have grown worse.

³ Here is not the space to deal with this in a wider context, but much pertinent material is contained in a study by V. M. Dandekar and N. Rath, *On Poverty in India*. Economic and Political Weekly (Bombay), Vol. 6, Nos. 1 and 2, 1971.

⁴ P. von Blanckenburg, op. cit.