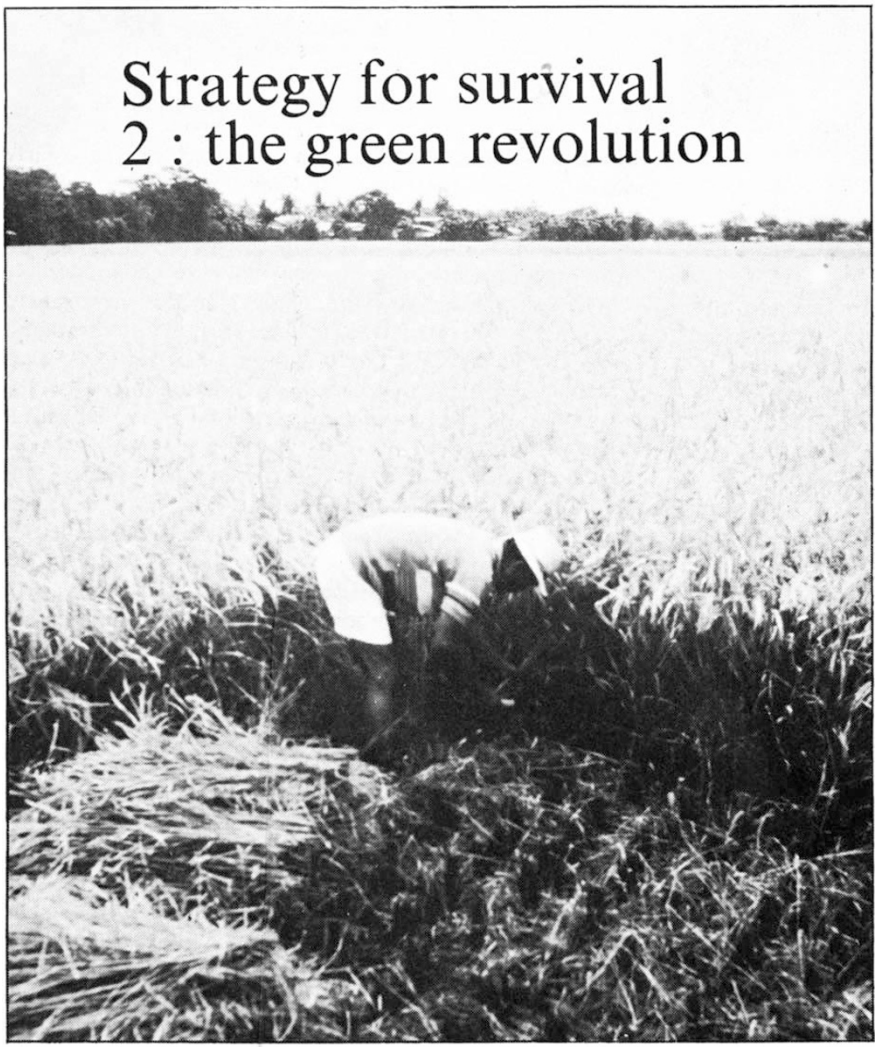
Strategy for survival 2 : the green revolution



David Spurgeon looks at a report soon to be published on what the farmers at the grass roots really feel about the Green Revolution.

ALTHOUGH in simple terms of production gains the Green Revolution has been an undoubted success, it has produced a harvest of reproach as well as praise. Critics have maintained that the introduction of the new high yielding varieties of wheat and rice together with the necessary package of technological practices has helped the rich get richer while the poor get poorer. They predicted that it would lead to the mechanisation of farms, reduction of opportunities for labour, concentration of land holdings and other factors which would increase inequities between rich and poor. All this was said without much in the way of factual support.

Now, at last, some real evidence is beginning to come in from the fields and farms of Asia. It appears in the results—soon to be published—of studies of 2,428 rice farms in 36 villages located in 14 separate areas of six Asian countries.

The research, funded by Canada's International Development Research Centre and carried out through the International Rice Research Institute and a number of Asian institutions, was to determine just what changes had occurred in the wake of the introduction of the new rice technology. Answers were sought to such questions as: How extensively have the new varieties been accepted? Who is benefiting from the new technology, and in what way? How has the new technology affected employment? What have been the effects on social structure? And what are the major obstacles to further growth in rice production?

One major finding, in case anybody was still in doubt, was that the Asian rice farmer is not a stubborn traditionalist thoroughly resistant to change. Certainly he responded to innovation in a way that would minimise his risk, but respond he did: in 29 of 32 irrigated villages, 90% or more of the farmers reported that they had at least tried the modern varieties (which as used here means varieties introduced since 1965). Adoption rates vary from country to country, but in Pakistan, for example, the area planted with the new rice varieties was 42% of the total only five years after their introduction into that country.

Another important finding was that both family and hired labour increased (and not the reverse, as predicted) in all of the study sites except in two Pakistan villages, where practically no labour changes were reported. This was so despite the adoption of the tractor in several places. Malaysian villages had the highest proportion of those taking on tractors, but pre-harvest labour decreased there nonetheless. In fact, the villages where labour-saving technology had been most widely adopted after introduction of the new varieties also reported the largest number of farmers who had increased their employment of family and hired labour. Apparently any savings in labour were more than offset by the labour requirements of the technology itself. And the introduction of the new varieties seems to have provided more, rather than less, employment to landless farm labourers.

On the question of increased income from higher yields the evidence varies. Income definitely increased for some farmers: in one area of the Philippines, the value of the farmer's harvest in both wet and dry seasons was almost three times what it was before introduction of the new varieties. Costs of production also increased, however, because more fertilisers and pesticides are required for the new varieties. Even then, farmers' incomes were often greater than they had been.

Yet, subjectively, many farmers did not see themselves as any better off. One researcher pointed out that this was partly because farmers and their families had eaten more rice themselves since the introduction of the new varieties while not seeing this as a form of profit, which of course it is. Another suggested that previous losses had left farmers with long-standing debts that could not be entirely offset by a single season's gains. Several researchers reported specific economic gains as a result of the new varieties and detailed how the gains had been spent.

Consumer goods figured high among purchases made by the successful farmers. These included bicycles and radios, sewing machines, house furnishings and farm implements. Many spent more on food and education than they had before, whereas others paid off debts with their increased profits.

Not all farmers felt the same way about their status after the introduction of the new varieties. Many saw themselves as better off but a few even thought they were in a worse situation.

The views of the researchers also differed. One report, from India, seemed to confirm the critics' opinions.

It maintained that "the new technology helped to tighten the grip of the big farmer on rural economy" and that, although there was no firm evidence of deterioration in living standards of small farmers, small tenants and labourers, "relative distribution of incomes appears to have worsened."

Yet in an analysis of the whole picture, Celia T. Castillo, of the University of the Philippines, said: "From the data, it is obvious that tenants and small farms are better off with modern than with local varieties as far as their own assessment of increase in rice profits and level of living is concerned. Of course, owner-operators and large farmers were much better off than tenants and small farmers. How else could it have been? It is truly asking for a miracle to expect that the new seeds would bring about social equality where centuries have failed to produce a dent on institutional rigidities."

Dr Castillo says emphasis on the relative gains made by the rich and poor farmers has led to a neglect of another issue—farmers' gains relative to where they were before the advent of the new technology. If one becomes preoccupied with the income distribution issue, one is left with the impression that tenants and small farmers would have been better off in terms of incomes and living standards if they had stuck with traditional varieties, she says. And if this were the case there would be no rationale for spreading the new seeds more widely. But it is not the case, according to the data.

In another analysis, Randolph Barker and Teresa Anden, of the International Rice Research Institute, state: "It is clear that a technology that requires more cash inputs will tend to reinforce this [income distribution] inequity in some of the study villages. One cannot, of course, expect technological innovations to correct serious inequities in access to and benefits from resources. The only mitigating step that can be taken is to attempt to reduce cash requirements, particularly for chemicals, by building more resistance and tolerance into the seed itself. Increasing emphasis is being given to this problem in rice research."

The necessity for such research was illustrated in both West Java and the Philippines. In the former, about half the wet season crop was destroyed by gall midge, and in the latter tungo virus caused similar damage. Farmers in Java noticed that attacks were more severe on the available new varieties, so they reverted to local ones, while in the Philippines resistant modern varieties were available — and were used.

Barker and Anden conclude, from the responses of farmers to a question about their preferences, that local varieties will remain popular in some areas until modern ones are developed that are suitable to local environmental conditions, or until the strong price preference for local varieties changes. They also note that government policy has been a significant factor in determining the speed with which the new varieties have become available and accepted, if such policy has influenced price and availability.

Dr Castillo pointed to another notable finding of the study: "Although high yield capacity is the characteristic most associated with the new varieties, in many villages where adoption has taken place, their yields did not exceed those of the local varieties; they were adopted because of their shorter growing period and non-photoperiodism." Many farmers used the new varieties because they could provide two crops instead of one. This second crop sometimes replaced one of pulses and vegetables, however, and the impact of this on the protein-poor diet of the farm family will have to be further analysed.

A clear need emerged for improvement of several factors if the full potential of the new varieties is to be achieved: availability of credit and the necessary infrastructure through which seeds, fertiliser and pesticides can be obtained; irrigation and flood control; and suitable government policies regarding price, information distribution, and so on.

The study should provide a good factual base from which to consider not only what changes the new rice technology has made in Asia, but also what changes are needed for the future. Those involved in it consider, however, that an equally important result—if not a more important one—will be the strengthening of social science research in the region. In their eyes it is not just another research project; it is a device for developing a network of relationships among Asian social scientists concerned with similar problems. □

Land preparation and harvest in the Philippines.