

FOCUS

Quiet Revolution in Rice Cultivation

In the decade of the 1960s, economists and agricultural economists mainly in the US published numerous theoretical and empirical studies on transforming LDCs' (traditional) agriculture through technological change. An outstanding study published in 1964 was by Nobel laureate in economics T W Schultz, where he hypothesized that there are 'few significant inefficiencies in the allocation of factors of production in traditional agriculture'. This hypothesis has been widely tested by researchers and generally found to be true. It has been maintained so far by others that the most promising means of increasing the output and income of peasant farmers is the introduction of new technologies as extra factors of production. In real terms these technologies include high yielding variety seeds, better breeds of livestock, more efficient implements and machines, irrigation, chemical fertilisers, weedicides, insecticides and improved human resources in agriculture.

Coincidentally, during the decade of the 1960s there were 12 international research institutions (such as IRRI and CMMIT) established to develop high yielding variety seeds for grains and other cash crops. Numerous inorganic fertiliser factories were built to sustain the additional supply of fertilisers in demand in LDCs. Similarly, facilities of irrigation and credit availability to innovative farmers of modernised agriculture were provided either by encouraging them to form cooperatives or through individual contact with the supplying agencies.

Almost all developing countries have introduced modern technology in agricultural production during the last quarter of a century. There are two main reasons for this: one, to attain food self-sufficiency for the growing population and two, to increase the supply of raw materials for the newly established industrial sector. South Asia, Indonesia and the Philippines are commonly identified as the cases for the former; and South Korea, Taiwan, Thailand and Malaysia are regarded as the cases for the latter.

This is a revolutionary experience quietly enjoyed by Bangladesh's rice cultivators. However, like other achievements such as population control and micro credit, the achievements in rice cultivation have not perhaps been receiving as much attention of the media and the nation at large. But the time has come to emulate the success stories of agriculture by other sectors.

by Dr Moazzem Hossain

Agricultural technology, however, has been classified into two categories: mechanical technology and biological (or biological-chemical) technology. In general, the mechanical involves lumpy machinery capital which has labour saving effect. In contrast the biological technology depends on divisible inputs such as seeds and fertiliser, and is usually geared to increase output per unit of land.

Introduction of these technologies revolutionised agriculture in the 1970s and 1980s; and was regarded as the 'green revolution'. Numerous studies so far explained the impact of 'green revolution' in South Asian countries including Bangladesh. It has been claimed in the literature that additional production of food grains wheat and rice is the prime success for the 'green revolution' in South Asia. Following the footsteps of 'green revolution', Bangladesh is currently in a middle of a 'quiet' revolution in the area of food grain cultivation, particularly, Boro rice. This paper attempts to provide an outsider's view on this issue.

Growth in Food Grain Production and Productivity

Cropping contributes more than 80 per cent of value-added in agriculture in Bangladesh. The cropping sub-sector's progress, particularly rice and wheat, account, for more than three quarters of value-added in cropping. Therefore, the increase in food grain production is the major source of agricultural growth in the nation. The growth in production of cereals and rice over 1991/92 and 1999/00 has been remarkable. The cereals' production growth over the past decade surpassed the population growth and rice production grew by more than 12 per cent over the same period. Out of the total rice pro-

duction a remarkable achievement has been made in Boro production with almost an annual growth rate of 7 per cent over the last decade. It has been estimated that 26 per cent of the total rice area was under Boro cultivation in 1991/92 and it reached to 37 per cent in 1999/00, an increase of 11 per cent over this period. The production share of Boro currently stands at almost half of the total rice production compared to 23 per cent in 1985/86 and 40 per cent in 1991/92. The recent estimate by the Ministry of Agriculture suggests that the production of Boro rice has increased from 68 lakh metric tons in 1991/92 to almost 110 lakh metric tons in 1999/00.

This is by all means a revolutionary outcome and has been taking place quietly in Bangladesh's Boro rice cultivation. Of course, it was not possible without support of the democratically elected governments since 1991.

It appears that the governments of both Begum Zia (1991-96) and Sheikh Hasina (1996-present) has been giving all our efforts to sustain increased production of Boro rice. Recently, the Ministry of Agriculture has claimed that the present government has achieved a 'zero' food-gap with an estimated production of 243 lakh metric tons of cereals in 1999/00 against an annual requirement of 214 metric tons. All these were possible due to an adoption of modern technology in rice cultivation, particularly, in Boro rice by Bangladesh's peasant farmers. The following figures indicate that the farmers have been adapting appropriately to use modern technology on a sustainable basis. Taking irrigation as an example, while total irrigated area in the country has increased by 13.5 per cent between 1992/93 and 1996/97, for rice crops the increase was by 11.5 per cent and for Boro rice this was

more than 12 per cent. However, over the decade between 1987/88 and 1997/98, the irrigated area under Boro cultivation had increased by more than 40 per cent with an annual growth rate of 4 per cent. This proves various government's support to the farmers over the years.

Adoption of modern technology paid off. The table below taken from one of the studies of this writer (South Asian Economic Development, Routledge, London, 1999) shows the productivity comparisons in rice in four countries of South Asia over a decade. Out of these countries, Bangladesh has achieved the highest productivity growth in rice 29 per cent. This productivity growth is mainly the effect of seed-fertiliser-irrigation technology introduced in Bangladesh during the last quarter of a century.

Self-Sufficiency in Food Grains

The shortages in food grains production made Bangladesh to spend huge foreign exchange on food imports and also dependent on the food aid mainly coordinated by the World Food Programme (WFP). It is in the wake of these developments that food self-sufficiency became a prime objective of the nation. The agenda of gaining food self-sufficiency at national level has been intensely pursued by adopting new technology in agriculture and as a result net cereal imports began to taper off since the 1990s.

Table: Yield of rice (Kg/Ha), 1985-94

Country	1985	1994
Bangladesh	2,196	2,796(29)
India	2,329	2,834(22)
Pakistan	2,350	2,500(6)
Sri Lanka	3,071	3,130(2)

Note: Figures in parentheses are change in per cent

Source: United Nations

Bangladesh although still remains import-dependent for wheat but rice import has dramatically declined in recent years. Bangladesh's deficit has been unpredictable due to the country's vulnerability to natural disaster, particularly flood. In some flood-free good years the country reached close to self-sufficiency, for example, in the years 1992/93 and 1996/97. In 1992/93 the average net imports were only 63 thousand metric tons but in 1994/95 (a flood-affected year), the net imports climbed to 12.4 lakh metric tons. Last two years' bumper harvest (1995/97) brought the country close to a self-sufficiency level, once again. The country is also likely to enjoy self-sufficiency in rice in 2000/01 due to consecutive good harvest over 1999/00. The present management of rice cultivation both at farm and government levels has proved to be undaunted by the unprecedented flood of 1998 and the opposition's prolonged martial campaign in 1999/00. This gives a positive sign towards sustainable growth and commitments to the sector by both farmers and the government. However, it does not mean that there is a room for complacency as maintained by the Minister for Agriculture, Motia Chowdhury. The present achievements are, however, outcomes of accountability of the democratically elected governments to the nation, in general and to the rural electorate, in particular. If efficient management and the political accountability can work side by side effectively, sustainability of rice production could be ensured for a long period to come.

Investment Pays off

Bangladesh has witnessed a doubling of population over the last 40 years. Since the nation's staple diet is rice, the most agri-

cultural investments in the past have been made in increased rice production. During the 1990s the investment in modern technology brought more and more land under seed-fertiliser-irrigation technology. Moreover, the adoption of technology by the peasant farmers became more effective in recent years due to improved agricultural extension and other services to the farmers by the trained agricultural experts via scientific extension programme of the government.

As seen earlier the land under irrigation has increased, particularly the Irri-Boro cultivation increased by many folds over the last two decades. The use and availability of fertiliser have been increasing every year. Effective and expanded agricultural extension services have contributed towards these achievements within a reasonable time. By all means the credit goes to the farmers. Kudos also partly goes to the graduates of agricultural sciences and their mentors at the field level. The country has ultimately started reaping the benefits from its investment in improved training and research facilities in agricultural and allied sciences. This is another example of improved human resources' contribution to development. One must also acknowledge the relentless effort of the Minister Motia Chowdhury.

By all means this is a revolutionary experience quietly enjoyed by Bangladesh's rice cultivators. However, like other achievements such as population control and micro credit, the achievements in rice cultivation have not perhaps been receiving as much attention of the media and the nation at large. But the time has come to emulate the success stories of agriculture by other sectors.

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Development's Last Frontier Eyes Global Market

Without a level playing field developing countries face enormous hardships when their businesses have to compete in an increasingly globalised world. African nations are developing small and medium businesses that could take up the new challenges.

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Francophone countries yet to be picked.

Those who have benefited from Enterprise Africa include caterers in secondary schools and universities, book publishers, hoteliers, the fishing industry, car-spares dealers and low-cost real estate managers.

The overall contribution of small and medium term enterprises to Gross Domestic Product exceeded 30 per cent between 1998-99 parts of West Africa, including Ghana and Mali.

But it has not been all smooth sailing. A recurrent complaint among some Ghanaian and Nige-

Africa: doing business

The UNDP's Enterprise Africa Programme is based on the Empretec Programme, established in Latin America in 1988. Empretec operates in Argentina, Bolivia, Brazil, Chile, Colombia, Ghana, Morocco, Nigeria, Uruguay, Venezuela and Zimbabwe.

Results of Empretec/Enterprise Africa so far:

- 50,000 entrepreneurs
- 10,000 selected, trained and received technical assistance (35% women)
- 80% of the enterprises recorded a sharp increase in productivity, turnover and market share.
- 500 new businesses established, mostly in non-traditional sectors
- 50,000 new jobs created by entrepreneurs who benefited from the programme.

Source: United Nations

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Empretec

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