

FOODGRAINS PRODUCTION UNDER IRRIGATED CONDITIONS—SOME REFLECTIONS*

By
A. B. JOSHI

0.1 The record of foodgrains production in India, since Independence and especially since 1965, has been absolutely dazzling. Yet there are doubts and questions as to whether the most vital and key factor for production, namely, water, is or has been optimally utilised in this country.

0.2 As is well-known, India's foodgrains production was about 55 million tonnes in 1949-50. By 1965, it had risen to 72 million tonnes. The year 1965 is taken as a reference point, because from that year the era of the HYVs (High Yielding Varieties) started. That was the year when semi-dwarf varieties of Wheat and Rice and hybrids of Jowar and Bajra were pressed into commercial agriculture. The first hybrids of Maize were released in 1961. The year 1965-66 marked the end of the Third Five-Year Plan. During the Fourth Five-Year Plan, ending with the year 1973-74, and the Fifth Five-Year Plan, ending with the year 1978-79, the foodgrains production rose, respectively, to about 105 and 132 million tonnes. The target for the Sixth Five-Year Plan was kept at 154 million tonnes; the production by the year ending that Plan (1984-85) was 146 million tonnes. In the penultimate year of the Sixth Plan, however, that is in 1983-84, the production marked upto 150 million tonnes, the highest achieved upto that point.

0.3 The Seventh Plan target (by the year ending 1989-90) has been kept at 178 million tonnes. That is, during the Seventh Plan an additional

*'Technical Address' by the Sessional President at the 40th Annual Conference of the Society held at Banaras Hindu University, Varanasi, on 4th December, 1986.

amount of about 28 million tonnes of foodgrains would have to be produced. In the context of this target, some related figures may be looked at. They are :

(a) During the Sixth Plan, annual foodgrain production during the first three years (1980-81 to 1982-83) hovered around 130, 133, and 127 million tonnes. In 1984-85, the fourth year, the production suddenly shot upon 150 million tonnes, an increase, on the average, of about 20 million tonnes in one jump. It is to be noted that that year, fertilisers came to be subsidised. The annual fertiliser subsidy is currently reported to be of the order Rs. 1500 crores or more. It is already pinching hard the Government financial system.

(b) Rice and Wheat are the principal cereals which have tremendously profited from the Green Revolution which began around the year 1965. Rice production which was around 23 million tonnes in 1950 rose to about 30 million tonnes in 1965-66 at the end of the Third Plan and it further rose to 60 million tonnes in 1984-85, the last year of the Sixth Plan. The Seventh Plan target for Rice is set at 73-75 million tonnes. It is expected to be achieved by putting 3 million hectares more under rice during the Seventh Plan, when irrigated rice would amount to 50% of the total rice area. The story of Wheat is a similar one. Wheat production in 1949-50 was about 6 million tonnes and it rose to about 11 million tonnes in 1965-66, and further to a phenomenal figure of 45 million tonnes by 1984-85, the last year of the Sixth Plan, a more than 7-fold increase in 35 years. The Wheat target for the Seventh Plan, is set at 56-57 million tonnes, which means that an additional production of about 11 to 12 million tonnes of Wheat is to be achieved during the Seventh Plan. As in the case of Rice, the Seventh Plan target for Wheat is to be achieved by increasing the Wheat area by another 3 million hectares and by raising the percentage irrigated wheat area from the present level about 67 per cent, to 80 per cent. Thus both in the case of rice and wheat, the increased production during the Seventh Plan is to be achieved by increase in total area under these crops (by 3 million hectares, each) and by substantially increasing the area under irrigation.

(c) Around 1950, fertiliser consumption in India was a mere 66,000 tonnes. By 1984-85, it rose in terms of nutrients, to 8.37 million tonnes, a phenomenal rise indeed, triggered by the Green Revolution. During the Seventh Plan, the fertiliser consumption is targeted to increase to 13.5 to 14.5 million tonnes (over 1½ times). The fertiliser subsidy, it is expected, will continue to be extended on the same, if not on an extended scale, pinching the Nation's economy even more.

In comparison, the indigenous production of fertilisers is hoped to increase from the present 5.18 to 8.75 million tonnes. The fertiliser imports are of the order of 4.63 million tonnes currently. By the end of the Seventh Plan, they are expected to range between 4.75 to 5.25 million tonnes. In other words, like increased acreages and levels of irrigation to the principal cereal crops, rice and wheat, the Seventh Plan target will need substantial increase in fertiliser consumption; fertiliser imports continuing as of now, or rising to some extent.

(d) During the Seventh Plan, the area under irrigation has been planned to increase from the present level of about 68 million hectares (potential) and 60 million hectares (utilisation) to 81 million hectares (potential) and 71 million hectares (utilisation). That means, the additional foodgrains production (of about 22 million tonnes) would come from an additional 11 million more hectares (figures for utilisation) under irrigation, and through a $1\frac{1}{2}$ times increase in fertiliser consumption.

0.4 Shri B. B. Vohra (ICS Retired), who has been one of our most experienced and original-thinking senior administrators and policy planners at the national level, has written authoritatively, critically, candidly and extensively about the state of irrigation in India. He has rightly pointed out that colossal sums of money have been invested in the creation of vast irrigation potential in the country. In the category of the major and medium irrigation projects, according to him, an irrigation potential of 20.8 million hectares was created during the 35 years from 1951 to 1985 at a cost of Rs. 15,026 crores. In the Seventh Plan, the creation of an additional potential of 4.3 million hectares, of these two categories of irrigation projects is envisaged, with the provision of a sum of Rs. 11,556 crores. Thus, by the end of the Seventh Plan, a total investment of Rs. 27,000 crores would have been made in this sub-sector of irrigation since 1951. According to Shri Vohra, a close look at this chunk of irrigated potential shows that the performance has been far from satisfactory in the past. He further states that the end of the Sixth Plan, the gap between the "potential created" and the "potential utilised", in the major and medium irrigation sector, was as big as 5.2 million hectares, that is 25 per cent of the total potential of 20.8 million hectares created during the previous 34 years.

Shri Vohra further states: "For, its deficiencies and failures (of the major and medium irrigation projects) have now reached such proportions that this sector is beginning to collapse under its own weight. According to a recent study, 156 major irrigation projects have undergone a cost escalation of 562 per cent. Against the original estimate of Rs. 2,156 crores they are now expected to cost Rs. 14,000 crores when com-

pleted. More money will be needed to construct distributaries, canals and to carry out other farm works." Shri Vohra makes a categorical statement that the picture of major and medium irrigation which emerges from such studies can only be described as chaotic.

As regards the question of water-logging and salinisation, Shri Vohra states : "... In the world as a whole, as much irrigated land goes out of production, due to water-logging and salinisation every year, as is brought under production through new projects. . . In our country, precise information on the extent of water-logging is difficult to come by However, according to a recent unpublished World Bank study, water tables are rising at rates ranging from 0.2 to 1.7 metres per year beneath about 3 million hectares of surface irrigated land in Haryana, Punjab, and northern Rajasthan The (World Bank) report recommends that drainage should be provided to the entire 3 million hectares of affected land if they are to be saved from slow death over the next 30 to 40 years".

It is not intended, in this note, to go further on these aspects of irrigation. There are too many lacunae and defects in the system which will take enormous sum of money, and a number of years, to correct the situation. Thus, it appears that it will not be enough just to say that so much more of irrigated potential will be created for enabling the generation of additional agricultural production that the country needs. The increases will not come automatically and so readily.

0.5 The above not-so-bright picture gets even more dim and grim when we consider estimates of levels of crop production attained in our irrigation systems. On the one hand, the examples of Haryana and Punjab illustrate, what can and has been achieved in terms of foodgrains production from our irrigated lands. Thus, in these two States, in the rice-wheat cropping system practised, a total production of 5 to 7 tonnes of foodgrains per hectare per year have been achieved on State-level basis.

But the picture we get of the foodgrains production per hectare per year in the country as a whole, is indeed too dismal and depressing. The paper prepared in September, 1983 by Agriculture Division of the Planning Commission (page 9; para 20) for the Meeting of the Steering Group on Agriculture and Allied Sectors for the Seventh Five-Year Plan, 1985-90, states as follows :

"In spite of the large investments made in the irrigation sector and the phenomenal growth of irrigation during the 30 years, the returns from the investments both in terms of yield as well as financial benefit accrued are very disappointing. Irrigated land should yield atleast 4 to 5 tonnes of grains per hectare per year. However, at present it is hardly 1.7 tonnes on the average. Actual yield levels are lower than the levels of 4 to 5

tonnes achieved in National Demonstrations and where appropriate water management and other cultural practices were maintained at optimum levels”.

“The Public Accounts Committee of the Parliament in its 141st Report (1982-83, Seventh Lok Sabha) have noted with concern the lack of performance in the irrigated commands. Under Section 4.24 of its report, the Committee states :

“In this context, the Committee *note* with concern that so far no in-depth study has been carried out with a view to finding out the productivity level in irrigated areas vis-a-vis unirrigated areas. This is necessary atleast to know the exact extent to which production could be increased by providing further irrigation facilities. . . . An in-depth study in this regard is necessary at the regional and State levels for different crops and under different agro-climatic conditions. . . . Such a study should be undertaken by a multidisciplinary group under the aegis of the Indian Council of Agricultural Research and the agricultural universities. Since the Ministry of Irrigation is also looking after the Command Area Development activity, it will be appropriate that the study is co-ordinated by the Ministry of Irrigation”. The Committee adds that the study should be initiated forthwith.

0.6 The irrigation system in India, in terms of its colossal costs and design and delivery systems and in terms of realisation and potentials for increased production of agricultural and foodgrain crops, is too vast and intricate a juggernaut to enable a precise and incisive critique. Such a critique is urgently needed. But it cannot be made the subject of a brief address.

One could however, venture a statement, albeit simplistically, that even if one-half of an irrigated acreage today, say 30 odd million hectares (which should of course include the 20 million hectares area under major and medium projects, plus some more) were planted to only two foodgrain crops in a year, (no boosts of multiple cropping) and the two crops together produced a total of 4 tonnes of foodgrains per hectare per year, as Punjab and Haryana are successfully doing, 120 million tonnes of foodgrains, out of the 150 million tonnes the country annually produces today, could come only from less than one half of the irrigated acreage alone. But that is just not happening.

It is also necessary to point out that at present we have no system for obtaining statistical information on agricultural and foodgrain production separately in respect of our irrigated areas. Our present information is for the country as a whole, including both rainfed and irrigated areas.

The information comes from the National Sample Surveys mainly and from such other sources and agencies. It is high time that estimates of foodgrain production are obtained, on a continual basis, separately in respect of each of our irrigation command areas.

The purpose of today's address is to seek the help and good offices of the Indian Society of Agricultural Statistics and similar other agencies to generate critical dialogue and discussions on this subject at its ensuing meeting for making detailed and statistically sound surveys in each of these irrigated command areas in the country, in respect of engineering, agricultural—input and other wherewithals and economic aspects of agricultural and foodgrain production.

Although it may be a bitter pill to swallow, let us accept the fact that all is not well with irrigated agriculture in India. The Planning Commission and the Public Accounts Committee of the Lok Sabha have indicated the urgent need for such in-depth studies and critical monitoring of agricultural production and productivity in the irrigation command area projects. They have suggested that I.C.A.R., agricultural university and the irrigation department should jointly mount such in-depth studies and surveys. Such an effort is indeed necessary, but I feel departmental committees will not do. What is needed is a powerful searchlight, a surgeon's knife and a good deal of political will from our policy makers for diagnosing the maladies and for suggesting remedies. This can only be done by a full-fledged, high power and authoritative Commission of Enquiry set up under the aegis of the Government of India.

The Green Revolution in India has been a historic event and a dazzling fact. We must admit this. But reading through the Seventh Plan document, with its *premises*, its granted and guaranteed input resources and the commanded targets, one tends to feel, that the country still seems to be under the influence of a dizzy and benumbing euphoria stemming from the Green Revolution. We have to shed this euphoria and set ourselves steadfastly on the tasks ahead, to be able to achieve something concrete and worthwhile in the years to come. Samuel Taylor Coleridge needs to rise in his grave and warn us that Kubla Khan can no longer continue to decree his pleasure dome in Xanadu!