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TOWARDS AN AGRICULTURAL REVOLUTION

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I am grateful to the President and members of the Indian Society of Agricultural Economics for inviting me to preside over their 24th Annual Conference. I cannot lay any claim to specialisation in any field of knowledge, except that with all sensitive Indians the problems of our agriculture have exercised my mind for years. I have also taken part from time to time in various discussions on our food problem, our agricultural policy and our economic development and have tried, to the measure of my ability, to follow the various arguments and their implications for the future growth of our economy. But I am fully conscious that these occasional activities on my part do not qualify me to discharge the functions of the President at the Annual Conference of such a body of experts as the Indian Society of Agricultural Economics. I therefore take it as a token of your affection for me and a courtesy extended to a man of public affairs currently involved in the field of economic planning.

I am happy to note that this Session marks the Silver Jubilee of the Society and I cannot help recalling on this occasion the great contribution made by Shri Manilal B. Nanavati in nurturing it from its birth into sturdy manhood in this land of infant mortality. It is also in the fitness of things that such a conference should be held in the Vallabh Vidyapeeth, which is a rural university dedicated in many ways to the ideals of the Society.

The Indian Society of Agricultural Economics is one of the most active learned societies in this country which are engaged in extending not only the horizon of knowledge, but also that of service. The many conferences and seminars which have been held in the past under the auspices of this Society have sought to bring the various aspects of our agricultural problems to focus and derive practical lessons for policy. The journal that the Society has been bringing out and the research and training facilities which it has been providing are true to this spirit of cultivating knowledge for the sake of service, of scientific advancement for practical action. The seminar on Agricultural Planning organised by the Society jointly with the Agricultural Statistics Society in November, 1964, was also conceived in this spirit.

The subjects which have been selected for discussion at the Conference this year are also such as to provide ample scope for analytical acumen as well as practical results. For instance, the question of relative prices of farm products is of considerable practical interest today when we are considering ways and means for increasing their supply in the context of a continued food shortage. Similarly,

a discussion on the economics of livestock enterprise is appropriate, not only in view of the current need to increase our livestock resources, but also because this venue would provide the most suitable atmosphere for such a discussion. This district of Kaira where "Amul" is engaged in a pioneering venture in this field exemplifies the constant interplay between the man and the machine which is a portent of the transformation to come in our economy.

I have no doubt that this practical bias of knowledge, this application of science, is what we need most today for the economic transformation of our country, and along with it, that of our agricultural life which has been stagnant for centuries past.

A stagnant agriculture is the main feature of a traditional society. In such a society one finds stereotyped agricultural practices, inadequate use of water and fertilizers, widespread land fatigue and soil erosion, weak and unprofitable strains of seeds and antiquated agricultural tools and implements. Modernisation of the economy and accelerated economic growth are possible only if this stagnation is broken for good. The first 25-year cycle of Indian planning covering the five five-year plan periods from 1950-51 to 1975-76 is based on this premise, although there would appear to be many doubters and dissenters today of this fundamental policy.

To those who doubt and dissent, my only plea will be to disengage their vision from one or two specific five-year plans where emphasis may have been placed on this or that particular aspect of the economy and to look at this pulsating cycle of growth in the round. If they do so they will find that the true implication of this 25-year cycle lies in the heroic attempt of the Indian people to modernise themselves, not in industry or in agriculture or in transport and communications alone, but in every sphere of life, economic, social, psychological and cultural. It is an attempt to bring India up-to-date, to make her participate in the stream of modern life with all its existing amenities and promises for future rewards. In the economic sphere proper this means simultaneous, large-scale, integrated industrialisation and the development of agriculture and the rural community. It is not agriculture at the cost of industry or industry at the cost of agriculture which is sought to be developed. It is the development of both in a harmonious, rising crescendo of activity.

I may be permitted to refer at this stage to a pet hobby-horse of some economists. It is pointed out by scholars that the industrial take-off in England and Western Europe between 1750 and 1850 was really made possible by the agricultural surpluses of the countries concerned preceding this period. It is also pointed out sometimes that the economic development of the U.S.S.R. turned on the creation of agricultural surpluses, whatever might be the means adopted. It is further pointed out that the spectacular industrial development of Japan in this century has been largely due to the agricultural surpluses that were generated in her economy during the last two decades of the 19th and the first two decades of the 20th century. Nearer our own times, Communist China's or even Nationalist China's experience is drawn upon to make the point that agricultural surpluses are the true foundation of industrial development. Arguing from these historical examples, many economists have stated that India's emphasis on heavy industry

has been too premature, that we should have first made agricultural surpluses secure and that consequently India is caught today in a crisis of ambition.

I do not deny the importance of agricultural surpluses in industrial growth. It is a commonplace of economics that people who are put in industry, particularly heavy industry which has a long period of gestation, have to be fed, clothed and housed before the fruits of their labour begin to come forth. For this purpose an agricultural surplus within the country is certainly handy. But what if the country has a vast population pressing on its soil, rising at a high rate, and trapped in the vice of outmoded agricultural practices ? What if the country chooses the democratic path of action of providing political freedom and economic liberty to its humblest citizen, and what if the humblest citizen, in this case the poorest farmer, is moved by a thousand hunger for a fuller life, for himself and his family? If we admit these initial conditions into our system of analysis, then the facile generalisation of mopping up agricultural surplus through some form of authoritarian or autocratic fiat for investment in industry is no more acceptable. Then we have to be on the look-out for a system which combines three factors, the creation of agricultural surpluses wherever possible, but also of industrial surpluses wherever conceivable in order to modernise agriculture, and finally, a continuum of democratic economic institutions which make for this interflow between agriculture and industry. Such a system, even in its bare conception, is a much more intricate, delicate, and I believe, civilised, mechanism than the one which existed in England and Western Europe in the 18th and 19th centuries or anywhere else nearer our own times. As far as I am able to see, India's economic planning is dedicated to the task of devising this mechanism.

Few people pause to think that if the performance of agriculture has been limited in the Second Plan and is going to belie our original expectations in the Third, it is not for lack of emphasis on agriculture. It is to a considerable extent due to the failure of industry, power and irrigation to supply the growing needs of agriculture. In concrete terms, it is the inadequacy of fertilizers, pesticides, farm equipment and other material inputs produced by industry for use in agriculture, insufficient and delayed utilization of water resources and our failure to take the fullest advantage of the increasing supply of power for agricultural uses which are really at fault. This is not to call away attention from some of the lapses which have occurred in agriculture itself, for instance, the slow pace of implementing the land reforms, inadequate deployment of extension services and the lack of a proper price policy. This is meant only to restore the sense of perspective which should govern analysis in this difficult field. In fact, placed as we are, a revolution in agriculture is unthinkable in terms of something happening in agriculture alone. It is to be thought of as a series of interchanges between agriculture and industry with rising intensity, industry supplying the basic needs of material inputs for agriculture, agriculture feeding back its surpluses for the development of industry and industry supplying back the various consumer goods on which the agricultural surpluses can be spent. Any other kind of development can only be partial and will not be in conformity with our view of modernisation of the country's economy.

It is, then, in this double harness of simultaneous industrial and agricultural advance with a democratic mode of functioning as our guide that we are moving

towards an agricultural revolution in India. Such a revolution is rather simple to outline. It means a revolution in the yield per acre of our farm lands. But this would involve a very great use of commercial fertilizers, made possible by vastly improved methods of water and pest control. It would involve better cultivation, sowing and weeding of the growing plants. It would involve selective breeding, propagation and distribution of those strains of rice, wheat and other crops grown in this country which respond to heavy dosage of fertilizers. Though simple in outline, such a revolution is extremely difficult to bring about. It impinges on centuries old agricultural practices which die hard. It calls for demonstrations on a gigantic scale of the results of the new techniques of agricultural production. It demands intensive botanical and biological research into untried fields. It requires organisational and managerial innovations in the field of agriculture on a scale large enough to affect the six crore farmers in this country. It is not going to be an easy task.

And yet it is precisely this which happened in Japan during the four decades from 1881-90 to 1911-20. As a result of these basic changes in Japanese agriculture, its agricultural output increased by more than 75 per cent during this period, the area under cultivation increasing by over 20 per cent and yield per acre by over 45 per cent. During this period in Japan the population increased by 44 per cent but the agricultural labour force fell away by 14 per cent. The per capita food supplies increased by over 70 per cent, the output per farm worker increased by more than 100 per cent. The starting point of this agricultural revolution in Japan was also more or less the same as ours in India today : over-population, low per capita incomes and an average farm of two to three acres of fragmented land.

It is however necessary to remember that what was possible for a small country like Japan with a fair amount of uniformity among its people is not going to be so easy for us with our vast land, a very large population and diverse culture. It is scientific research in the sense of agricultural, chemical and biological research on the most intensive scale and the application of the results of this research on the widest possible scale which can deliver the goods in future. Once these are organised and brought under control, the other fringe improvements should more or less automatically come in their wake. I mean greater mechanical aids to agriculture and so forth.

That we are moving towards such a revolution can be seen from the tentative targets envisaged for the Fourth Plan. The total plan outlay in agriculture in public and private sectors taken together is likely to be of the order of Rs. 3,100 crores and in agriculture and irrigation taken together, of the order of Rs. 4,100 crores. The total investment in agriculture in the public sector alone estimated at Rs. 2,400 crores is going to be nearly two and a half times that in the Third Plan, and that of agriculture and irrigation taken together estimated at over Rs. 3,400 crores for the public sector twice that in the Third Plan. In terms of specific targets, the area under improved seeds and under green manures would be doubled, the consumption of fertilizers would be trebled, and the area under plant protection measures would be quadrupled. There would be an increase of nearly 50 per cent in area under major irrigation, of nearly 25 per cent under minor irrigation and about 70 per cent under soil conservation measures. The coverage under plant

protection measures would be nearly half and that under improved seeds nearly 80 per cent. While the coverage under chemical fertilizers is difficult to calculate at this stage, it is estimated that about 40 per cent of our total requirements of nitrogenous fertilizers will be met, this showing the leeway to be made up in respect of fertilizers in the subsequent plans. The tentative picture outlined above would indicate the enormity of the tasks before the agricultural scientists and the administrators. In short, it means that the results of scientific research on the widest possible scale should be made available by an administrative machinery which is equal to the task to every nook and corner of our countryside.

That this task is going to be truly herculean can be realised if we remember that the performance of agriculture in the Third Plan is likely to fall substantially short of our original targets. As against our original target of 100 million tonnes for foodgrains production, we are likely to end up with only 90 or 92 million tonnes. Similarly, production of oil seeds is now anticipated to be only 7 to 8 million tonnes against a target of 9.8 million tonnes, and that of cotton 6 million bales as against 7 million bales as originally targetted.

This unsatisfactory performance is primarily due, as I have said earlier, to the failure of inputs for agriculture. As against the target creation of cumulative potential for irrigating 29.5 million gross acres under major and medium schemes, we now expect to create a potential for only 20 million gross acres, of which only 16 million gross acres may be actually utilized. Against a target production of 1 million tonnes in terms of nitrogen of chemical fertilizers, we are likely to produce less than 500 thousand tonnes at the end of the current Plan. As against a target of 166 thousand units of diesel engines for use in agriculture, we now hope to produce only 78 thousand units.

It is the view of our experts that with the gigantic effort in the field of agriculture in the Fourth Plan outlined before we can hope to increase agricultural output at least at the rate of 5 per cent per annum. Even this modest rate of growth would require over 3 million tonnes of chemical fertilizers, 2.5 million tonnes of iron and steel, 2.5 million tonnes of coal, 5.5 million tonnes of cement and 2.5 million tonnes of pesticides besides a large number of small machines, equipment and other industrial products. According to a recent analysis of the growth of agricultural production during the period 1951-54 to 1958-61, 33 out of the 184 districts for which the statistics were reviewed are seen to have achieved an average annual increase of 7.5 per cent or more per annum and 69 districts out of the total number studied, to have done better than 5 per cent a year. These findings confirm the view that it should be possible to attain a rate of growth of over 5 per cent per annum in agricultural production. What is important is to formulate targets for each one of the 300 districts in our country and execute these plans with the utmost determination. In view of the massive nature of the inputs proposed, the actual results may even be better provided these inputs are timely. The real problem is to translate technological feasibility into an administrative certainty.

For this purpose we shall have to depend in the years to come more and more heavily on the extension services of the community development blocks on the one hand and on rural co-operatives on the other. The central task of the Community Development organisation in the blocks is now recognised to be to mobilise the

entire rural community and the extension services for sustained and concentrated efforts in order to increase agricultural production. It is true that the Community Development organisation in the blocks includes extension officers not only for agriculture, co-operation and animal husbandry, but also for panchayats, women's welfare and rural engineering. But unless agricultural improvement is made the focal point of all these various services, the real task of dynamising agriculture will never be performed. This does not, however, mean that community development activities other than in the field of agriculture are not going to be important in future. In fact, with greater and greater availability of power in the rural areas, many more units for processing agricultural products and their wastes will be set up. The Community Development organisation will naturally have to foster these and bear the responsibility of consciously bringing about the long-awaited socio-cultural transformation of the countryside in their wake.

Rural co-operatives will also have to play their part in a more efficient manner in supplying the needs of the farmer. It is not enough to say that the membership of the primary agricultural credit and services societies exceeded two crores at the end of 1962-63. As it is, this compares unfavourably with the figure of the total number of agricultural families which is 6 crores. What is more important than numbers is that their work should be improved in terms of management of business, administration and supervision of units. Large overdues and diversion of loans to non-productive uses still continue to plague us. It is a notorious fact of the current pattern of development that farmers having sub-marginal holdings who are preponderant in number are not in a position to avail themselves of the facilities of the co-operative movement to any significant degree. Besides, the weaker and the relatively more vulnerable sections of the community are also not able to take the fullest advantage of the co-operative apparatus. To solve this last mentioned problem two alternatives are being considered : earmarking of separate societies for this section of the community and earmarking of separate funds for special programmes for them. Unless these defects are removed without delay one important aspect of organisation for agricultural advance will remain ineffectual.

Another important organisational parameter is the pace at which land reform measures are completed. The progress in this field has not been spectacular. Administrative arrangements for supervising our land reform enactments have not been adequate and even complete and up-to-date records of rights of tenants do not seem to exist in several States. The consequence of all this has been that the poorer farmers and the landless labourers are fast becoming the single weakest spot in Indian agriculture, a source of serious disaffection. Efforts are, however, being made to implement the reforms in full before the Fourth Plan is launched. States are taking expeditious measures to complete the work in time while the Centre is supervising the progress of the work.

The people who are responsible for the formulation and execution of agricultural policy in this country obviously are not unaware of the many tricky problems. In fact, a number of interesting departures from the past policies have been made in recent times. One such innovation is the emphasis now placed on regional specialisation and area approach, utilising to the full comparative advantages of different regions in the production of different agricultural commodities.

Another is the enlargement of the intensive agricultural district programme in an increasing number of districts, the two essential features of this programme being : (*a*) the development of a package of improved agricultural practices for each important crop based on the latest research findings, and (*b*) assistance to the cultivator to develop farm production plans. A third is the crash programme in agriculture now under way and the intensification of the production of subsidiary foods, growing of vegetables and poultry farming, etc. A beginning has recently been made in building up a structure of reasonable prices for agricultural commodities, particularly foodgrains, which make agricultural investments worthwhile. A Food Trading Corporation has been set up which along with the Agricultural Prices Commission, which is in the offing, State warehousing and credit facilities is bound to have an impact on production, through a rational structure of prices for foodgrains, lowering of their transportation cost and provision of better storage facilities for them. Finally, the plan for technical training is also being tailored to the increasing needs of agriculture in the Fourth Plan.

All this, however, means unremitting, back-breaking toil day in and day out for the next few years to come. It is time for us to realise that there is no short-cut to the agricultural revolution. The agricultural revolution of which we conceive today will depend for its success on our ability to adapt ourselves to the different techniques best suited for different regions and different crops, techniques either already devised or to be devised through scientific research and technical advances in different fields. This adaptation would call for the re-orientation of the human factor in agriculture through continuous education, demonstration and training as well as through the provision of the essential inputs and services to the farmers. It is only if we succeed in making this re-orientation shall we be in a position to bring the small farmers and the landless agricultural labourers into the vortex of the revolution. Without them, however, the revolution will die at its birth. I have no doubt that the members of the Indian Society of Agricultural Economics will look upon themselves as the carriers of this revolution throughout the length and breadth of this country.