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RAPPORTEUR'S REPORT ON EXTENSION
AND INPUT SUPPLY

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The achievement of self-sufficiency in foodgrains by India was a miracle that defied the gloomy predictions of everyone at home and abroad. It has undoubtedly been the biggest achievement for the country since Independence. It was, however, soon realised that the green revolution was limited to a few crops for which technology was available. Ecologically disadvantaged regions and resource poor farmers also did not achieve any breakthrough in the level of yields.

To achieve growth with equity, special programmes were launched from the Fourth Plan onwards for crops, regions and farmers which had remained at stagnant level of yield. There is, however, a widespread recognition that the strategy of super-imposing special programmes on the general programmes had created distortions and sub-optimality. There was consequently need for an integrated planning of special programmes, sectoral programmes, area programmes with programmes for the development of human resources.

Achieving growth with equity has perhaps become the most important national concern. The major theme selected for the Conference is therefore topical and very crucial for the nation. The very title of the theme and the subsequent outline indicate a three-fold thrust. The objective for agricultural development in future, *i.e.*, its next stage is the simultaneous achievement of growth with equity. The emphasis is on needed change rather than a review of the past which can only provide the backdrop. The stress is on strategy and policies. The theme of this group is concerned with the study of policies pertaining to agrarian structure and agrarian institutions relating to extension and input supply which need to be adopted in future for the simultaneous achievement of growth with equity in agricultural development.

In all, six papers have been received. Out of them three papers deal with the effectiveness of extension and the level of adoption of various components of improved technology by the farmers. Two papers focus on the efficiency of use of various inputs under different farming situations, crops and farmer groups whereas one paper deals with infrastructural support for transfer of dryland technology. The papers cover a large number of crops and regions. Four papers deal with the findings of studies based on primary data collected for the studies whereas one has relied on analysis of secondary data. All the five studies have provided very useful data and findings for policy formulation. The input-output ratios for different areas and crops dictate optimal strategy for growth. Further analysis of efficiency of different inputs for various farmer groups can indicate a strategy specific to each farmer group for achievement of growth with equity. Analysis of the effectiveness of extension and actual adoption of the various components of technology package, coupled with a constraint analysis of the reasons for inadequate adoption, can enable reorientation of extension and input supply strategies.

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None of the papers, however, conforms to the theme of the group. The conclusions of the five studies like past history should have formed the basis for discussion of policies to be followed in future instead of concentrating primarily on the studies themselves. There is occasional and passing reference to policy implications but there is no detailed discussion of policies needed for achieving growth with equity. These papers have not stressed upon policy issues and policy directions at all and have confined themselves to conclusions from the studies. One paper has merely listed constraints in adoption and the areas needing attention without any discussion whereas another has briefly touched upon the policy implications of findings. Only one paper has dealt with the entire range of policy implications for infrastructural support to dryland farming, namely, credit, input supply, extension, marketing and processing. Many issues relevant and important for the spread of dryland farming have been discussed. Increasing productivity of drylands is important in the interest of equity and so the coverage is relevant to the theme. However, the paper should have emphasised more on policies pertaining to extension and input supply which is the theme of the group particularly since there is a separate group on credit and marketing.

Another weakness in the studies is that the conclusions drawn from findings are, by and large, inferential in nature and are not based upon actual studies. For instance, low adoption could be because of technology not being relevant, ineffective extension or the absence of back-up infrastructural support. Constraint analysis for non-adoption could have formed part of the study. In two studies the data are for the period 1977-80 which may be out-dated for use in policy formulation particularly since they relate to effectiveness of extension system and adoption of dryland technology. Extension system was in formative stages at the time of the study. There has also been considerable evolution in the development of dryland technology since the period of the study. The data in the other three studies are, however, of recent origin and hence relevant and topical.

SUMMARY OF CONCLUSIONS AND POLICY IMPLICATIONS

The conclusions from the papers and the attendant policy implications could be summarised as below:

There is still considerable potential for increasing productivity through use of modern farm inputs which have higher returns to scale than the traditional and primitive inputs. Returns to scale were higher in the case of irrigated areas, high-yielding varieties (HYVs) and cash crops. This indicates continuation of technology-based strategy for agricultural development.

There are varying returns to scale for different areas, crops, farmer size-groups and marketing infrastructure. This indicates the need for a highly micro approach to planning, development of relevant technology and extension strategy. For instance, areas with shortage of labour and high wage rates will dictate a strategy of growth which is not labour intensive whereas a strategy of labour intensive agricultural production may be more suitable for areas with abundance of labour and low wage rates. These considerations are kept in view by the farmers in practice but they are yet to be fully integrated into the policy package which continues to be more or less the same for all situations, farmers and other infrastructural factors.

Both large and small farmers are profit maximisers. Given access to information, inputs and markets, small farmers could increase agricultural production substantially. Attention to these farmers alone can enable growth with equity. Their development has to be seen as an economic activity rather than a welfare activity.

There is still no clear picture about the relative returns to scale in the case of different farmer size-groups although on the whole there may be a slight advantage in the case of large farmers. The conflicting findings about this issue and the attendant policy implications indicate the need for a comprehensive analysis of this issue.

Resource poor farmers are more inclined to adopt recommendations involving family labour such as weeding rather than cash inputs. The returns to scale being higher for light inputs, their use is more advantageous to small farmers. There is therefore need for a distinct strategy for improving productivity of small farmers which should stress on non-cash inputs and light inputs.

Farmers of all sizes-groups were found to be inefficient users of labour. Between the two groups, however, farmers belonging to the larger size-group were more efficient users. This indicates the need for greater attention in research as well as extension to improve the productivity of labour. Particular emphasis has to be on improving productivity of labour in the case of small farmers, who, in spite of being less efficient users of labour, are inclined to adopt improved labour practices. Productivity of labour use has received inadequate attention till now.

Extension is likely to be less effective in low productivity areas. This indicates the need for reorientations of the extension strategy which should be specifically designed for low yield and high yield areas instead of having a generalised approach common for high yield and low yield areas.

Transfer of technology among dryland farmers will need a very strong and relevant back-up package of infrastructural support. This would include earmarked credit at low rate of interest and a deliberate preference for dryland crops with effective procurement and processing operations. Special steps are required to provide input service particularly custom hiring services due to low demand and inadequate marketing network. A more intensive extension through increase in staff strength and improvement in training is essential. Effective crop insurance with a subsidy element is advocated.

HIGHLIGHTS OF PAPERS

Returns to Scale from Farm Inputs

K. Sain and G. Mallik have examined the returns from major farm inputs and their utility in increasing productivity and equity for different crops, agro-climatic regions and economic group of farmers on the basis of a study of 120 operating households belonging to four size-groups in three districts of West Bengal during 1984-85. G. Subramanian has studied the economic efficiency relating to labour, fertiliser, pesticides and bullock pair for both large and small farmers for irrigated cotton in Madurai district of Tamil Nadu. The findings of Sain and Mallik reveal that the major farm inputs still remained potentially productive but

in varying degree in different areas, crops and farmers' size-groups. The modern and light farm inputs were relatively more productive than the traditional and primitive inputs and there were higher return to scale in the case of irrigated crops, HYVs and cash crops. The distribution of farm inputs was under-developed and inequitous as far as small farmers were concerned. Subramaniyan's study revealed that large farmers were relatively more efficient users of inputs than small farmers although both the categories of farmers were found to be profit maximisers. While both the small and large farmers were inefficient users of labour, the large farmers were more efficient in its use. Both farmer groups were equally efficient in the use of cash inputs, but the large farmers became more efficient users of inputs because of their higher efficiency of labour use.

Efficacy of Extension and Spread of Technology

J. I. Patel and A. S. Charan have analysed secondary data between the years 1977-78 to 1979-80 to assess the extent of impact of extension in Gujarat separately for high productivity areas and low productivity areas. Their study showed that the impact of extension services was not uniform from year to year. The trend however showed an increase in effectiveness of extension in high productivity areas. S. V. Supe *et al.* have evaluated the effectiveness of extension in increasing the yield of paddy in Bhandara and Chandrapur districts of Maharashtra with particular emphasis on coverage under HYVs. Factors of communication behaviour, comprehension and attitude of paddy growers towards improved package of practices were considered. The study indicated lack of awareness of HYVs amongst farmers resulting in their inability to comprehend the varieties and unfavourable attitude towards them leading to nearly two-thirds of them adopting local varieties. The study of Y. V. R. Reddy *et al.* is based on adoption of the four components of dryland technology by more than 5,000 farmers from 16 different agro-climatic regions in India. The components were improved seed, fertiliser application, pesticide use and improved weeding. The study indicated large variation in the adoption of improved dryland technology from location to location for the same crop and also from crop to crop within the same location. The adoption was higher in the case of low cost inputs like improved seed and interculturing/weeding, probably because of use of domestic family labour. It was, however, low in the case of costly cash inputs. Adoption was more in the case of *rabi* sorghum, wheat and commercial crops compared to other crops.

Infrastructural Support for Spread of Dryland Technology

K. P. C. Rao and R. P. Singh have dealt with the range of infrastructural facilities needed for transfer of dryland technology. Institutional development was needed to provide backward and forward linkages. In credit there was need for a specific share of credit to small farmers, rationalisation of procedures and low rate of interest. Coarse grains should be given remunerative prices with full procurement back-up. Steps should be taken to increase the demand for coarse grains. The paper makes a plea for giving immediate attention to provision of processing facilities and inclusion of coarse grains in the food for work programme, improvement of marketing and storage facilities. The need is also emphasised for con-

tingency seed stocking, a better retail outlet system for stocking of inputs and custom hiring facility for implements. The strength and training of village extension workers needed to be improved. The premium for crop insurance should be subsidised and the level of compensation increased. Reddy *et al.* have also pointed out on more or less similar lines the constraints in the adoption of dryland technology and steps necessary to improve the level of adaption.

ISSUES FOR DISCUSSION

The following are some of the major issues needing discussion in the Conference.

1. What are the future concerns in agricultural development in achieving growth with equity? The low level of yields for different areas, crops and farmers is obviously a major concern. But could there be other concerns? There is increasing concern for the neglected sections such as women and the tribals. The farmers feel that the terms of trade have been adverse to them and are demanding a better deal. Could increase in productivity and support prices alone solve the problems of farmers particularly the small farmers? There is an increasing concern amongst the consumers that prices of farm products are beyond their reach. This also limits their demand for farm products. Meeting commodity requirements in terms of nutritional, energy and industrial raw material needs has to be the objective of growth. Increasing production is further dependent upon demand for farm products. The strategy for agricultural development will need to keep these and other issues in view. Compulsions of both growth and equity will be compelling. What should then be a viable strategy for growth with equity in the future?

2. Integrated planning for area and sectoral development with development of special beneficiary groups will require a highly decentralised micro level planning and its organic linkage with macro level planning. What should be the methodology for such planning? How could this planning be internalised in the system? Extension system shall have to play a key role in this planning. What could be its optimal role? How should this planning be integrated into the extension system? How should input planning be integrated into overall planning for agricultural development?

3. The success of the strategy for agricultural development will depend upon the effectiveness of extension. How far is the present extension system adequate for the job it will be required to shoulder? How can it deal effectively with the specific needs for different farming situations and farmer groups for which relevant technology package is available? In particular, how can it be reoriented to meet the needs of neglected groups such as farmers below poverty line, women, tribals, etc? What could be its role in the development of technology relevant to specific groups and in thus meeting the technology gaps? What are the changes required in its structure and methodology to meet these challenges?

4. Mass media and audio visual aids are playing an increasingly important role in extension. What is the present status of their role and effectiveness? What is the new role envisaged for them? How should the various media be synchronised with the extension strategy for synergetic impact? Is the present infrastructure for

software development adequate? What are the possible policy options to fill in this gap?

5. Is the present delivery system for input supply adequate particularly in meeting the needs of resource poor farmers and areas with low demand? What are the present gaps in input assessment, stocking and positioning? How should input supply management be reoriented to fit in the new strategy of agricultural development being envisaged? What are the policy options and funding implications of meeting the input needs of areas and farmers at low level of demand? What is the best arrangement to meet the large resource requirement for meeting these needs?

6. Extension and input supply are closely related. Extension depends for its success on close input back-up. Input assessment and consumption, on the other hand, depend upon effective extension. What is the optimum relationship between extension and input supply management? How can this be internalised in the system?

7. Effectiveness of extension depends upon very close relationship and rapport with other departments and institutions involved in land use, supply of inputs and services as well as infrastructural facilities such as storage, processing and marketing. How can a synergetic relationship be established between extension and other sub-systems of agricultural development? How could it be internalised in the system?

8. Such a massive change in the rural scene for its success would require participation of people to the maximum extent. Compulsions of technology-based agriculture will require strong functional hierarchies, very close linkage of extension and research as well as meticulous and total attention to every component of technology. How could participation of people be ensured without diluting the content of specialisation? Specifically, what should be the relationship between extension hierarchy and the local bodies?

9. A very high degree of co-ordination and integration in both planning and implementation is called for between the various departments and institutions. Is the present system adequate? What would be the most feasible and workable administrative arrangement to provide the necessary degree of integration for avoiding duplication and achieving optimality?

10. In the final analysis, the extent of agricultural development will depend upon the dedication, commitment and ability of agricultural functionaries. What is the present level of competence and motivation amongst them? What policy measures are needed to build a highly motivated and professionally competent cadre?