Vol XXII
No. 4

ISSN 0019-5014

CONFERENCE
NUMBER

OCTOBER-
DECEMBER
1967

INDIAN JOURNAL OF AGRICULTURAL ECONOMICS

INDIAN SOCIETY OF
AGRICULTURAL ECONOMICS,
BOMBAY

AGRICULTURAL DEVELOPMENT IN DEVELOPING COUNTRIES

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SUMMARY

The problem of agricultural development in the developing countries—viewed in an international perspective—the author submits, is the biggest problem the world confronted since the Second World War and opines that achievements in this field have been below expectations. After outlining the general characteristics of the developing countries he pleads for more emphasis on factors which hinge on human development such as education, agricultural research, extension and organisation; for they seem to create the necessary institutional framework within which agricultural development can take place. The role of agriculture in the selected developing countries for the last decade is then examined and it is pointed out that agricultural development is the corner-stone of economic development in these countries. The factors which led to the creation of certain production conditions in respect of certain States/countries in the region are then highlighted. These production conditions in respect of three countries, *viz.*, Taiwan, Thailand and Japan (1878 to 1917) are discussed in an attempt to isolate most common factors which have accelerated agricultural development in this region as a whole and, the above countries in particular. The production conditions are grouped into two main categories : (*i*) institutional and (*ii*) scientific and technical. The factors like land improvement, land legislation, credit and marketing and price incentives are included in the former category while, the use of chemical fertilizers, pesticides research, extension and education are included in the latter.

On the basis of a comparative study in Japan (1878 to 1917) and Taiwan (1951-61)—two successful examples of agricultural development in Asia—the author concludes that the development of human factor created the necessary climate for the success of the institutional framework or the production conditions such as successful land reforms, formation of technical skills and its assimilation, change of attitude of the people, etc. The experience of Japan reveals that accelerated agricultural development pre-supposes far-reaching social, economic, and institutional changes. Such changes can be achieved only through deliberate and co-ordinated action in the field of education, research and agricultural extension. In other words, a planned or directed social change is highly necessary for such a transformation. The educational system of Japan in the Meiji era was largely responsible for moulding the social attitude of the Japanese people which in turn enabled the formation of skills and its assimilation. In the case of Taiwan this aspect was largely borrowed from the mainland of China in the latter half of the 'forties, the hallmark of successful rural development. The word 'rural development' means not only expansion of agricultural inputs but also the growth of schools, technical training centres, improved methods of communication, change in the attitude of the people, and is synonymous with social change.

The author's diagnosis is that the failure of agriculture in Asia is mainly due to the failure of rural development. Therefore, rural development is the key factor to be tackled in the context of agricultural development in these countries. But this is the most difficult aspect of economic development, since it deals primarily with people who cannot be centrally controlled. Thus the human aspect is the crucial factor in the context of agricultural development and the neglect of the same would retard agricultural growth and thereby economic development in Asian countries. Action on three fronts appears necessary to tackle the problem effectively, *viz.*, (1) action in the fields of agricultural research, extension, organisation, etc., (human development); (2) industrialization directed to the needs of agriculture; and (3) a family planning programme to reduce the pressure on land and thereby assisting agricultural production.

PATTERNS OF AGRICULTURAL DEVELOPMENT (A CASE STUDY OF FOUR DEVELOPING ECONOMIES)

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SUMMARY

Many under-developed countries have shown high rates of agricultural growth in recent years. Mexico, Sudan, Israel and Taiwan stand foremost among them. All these countries have high rates of population growth. But in almost all the other socio-economic characteristics, they are

widely different. Besides, as they remain at different stages of economic development their agricultural sectors do not occupy the same importance. The factors that have led to their high rates of agricultural growth include both human and non-human factors. Among the non-human factors, area, crop patterns and productivity have been the most important. Apart from the changes in the quality and quantity of inputs in agriculture, improvements in tenure systems, market facilities, credit agencies, etc., also have influenced productivity to some extent. The expansion of cropped area and changes in crop patterns have accounted for more than half of the increase in crop output in Mexico and Sudan which have large land expansion potential. But more than three-fourths of the increase in crop output in Israel and Taiwan have come from increase in productivity. This may be partly due to the poor land expansion potential in these countries and partly to the higher level of economic development reached by them. Irrigation was one of the sure sources of increasing productivity in all these countries. Even though all of them made rapid progress in the use of fertilizers, there were wide differences among them in the level of fertilizer consumption, Taiwan and Israel far outpacing Mexico and Sudan. In the use of machines and of pesticides and fungicides also, Israel and Taiwan are ahead of Mexico and Sudan. The same is the case with the use of improved varieties of seed. The capital requirements in the agricultural sector and the institutional facilities for providing them are greater in the relatively more advanced economies of Israel, Taiwan and Mexico. Land tenure systems are also more favourable in these countries for intensive agricultural practices. The size structure of holdings does not seem to have any decisive effect on agricultural growth. Transportation facilities and market facilities are well developed except in Sudan. On the whole, it is found that agricultural growth in Sudan has been mainly due to increase in cultivated area and changes in crop patterns while in the other countries it has been mainly due to increase in productivity. Countries with dense population may have to rely more on factors promoting productivity, among which irrigation, use of fertilizers and improved varieties of seed seem to be the most important.

AGRICULTURAL DEVELOPMENT IN DEVELOPING COUNTRIES

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SUMMARY

The special characteristic of many developing countries is a gap between food production and food requirement for the growing population. In order to study the progress made in agricultural development in some of the developing countries, five developing countries have been selected. These countries are Philippines, Malaysia (Malaya), Thailand, Algeria and Venezuela. Out of these three are from Asian countries and one each from Africa and South America. Two developed countries of Asia, Japan and Israel have also been studied for comparison.

The demand for food in the countries (developing) under study increased at a compound rate between 5 and 8 per cent at the population growth rate of 2.5—5 per cent per annum between 1937 and 1964. None of the developing countries is in a position to supply required amount of food to provide the estimated required calories per capita for their people. Two developed countries are providing enough food for their people.

Efforts are underway to increase agricultural production in all the countries. During 1952-53 to 1964-65 almost all the countries increased their agricultural production. Among the developing countries under study, Venezuela has faired best. Thailand and Malaysia have closely followed Venezuela. Algeria is lagging far behind in agricultural production during this period. Among the developed countries, Israel has faired better than Japan. The position of food production is very much in line with agricultural production.

During the period 1948-55, Philippines did well in increasing her crop output in relation to population growth but between 1955 to 1963 the increased food demand overtook the crop output. The rest of the developing countries were short in production over demand. Malaysia improved her situation during 1955-63. Thailand has also improved the situation in crop output during this

period and the gap between demand and supply narrowed down. Two developed countries under study did very well upto 1955 but the rate of change in crop output fell short of domestic demand during 1955-63. These countries, however, are in a better position than other countries in one respect that they can afford to buy food items from external market from their export earnings.

The agricultural output per worker in 1960 varied between Rs. 437 and Rs. 13,700. There is direct relationship between arable land per agricultural worker and value of agricultural output per worker. The exception in this case is Japan. This reflects the higher level of agricultural technology in this country. Of the improved technology, the use of fertilizers has increased in all the developing countries but still they are far short in the use of fertilizers in comparison with Japan and Israel. The use of other production inputs is also increasing in these countries.

The production of cereals has increased in all the countries during 1948-49 to1963-64. This increase in production has mainly come from the expansion of area. Thailand has done the best in maize production while Venezuela in rice; per hectare yield of non-cereal crops has declined in some of the countries during this period. Algeria has lagged behind in cereal production in comparison with other countries.

The overall position in agricultural development is not very satisfactory, a well co-ordinated and concerted effort is needed to bring a real break-through in agricultural production in these developing countries.

AGRICULTURAL GROWTH IN DEVELOPING COUNTRIES : A COMPARATIVE STUDY OF INDIA, TAIWAN, S. KOREA AND ISRAEL

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SUMMARY

The purpose of this paper is to examine how some of the developing countries of Asia placed in more or less similar situations have fared differently than India in the matter of agricultural growth in recent years. A study of trends of growth in total and per capita gross domestic products and corresponding growth rates in agriculture and food production reveals wide variations. The highest growth rate of 11.59 per cent in gross domestic product (GDP) supported by 14.08 per cent in agriculture and 13 per cent in food has been achieved by Israel followed in descending order by Taiwan and S. Korea. India with its low growth rate of 4.18 per cent in GDP and 3.04 per cent in agriculture and 3.01 per cent in food trails at the bottom of this list. The same trends were noticed in per capita growth rates but in this case the trend was masked by differential rates of growth in population. In all cases, an implicit association between rates of growth in GDP and agriculture seems to manifest itself. These growth differentials have been accompanied by changes in agro-industrial compositions of the GDP of these countries. The faster developing countries had to start with smaller contributions to GDP from agriculture and as the growth accelerated the secular importance of agriculture further tended to decline. In India, not only the growth rates have been poor, agriculture continued to maintain more or less the same dominant importance. The inference is that in all these countries, sooner or later, a point along the developmental path has to be attained when instead of agriculture having to support industrial growth, both sectors begin to support each other.

Growth rates in the major part of last decade and the first half of the present decade have been compared with respective regional rates of growth in the Far East and the Near East. The two regions reveal slightly different trends but even in the Far East, Taiwan and S. Korea have shown a performance superior not only to India but to the whole of the region. In the Near East, Israel distinguished itself with its much higher rates of growth.

With a view to obtain further insight a comparison of agricultural productivity has been attempted. The exercise for want of sufficient data was confined to two important crops—rice and wheat—, which also revealed striking differences between the countries. Productivity per unit of land for rice in Taiwan and S. Korea and wheat in Mexico has not been matched by corresponding performance in India. The New Agricultural Strategy based on strains drawn from Taiwan and Mexico therefore does promise a break-through in agricultural productivity in relation to input mix and quantity obtainable in India. Similar germ plasm and technology can be provided in the cultivation of these crops in India.

The use of commercial fertilizers also seems to have played a very important part in raising agricultural productivity and in developing agriculture as is evident from much higher levels of fertilizer consumption in all the countries which have done better than India. Even Israel where the level of fertilizer use was relatively low due obviously to nature and climate, the figure was much higher than in India.

All these countries have implemented comprehensive plans of economic development with some emphasis on agriculture but their manner of execution and implementation has differed. Taiwan has achieved outstanding success in land reforms. In India statutory changes in land laws have been mostly neutralized by poor implementation. In the reclamation of shifting soils and in tapping ground water resources, Indian planners have much to learn from the experience of Israel. In all the other three countries institutional credit has replaced the indigenous moneylender in a big way while India has yet to make considerable headway in this matter. It is only lately that our country has officially recognized the importance of proper price incentives to the farmer. Mixed farming and diversification of production have also helped the other three countries in increasing the income of the farmer and also in making available higher nutrition to the common man.

Extension work has been done in all the countries but it could not be as effective in India as in other countries because of a number of hurdles. A high degree of illiteracy in India is only one of the hurdles.

Lastly, the question of foreign assistance has been examined. All the four countries have received massive doses of P.L. 480 assistance from U.S.A. The fact that such heavy dependence on aid did not stand in the way of superior performance in respect of Taiwan, S. Korea and Israel should serve to dispel the common belief in India that foreign assistance has been damper to our economic growth in general and agricultural development in particular.

THE ROLE OF HUMAN AGENT IN AGRICULTURAL DEVELOPMENT OF TAIWAN

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SUMMARY

Taiwan's achievement in agricultural development since World War II has been the most significant and unique. Inasmuch as the nature of small holdings, the nature of population increase majority of them dependent on agriculture, soil and rainfall situation, etc., are concerned, a close similarity exists with India. Both Taiwan and India took to planned development after World War II through their Four and Five-Year Plans respectively. In Taiwan, it is seen that the major factors like physical land area, physical irrigation facilities had reached their maximum level of expansion during the pre-war period and remained stable thereon. And yet during the period 1950-60, Taiwan could register outstanding achievements in agricultural output. According to Yhi-Min-Ho, the varietal improvement of seeds and greater application of commercial fertilizers, improved fertilization methods, rotational cropping with the introduction of inter-cropping, etc., have been crucial factors in the rapid growth of output. This stresses the significance of the successful use of innovations and techniques and their infusion through development of skills amongst farmers, all born out of well directed research, education and extension vis-a-vis development in human agent. It has been estimated that in this endeavour in Taiwan through one NT dollar investment in research, education and extension, it was possible to achieve a long run social return of 14 NT dollars of gross farm output. Thus it is clear that a large part of the contribution in the growth of farm output in Taiwan during 1950-60 was due to technological change infused through agricultural research, education and extension while a large part of the contribution in the growth of farm output in India during the same period came from horizontal expansion of land area only. R. Giri, A. V. K. Shastri and D. S. Somayajulu have shown by fitting a double log function that in the farm output growth rate of 3.5 per cent per annum in India during 1951-63, nearly 75 per cent has been due to the growth in area only, 13 per cent due to fertilizer and the rest has been due to the combined effects of other factors. As regards the investment in human agent, considering the outlays on research, education and extension during the same period, the rate of increase in investment has been observed more or less same in India and in Taiwan. Similarly in the case of fertilizers, the rate of consumption was 18 per cent per annum (compound) in India as against 8.5 per

cent per annum in Taiwan during 1950-1960. It is only here the implications of Taiwan's agricultural development, particularly the way in which the increased rate of technical change has been achieved after World War II, in spite of standstill conditions of physical facilities, have few lessons to offer for India. Proper utilization of investment in 'human agent', to evolve compatible innovations and techniques under research efforts, and to infuse development of better skills amongst farmers through education and extension systems formed the nuts and bolts of the success. In India, while it is true that the level of input usage was very low especially fertilizers, the investments were made appreciably on research, education and extension and increased at the same rate as in Taiwan, but the returns in terms of increased rate of agricultural output remained very low. This —it is argued—is due to lack of purposeful research, meaningful educational programmes to change the traditional farmers, and motivation and dedication to extension tasks. In this regard, Taiwan's strategy which emphasizes on (*a*) agricultural education to farmers, (*b*) innovations and techniques compatible with the existing system out of Taiwan's own research and (*c*) an extension system oriented to obtain voluntary acceptance of developmental programmes provides useful guide-lines.

TAIWANESE AGRICULTURE—RELEVANCE OF ITS EXPERIENCE TO AGRICULTURE OF INDIA

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SUMMARY

This paper attempts to analyse the relevance of Taiwanese agricultural development to agricultural development of India. The economies of the two countries largely resemble in a number of spheres. The problems of temperature diversity and availability of water in both countries are similar in nature. As against the poor quality of soil the overall climatic conditions are more favourable in Taiwan than in India. The average farm holding in Taiwan consisted of 1.15 hectares in 1958 while in India it was 2.66 hectares in 1960 (giving a per capita availability of 0.16 hectare in Taiwan and 0.425 hectare in India). The irrigated land per person of agricultural population and of total population comes to 0.134 and 0.061 hectare respectively in Taiwan while the corresponding estimates for India are 0.093 and 0.065 hectare. Agriculture is the mainstay of the economy in both the countries and supports large proportion of population. Both the economies are facing a problem of population explosion though the problem is more acute in Taiwan than in India.

Right from 1900 to the present day, agricultural development in Taiwan has been remarkable. The development process was chiefly characterized by the adoption of labour intensive technology. However, after 1952 institutional factors like land reforms, farmers' associations and co-operatives played an important role in the agricultural development of Taiwan. The different associations and co-operatives helped farmers in procuring fertilizers, insecticides and pesticides, etc., and also provided technical advice to them. The expansion of education was another important contributory factor in this process of agricultural development. Throughout the period of agricultural development in Taiwan, the role of government has remained positive and encouraging in all respects. The different improvements were so marked that the yield of all crops increased substantially. The yield of rice, the most important crop of Taiwan, increased from 1,998 kgs. per hectare in 1952 to 2,937 kgs. per hectare in 1964.

As compared to rapid agricultural development of Taiwan, development of agriculture in India remained stagnant till 1950, while the progress in production after 1950 has remained below the desired level. The progress in institutional aspect as well as in physical programmes has been far from satisfactory. The experience of Taiwan is a challange to Indian planners and agriculturists. The lessons which we can learn from Taiwan are two-fold. Firstly, in modern times two pre-conditions of growth are : non-exploitative tenure system and spread of literacy and education in rural areas. Secondly, potentialities for the development of Indian agriculture with the known and tried innovations are immense. A literate and conscious peasantry which is provided with a non-exploitative tenurial framework will respond to the new innovations more quickly and vigorously than is sometimes realized.

SOME ASPECTS OF AGRICULTURAL ADVANCEMENT IN THE UNITED ARAB REPUBLIC

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SUMMARY

The main natural factors which keep the agriculture of the United Arab Republic on a sound foundation are (*a*) most fertile soil in the world brought by the largest river Nile from the heights of the Abyssinian mountains; (*b*) the availability of irrigation on more than 90 per cent of the cultivated land which approximates 6.4 million feddans, is calculated as 18 million feddans in terms of crops; and (*c*) the division of agricultural year into three seasons, winter, summer and 'Nile' results in taking of three crops in a year.

The institutional reforms achieved during the last decade resulted in providing incentives among all the producers for raising productivity of the land. These were : (*a*) Fixation of maximum limit of ownership to 200 feddans. This had benefited some 2 lakh families, representing 12 lakh individuals (1952 law). (*b*) Fixation of rent at seven times the basic land tax. This had benefited all those who work in agriculture (1952 law). (*c*) The above has helped industry through the diversion of capital from land speculation to productive enterprises. (*d*) The new Constitution has set people's ownership of land. Agricultural land totalling 6 million acres will be the first piece of property to be placed under people's ownership as large State farms. This has been done to stop fragmentation of holdings, and exploiting land more scientifically with the help of machinery, implements, and latest inputs (1964). (*e*) The introduction of State farms is a gradual process. Till the period it is achieved small farms are brought under common crop rotation and given a shape of co-operative farming without pooling of land. Here, the entire block is ploughed as one unit by the tractor, but afterwards everybody works on his own land. (*f*) The co-operative movement has covered the entire cultivators and as such deepened its root on the U.A.R.'s soil. Co-operative societies in addition to providing loans to their members also help them in marketing. They have adopted the best and the cheapest methods in the field of marketing, starting from selection of seeds to the sale of the final crops. The entire marketing of crops is handled by co-operatives and the middlemen have been completely eliminated.

The economic reforms in the form of more public expenditure on agricultural development programmes has benefited the U.A.R.'s agriculture in its technical aspects. (*a*) The percentage expenditure on agriculture out of the total planned public expenditure on overall development programmes has increased to 45 between the period 1961-66. (*b*) This has resulted in the increased use of improved varieties of seeds, fertilizers and pesticidal products. (*c*) The above has given a big push to the productivity of several crops, most important among them being, cotton, wheat, barley, maize and millet. The per feddan productivity of cotton is highest in the world, while that of other crops is equivalent to world average. (*d*) Export has also increased and reached a level of nearly 60 per cent of the U.A.R.'s total output of the main crops.

The recent conflict with Israel has, however, given a great set-back to the U.A.R.'s economic development programmes and it will take some time before its development is fully restored.

ROLE OF AGRICULTURE AND STRATEGY FOR ECONOMIC DEVELOPMENT

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SUMMARY

In an over-populated country, agriculture must provide the basis for capital formation. This is possible by raising labour productivity in agriculture through the adoption of improved technology. In over-populated countries, agriculture is so much over-crowded that a large proportion of the labour force employed in it needs to be diverted to the non-farm sector. Diversion of surplus

population from agriculture to capital projects like irrigation, roads, railways will generate capital formation which could be employed for increasing productivity in agriculture, and for the expansion of the non-farm sector. Even in the case of traditional agriculture in low income countries where the technological framework is static, agricultural production can be increased through greater use of labour. Besides, the adoption of improved technology requires complementary input of labour. The use of labour-saving machinery in farming in densely populated countries creates unemployment at the cost of using scarce foreign exchange in importing mechanical equipment. In such a situation, the objective of economic policy is to increase the output per acre and not per worker. The emphasis should be on relatively cheaper forms of capital substitutes such as high yielding varieties of crops, irrigation, plant protection measures which not only increase labour productivity but labour intensity also. On farms that cannot provide adequate productive employment to the farmer and his family, vertical diversification shall be able to provide gainful employment to the farmer and his family by way of enlarging the effective size of the farm business, reducing risks, taking advantage of the possibilities of co-operative processing and marketing.

Technology has great potentialities. In this respect, the example of Japan is worth emulation. In Japan, productivity on the large majority of farms of average size of two to three acres is two to three times more than that in other parts of Asia as a result of effective agricultural extension work, increased use of fertilizers and labour input, irrigation practices, double cropping and improved cultural practices. Increase in agricultural productivity through technological development which makes intensive labour use possible is the key to economic growth in over-populated countries.

THE PLACE OF HUMAN FACTOR IN AGRICULTURAL DEVELOPMENT IN DEVELOPING COUNTRIES, WITH SPECIAL REFERENCE TO UNIRRIGATED AREAS OF MAHARASHTRA

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SUMMARY

Economic Development is a process, whereby an economy's real national income increases over a long period of time and if the rate of development is greater than the rate of population growth, the per capita real income will increase. Several thoughts have been put forth by economists, pressing one aspect or the other of development. Great stress has been laid on the increase in per capita income or development of capital resources. Very less stress is so far laid on the development of human factor as a part of economic development. In developing and over-populated countries like India, agriculture forms the major occupation and the income per capita is very low. More stress is being laid on development of capital and labour. The education of farmers is being neglected. If prime importance is not given to the development of human factor, the economic development will carry no value.

In rural areas, the number of defaulters repaying crop and development loans is increasing. The small farm holders are unable to avail of the facilities of crop loans, loans for purchase of oil engines, pumping sets, tractors and land development loans for want of inadequate security. Income from land of over 70 per cent farmers is not adequate enough, even to balance their budgets. Well-to-do farmers are reluctant to repay loans, and the middle class farmers manage to repay loans merely by paper transactions. The technology in farming is also mostly used only by a few well-to-do farmers, due to defective methods of approach by the extension agencies. The farm management advisory service for individual farmers, considering the needs of every individual, has proved successful in countries like U.S.A., Norway, Japan and other countries, where the size of farm holdings has a very wide range. To remove farmblindedness of cultivators, it is necessary to introduce the farm advisory service on a large scale in Indian agriculture. The management factor plays a significant role and even the existing resources could be utilized by better management, which also needs individual approach to every farmer and intensive training programme.

Village leadership has gone from bad to worse, due to introduction of the principle of democratic decentralization of power. There is keen competition for power and village atmosphere has

been spoiled due to power politics. The enlightened farmers have been involved in it and the progress of agriculture has been adversely affected. Secondly, the cream of young generation going out for education to urban areas has never returned to villages. This is due to insecurity of life and property, inadequate amenities of life and several other reasons. Those who are unfit for any other occupation therefore stay in farming and prospects for development of agriculture have become remote.

Labour productivity has also gone down. The will and capacity to work among the labour and farmers are lacking. Training to rural and urban masses is therefore essential in this regard.

The institutions of *panchayati raj* and co-operative societies are also corrupt and inefficient and do not aid properly to serve the purpose of economic development. Serious efforts on the part of public and Government are necessary to improve these institutions and thereby bring about proper development of human factor.

AGRARIAN REFORM AND AGRICULTURAL DEVELOPMENT IN DEVELOPING COUNTRIES

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SUMMARY

Agricultural production in developing countries has been increasing no doubt but the rate of growth has not yet compared well with that of the rate of growth of population, or that of income or both, with the result that there has been a lag between the demand and the supply of main agricultural products both food and non-food, leading to an imbalance in the economy and a consequential balance of payment difficulties. In India this has also created a condition of short supply of foodgrains and raw materials on the domestic front. It appears, the growth depends upon the volume of investment and the possibilities of input utilization to an optimum level. This to a large extent depends upon the existing land tenure system and, therefore, wherever land reform measures have been selective and implemented successfully, the growth rate has been higher. In Japan, between 1878 and 1912, agricultural output increased at a compound rate of less than 2½ per cent per annum and it required the land reform of the 'fifties to bring about a more spectacular growth rate in agriculture. Prices and tenure systems are two most important factors influencing incentives. Prices have again limited applications in under-developed economy, where land tenure is insecure, based on exploitative conditions, charged with high rents and almost depressed on account of social and economic inequalities. Even if productivity is increased by concentrating on the intensive application of inputs in areas where land is irrigated and other natural conditions are favourable, the high rents in force in these areas and an oppressive land tenure system would operate as a serious disincentive for tenant cultivators to apply inputs to the extent that would otherwise be worthwhile. If, however, increased supply of the required inputs for agriculture is combined with a minimum number of measures on the institutional side to improve the responsiveness of producers, there is no reason why a higher rate of growth in agriculture of the order required (5 per cent per annum for India) cannot be achieved within a short period.

Some of the developing countries have combined both, the increased supply of inputs with necessary institutional framework of a progressive land system and a co-operative structure. The Mexican experience has been valuable, because it has shown that land reform measures may bring great social benefits to the farm population and also because it has shown that if agrarian reform is to be successful in economic terms, it must form part of a general scheme for agricultural development, involving the provision of credit facilities, the organization of production co-operatives and, under Mexican conditions, the resettlement of farmers in new areas. Also, the Mexican experience is significant in relation to the conditions of really over-populated countries; it shows that reform can improve the conditions and status of the farm population and raise the rural standard of living, but it is not likely to provide full employment opportunities where the total population is increasing at a rapid rate. The intensification of production depends in very large measure on the supply of credit and the market position. In Japan, apart from the adoption of the intensive methods of production on a large scale, the successful implementation of the land reform measures has been the most important factor, strengthening the base of agricultural development and producing incentives for

investment. Although the 1952 Agricultural Land Act severely limited the amount of land any individual could own, the 1962 amendments empowered elected Village Agricultural Committees to allow farmers to exceed the 1952 ceilings on land ownership if they could do so by using the labour of family members. This has further led to an increasing number of 'co-operative agricultural work' in Japan. The creation of local Land Commissions has stimulated new leadership and has brought in confidence and fair play in the purchase of land from big landowners and its re-sale to small owners. The Japanese experience is thus worth the most careful consideration, particularly on the part of those countries where population pressure on the land is great and alternative sources of occupation are lacking.

Thus, experiences from Mexico and Japan indicate that in India other measures for raising agricultural productivity must necessarily be combined with fundamental reform of tenure. What is necessary now is a precise determination of certain measures required to accelerate agricultural development and a hard-headed but determined approach for implementing them. This would be further helped, if land commissions are organized on the Japanese pattern and entrusted with the task of implementation. Land reforms are also to be followed by immediate steps of consolidation of holdings and initiation of co-operative farming in the country.

AGRICULTURAL DEVELOPMENT IN DEVELOPING COUNTRIES : A CASE IN TOBACCO CULTIVATION AND MARKETING

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SUMMARY

A general view can be gathered from relevant statistics that India is far behind Rhodesia in yields of Virginia flue-cured tobacco while Indian prices are higher than those in Rhodesia. The sources of the discrepancy can be traced to the defective systems of cultivation, grading and marketing apart from the general backwardness of the Indian cultivator.

Yields on Indian farms can be improved by a series of improvements in agronomical practices, at the same time reducing the cost per pound of leaf grown. Good care during nursery stages, better spacing while transplanting the field, careful personally supervised and efficient priming of leaves during harvesting, better ways of handling the harvested leaf, improved barn design and curing schedules, and a good system of rotation of crops to restore natural soil fertility are some of the important steps to be taken at the stage of cultivation. In all these directions great opportunities are available for improvement. Research organizations, extension workers and cultivators should take up the challenge to raise quality and quantity relative to costs.

Much can be done to improve the system of grading as well. The present two-tier system of of grading is to the complete detriment of the cultivator and the commodity prospects. As evident from the Rhodesian experience, the grower is better placed with improved methods of harvesting, handling and curing, coupled with preliminary Government assistance, to grade the leaf himself, into final *AGMARK* grades and leave the buyers merely the function of processing the leaf. This will improve the yield and reduce costs greatly.

Auctioning as a system of marketing should be revived in Guntur district on a big scale with the requisite auxiliary facilities of warehousing, etc., to eliminate the monopolistic domination of the market. Finally, Government should play a controlling and advisory role in the field of production and marketing. The cultivator should be guided, and, if necessary, controlled to grow the right type of tobacco in the requisite quantities with a view always to match supply with demand. Further, as in case of Rhodesia, a forum in the form of a Tobacco Board should be created to govern all aspects of tobacco cultivation and marketing, with representatives from the Government, trade and cultivators. The experiences of Rhodesia prove that these improvements will immensely benefit the Indian tobacco enterprise.