PREFACE

For millennia agriculture has played a central role in Indian economy and will undoubtedly continue to do so in the near future. Close to 70 percent of the population derives its livelihood from occupations related to agriculture. Thirty five percent of the country’s national income is derived from the agricultural sector. Such major problems of the country as food sufficiency, rural unemployment and economic, political, and social discontent are directly related to its agricultural systems. In statistical terms, India ranks high among the producers of agricultural goods. She stands third in the world in wheat production, after the Soviet Union and the United States; second in rice after China; and second in millet production after China. Producing between one-quarter to one-third of all the world’s tea, jute, peanuts and hemp-fiber, she leads all nations in their productions. She produces exportable amounts of several other cash crops in which her world status is high: third in the production of sugar-cane, tobacco, and oilseeds and fourth in cotton. She has the largest bovine (290 million or one-quarter) population of the world. These impressive agricultural productions must be matched against a large population rising at nearly 2 percent a year, low agricultural yields and poor per capita production. Although subsistence levels in food grains have been recently reached and prospects for future food grain increases have brightened up as a result of diffusions of agricultural modernization, the race between food and population remains a close one.

Despite some breakthroughs, the basic structures of the agrarian economy remain traditional. Established centuries ago, these structures of a self-contained rural economy, founded in caste-derived occupational land tenures made complex by absentee and parasitic landlords, have been slow to respond to modernization. Linked as these are to other segments of economy such as food self-sufficiency, industrial development, unemployment, foreign trade, social organization and administrative stability agriculture became a major problem in the post-colonial India.

Agriculture is a multi-dimensional problem, its various components are so inextricably interconnected as to render analysis and classification of problems difficult. One example of the interconnectedness of the problems is the land tenure system. Landholdings are tiny, fragmented, and not particularly amenable to modernization. The problem is at once social, economic and political. Inheritance laws, the colonial zamindari system, caste-based agricultural practices, all are bound up with the problem. Legislative efforts to ameliorate the situation are tied up with the
social and political systems. Compounding, the situation has been the mounting demographic pressure, which has wiped away gains in agricultural productions during the last three decades. The process of agricultural rehabilitation, therefore, would consist of effecting improvements on several fronts, in techniques, in social institutions and in reducing demographic pressures. Some major agricultural problems are:

**Land Tenure Problems:** Statistics regarding land-distribution among rural families are few, and largely based on estimates. At the bottom of the ladder are the 58.0 percent of households who own less than one hectare of land each. It is estimated that within this category 10 percent of the households are totally landless. By comparison, one-half million families, or the richest two percent of the households, own 20.5 percent of the land used for agricultural production. While this highly unequal distribution of agricultural land suggests a serious land problem, even more serious is the unequal farm wealth or income. In reality, the smaller farms are not only uneconomic but also suggest a serious problem of agricultural inefficiency.

A major problem of landholdings has been their fragmentation. One household may own tiny bits of scattered plots. The origin of fragmentation relates to Hindu and Muslim inheritance laws and customs under which all sons would receive equal shares in good and bad sections of the land based on soil conditions, type of crops, topography, drainage and fertility at the time of inheritance. Further fragmentation resulted from partial confiscation of a lot by revenue intermediary in case of delinquency of payments. For poor cultivators, a part of the land may have to go to the landlord as payment of the debt incurred. Often villages of the size of 5,000 hectares would be divided into 50,000 fields. Since the enactment of recent legislation on consolidation of holdings, millions of tenancy suits lie pending in the overburdened civil courts. Fragmentation clearly creates uneconomic holdings. Apart from the duplication of effort in irrigation and cultivation of scattered fields, a farmer must lose much land in the earth-ridges to separate his fields from others. For the same reasons fragmented fields do not lend themselves to mechanized farming or the application of chemical fertilizers.

**Another problem is that of landless or tenant cultivators.** The rise of landless cultivators, though common in most countries, assumed tragic proportions in India during British rule. The dominant prevailing system of land tenure during Mughal rule was the *ryotwari* or peasant-proprietor (small holding) system. The
peasant was the owner of the land and possessed the decision-making and inheritance rights. The government collected revenues from the peasants directly through the village governments. During the late Mughal period revenue collection was increasingly assigned to the intermediaries or zamindars, who, during British rule virtually became the landowners. Often repressive in collection practices, the zamindars were given rights to confiscate lands of delinquent revenue payers. At the time of Independence there were two main systems of land-tenures, the ryotwari and the zamindari.

A characteristic feature of the zamindari system was that the actual Cultivators had no contact with the government, and were at the mercy of the intermediaries. The zamindari system became a fundamental issue in the land reforms after Independence. In the wake of such slogans as “land to the tiller,” many laws of land redistribution, land consolidation, land ceilings and the abolition of the zamindars and absentee landlords were enacted during the 1950’s and 1960’s. Progress undoubtedly has been achieved in a number of states in legislation enactment, but implementation remains difficult. Before Independence 40 percent of the cropped area was under the zamindari system which by 1972 had been largely eliminated. After 1947, nearly 20 million farmers were given landowning rights and nearly 6 million hectares of land allotted to the landless farmers. By 1972 scattered land holdings of 32.6 million hectares of land had been consolidated. By 1985 nearly 52 million hectares, representing only one-third of total cropped area of the country had been brought under consolidated holdings. However, only two states, Punjab and Haryana could claim one-hundred percent consolidation in land holdings. Land ceilings ranging between 4 and 30 hectares have been fixed by the states. Despite these legislative measures, nearly one-half of the households still possess landholdings of 20 hectares or more.

A related problem was that of the absentee zamindars (landlords). Over the centuries, particularly during the British rule, a barge cadre of absentee landlords had arisen. Although owning most of the cultivable land, the zamindars resided in the urban areas, leaving the chores of cultivation to the tenant farmers (share croppers), some of whom would in turn occasionally hire laborers to do the work. A system of sharecropping was soon established. Periods of economic depression, unforeseen weather and constant borrowing of money from the zamindars often ruined the sharecroppers, but enriched the zamindars. Improvements in agricultural practices by
the sharecropper under such conditions were impractical. The absentee landlord was content with whatever returns he could get, and was disinclined to make investments for agricultural improvements, whereas the tenant-farmer did not possess the capital necessary to do so. He was content with whatever share of the crop he could get without any additional investment, in the true fatalist tradition.

**Peasant Indebtedness:** Although peasant indebtedness is universal among subsistence farmers, but its impact is perhaps nowhere as crushing as in Indian farming. Estimates of the extent of Indian peasant indebtedness vary, but all point to an incredibly high level. Following a period of depression in the 1930’s, rural debt in British India (excluding the Native States) was estimated to be over Rs. 12,000 million, ($419 million approximately) which probably equaled the average annual rural income. This, in all likelihood, has been on the increase since then. An estimate of the All-India Rural Credit Survey of 1954-56 indicated that nearly 70 percent of all the cultivating families were in debt. New statistics confirm the continuance of large-scale and deep-rooted rural poverty in the country. The average annual per capita income of an Indian farmer (cultivators, landlords, and moneylenders included) is about $50, whereas the average indebtedness of the rural families in debt (70 percent of the total) amounts to $80 (in the early 1980’s).

The lot of the landless cultivator is even more pitiful than indicated by the average figures. To an average farmer indebtedness is a way of life. Factors responsible for indebtedness are many: uneconomic, fragmented landholdings, vagaries of monsoons, capital deficiency to tide over sickness, drought, floods, cattle diseases, lack of storage facilities forcing sale of the harvest even at unprofitable times, and above all, the incurring of customary extravagant expenses on certain social occasions, such as the birth of a son or the marriage of a daughter.

Rural credit services are notoriously inept in organization and inefficient. Although government-run cooperative societies offering credit facilities to farmers in 1987-1988 numbering 348,000, these served only 35 million agricultural families and provided to no more than one-third of the agricultural credit requirements of the country. Between 1960 and 1980 the number of credit societies increased by 52 percent and loan advances rose from $131 million to $250 millions. Specialized cooperatives for sugarcane, fishing, marketing, agricultural management, and the processing of agricultural output were also established during the period. Undoubtedly, the facilities have been improving, but mainly for the upper class
farmers who are more creditworthy. The bulk of farmers lack vision, initiative and resourcefulness to make use of the facilities. They still approach the local moneylender, usually the big landlord, who charges exorbitant rates for commercial loans. Interest on loans of 20 to 36 percent a year is not uncommon.

Problems of Mechanization: In large measure, the Indian peasant's agricultural inefficiency has resulted from the work of nature and society, (e.g., lack of irrigation facilities, poor soils, a caste-based system of exploitation and deficiency of capital). His conservatism was not merely an expression of his resistance to new ideas or techniques. It stemmed from traditional practices, which were intimately adjusted to the environment. His tools and practices were simple and the land seemed to yield enough.

The need for diffusion of innovations to pull the peasant out of tradition and poverty has been widely recognized, but the farmer's resistance to innovations still persist. The traditional perceptions must be altered. Evaluation of innovations before initiation have also to be clearly undertaken. The use of an ordinary light plough may serve as an example. The criticism that the light plough merely scratches the surface of the soil is not entirely tenable for conditions under which an average Indian farmer has been working. The traditional "surface scratcher" light plough is all that his bullocks can draw and that he can carry on his shoulders to and from his scattered fields. Furthermore, it has been demonstrated that deep ploughing is useful only for certain crops and in specific soil conditions. The key to good ploughing is the efficient use of soil-moisture and irrigation.

The introduction of innovations in techniques (machines, irrigation, better crop varieties and seeds) must, therefore, be based on and coincide with the given circumstances of farmers' capital resources (credit facilities), tenancy laws regarding viable and consolidated landholdings and infrastructural bases. Simple, improved tools such as the seed drills, threshing and winnowing appliances, water lifts or electric wells are cost-effective devices that can be more useful than huge machines to an average Indian farmer. Mechanization, in conformity with Indian conditions, however, has to be introduced. Undoubtedly simple farm implements are useful and in the long-run cost-effective. For example, a small tractor can perform a multiplicity of farm jobs from clearing, cultivating, harvesting, and the transporting of produce and implements, although its initial expense for an average farm could be large. A large harvester-combine on the other hand may not be suited for small Indian farms. In
1986 there were 25.3 million tractors in operation (production 80,000 annually). Associated with mechanization is the problem of unemployment among agricultural labor which would undoubtedly be aggravated if mechanization programs were carried out. The problem of agricultural unemployment has indeed taxed the minds of agricultural analysts. An answer to it is the proposal that the massive agricultural labor force that would be released from the farms consequent upon mechanization could be usefully channeled into newly developed agro-based rural industries. The use of mechanical implements has been on the rise in the country since 1961. An efficient iron plough has replaced the traditional wooden one in several parts of the country. Its use has become significant in western Uttar Pradesh and Tamil Nadu, where 100 iron ploughs were used for each 1000 hectares of cultivated land, as compared to 26 ploughs/1000 hectares for the nation in 1966, a dramatic rise since 1961. By 1966 tractors had become widely used in Punjab Haryana (4 to 5/1000 ha of cultivated area); elsewhere the use was negligible. In 1966 about 50,000 tractors were in use in the country. The use of specialized implements, namely seed-drills, threshers and sprayers is now common in Gujarat, Karnataka and Andhra Pradesh. Power driven water-lifts have become widespread in Punjab, Haryana, Gujarat and parts of Tamil Nadu (15 electric or diesel wells per 1000 hectares of cultivated land) in the 1980’s. Great regional variations clearly exist in the diffusion of these innovations. The most noticeable shift from the traditional farm operations to mechanization in Punjab and Haryana has paralleled the initial diffusion of high-yielding varieties of wheat and millets in those states.

**Infrastructural Problems:** Rural communication in India is generally inadequate, although the country’s road network is one of the largest in the world. Poor un-surfaced roads serve most rural interiors, straining the means of transport of goods by bullocks. This has been one factor which has hampered development of industries based on agricultural produce, such as canning and dairying. The Community Development Projects during the early phase of planning (1951-1966) laid considerable emphasis on the development of communications in rural areas. Nearly $1,200 millions were spent on improvements and expansion of rural link roads. Road track connected with the rural interiors expanded from 243,000 km to 721,000 km between 1951 and 1966 in 1986 the track consisted of 830,000 km of surfaced roads. 
A major task of rural development is the provision of marketing facilities for
the middle class and small farmers. Only in a few states such as Punjab, Maharashtra,
Andhra Pradesh and Gujarat does a fairly well-developed network of officially
inspected markets exist. Elsewhere, conditions for the storage, credit and
transportation of commodities are poor. Even in areas of regulated markets, the small
farmer rarely utilizes the existing facilities. Moreover, he is still at the mercy of
unscrupulous traders in obtaining a fair price for his commodities since an effective
national pricing policy has not been enforced even in the regulated markets. A small
farmer is easily exploited by secret brokerage, false weights and payment of inflated
commissions. The key to agricultural progress lies, in a large measure, in the creation
of an adequate infrastructural base.

**Agricultural Productivity:** Indian agricultural yields are among the lowest in
the world, although a steady rise in yields since 1950 was recorded. Scientific
fertilization is a recent phenomenon and practiced by few. An average farmer, deep in
debt, does not have the resources to apply nitrogen, potash, or potassium to the crops.
Investment in chemical fertilization could lead to his economic ruination. Burnt
stubble, branches, leaf mold, or animal manure application are his chief means of
fertilization. Even these are inadequately applied. Social customs frown upon the
utilization of human excreta for the fields. Occasionally cow dung is used but 60
percent of it is burnt as a fuel or lost for mixture in plaster coating to floors or walls in
rural areas. Recent breakthroughs in yields by the introduction of high yielding
varieties of crops have demonstrated the need for chemical fertilization. The Five
Year Plans, therefore, rightly emphasized expansion in the output of chemical
fertilizers.

The use of chemical fertilization has steadily gained ground since the early
1960's. The most rapid growth in the use was in the Haryana-Punjab area, which was
responsible for 32 percent of national nitrogenous fertilizer consumption during the
Fifth and Sixth Plans; as compared to nation’s annual rate of 4 percent. Other areas
where fertilizer consumption markedly improved were in Tamil Nadu and parts of
Andhra Pradesh. Other areas have been slow to accept fertilizers, partly because these
parts were poor in irrigation, water management schemes and rural electrification to
sustain the consumption of fertilizers. Potentials for diffusion of scientific fertilizer
utilization appear bright if other capabilities are improved. About three-fourths of the