# CONSTRAINTS IN CROP PRODUCTIVITY ON TRIBAL FARMS OF SHAHDOL DISTRICT MADHYA PRADESH

THESIS

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## MASTER OF SCIENCE IN AGRICULTURE

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CERTIFICATE-I

This is to certify that the thesis entitled, "CONSTRAINTS IN CROP PRODUCTIVITY ON TRIBAL FARMS OF SHAHDOL DISTRICT (MADHYA PRADESH)", submitted in partial fulfilment of the requirements for the degree of "MASTER OF SCIENCE IN AGRICULTURE" of the Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, is a record of the bonafide research work carried out by Shri VINOD KUMAR SARAF under my guidance and supervision. The subject of the thesis has been approved by the Student's Advisory Committee and the Director of Instructions.

No part of the thesis has been submitted for any other degree or diploma (certificate awarded etc.) or has been published. All the assistance and help received during the course of the investigations have been duly acknowledged by him.

S.S. Gour
Chairman of the Advisory Committee

THESIS APPROVED BY THE STUDENTS' ADVISORY COMMITTEE

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CERTIFICATE-II

This is to certify that the thesis entitled, **"CONSTRAINTS IN CROP PRODUCTIVITY ON TRIBAL FARMS OF SHAHDOL DISTRICT (MADHYA PRADESH)"**, submitted by Shri **VINOD KUMAR SARAF** to the J.N. Krishi Vishwa Vidyalaya, Jabalpur in partial fulfilment of the requirements for the degree of **M.Sc.(Ag)**, in the Department of **AGRIL. ECONOMICS & FARM MANAGEMENT**, has been approved by the Student's Advisory Committee and External Examiner after an oral examination on the same.

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Chapter - I

# INTRODUCTION

# 1. INTRODUCTION

Largest tribal population in world except Africa live in India. There are 427 tribes numbering 384 lakhs in India, they comprise 6.94 per cent of the total population of our country. Tribal population in India increased from 3 crores in 1961 to 3.8 crores in 1971. Among the Indian States, the largest number of tribal people live in Madhya Pradesh. In Madhya Pradesh, there are 84 lakh tribals and they constitute 22.4 per cent of India's tribes population and 20.2 per cent of the population of the State. Every fifth person is a tribal in Madhya Pradesh. Tribal people are popularly known as "Adivasis".

[1]The tribal people command on special economic, social and political status under present Indian's economic development of the country and the growing riches of the Indian towns has deprived tribal cultivable land and forests. In the absence of any worthwhile economic activity, they have no option but to eke their meagre living by tilling the forest area, hilly slopes and collection of whatever forest produce they can lay hands. The result is that eventhough their life style is based on minimum material needs, yet they are forced to precarious

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1. Pant, S.P. Draft report on "Natural and physical resources, socio-economic constraints, farm and forest practices of three tribal districts of M.P." Deptt. of Agril. Econ. & Farm Management, 1981-82, part-I, p 1.

living. Truely speaking, they have little economic role in their communities or in the society at large.

The tribals are at different levels of stages of development and practice different types of socio-economic activities, suitable to topography of land, climate and needs. The actions are governed by traditions, customs and values. They in the world equals - where women folk work by the side of men. They present embodiment of cooperative traditions and community living.

Tribals mostly live in the forest, cold hilly terrains which are very picturesque and very rich in forest and min-eral wealth. As against the overall of 43 per cent, tribals have 57 per cent of active population of the total population. This is the beautiful part of the tribal story. The other part of the story is very sad. They are in the griding grips of poverty, ignorance and exploitation. The areas inhibited by them lack infrastructure. Ninety one per cent of the tribals are engaged in primary sector as against 73 per cent of India.

As per constitutional provisions, tribals come under weaker section of the country. There had been specific efforts made to improve their conditions through special multipurpose tribal blocks, tribal development blocks; and the integrated tribal area development

programmes had been the landmark efforts to integrate them in the development of the main stream of the country.

In India, tribal population in view of the slow pace of tribal development, particularly agriculture development, yawing gap of disparity and alleged exploitation of tribals. The Central Coordination Committee for Rural Development and Employment, recognized the need for intensive development facing the backward tribes and the tribal area. In its special meeting held on 17th August, 1970, it decided to start pilot project for economic development of tribal areas. Tribal practices a shifting cultivation, locally known as 'Jhum'. Their economics is based partly on crude form of agriculture and partly supplemented by livestock and poultry. Their land is comparatively poor in fertility and practically without irrigation facilities. Although, new technology has been developed in the field of agriculture, the tribal population has been left out of the main stream of their development process. In such a situation, the tribal farmers need technical know-how as well as credit facilities. The tribals are exploited not only by the money lenders, contractors, petty traders, but also by the petty officials appointed for productive supervision and regulatory control in these areas. Hitherto, the tribal people live in a very backward and poor condition. Although, the massive efforts were made to

develop the tribal agriculture, which is the basic source of their livelihood, but there had been a slow pace of agriculture development. It was very unfortunate at the time, when other sections of the country were reaping the benefits of green revolution.

The area under paddy and wheat revealed an upward trend since 1970-71 in the district of Shahdol, while the production was not increased in proportion to area. The average yield of paddy and wheat were constant since 1972-73, i.e., not too much increases and decreases. The tendency of constant crop yield in Shahdol district of Madhya Pradesh has provoked the present study because this district is one of the major tribal populated district of the State.

The total population of Shahdol district is 10,29,839, out of which tribes accounts for 48.23 per cent and 88.13 per cent people live in rural area and only 11.83 per cent in urban area. The total population of Kotma block is 44,923, out of which the schedule tribes accounts 15,760, comprising 35.5 per cent of the total population of this block. The density of population per Sq.km is 73 and is considerably lower than that of the State and country, i.e., 94 and 182, respectively. In the proportion of tribal population, it ranks 6th in the State; the first being Jhabua district having 84.71 per cent tribal population.

The problem

Despite the technological break through in agriculture and strengthening of extension programmes, the yield rate of major crops in Madhya Pradesh as well as in Shahdol district are far below the yield potentials and the targeted level of production.

The problem is to increase the production of crops and how to break the constant trend of crop yield per hectare in Shahdol district of Madhya Pradesh. One of the greatest problem is the production gap between the existing production and the production based on improved practices. With the prevailing production gaps, the crop growers of Shahdol district are not only losing every year their earning capacity, but their standard of living is also going down. However, the tribals have become aware about the improved techniques of agriculture and seem willing to adopt but their poor economic conditions, unavailability of resources and other things do not allow them to go for new technology.

It is in this context that farm credit resource availability, knowledge about improved techniques of agriculture assume a great importance in modernization of present day tribal agriculture. It is essential to provide needed inputs in proper quantity and in proper time and required credit to the tribal farmer, who otherwise cannot

offord to invest money for increasing the production. It is also important to ensure that the farmers make best use of it. Irrigation facilities have also increased in the area for breaking the constant trend. Thus, the availability of credit facilities and resources and their proper utilization emerge as the vital part of agriculture production system. Credit, resource availability and other has a role of great significance in transferring traditional subsistance type of farming into modern scientific farming for increasing the production, particularly in the tribal areas of the country.

The problems were mostly related to the economic, social, resource availability and other aspects with regard to production of major cereals in the district of Shahdol.

In view of the factual situation existing with the tribal farmers of Shahdol district, it was considered timely to investigate into the constraints coming in the way of increasing agriculture productivity.

Scope and importance of the problem

The study is diagnostic in nature and seeks to point out the inherent constraints (economic, social, unavailability of resource and other constraints) operating in the district with regard to production of crops. The study within its scope makes an attempt to answer these critical

questions hampering the production of major cereals. It will investigate into various aspects of crop management and will isolate the reasons responsible for constant production of crops.

Although, there is a wide field for such a study but in view of research worker's limitations, the following objectives have been set up for this study.

Objectives of the study

In general, the objective of the study is to identify the practical problems (constraints) that inhibit increase in per unit and total production of major crops of the area under study, i.e., Shahdol district. The specific objectives are -

(a) To study the cropping pattern and intensity of tribal farms.

(b) To find out the economic constraints in raising crop productivity on tribal farms.

(c) To suggest the strategies to increase productivity on tribal farms.

Limitations of the study

As the findings of this study are based on the data collected from selected respondents of Shahdol district,

hence cannot be generalized for the whole State. The scope of study is limited to examine the constraints analysis of crop productivity in tribal farms of Shahdol district and other aspects are not covered.

Sequence of material presented

The practical utility of the problem under investigation and the objectives of the study are presented in Chapter I, followed by literature reviews in Chapter II, methodology in Chapter III and results and discussion in Chapter IV. The entire material discussed in these chapters is summarized in chapter V.

Chapter - II

# REVIEW OF LITERATURE

## 2. REVIEW OF LITERATURE

Review of literature is essential to any research worker to determine the work both, theoritical and empirical aspects which has been done in the past. It guides in determination of problem area, provides a basis for conceptional definition of major concepts and interpretation of findings.

Around 1966, green revolution came into existence in India and the people and the government thought that the food problem will not be any more. After few years, the economists and planners observed that total food production reached certain stage of stagnation and there is no trend in the increase of total output. The analysis of per unit area confirmed the fact. This brought worry in the minds of people, and technicalogists of agricultural field started thinking towards this. This gave a term 'Constraints in crop production' and research workers including agricultural economists started working on finding the constraints of crop production. This study is also an attempt in that direction with a limited scope. To have proper and sound field for investigating the problem, review of literature is carried out and the same is given below.

Nag (1958)[1] reported that people of Baiga tribe mostly depend on agriculture and have no change in the outlook towards cultivation which they carry out with limited means and under natural conditions. This kept Baigas agriculture at very low technologically.

Saha and Borkataky (1968)[2] found that the production of cash crops is very limited due to its situation in an interior area. It is observed that sale of crops and fruit constitutes 64 per cent of the total income, but there is very little eagerness to increase production of such crops as it will be difficult to sell the surplus produce. It is mostly on barter system or on the basis of returning the crop after the harvest. There is very little scope of monetization in rural economy.

Shah (1969)[3] study gave stress on the need for planned change for shifting cultivation to settled farming and development of communications and transport, provision of marketing facilities and development of subsidiary

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1. Nag, D.S. "An economic study of the Baiga". Tribal Economy, Chapter II, 1959, pp 31.

2. Saha, N. and Borkataky, M.D. "Socio-economic study of Mizo village in Miz hills". Indian J. Agril. Econ. Vol. XXV (3), 1970, pp 143.

3. Shah, V. "Rural life in Assam". Case studies in four villages, Jorhat Agro-Econ. Res. Centre, North-East India, Assam Agri. Univ., 1969, pp 294.

occupations for enabling the tribal communities to improve their standard of living of the tribal.

Dubey (1969)[1] indicated that the farmers did not adopt improved farm practices because they were not fully convinced of their usefulness. They did not have sufficient money to buy these things or to pay for the extra labour required for the improved cultural practices. This was further limited by untimely supply of inputs and lack of knowledge towards way of utilization of improved crop production inputs.

Shah (1969)[2] reported that the per capita income and standard of living are low in tribal areas of Gujarat. This is because of poor natural resources and inadequate rainfall combined with large scale exploitation of tribal people by non-tribal interests and the primitive nature of the tribal economy.

Singh et al. (1970)[3] stated that the small size of holding, lack of dependable source of irrigation in paddy

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1. Dubey, S.K. "A study of factors influencing adoption, non-adoption and reversion from improved farm practices in Jabalpur block of Madhya Pradesh". Ph.D. Thesis, JNKVV, Jabalpur, 1969, pp 326-335.

2. Shah, V. "Problem of economic development in areas of Gujarat". Khadi Gramodhyog, Bombay, 1969, 15(9):670-672.

3. Singh, Y.P., Tripathi, K.S. and Maheshwari, V.C. "A study of the adoption of improved varieties of paddy". Bichpuri Balwant Vidhyapeeth J. Agril. Sci. Res., 1970, 12(1) : 28-33.

production as important causes for non-adoption of improved crop production practices.

Goswami (1970)[1] observed that the problem of agriculture development in the hill areas are linked with various other socio-economic considerations viz., improvement of infrastructure changes in social habit and customs, creation of demand for goods and services and urge for development, increase in income opportunities for investment etc. To tackle these problems, an integrated approach to the whole socio-economic structure is essential.

Veerabhadrain and Dwarikanath (1970)[2] reported that the 60 per cent of farmers who did not adopt the recommended quality of fertilizer cited lack of precise knowledge about fertilizer use, while the rest 40 per cent quoted lack of money as a reason for non-adoption.

Singh (1970)[3] reported that in tribal area in addition to absence of any irrigation facilities and other facilities

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1. Goswami, P.C. "Problems of economic development of tribal areas". Indian J. Agril. Econ., 1970, XXV(3), p 147.

2. Veerabhadrain, V. and Dwarikanath, R. "A study of adoption of hybrid maize in Bangalore district. Mysore J. Agri. Sci., 1970, 4(3), p 326.

3. Singh, I.P. "Development of agriculture in tribal areas". Indian J. Agril. Econ., 1980, XXV (3), p 170.

like primitive stage of agriculture, low quality of land and absence of improved techniques and cooperative credit come in way of agriculture.

Sisodia et al. (1970)[1] reported that the several factor were responsible for the backwardness of tribal agriculture in Madhya Pradesh. These are poor soil, very less area under irrigation, lack of manuring, ignorance of the people about the new technique and practices, use of crude and primitive agricultural implements and greater intensity of soil erosion on hill slopes and inability of the tribal farmers to arrest it. In the tribal districts, the rate of increase in irrigated area is also very slow. HYVP area is very small and also fertilizer consumption is very low in comparison to non-tribal districts.

Chaudhari (1970)[2] found that the ownership of land among the tribes is almost negligible. Cultivated land whatever they possess is of inferior quality and these are generally uplands. Large proportion of tribes depend on share cropping. There is no denial of the fact that many of them are constantly subjected to evictions. Sharing of produce also serve as a drag on production incentives.

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1. Sisodia, J.S., Singh, V.N. and Mishra, J.P. "Agriculture development in tribal Madhya Pradesh". Indian J. Agril. Econ., 1970, XXV (3), p 190.

2. Chaudhari, S.K. "Tribal agriculture in the plains". Indian J. Agril. Econ., 1980, XXV (3), p 198.

Singh (1970)[1] reported that per acre return in tribal agriculture fall very low when compared to that in the non-tribal areas of Madhya Pradesh. Per acre gross value of crops (1963-64) was Rs.131.3, 128.4, 138.9 in Jhabua, Khargone and Dhar, respectively; Rs.96.4, 100.1 in Mandla and Shahdol district, whereas Rs.151.5, 141.9, 213.7 in Mandsaur, Jabalpur and Raipur (non-tribal districts) of Madhya Pradesh. The figures for Jhabua, Dhar and Khargone are high due to influence of cash crops viz., cotton and groundnut which was a rare feature in tribal agriculture.

Agrewal and Shah (1970)[2] concluded that agriculture as carried on by the Bhotiyas, a hill tribe in the plains, is still primitive and traditional. There are no irrigation facilities, no fertilizer has ever been used, only local varieties of crops are grown. The yield and return per acre are poor. Income from supplementary enterprises are also very low.

Singh et al. (1970)[3] concluded that non-diffusion of new technology in the form of use of improved seeds, chemical

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1. Singh, I.P. "Development of agriculture in tribal areas". Indian J. Agril. Econ., 1970, XXV (3), p 171.

2. Agrewal, R.C. and Shah, S.L. "The tribal agriculture of Bhotiyas in a new settin of tarai plains". Indian J. Agril. Econ., 1970, XXV (3), p 209.

3. Singh, I.J., Mishra, J.P. and Sharma, J.S. "Problem of economic development in tribal agriculture in tarai plains". Indian J. Agril. Econ., 1980, XXV(3), p 214.

fertilizers, weedicides and pesticides and irrigation water on tribal farms is due to lack of capital investment. This is due to the strong bias of the tribal farmers against borrowing.

Barkataky and Gohain (1970)[1] reported that the love for traditional institutions were found to be a great stumbling block in the short run in adopting new form of technology which means requirement of more capital investment and drive for development.

Giri (1970)[2] in his paper reported that the Swazi areas which are comparatively overpopulated and overstocked, have small scattered holdings with unbalanced land utilization, overgrazing of pastures, poor farming techniques and low level of yield rates. Limited credit facilities, inadequate production inputs, poor infrastructure, lack of organisation for disposal of output and low level of farm education and training are other impediments to agriculture development in the Swazi areas.

Pichholiya (1970)[3] reported that due to topographical condition, the basic problems of tribal agriculture in

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1. Borkataky, M. and Gohain debarish. "Institutional factors as a deterrant for economic development in tribal areas". Indian J. Agril. Econ., 1970, XXV(3), p 218.
2. Giri, R. "Development of agriculture in tribal. Indian J. Agril. Econ., 1970, XXV (3), p 222.
3. Pichholiya, K.R. "Basic problem of tribal agriculture and tribal development block". Indian J. Agril. Econ., 1970, XVV (3), p 223.

Rajasthan have been; lack of irrigation, soil erosion and plant protection. It is felt that unless these basic problems are properly tackled, the attempts to increase farm production through high yielding varieties and fertilizer etc., may not give desired results.

Sahu (1970)[1] reported that due to agroclimatic conditions, technological backwardness of tribal farming system, lack of education, prevalence of rigid traditional, social and cultural outlook etc., tribal agriculture can rightly be classified as subsistance sector. Primitive method of farming and static cropping pattern are the key characteristics of tribal agriculture in India. A number of secondary characteristics such as low farm output and high man-land ratio leading to a low input-output coefficient, increase in the quantum of distress, sale and repurchase of agricultural produce, high cost of production per unit of area and low farm productivity, non-availability of plain fertile lands, fertilizer, irrigation, improved seeds, easy credit and storage facilities and organised market, ignorance about the latest use of agricultural technology and practices, aptitude of tribals for primitive traditional tribal culture, pattern of farm investment, structure of operational holdings, farm families, rate of saving, degree of indebtedness etc., are a few important factors affecting the growth and development of tribal agriculture in India.

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1. Sahu, B.N. "Guidelines for development of tribal agriculture in India". Indian J. Agril. Econ.,1970, XXV(3), p 224.

Acharya et al. (1970)[1] observed that out of 60 tribal farmers, as many as 53 were in debt. The indebtedness was proportionately more with small and medium sized farmers. While examining the rate of interest, it was observed that the cooperatives charged 9.5 per cent per annum, while it was high as 25-50 per cent per annum with the money lenders. The small and economically weak tribal farmers were exploited more by the money lenders. It was also observed that underutilization of the available credit was reported on account of untimely supply of credit by cooperatives.

Singh et al. (1970)[2] reported that the hope for the prosperity generated through the new technology of agriculture production is not being shared in the underdeveloped tribal areas. The farmers in these areas are still pursuing the primitive technique of production, resulting in low productivity on the farm. It is shown that the agriculture of these farmers is still in primitive stage and the farmers are irrational and inefficient in the use of farm resources.

Agrawal and Shah (1970)[3] suggested that the special attention should be paid by extension workers to the problems

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1. Acharya, T.K.T., Dhangade, M.P. and Lopes, M.N. "A study of credit problem of farmers in a tribal area of Maharashtra. Indian J. Agril. Econ.,1970, XXV(3), p 218.
2. Singh, L.R., Bhati, J.P. and Shukla, V.C. "Agriculture performance of 'Tharus' - a tribal community in tribal region of Uttar Pradesh". Indian J. Agril Econ., 1970, XXV (3), p 222.
3. Agrawal, R.C. and Shah, S.L. "Tribal agriculture of Bhotiyas in a new setting of tarai plains."Indian J. Agril. Econ., 1970, XXV (3); 210-213.

of Bhotiyas. Provision of loans, increase in transport facility and encouragement to traditional industry to utilize the available resources are a must in economic development of the tribals.

Padmavalli (1970)[1] suggested that the cropping pattern of the tribal areas should be such that the tribals are encouraged to resort to cultivation of cash crops of their region to the maximum extent possible. Effective measures may be taken to increase the number of orchards where a variety of fruits are grown to set up fruit preservation industry in the vicinity of tribal areas. Rearing of cattle may be encouraged in well-suited regions such as the Nilgiris, Hosur etc. Agro-based industries be set up with extension of transport and communication facilities. Other infrastructures and social measures are a must to bring out the tribal from the traditional cluches for adoption of improved agricultural practices.

Shrivastava and Singh (1970)[2] suggested that special efforts be made to induce qualified people to shoulder the

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1. Padmavalli, R. "Development of agriculture in areas of Tamil Nadu." Indian J. Agril. Econ., 1970, XXV(3), p 225.

2. Shrivastava Dru and Singh, C.B. "Agriculture development and tribal population in India." Indian J. Agril. Econ., 1970, XXV (3) : 161-167.

responsibility of educating and helping the tribal people. To think of agriculture development in the absence of people communication system is almost a mockery because this would inhibit the timely disbursement of credit and other agriculture inputs. Attention should also be paid to the growth of various forest and cottage industries as well as animal husbandry, so that all these combined create sufficient year round employment and income opportunities for the tribals which could be instrumental in holding them attached to the particular area.

Roopsingh (1971)[1] suggested two approaches to tackle the problem of disbursement of credit. The first alternative is to make an intensive effort in restricted area, where the entire credit requirements of tribals may be met by selective use of the credit facilities. The second is to go tehsil by tehsil in a predeterminate order to effect intensive utilization of credit facilities.

Chaudhary and Prasad (1972)[2] found that the high cost of fertilizer and lack of finance were main hinderances in the adoption of fertilizer.

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1. Roopsingh. "A study of credit problems of farmers in tribal area of Rajasthan". Yojana, March 1971, p 29.

2. Choudhary, B.N. and Prasad, C. "Problems of farms in relation to fertilizer use - an investigation in Delhi villages. Fert. News, 1972, 17 (2) : 51-57.

Smith (1972)[1] reported that there is a desperate need for capital to supply basic farm requirements but ignorance among the African farmers precludes the effective use of credit and lack of production skills, means low level of production.

Shoham and Rathore (1973)[2] found that reasons for non-adoption were lack of resources such as irrigation, credit facilities, lack of technological know-how and non-availability of inputs in time.

Rao (1973)[3] examined the system of marketing of produce and money lending in tribal economy. In the absence of adequate transport facilities and low marketable surplus of agricultural produce (12%), the scope for the promotion of efficient market system in the area is very limited. The government policy, which is mainly oriented towards the development of tribal economy through institutional support could not make much headway in its objective because

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1. Smith, C.A. "Agriculture development in Rhodesian tribal trust lands". Probe, 1972, 1(1) : 1-15.

2. Shoham, S.M. and Rathore, B.S. "Technological change and its diffusion : agriculture of western zone of Rajasthan". Res. J. Univ. Udaipur, 1973, XI, p 49.

3. Rao, D.V.R. "Marketing of produce and indebtedness among tribals". Report on a study in Chintapalli block, Agro-Econ. Res. Centre, Andhra University, 1973, p 200.

sophisticated development programmes could not appeal to the unsophisticated tradition-bound tribal people. Inspite of the protective regulations of government, the tribal people are still exploited by private traders and money lenders.

Sharma (1974)[1] reported in the study on incentives and disincentives related to adoption of agricultural innovation by small farmers of Madhya Pradesh, that the availability of irrigation was an important incentive for adoption of new technology.

Bhati et al. (1974)[2] stated that the main need amongst tribal farmers in Uttar Pradesh is more irrigation followed by credit to purchase fertilizers and improved seeds.

Bhati et al. (1974)[3] examined the data of 40 tribal farms and 20 non-tribal farms in a block in Nainital district in Uttar Pradesh. The various problems coming in the way of

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1. Sharma, P.N. "Incentives and dis-incentives related to adoption of agricultural innovativeness by small farmers of Madhya Pradesh, India." Ph.D. Thesis, 1974, Cornnel University, Ithaca, New York (USA).

3. Bhati, J.P., Singh, L.R. and Moorti, T.V. "Economic structure of tribal agriculture in Nainital tarai". Agril. Situ. India., 1974, 28(12) : 821-825.

2. Bhati, J.P., Moorti, T.V. and Singh, L.R. "Some reflections on economic development of tribal farms in Uttar Pradesh". Econ. Affairs, 1974, 19(12) : 514-522.

extensive adoption of high yielding varieties of seeds on tribal farms were due to high cost, inadequate and untimely supply of inputs, lack of knowledge to grow and susceptibility towards diseases.

Singh and Singh (1975)[1] reported that the size of holding showed a positive significant association with adoption of high yielding varieties of paddy and wheat.

Kakatpure (1975)[2] reported that the lack of finance and inadequate irrigation facilities, high cost, untimely suply, unsuitable land, lack of knowledge and inadequate supply of inputs were the most important reasons for non-adoption of improved agricultural practices.

Pant (1975)[3] reported that the credit in the initial phase of development without training the small farmers for more productive use of modern inputs results in loopsided

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1. Singh, V.B. and Singh, K.K. "Effect of education, size of holding and irrigational facilities in adoption of high yielding varieties." J. Rural Extn., 1975, U.P. Society of Extn. Edn. & Rural Development, 3(2), p 17.

2. Kakatpure, W.A. "Factors affecting knowledge and adoption of improved agricultural practices by small farmers in Sehore district, M.P." M.Sc. (Ag) Thesis, JNKVV, Jabalpur, 1975, pp 57-58.

3. Pant, S.P. "Problems of prospects of small farmers in the tribal area of Chhindwara district, M.P.". Agro-Economic Research Centre (M.P.), 1975, p 181.

development and eliminates the poor from the race. Some of small farmers may even have land but are still in more acute financial crisis that what they faced before taking the loan. Greater investment in man than in loan financed material is therefore seen as the pre-requisites for development of the small and under-priviledged tribal farmers.

Banerjee (1976)[1] reported that the diffusion of recent agricultural technology was almost nil in the tribal area, majority of the farmers lacked in knowledge about the technology.

Desai (1976)[2] found that while informal credit sources have played a variety of roles in the life of the tribal population of the study area, the formal sources with exception of the forest labourers, cooperative performed a stereotyped role until 1973-74, despite the acute demand for subsistance credit. This was because the formal agencies were uninfunctional in their roles.

Gour[3], stressed that non-conventional inputs should be encouraged and suitable changes should be made in the

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1. Banerjee, S.K. "A study of socio-economic and demographic factors associated to the knowledge of agricultural technology among tribal farmers of Baster district of Madhya Pradesh". M.Sc. (Ag) Thesis, JNKVV, Jabalpur, 1976, p 69-88.
2. Desai, B.M. "Formal and informal credit sources in tribal areas of Dharampur taluka". Artha Vikas, 1976, 12(2);78-94.
3. Gour, S.S. "Resources endowment of tribal areas of Madhya Pradesh".

cropping pattern so that minor millets may be replaced by their superior quality in the beginning before introducing new crop. As against general approach, he advocated the need of treating each area according to its potentialities.

Mehta[1] analysed the problem of central belt and pointed out that the receptivity of the tribal is low. Administrative machinery should be made more efficient than at present to induce any economic development of the area.

Tiwari[2] analysed the constraints on development of tribal in Madhya Pradesh on the basis of sex ratio, participation rates, occupational distribution, infrastructure and education of tribals.

Rathore[3] invited attention on economic obsticles of tribal population and rightly suggested for better understanding of the inner feeling of tribal population and removing the economic obsticles.

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1. Mehta, V.D. "Tribal economy of central belt". Op.cit.

2. Tiwari, R.S. "Constraints of the development of tribal of N.P.". Op.cit.

3. Rathore, R.S. "Economic barrier on development of tribal". Op.cit.

Singh (1977)[1] reported that 88 per cent of farmers in the tribal areas of Mandla district did not adopt improved seed and fertilizer. Big farmers were more adopters of improved seed and fertilizer in comparison to the small tribal farmers. He also concluded that the farmers who have irrigation facilities were the more frequent adopters of improved seeds and fertilizers as compared to those who did not have irrigation facilities. He concluded that lack of irrigation, technical guidance, credit and nonavailability of inputs in time were some of the disincentives for the tribal farmers which inhibit them for adopting improved crop production technology.

Mitra (1977)[2] stated that the agriculture problems for tribal farmers and barriers to implementation proposals by the planners arise from geographical, economic and sociological factors. Two new dangers to farmers are of the village mahajan with a vicious circule of indebtedness under cover and that a new type of exploitation is of status levels in the previous classes society.

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1. Singh, C.V. "Study on the small farmers adoption behaviour related to agriculture innovations in tribal area of Mandla, M.P.". M.Sc.(Ag) Thesis, JNKVV, Jabalpur, 1977.

2. Mitra, S. "Development problems of tribal agriculture in India." Geo. Rev. India, 1977, 39(2) : 107-116.

Bera (1977)[1] observed that in view of the recent awakening about the problems of tribal people, particularly the less privileged class of people, emphasized on more attention being given to investigate this class of people in the area of credit need and related aspects. He also observed that there is a intrinsic difficulty in taking up the problem of tribals for investigation by theresearch worker because of the language problems as well as the fear they have in giving the requisite information. The summary revealed that the credit was demaded by all the classes of farmers irrespective of their size of holdings.

Motiramani (1977)[2] concluded that there are a number of constraints responsible for low productivity of wheat such as abnormally warm temperature during wheat sowing season (1976-77) and at ripening, low and unbalanced fertilizers use, seed quality and variety, plant population, untimely sowing, pests and diseases, weed problem, tillage and other problems faced in rice.wheat rotation. He suggested for an intensive survey on constraints in productivity of crops of tribal regions.

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1. Bera, M.K. "Credit needs of scheduled tribes in Jashpur block of Raigarh district, M.P.". M.Sc.(Ag) Thesis, JNKVV, Jabalpur, 1977.

2. Motiramani, D.P. "Constraints analysis of wheat productivity". Mimeograph, 1977.

Mahapatra (1978)[1] reported in the paper on field studies in Mayur Bhanj district (Orissa) that the rate of modernisation of tribal agriculture was slow and also concluded that the absence of irrigation was a prime factor which inhibits development.

Mitra (1978)[2] reported that the tribal people form only 5.72 per cent of West Bengal population and as a result of this weak position, there is no tribal development. However, it is recognized that these people are economically and socially disadvantaged, suffering from intense poverty, indebtedness, loss of land and inadequate inputs for farming.

Yadav (1978)[3] reported that nine broad categories of constraints operate in wheat production , which are low fertility status of soils, non-availability of irrigation facilities, non-use of chemical fertilizers, nonavailability of FYM, poor water management, poor seed quality, topography of field, occurrence of insects and pests and weed problem.

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1. Mahapatra, S. "Modernisation of tribal agriculture - technological and cultural restraints". Econ. Polit. Weekly, 1978, 13(13) : 581-585.

2. Mitra, S. "The tribal culture of West Bengal". Geo. Rev. India, 1978, 40(3) : 219-227.

3. Yadav, Anil. "Constraints analysis of wheat production in Sagar district, Madhya Pradesh". M.Sc.(Ag) Thesis, JNKVV, Jabalpur, 1978.

Vishwakarma (1979)[1] reported that the tribal farmers of Dindori block faced various problems while borrowing loan. The procedure of financing was quite lengthy and difficult, loans were not available at proper time, patwari and village level workers did not help the borrowers in providing loans. Steps be taken to improve these so that economic development of tribal farmers be carried out.

Yadav (1980)[2] found that farm production and income could be increased significantly by improving the supply of working capital. Although, attempts have been made to do this through tribal development project and cooperatives, but the farmers are mistrustful and unmotivated due to lack of knowledge.

Pal stressed the need for drawing up a development strategy for tribals based on canal and tank irrigation, repayment of loan etc.

Gour stressed to consider various constraints of limited wants, low man-land ratio, competitive spirits as boons, while drawing up strategy of tribals.

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1. Vishwakarma, P.K. "A study of the credit behaviour of the tribal farmers of Dindori block, Mandla district, M.P.". M.Sc. (Ag) Thesis, JNKVV, Jabalpur, 1979.

2. Yadav, H. "Resource productivity on sample tribal farms in Baster district of Madhya Pradesh". Econ. Affairs, 1980, XXV (11) : 272-280.

Maheshwari[1] observed that for development of backwards or tribal region, efficient administrative apparatus is must. Similarly, coordination between various departments is essential.

Patel[2] stressed on the two interpretation of tribal development as a concept, i.e., development of tribals and of tribal area. In the firse sense, social constraints, cultural laga, lack of awakening and aspiration etc., play an important role but in the second sense, dearth of capital, lack of infrastructure and other social overheads are significant.

Jain[3] stated that the exploitation by money lenders, revenue and police officials do not allow the tribals to progress. Education among tribals forms the basic essentials for their economic development.

Upadhyay[4] suggested that development of tribal areas can be achieved through the development of agriculture,

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1. Maheshwari, P.D. "Role of administrative apparatus in tribal development programme". Op.cit.

2. Patel, M.L. "Economic constraints of tribal development". Agro-economic survey of tribal Mandla. Peoples Pub. House Pvt. Ltd., New Delhi.

3. Jain, T.C. "How the tribal development be marched". Op.cit.

4. Upadhyay, S.K. "Tribes development possibilities in M.P." Op.cit.

irrigation, forestry, animal husbandry, poultry and industries. Among the forest based industries are saw mill, rope and furniture making, bomboo products, bidi industries and bee keeping.

Yadav[1] stressed that the strategy should include two basic requirements. Firstly, increase in the level of income and meeting the minimum needs with reference to Bastar district. He advocated to set up an autonomous agency which could meet all types of requirements which is at present being met by private traders. The credit should be lined with scheme of repayment by labour in the off-season employment. He stressed on the recruitment of honest and hard workers.

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1. Yadav, H. "Strategy for tribal development programme with reference to Baster district". Op.cit.

Chapter - III

# M E T H O D O L O G Y

## 3. METHODOLOGY

This chapter deals with the nature and type of data required, sampling technique used for collecting the data and analytical tools applied for generating relevant conclusions.

### The Data

The data required for this study were both, of primary and secondary in nature. The primary data releate to the general characteristics of sample farmers and inherent constraints (economic), operating in raising productivity of important crops of tribal farmers. The information was also collected regarding the finance and marketing problems.

### Sampling Technique

### Selection of area

Shahdol district is selected purposively, as it has quite a large percentage of tribal population of Madhya Pradesh. Kotma block is selected purposively as it has the highest percentage of tribals, out of all the blocks of the district and the investigator was acquainted with the area which facilitated the work of collection of information on many aspects relating to this study.

Selection of the villages

After selecting the block, a list of the villages was obtained from the block headquarter. Then five villages were selected from Kotma block at random. The selected villages are - Gohandra, Baskhali, Changeri, Manmari and Pathrodi.

Selection of the tribal farmers

From the selected five tribal villages, a list of tribal farmers of each selected villages was prepared with the area under individual holding. The list is arranged in the ascending order of size of land holding. The total tribal farmers were categorised into three groups viz., (a) small sized farmers, (b) medium sized farmers and large sized farmers, by dividing the list into three equal groups. From each group, 20 farmers were selected at random. Thus, 60 farmers from five villages were selected for intensive study of the problem.

The data in the study pertain to the period for the year 1982-83.

Method of collecting data

Primary and secondary types of data were collected for the study. Secondary data were collected from the following sources :-

(a) Block records,

(b) Progress report of the block, and

(c) Village records available with the village Patwari.

The survey method was adopted to conduct the enquiry by personal interview with the help of pre-tested schedules, covering various aspects to answer the objectives of this study. Thus, primary data were collected to provide basic information of this study.

Before putting the question to respondents, the purpose of the study was explained to the selected respondents and they were assured that the information rendered by them will be kept confidential and in no case could be exposed to any.

Method of Analysis

The data collected by survey method were edited for adequacy and reliability. For gap fillings, second round survey was also done with same respondents. Since the major objective of the study was to isolate and specify the nature of constraints operating among the cultivators, the detailed information collected as per schedules was arranged. The data were interpreted by using the simple mean and percentage.

Hypothesis

The following hypotheses have been framed for this study.

1. Human labour resources form the major constraint for increasing crop production with the tribal farms.

2. Tribal farmers fulfil their agricultural credit requirements from the money lenders.

3. There is no difference with respect to credit requirement for the various agricultural purposes among the different sizes of land holdings.

# Chapter - IV

# RESULTS AND DISCUSSION

## 4. RESULTS AND DISCUSSION

In this section efforts have been made to cover the analysis and interpretation of the data collected for the study, and to present the results in context of the stated objectives. The results and discussion covers the analysis of primary data on general characteristics of the sample farms, the factors influencing the crop yield, and the constraints and the reasons for their operation on the sample farms.

### Land utilization pattern of sample farmers

Land use pattern which is the by-product of the natural forces and human intension in respect of the use of land resources under natural vegetation and commercial crops. The vastness of land surface represents mosaic of soil crop complex and agricultural features which form the basis for interpretation of the farm business. For the purpose of this study, sample farmers were delineated into three categories namely small, medium and large farmers. The common use under which the land is subjected are - land under cultivation, uncultivated land, barren land and current fallow etc. The details are given in Table 1.

Table 1 : Land utilization pattern of sample farmers

| Land holding group | Total land owned | Uncultivable land | Barren land | Current fallow | | Land under cultivation | Av. size of land hold. | % area irrigated |
|---|---|---|---|---|---|---|---|---|
| | | | | Kharif | Rabi | | | |
| Small | 33.579 | 0.318 | - | - | 29.637 | 33.261 | 1.7 | 1.0 |
| Medi. | 58.950 | 2.740 | - | - | 49.310 | 56.210 | 2.9 | 1.3 |
| Large | 149.859 | 2.500 | 1.314 | 2.579 | 119.248 | 143.466 | 7.5 | 3.0 |
| Overall | 242.388 | 5.558 | 1.314 | 2.579 | 198.195 | 232.937 | 4.0* | 2.2* |

* Overall average

It may be noted from the above table that out of the total 232.937 hectares, large farmers occupy the largest area (143.466 ha) followed by medium (56.210) and small farmers (33.261 ha). As regard the uncultivated land, it was highest in medium farmers (2.740) followed by larger farmers and small farmers. The uncultivated land was found minimum in small farmers. The practice of leaving current fallow among sample farmers was found 198.195 ha which ranged from 119.248 ha among larger farmers followed by 49.31 in medium and 29.637 in small farmers during rabi season, while during kharif season, it was found 2.579 ha among large farmers. The practice of leaving fallow land was found minimum in small farmers, where it was approximately four times less than larger farmers.

Out of the total owned area, maximum percentage (96%) is brought under cultivation. It is quite surprising that no area is left by tribal farmers for grasslands. This is due to the fact that tribal farmers leave their cattle to graze in government lands and as very small percentage of area is put under cultivation in rabi season, no problem is faced by farmers to have grazing area in most of the months of the year.

Thus, it could be concluded that a very large percentage of total owned area (96%) is put under cultivation by the tribal farmers and no area is allocated for grasses or grazing cattle.

## Cropping pattern and intensity of farming of sample farmers under different size groups

Cropping pattern refers to the area under different crops allocated in different seasons. In other words, cropping pattern speaks about the intensity of land use and the intensity of resources use on various crops grown under different levels of technology. Following table presents the phenomena of cropping pattern among the different categories of farmers.

Table 2 : Cropping pattern and intensity of farming of sample farmers under different size groups

(area in ha)

| Land holding group | Kharif crops | | | | Rabi Crops | Ratio of kha. to rabi crops | Total cropped area | Cropping intensity |
|---|---|---|---|---|---|---|---|---|
| | Paddy | Kodo | Urd | Total | Wheat | | | |
| Small | 32.031 | 1.230 | - | 33.261 | 3.624 | 1:0.1 | 36.885 | 110 |
| Medium | 50.302 | 5.412 | 0.545 | 56.259 | 6.900 | 1:0.12 | 63.159 | 112 |
| Large | 122.100 | 14.753 | 6.613 | 143.466 | 24.218 | 1:0.17 | 167.684 | 116 |
| Overall | 204.433 | 21.395 | 7.158 | 232.986 | 34.732 | | 267.728 | 112 |

Small farmers have distributed their cropped area as 32.031, 1.230 and 3.624 hectares to paddy, kodo and wheat crops, respectively. Cropped area of medium farmers was 50.302, 5.412, 0.545 and 6.900 hectares in paddy, kodo, urd and wheat crops, respectively. While large farmers have devoted their cropped area as 1220.100, 14.753, 6.613 and 23.218 hectares under paddy, kodo, urd and wheat crops, respectively. Table 2 also shows the cropping intensity among the sample farmers. Cropping intensity refers to the number of crops grown on a farm during the year with land as a fixed resource. In other words, it is a ratio between the gross and net cultivated area, expressed in terms of percentage. Cropping intensity of the sample farmers was 112 per cent which ranged from 110 in case of small farmers to 116 per cent in large farmers. The cropping intensity

is quite low due to the fact that cropped area under irrigation is negligible with the sample farmers. The ratio of kharif to rabi crops is 1:0.1, 1:0.12 and 1:0.17 in small, medium and large category of farmers. Whatsoever area devoted to rabi crops is under wheat only and 88 per cent of the cropped area is occupied by paddy.

Thus, it could be concluded that the tribal farmers are mon crop farmers and mostly grow crops of kharif season and intensity of cropping is quite low as irrigation facilities are negligible.

Productivity levels of important crops

To have an insight into the level of production of important crops of the sample farmers, the yields of the district and that of adjoining district have been provided in the following table.

Table 3 : Productivity levels of important crops

(q/ha)

| Unit concerned | Land holding size group | Paddy | | Kodo-kutki | Urd | Wheat | |
|---|---|---|---|---|---|---|---|
| | | Imp. | Local | local | local | Imp. | Loc. |
| Sample farmers : | Small | - | 5.00 | 1.70 | - | - | - |
| | Medium | 8.00 | 6.25 | 1.85 | 1.60 | 5.60 | 4.25 |
| | Large | 8.25 | 6.50 | 2.20 | 1.65 | 5.80 | 4.50 |
| Average | | 8.12 | 5.90 | 1.90 | 1.62 | 5.70 | 4.20 |
| Shahdol district | | 7.49 | | 2.42 | 1.89 | 6.22 | |
| Adjoining Dist. Rewa | | 5.40 | | 2.58 | 2.06 | 8.17 | |

Table 3 shows the comparative picture of production level of sample farms and district average and one of the adjoining districts for different crops. It may be noted from the table that production per hectare of sample farms was lower than district (Shahdol) average. Per hectare paddy production of sample farms was 5.90 q which ranged from 5.00 in case of small farm to 6.50 q of large farms which was lower that district production (7.49 q). Small farmers have not adopted improved package of practice as shown in the table. The production level (improved) obtained by medium and large farmers were roughly the same. The Rewa district average for paddy is lower as this district falls under wheat-paddy tract, whereas Shahdol district is in paddy tract. Production of wheat in sample farms was 4.20 q which ranged from 4.07 q in case of small farms to 4.50 q in case of large farms. Medium farms obtained 4.25 q/ha which was lower than both the districts, Shahdol and Rewa. Table shows that production level of sample farms is lower than district average. The production level of wheat of tribal district Shahdol is lower than non-tribal district Rewa. Per hectare production of kodo-kutki and urd crops was also found less than the district average. The yields are less than that of the adjoining district Rewa. An awfully low production level of study area is an index of its tradition-bound crop cultivation with disregard of soil, water management and inappropriate cropping system for rainfed and irrigated

conditions. Thus, emphasizes to have a study into the constraints responsible for such a low yield of crop of tribal farmers.

Soils of the sample farmers

In crop production, soil forms an important component. The soil of the region is sandy and Matiyar. It is of low fertility status. It forced the farmers to raise only kharif crop and very small percentage area is devoted to rabi crops. Bunded and lowlying fields are suitable for paddy cultivation. Continuance of raising the same crop every year will make the soil sick in long run and needs attention for soil management. Lowlying fields and low moisture retention of soils are the main problems reported by the sample farmers.

Constraints for improved seed

Introduction of high yielding varieties in sixties gave production potential to the crops, specially paddy and wheat. These produce higher grain yield per unit area than the traditional varieties. This is of utmost importance under the increasing conditions of irrigation and fertilizer use to the crops. An attempt is made to find out the present level of improved seed use with the farmers. The following table provides details on local and improved seed use by the sample farmers.

Table 4 : Use of local and improved seed

(area in ha)

| Land holding size group | Paddy | | | Wheat | | |
|---|---|---|---|---|---|---|
| | Local seed | | Imp. seed | Local seed | | Imp. seed |
| | Home supplied | Pur-chased | | Home supplied | Pur-chased | |
| Small | 12.000 (3.7) | 20.031 (6.3) | - (0) | - (0) | 3.624 (100) | - (0) |
| Medium | 40.000 (79) | 6.302 (13) | 4.000 (8) | - | 4.500 (65) | 2.400 (35) |
| Large | 98.500 (81) | - (0) | 23.600 (19) | 12.168 (50) | - (0) | 12.050 (5) |

The figures in brackets give percentage for respective category of the total area under concerned crop.

The above table reveals that the small category of sample farmers do not use improved seeds. There is more percentage area put under improved seed in case of wheat crop as compared to paddy. This may be due to the fact that, risks with paddy are more due to monsoon and wheat is supposed to be a sure crop. Only 8 per cent of the total area under paddy is put to improved varieties in case of medium size farmers, whereas this percentage is 19 in large size farmers. In case of wheat, the improved varieties occupied 35 and 50 per cent of the total area under it with small and large farmers, respectively.

The above discussion bring the conclusion that small farmers do not put improved varieties of paddy or wheat on their farms. Improved varieties occupy more per cent area

in case of wheat as compared to paddy crop. This necessiates an investigation into the reasons for such a behaviour of farmers because it is desired that for increased production, improved varieties must be used by the farmers.

Along with the facts on improved seed, information on local seed source was also gathered. The small and medium size farmers used purchased seeds for more per cent area in case of wheat as compared to paddy. The large size farmers had their own home supply of local seed in paddy and wheat. This leads us to the conclusions that small and medium class farmers depend on market for their local variety seed requirements. An attempt is also made to find out the reasons for the use of local variety seed.

The farmers revealed that it is due to full knowledge of the behaviour of local variety seeds with respect to sowing time; percentage germination; requirement of soil; water; seed rate; manure; the time of harvest and the production potential, that attracts them to put this. The other factors included the timely availability, no irrigation facilities and lack of information on improved varieties.

Economic constraints

The farmers were asked questions to reveal the factors which came in way of the use of improved seed of paddy and wheat and economic constraints are given in the following table.

Table 5 : Economic constraints of improved seed

| S.No. | Size of land holding | Lack of finance | Not available in time |
|---|---|---|---|
| 1. | Small | 9 | 5 |
| 2. | Medium | 7 | 4 |
| 3. | Large | 8 | 4 |

The above table reveals that farmers gave lack of finance and non-availability in time as the factors coming in way for the use of improved seed. 40 to 50 per cent of the sample farmers gave lack of finance as the major economic reason for not using improved seed. It is really interesting to note that the large category of farmers also quoted lack of finance as a constraint. Thus, it could be concluded that arrangement for the finance to purchase improved seed must be made.if desired increased production is to be obtained.

Other constraints

There may be other factors in addition to economic, which may be responsible for not putting the area under improved seed by the farmers and the same are listed in the following table.

Table 6 : Other constraints for the use of improved seed of paddy and wheat

| Size of land holding | Lack of knowledge | Unknown about the sources | Not suitable with the field | Lack of irrigation | Required more supervision |
|---|---|---|---|---|---|
| Small | 4 | 3 | - | - | - |
| Medium | 3 | 2 | - | 4 | 2 |
| Large | 2 | 1 | 2 | 5 | 1 |

It is clear from the above table that the farmers gave many constraints in addition to economic in adopting improved seed. The major one is lack of knowledge with respect to the improved variety and the source of supply. In addition to the five reasons listed in the above table, the farmers also gave the following constraints operating for the use of improved seed :-

1. Uncertainty about the productivity of improved seed.
2. The improved varieties do not have taste and flavour as of local.
3. Improved varieties are susceptible to pests and diseases.
4. Improved varieties make soils barren; and so on.

Thus, it could be concluded that other constraints do play a major role in adoption of improved seed by the farmers and a sincere extension education body is necessary

to educate the farmers and remove their myths in addition to tackling the economic constraints.

Seed sowing of crops

Method, time and resources used in seed sowing of crops have significant influence on the level of production of crops. It is therefore, essential to peep into details on sowing of seed of crops to point out the factors which may be acting as constraints to level of production. In general, the sample farmers used broadcasting method of sowing of all crops. In case of paddy, few area by farmer is put by transplanting method, although in per cent term, 60 per cent sample farmers adopted this method. The broadcasting method of sowing of paddy is locally known as 'Sukha' method of sowing.

Economic constraints

The economic constraints operating in improved method of sowing are given in the following table.

Table 7 : Economic constraints for improved method of sowing crops

| Size of land holding | Lack of finance for equipment | Lack of proper equipment | Lack of other resources |
|---|---|---|---|
| Small | 2 | - | 11 |
| Medium | 3 | 1 | 10 |
| Large | 6 | 3 | 6 |

The investigation revealed that it is not the lack of finance to purchase equipment nor the proper equipment which acted as major constraints but lack of other resources. The other resources included size of land holding, human and bullock labour quality and quantity and managerial skill. It is very surprising that more percentage of large size farmers expressed the lack of finance to purchase equipment operating as constraints in improving level of crop production compared to small and medium category. This does not fit to economic logic as the requirement of finance for present improved technology of sowing is not heavy. This may be due to the fact that the respondents have confused in giving reply. Needs further investigation.

Thus, it could be concluded that lack of other resources than finance and proper sowing equipment which act as constraint in increasing level of crop production.

Other constraints

These include mostly lack of knowledge with respect to improved method of sowing and the source of availability of proper equipment. Only one-third of the sample farmers expressed these factors as constraints.

Constraints for manure

Organic manure have their role in the production of crops. These help in maintaining the texture of the soil,

thereby become directly responsible for raising the crops decades after decades. This is of great importance under the increasing conditions of irrigation and fertilizers given to the crops. Thus, it is necessary to find out the present status of manure use with the farmers and constraints coming in the way for its full demand and utilization.

In the category of manures, only farm yard manure (FYM) is used by most of the cultivators. There are only a few who use compost and green manure. The sample farmers of this study used only FYM, mostly prepared from the dung and litter available at home. The following table provides details on its demand and utilization.

Table 8 : Use and demand of farm yard manure

| Land holding size group | Total holdings in ha | Area manure applied(ha) | Recommended dose of FYM per ha in q | Actual use per ha in q |
|---|---|---|---|---|
| Small | 33.579 | 11.051 (33) | 110 | 62<br>56* |
| Medium | 58.950 | 27.200 (46) | 110 | 77<br>70* |
| Large | 149.859 | 39.200 (26) | 110 | 79<br>72* |
| Overall | 242.388 | 77.451 (35) | | 73<br>66* |

Figures in brackets refer to percentage of respective row.
* Percentage of respective row for column 4.

It was revealed by the farmers that they applied farm yard manure only to paddy crop, although wheat occupied about 14 per cent of gross cropped area. The application was made during the summer months and bullock cart was used to transport the manure to the fields. Desired nutrients from manure could not be made available to soil due to quality of manure and the time of application. Half digested manure was also applied to the fields which called for termites and other diseases.

The above table revealed that only 26 to 46 per cent of the total holding could be manured and in this area, only 56 to 72 per cent of the recommended quantity was applied. The farmers of small and large size of land holdings could only applied manure in one-third and one-fourth of the total holding. The quantity in case of small farmers was only 56 per cent to the recommended dose.

In conclusion, it could be said that only 1/3rd of the total area was applied with manure and in this area also 2/3rd of the recommended dose was applied. This calls for an investigation into the factors responsible for such a low level of manure application by the farmers to the fields.

Constraints in manuring paddy and wheat production

The farmers were asked about the various constraints which were responsible for the use of manure in all fields

and in required quantities. The constraints have been divided into two categories, (i) economic and (ii) others.

Economic constraints of manure

Lack of finance, not available in market and lack of resources (dung and litter) as economic constraints. The following table gives the details of such constraints.

Table 9 : Economic constraints of manure

| S.No. | Land holding size group | Lack of finance | Not available in market | Lack of resources (dung & litter) |
|---|---|---|---|---|
| 1. | Small | 3 | - | 8 |
| 2. | Medium | - | - | 10 |
| 3. | Large | - | 10 | 12 |

The above table shows that there were only three farmers of the small category who expressed that although manure was available with other families, could not be obtained due to lack of finance for the purchase of the same. There were 10 farmers out of 20 of the big category who said that they could have purchased the manure if it was available in the market. 8, 10 and 12 of small, medium and large size of land holdings farmers reported that dung and litter available at home is not sufficient to meet their requirement.

Thus, it could be concluded that it is mostly the non-availability of raw material (dung and litter) which constraint the full demand of manure. Lack of finance which forms a major constraint in the use of any resource in production do not operate in the case of manure as it is not available in the market nor cost on its manufacturing requires funds. Human labour forms a major portion in manufacturing of farm yard manure and it is mostly supplied from the family.

Other constraints

Lack of time and transport agency were reported as constraints under other category. Following table shows the cases in which other constraints operate for manure.

Table 10 : Other constraints for manure

| S.No. | Land holding size group | Other constraints |
|---|---|---|
| 1. | Small | 2 |
| 2. | Medium | 1 |
| 3. | Large | - |

The above table shows that there were only 2 out of 20 small category farmers who reported other constraints like lack of time and transport agency as responsible for

not fully utilizing farm yard manure. In case of medium, there was only one case expressing other contraints. It is necessary to make it clear that other constraints are not regular but are felt only in some years when the farmer does not get sufficient time to place the manure in the field due to ill health or remaining busy in social or religeous works.

During the investigation, a general observation was made, that the farmers do not think much about the use of farm yard manure and just place the quantity of FYM available at home in the field. The wheat fields are not manured as most of the quantity runs off during monsoon.

The above discussion calls for a serious attempt on the part of scientists, extension workers, for the fuller application of organic manures in fields. This is necessary to check the present fertile soil from becoming barren in future due to continuous production of crops with the help of irrigation and fertilizers. If the quantum could not be increased then supplement source of organic manure in the form of green manuring specially to the fields growing rabi crops be advocated and educated.

Application of Fertilizers to field crops

Application of fertilizers play an important role in production pattern of different crops. Fertilizers form a

source of major nutrients required by the crop. The fertility level of the soils is exhausting day by day due to introduction of intensive cropping pattern. Application of judicious quantity of fertilizers is important for increasing crop production to meet the demand of people. An attempt have been made to find out the present status of fertilizers use with the sample farmers.

The category of category of fertilizers, Urea and Gromore (24-24-0) are used by most of the cultivators. The following table provides details on its utilization.

Table 11 : Use of fertilizers by sample farmers

| Land holding size group | Area under (ha) | | Fertilizers applied area (ha) | | Recommended dose of NPK (kg/ha) Irriga. | Actual use of fertilizers (kg/ha) | |
|---|---|---|---|---|---|---|---|
| | Paddy | Wheat | Paddy | Wheat | | Paddy | wheat |
| Small | 32.031 | 3.624 | 1.500 | 1.500 | Paddy 60-40-25 | 30-0-0 | 24-24-0 |
| Medium | 50.302 | 6.900 (0.75)* | 4.300 | 2.500 | Wheat 60-30-20 | 26-0-0 | 27-27-0 |
| Large | 122.100 | 24.218 (4.350) | 25.700 | 18.218 | | 27-0-0 | 28-28-0 |
| Overall | 204.433 | 34.742 (6.100) | 31.500 | 22.218 | | 28-0-0 | 26-0-0 |

* Figures in brackets refer to area irrigated.

Table 11 shows that in case of paddy crop, fertilizers applied were only in 5, 8 and 21 per cent of the area under this crop in small, medium and large category of farmers, whereas the respective percentage is 40, 36 and 75 for wheat crop. All the area which is irrigated is given fertilizers. In addition to irrigated area, fertilizers are also applied to some unirrigated cropped area of wheat. When the actual quantity to be applied per hectare is compared with the recommended dose then it is observed that it is not only 50 per cent but the balanced dose is not given to the crops.

Thus, it could be concluded that the farmers not only given half of the recommended dose but the balance NPK is also not applied, therefore, an investigation is carried out to find the factors responsible for it.

Constraints for the use of fertilizers

The farmers were asked about the various constraints which were responsible for the use of fertilizer in all the fields and in balanced doses. The constraints have been divided into two categories, (i) economic and (ii) others.

Economic constraints for the use of fertilizers

Farmers expressed lack of finance and the quantities not available at desired time, the two constraints for fertilizers. The details are given in the following table.

Table 12 : Economic constraints for fertilizers with sample farmers

| S.No. | Land holding size group | Lack of finance finance | Fertilizer not available in proper time |
|---|---|---|---|
| 1. | Small | 11 | 2 |
| 2. | Medium | 10 | 3 |
| 3. | Large | 8 | 3 |

It is clear from the above table that more percentage of farmers of category of small and medium than large could not have finance to purchase the fertilizers. On an average, the percentage of farmers comes to 50. Very small percentage farmers had the problem in getting proper quantities of fertilizers in time.

Thus, it could be concluded that 50 per cent of the farmers felt lack of finance as constraints to use fertilizer to the crops.

Other constraints

There were many factors than the economic which come in way for the use of fertilizers to the crops. The factors revealed are lack of knowledge about fertilizers, irrigation facilities, not using improved seed, past experience and ideas

like fertilizers spoil the soil, the grains are not so tasty. The number of farmers revealing such factors is given in the following table.

Table 13 : Non-economic constraints for the use of fertilizers to the crops

| S.No. | Land holding size group | No knowledge about fertilizers | Irrigation facilities not available | Not using improved seed | Others |
|---|---|---|---|---|---|
| 1. | Small | 5 | - | 1 | 4 |
| 2. | Medium | 3 | 2 | 2 | 4 |
| 3. | Large | 2 | 5 | 3 | 3 |

It is clear from that above table that many non-economic factors do come in the way for the increased use of fertilizers to increase the production of crops. It is not possible to pinpoint a particular factor which can be said to be responsible for not using fertilizers but a variety of them operate with the farmers. Though, lack of knowledge about fertilizers and its use do play an important role and thus need to have an extension education in this field.

Interculture operations (weeding)

Weeds reduce grain yields because of competition for nutrients, light, moisture, space and carbondioxide. Besides, many weeds are alternative host for most of paddy pests and diseases and lower the quality of harvested crop due to presence of weed seeds in grain. Therefore, to save yield losses due to presence of weed in paddy, weed control is must. Weeds can be controlled by hand weeding, mechanical weeding and application of herbicides. But the tribal farmers use only hand weeding for saving the yield losses in paddy crop in very small area. No weeding operation is carried in other crops. Details on paddy in which weeding operation is carried out is given in the following table.

Table 14 : Paddy area under weeding operation

| Land holding size group | Area under paddy crop (ha) | Area in which weeding is done (ha) | Per cent area covered by weeding |
|---|---|---|---|
| Small | 32.031 | 18.840 | 59 |
| Medium | 50.302 | 32.002 | 64 |
| Large | 122.100 | 80.400 | 66 |
| Overall | 204.433 | 131.242 | 63 |

Above analysis reveals that as the size of holding increases, the percentage area covered by weeding operation also increases. In general, it is presumed that the farmers who have small area under paddy crop could cover up the area in weeding as they have family labours available with them and have not to depend on others. But such is not true.

The timeliness of weeding and available period for weeding come in the way to cover up the area under weeding. These call for investigation into the factors responsible for such a low coverage. Here it may be made clear that the sample farmers carried out weeding only once during the growing season of the paddy crop. This, therefore, made the problem still more significant. Thus, efforts have been made to find out the factors responsible for such a situation.

Constraints in weeding operation

The farmers were asked about the various constraints which were responsible for the weeding operation in all the fields and in required numbers. The constraints have been given below :-

Economic constraints

In most of the agricultural production activities, lack of finance is supposed to be the main economic constraint, but in case of weeding, it was found that this

factor did not operate clearly. It operates through high wages rates of human labour. The respondents revealed high wages rates and availability of human labour as the economic constraints. The cases reporting these are given in the following table.

Table 15 : Economic constraints in weeding operation of paddy

| S.No. | Land holding size group | High wages rates | Human resource problem |
|---|---|---|---|
| 1. | Small | 5 | 4 |
| 2. | Medium | 3 | 10 |
| 3. | Large | 4 | 13 |

The above table reveals that comparatively non-availability of human labour for weeding posed a problem more than the high wages rates. The small land holding farmers felt more about the high wages rates as compared to medium and large. The unavailability of human resource posed a serious problem with large size of land holding farmers as compared to small and medium. Only few cases of small size of land holding farmers revealed non-availability of labourers for weeding as a constraint.

Thus, it could be concluded that non-availability of human labour for weeding purposes poses a major constraints with the farmers specially the medium and large size of land holding farmers.

Other constraints

The farmers were of the opinion that more number of weedings do not provide the cost investment in it. This requires an extension education as per theory, a minimum of three weedings are necessary to a paddy crop.

Plant protection measures (insecticide and pesticides)

Plant protection had become an indespensable factor in modern agriculture where more stress is given to intensive farming rather than extensive farming. As it is said that "prevention is better than cure", plant protection methods should be adopted at right stage to avoid serious losses.

In India, where agriculture holds the key position in the national income, more stress should be given to this sector as to obtain greater return. For this, it is very essential that the crops be prevented from the attack of diseases and pests which take great toll of production. Hence, plant protection measures are important and they should be applied in appropriate manner. Indiscriminate application will lead to many hazards like air pollution and health hazards and phytotoxicity.

Hence, an attempt is made in this study to find out the present level of use of insecticides and pesticides by sample farmers. It was revealed that not a single farmer used insecticides and pesticides. The reason for its non-use was lack of knowledge about this method of control measure of pests and diseases.

Thus, it could be concluded that sample farmers included in this study are not using insecticides and pesticides and they do not know about these. It is, therefore, suggested that extension education be given in this field to avoid severe losses of crops due to attack of pests and diseases. The above facts are also applicable to chemical seed treatment.

Harvesting of paddy and wheat

Harvesting at proper time is an essential operation to reap the harvest of efforts made in production of crops. If the harvesting is delayed due to certain circumstances, there is logging of crop as well as shattering of grains in the fields in both the crops, paddy and wheat. The information on sample farmers who could not get the job done of harvesting is given in the following table.

Table 16 : Harvesting of crops by sample farmers

| S.No. | Land holding size group | Human labour resource not available in time |
|---|---|---|
| 1. | Small | 10 |
| 2. | Medium | 14 |
| 3. | Large | 16 |

Out of 20 farmers in each size of land holding group, 10, 14 and 16 farmers in small, medium and large size group, respectively could not carry out harvesting in proper time due to shortage of human labour. The non-availability may be referred to be an economic constraint. Some large sized farmers also reported that they could pay higher wages rates for harvesting but human labour is not available. The reasons quoted for this unavailability of human labour are that all farmers like to have their crop harvested in the limited time and secondly, the limited migrant labourers are not available. The local non-farmer agricultural labourers are limited.

Thus, it could be concluded that in case of harvesting of crops, it is the non-availability of human resources which come in way to reap the full advantage of timely harvesting.

Threshing of crops by sample farmers

Threshing of harvested produce is another important aspect which effects the grain quality and total production. Sometimes, if threshing is delayed, untimely rains spoil the harvested material on the threshing floor and affect the grain quality. This brings in low market price to the crops.

Use of mechanical threshers in paddy and wheat increase the threshing efficiency per unit time and cost. Threshing cost may also be less as compared to traditional method. The quality of grain as well as their by-products is superior than that of indigenous methods. The sample farmers who could not do the threshing in desired time period is given in the following table.

Table 17 : Threshing by sample farmers

| S.No. | Land holding size group | Not in proper time |
|---|---|---|
| 1. | Small | 16 |
| 2. | Medium | 15 |
| 3. | Large | 15 |

Out of 20 farmers in each size of land holding group, 16, 15 and 15 farmers of small, medium and large size group,

respectively reported that they could not carry out threshing operation in proper time due to certain reasons. The percentage is quite high in all the groups and therefore, it is necessary to find out the reasons for such situation.

Economic constraints

Due to various reasons, all farmers would like to carry out threshing operation as early as possible. Period of carrying out this operation for the crops remains the same for all farmers and therefore, the human and bullocks labour resource available remains of family supply only. This being not sufficient, delays this operation. The farmers who reported this economic constraint is given in the following table.

Table 18 : Economic constraints for threshing operation

| S.No. | Land holding size group | Non-availability of human and bullock labour |
|---|---|---|
| 1. | Small | 9 |
| 2. | Medium | 9 |
| 3. | Large | 10 |

Table 18 shows that about 50 per cent of the sample farmers do not get the human and bullock resource to carry out threshing operation in time. No other factor is reported for delay in threshing operation. Thus, alternative way must be introduced to replace thr present method of threshing. Threshers have not come to the rescue of the farmers but there are the following economic and other factors which do not allow the farmers to carry out this operation by threshers. These are - lack of finance, size of land holding, knowledge about availability in market and the idea that there is waste of grains if the operation of threshing and winnowing is done by threshers.

Winnowing of crops

In the series of operation for production of crops, winnowing stands as the last item. The sample farmers still use the traditional method of winnowing, i.e., with the help of natural or artificial air. A lot of time is involved in carrying out this operation. The sample farmers continuing this traditional method of winnowing due to the following factors.

Table 19 : Factors responsible for continuing traditional method of winnowing

| S.No. | Land holding size group | No knowledge of alternate method | Available family labour coule be used |
|---|---|---|---|
| 1. | Small | 14 | 13 |
| 2. | Medium | 10 | 8 |
| 3. | Large | 8 | 4 |

In case of majority of small land holding farmers, both the factors, i.e., utilization of family labour and no knowledge of alternative method of winnowing are responsible for doing the winnowing operation. Medium and large land holding farmers have less impact of these factors for carrying out traditional method of winnowing as compared to small farmers group.

All farmers would like to do job as early as possible and therefore, improved method of winnowing be adopted by farmers.

Human labour for agricultural operations on tribal farms

Indian agriculture is labour-intensive, specially when tribal area farming is considered. The agricultural operations are time-bound and therefore, an effort is made

in this study to find out the constraints for availability of human labour. The same are given in the following table.

Table 20 : Constraints for availability of human labour to carry out various agricultural operations

| S.No. | Different operations | High wages | Human resource problem |
|---|---|---|---|
| 1. | Sowing of paddy crop | 10 | 30 |
| 2. | Interculture operation | 12 | 27 |
| 3. | Harvesting | - | 40 |
| 4. | Threshing | 5 | 28 |
| 5. | Winnowing | 7 | 18 |

The sample tribal farmers revealed high wages and non-availability of human resources as the main two constraints for not carrying out various agricultural operations in time. The latter reason was reported by most of the farmers. Maximum severity was expressed for carrying out harvesting operation, then sowing, threshing and interculture. The farmers could not employ labourers although were available for carrying out sowing, interculture, threshing and winnowing due to high wages.

Thus, it could be concluded that lack of human resource is the major constraints in carrying out various agricultural operations in time with the tribal farmers.

Bullock power on sample farms and constraints

Indian agriculture, although had green revolution, still continues to depend on bullock power for cultivation purposes. This is of importance, specially when tribal farmers are considered. Not only with the sample farmers, but in the region of investigation, no farmer owns or hires tractor for cultivation purposes. Therefore, it is essential to consider the strength of bullock power with the sample tribal farmers. The present position of bullock power with the sample farmers is given in the following table.

Table 21 : Bullock power with the sample farmers

| S.No. | Land holding size group | Number of farmers with no bullock pairs | Number of farmers with less than the required |
|---|---|---|---|
| 1. | Small | 4 | 5 |
| 2. | Medium | 1 | 6 |
| 3. | Large | - | 2 |

Out of 20 farmers in each category, 4 and 1 of small and medium had no bullock power with them and they have to depend on others for cultivation of crops on their farms. 5, 6 and 2 of small, medium and large category of farmers, respectively had less than the required number of bullock pairs. Thus, it could be said that the problem is not serious when bullock power is considered with the farmers. This is due to the fact that every farmer tries to own bullock pair/s for cultivation purposes as it is the basic requirement. The agricultural operations on every farm, comes at the same time and if bullocks are not available, it will reflect on the production of crops and therefore, a farmer likes to have his own bullocks.

An attempt is made to find out the constraints for not owing and not having the required number of bullocks on the farms. The following table provides the details.

Table 22 : Constraints for bullock labour

| S.No. | Land holding size group | Lack of finance | Poor quality | High prices |
|---|---|---|---|---|
| 1. | Small | 9 | 6 | 2 |
| 2. | Medium | 6 | 8 | 4 |
| 3. | Large | 4 | 5 | 1 |

It is clear from Table 22 that 30 and 40 per cent of the sample farmers reported for the poor quality of bullocks. It is the small and medium category of farmers who reported lack of finance and high prices, the reasons for not having the bullocks or for the required number. Except for poor quality and to some extent lack of finance, the large size of land holding farmers, in general, had no other problems.

Thus, it could be concluded that whatsoever the small problem remains with respect to bullock power, it exists with small size of land holding farmers more as compared to medium and large.

Requirements, source, amount of agricultural finance and the constraints with the tribal farmers

Importance of credit is well recognized in the modern agriculture. It does not mean that the traditional farming, which the tribal farmers carry out, do not require credit. To have a view into the present sources and amount of credit, an attempt is made in this study. The following two tables provide the same.

Table 23 shows that tribal farmers require credit for bullocks, seeds and fertilizers, wells and diesel pumps. The credit supply agencies available are money lender, cooperative and nationalized banks.

Table 23 : Need and source of finance

| S.No. | Size of land holding and source | PURPOSE | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Bullocks | | Seed & Fertilizer | | Wells | | Diesel pump | | | |
| | | A | R | A | R | A | R | A | R | A | R |
| 1. | Small | | | | | | | | | | |
| | Total | 10 | 2 | 20 | 5 | 1 | - | - | - | 31 | 7 |
| | M.L. | 8 | 1 | 17 | 5 | - | - | - | - | 25 | 6 |
| | C.B. | 2 | 1 | 3 | - | 1 | - | - | - | 6 | 1 |
| 2. | Medium | | | | | | | | | | |
| | Total | 8 | 3 | 17 | 4 | 4 | 1 | - | - | 29 | 8 |
| | M.L. | 7 | 2 | 16 | 4 | - | - | - | - | 23 | 6 |
| | C.B. | 1 | 1 | 1 | - | 2 | 1 | - | - | 4 | 1 |
| | S.B.I. | - | - | - | - | 2 | 1 | - | - | 2 | 1 |
| 3. | Large | | | | | | | | | | |
| | Total | 7 | 4 | 16 | 3 | 5 | 2 | 3 | - | 32 | 9 |
| | M.L. | 5 | 2 | 12 | 2 | 2 | - | - | - | 19 | 4 |
| | C.B. | 2 | 2 | 2 | 1 | 2 | 1 | 1 | - | 7 | 3 |
| | S.B.I. | - | - | 2 | - | 1 | 1 | 2 | - | 5 | 1 |
| | All | | | | | | | | | | |
| | Total | 25 | 9 | 53 | 12 | 10 | 3 | 3 | - | 91 | 24 |
| | M.L. | 20 | 5 | 45 | 11 | 2 | - | - | - | 67 | 16 |
| | C.B. | 5 | 4 | 6 | 1 | 5 | 1 | 1 | - | 17 | 5 |
| | S.B.I. | - | - | 2 | - | 3 | 2 | 2 | - | 7 | 2 |

A = Cased applied
R = Cases received
ML = Money lenders
CB = Cooperative bank
SBI = State Bank of India

It is clear from Table 23 that nearly all tribal farmers required credit for various agricultural purposes. Although, the required number of farmers in different categories of tribal farmers is the same but they varied in the purposes of requirements.

The small farmers had a demand of credit for bullocks, seeds and fertilizers, whereas the medium and large land holding farmers required for irrigation purposes, i.e., wells and diesel pumps. The large farmers category only had a requirement for diesel pumps. A large number of farmers required loans for seeds and fertilizers, next is bullock and the last being wells and diesel pumps. Out of the number of farmers who made demand to various supply agencies, only 1/4 to 1/3 received the credit.

It could be said without hesitation that tribal farmers approached money lenders for credit although only 25 per cent of them received credit from them. Though who approached banks, 50 per cent could get the loans. Out of the two banks who supplied credit mostly to the large size of land holding farmers, it is the cooperative bank which has the lead instead of State Bank of India.

Thus, it could be concluded that only 25 to 33 per cent of the farmers who approached the various agencies for credit could get it. The small farmers required credit for bullocks and seeds and fertilizers, whereas the medium and

large size land holding farmers also needs for wells and diesel pumps. The money lenders still have a hold in approach and supply of credit to the tribal farmers. The large size of land holding farmers have only made approach to banks for credit purposes. Although, the farmers approached banks for the purchase of diesel pumps but none received it.

The analysis into the amount of loan applied reveal that the farmers approached for near about same amount from the money lenders and banks and also received near about the same quantity. But there is variation with respect to the different size of land holding farmers. The small category farmers received less percentage than medium and large. Cooperative bank supplied large percentage to the demand in case of large farmers as compared to medium and small. The large size of land holding farmers although made a demand for Rs.15,000/- for the purchase of diesel pumps but could not obtain any amount.

Thus, it could be concluded that small farmers although made demand for credit could not get the same percentage as was obtained by medium and large size of land holding farmers.

Constraints in getting credit :- Much have been said and written with respect to problems in supply and receipt of credit by the farmers. It is not possible to critically

Table 24 : Amount of finance

(Rs. in '000)

| S.No. | Size of land holding and source | PURPOSE | | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Bullocks | | Seeds & Fertilizers | | Wells | | Diesel pumps | | | |
| | | A | R | A | R | A | R | A | R | A | R |
| 1. | Small | | | | | | | | | | |
| | Total | 13.5 | 3.0 | 17.5 | 3.5 | 4.0 | - | - | - | 35.0 | 6.5 |
| | M.L. | 11.0 | 2.0 | 12.5 | 3.5 | - | - | - | - | 23.5 | 5.5 |
| | C.B. | 2.5 | 1.0 | 5.0 | - | 4.0 | - | - | - | 11.5 | 1.0 |
| 2. | Medium | | | | | | | | | | |
| | Total | 11.4 | 4.5 | 13.0 | 3.2 | 15.0 | 4.0 | - | - | 39.4 | 11.7 |
| | M.L. | 9.4 | 3.0 | 11.5 | 3.2 | - | - | - | - | 20.9 | 6.2 |
| | C.B. | 2.0 | 1.5 | 1.5 | - | 7.0 | - | - | - | 10.5 | 1.5 |
| | S.B.I. | - | - | - | - | 8.0 | 4.0 | - | - | 8.0 | 4.0 |
| 3. | Large | | | | | | | | | | |
| | Total | 15.0 | 6.5 | 18.5 | 4.2 | 20.0 | 8.0 | 15.0 | - | 68.5 | 18.7 |
| | M.L. | 9.5 | 3.0 | 12.5 | 4.2 | 6.0 | - | - | - | 28.0 | 7.2 |
| | C.B. | 5.5 | 3.5 | 3.0 | - | 9.0 | 4.0 | 6.0 | - | 23.5 | 7.5 |
| | S.B.I. | - | - | 3.0 | - | 5.0 | 4.0 | 9.0 | - | 17.0 | 4.0 |
| | All | | | | | | | | | | |
| | Total | 39.9 | 14.0 | 49.0 | 10.9 | 39.0 | 12.0 | 15.0 | - | 142.9 | 36.9 |
| | M.L. | 29.9 | 8.0 | 36.5 | 10.9 | 6.0 | - | - | - | 72.4 | 18.9 |
| | C.B. | 10.0 | 6.0 | 9.5 | - | 20.0 | 4.0 | 6.0 | - | 53.5 | 10.0 |
| | S.B.I. | - | - | 3.0 | - | 13.0 | 8.0 | 9.0 | - | 25.0 | 8.0 |

A = Amount applied
R = Amount received
ML = Money lenders
CB = Cooperative bank
SBI = State Bank of India

examine the problems relating to credit in this study but an attempt is made to identify some problems relating to this field.

If these facts are compared with the details of table on need and source of credit, then it could be said that all the farmers who received credit from various sources, could not get the required quantum of money. Out of these, about 30 per cent reported that the credit was not supplied in time and 40 per cent expressed that the procedure of obtaining loan was lengthy.

Four and two farmers of small and medium category of farmers respectively could not obtain loan due to small size of land holding or lack of security.

Thus, it could be concluded that in the case of sample tribal farmers, none out of those who obtained credit, received the credit as per requirement. Some of the small and medium size of land holding farmers had no security to obtain credit.

Marketing of crops

Although marketing of crops may not be included as one of the operations of cultivation of crops but its impact is on the incomes of the farmers. Therefore, may be problem with the farmers and in a few cases it may have such an

impact that farmers may be forced to produce or not to produce a crop. Marketable surplus varies with the size of land holding of a farmer and it was found that out of 20 sample farmers in each of the three categories of farmers; small, medium and large, 10, 14 and 20 sold their commodities in the markets. Depending upon the economic status, the quantities are being sold in different months. It was found that only 2 and 4 of medium and large size of land holding farmers sold their part of commodities in other months than just after harvest months. It is also a recognized fact that harvest prices are the lowest as compared to other periods. This directly effects the economic returns of the farmers and therefore, an attempt is being made to find out the constraints for this forced sale of the commodities. The following table provides such an information.

Table 25 : Constraints for marketing a crop immediately after its harvest

| S.No. | Size of land holding | Need of capital | Lack of godown facilities | No proper transport in other months |
|---|---|---|---|---|
| 1. | Small | 10 | 1 | 1 |
| 2. | Medium | 14 | 3 | 4 |
| 3. | Large | 18 | 4 | 7 |

It is clear from the table on pre-page that all the farmers who had marketable surplus sold it immediately after harvest as they demanded capital to meet various requirements. The requirements revealed by the farmers were social, religious, payment of debt etc. The other constraints were lack of storage facilities with the farmers and lack of transport during rainy and part of winter months. The latter two constraints were felt more by medium and large size of land holding farmers as compared to small.

Thus, it could be concluded that the need of finance by thefarmers forced them to sell their commodities immediately after their production. Efforts be made to overcome this constraint through setting up of cooperative marketing.

Measures to accelerate agricultural productivity of tribal farmers

In the previous sections, constraints in crop production of the tribal farmers have been discussed. It will be worth to pinpoint various measures to solve these constraints to have increased level of agricultural productivity.

Madhya Pradesh comprises of heterogeneous tracts which vary in their agro-climatic conditions. Each part of the State has its own economic problems and production pattern. In such diversities, agricultural growth in the State is likely to differ from one region to other. The causes for this differential growth may be, (i) natural, (ii) physical,

(iii) socio-economic, (iv) technological and (v) institutional. The existing cropping pattern of the region is the outcome of the above factors. Based on the previous results of constraints on crop production, following measures may be suggested to accelerate crop productivity of the tribal farmers.

(1) The Shahdol district covers about 1.0 per cent of area under irrigation. Irrigation potentiality, therefore, may be increased by conservation of rain water by local water reservoirs such as tanks and ponds at the village level.

Great reliance has to be laid down on the exploitation of ground water resources by various measures taken up by private and public sectors. This is a primary and necessary resource if crop production is to be increased.

(2) The consumption of chemical fertilizer by the farmers of Shahdol district was about 1.81 kg per hectare. This is quite low input and therefore, extension agencies must make efforts to educate the farmers for the use of fertilizers

(3) The above fact is also true for improved seed and plant protection measures.

(4) The tribal farmers felt the need of human labour resource to carry out agricultural operations like sowing, weeding, harvesting and threshing in time. Alternative ways to carry out these operations be developed.

(5) Quite a large gap exists between the demand and supply of finance. Institutional agencies must come forward to fill in the gap and also relief the tribals from the clutches of money lenders.

(6) The tribals could not reap the advantages of proper marketing and therefore, cooperative marketing may be developed.

On the basis of discussion carried out for the results of this study, the following could be stated for the hypotheses framed in Chapter III :-

1. Human labour resources are not the major contraint for all the agricultural operations. This is a major constraint for sowing, weeding, harvesting and threshing operations and therefore, the hypothesis on human resources contraint is accepted for these agricultural operations.

2. The study revealed that the tribal farmers do not obtain credit only from the money lenders but institutional agencies also supply credit. Therefore, the hypothesis framed with respect to credit agencies is not accepted.

3. The results of the study indicate that there is not much difference with respect to credit requirements

for the various agriculture purposes for the different size of tribal farms from the different financing agencies. Thus, the hypothesis framed on this is accepted.

# Chapter - V

## SUMMARY, CONCLUSIONS AND SUGGESTIONS

## 5. SUMMARY, CONCLUSIONS & SUGGESTIONS

Despite the technological breakthrough in agriculture, the yield rates of major crops in Madhya Pradesh as well as in Shahdol district are far below the yields obtained by scientific cultivation with good management of the crops. District Shahdol in the State of Madhya Pradesh represents 48.23 per cent of the tribal population. The area under paddy and wheat revealed an upward trend since 1970-71 in the district of Shahdol, while the production was not increased in proportion to area. The average yield of paddy and wheat were constant since 1972-73.

In view of the factual situation existing with the tribal farmers of Shahdol district, it was considered timely to investigate into the constraints coming in the way of increasing agricultural productivity with the following objectives :-

1. To study the cropping pattern and intensity of tribal farms.

2. To find out the economic constraints in raising crop productivity on tribal farms.

3. To suggest the strategies to increase productivity on tribal farms.

For the purpose of analysing the problem of constant low yield and greater instability in crop production in Shahdol district, both primary and secondary data were collected. The primary data were collected by survey method from the random sample holdings drawn from the Kotma Block of Shahdol district. Kotma block of Shahdol district was purposively selected as it has a very large percentage of tribal population. Five villages were selected from Kotma block at random, a list of tribal farmers of each selected village was prepared with the area under individual holding. The list was arranged in ascending order of size of land holding. The total tribal farmers were categorised into small, medium and large sized farmers, by dividing the list into three equal groups. From each group, 20 farmers were selected at random. Thus, 60 farmers were selected for intensive study of the problem. The data for the study pertains to agriculture year 1982-83.

Out of the total owned area, maximum percentage (96%) is brought under cultivation and 88 per cent of the cropped area is occupied by paddy. The tribal farmers are monocrop farmers and mostly grow crops of kharif season. Cropping intensity of sample farmers was 112 per cent which is quite low as irrigation facilities are negligible. The ratio of kharif to rabi crop is 1:0.13.

The primary data of sample holdings indicated that the area under improved paddy varieties was only 8 and 19 per cent

of the area under paddy in case of medium and large size farmers respectively. It occupied 35 to 50 per cent in case of wheat. The per cent area under improved varieties is more in case of wheat as compared to improved paddy varieties due to the risks involved in production of these crop varieties.

Production per hectare of various crops of sample farmers was lower than district (Shahdol) average. This emphasizes to have a study into the constraints responsible for such low yield of crops of tribal farmers.

The soils of the region are sandy and Matiyar. These are of low fertility status. It forced the farmers to raise only kharif crops and very small percentage area is devoted to rabi season. Lowlying fields and low moisture retention of soils are the main problems reported by the sample farmers.

Constraints analysis of crop production

There were several broad categories of constraints operating in crop production as yield barriers which need to be minimised and removed to achieve high yields. These constraints were related to the agricultural operations like sowing, improved seed manures and fertilizers, weeding, plant protection measures, harvesting, threshing and winnowing. Constraints on human and bullock labour, finance and marketing have also been dealt with in this study.

In case of improved seed, 40 to 50 per cent of sample farmers gave lack of finance as the major economic reason for not using improved seed. Farmers gave many constraints in addition to economic in adopting improved varieties. The major one is lack of knowledge with respect to the improved varieties and the source of supply.

Method, time and resources used in sowing of crops have significant influence on the level of production of crops. In general, the sample farmers used broadcasting method of sowing of all crops. Lack of other resources like size of land holding, human and bullock labour quality and quantity and managerial skill and proper equipment act as a constraint for improved method of sowing in increasing the level of crop production.

Only 1/3rd of the total area received manures and in this area also 2/3rd of the recommended dose was applied. The reason behind it was non-availability of raw material (dung and litter).

Fertilizers, urea and gromore (24-24-0) were used by most of the cultivators. Fertilizer was applied only in 5, 8 and 21 per cent of the area under paddy crop in small, medium and large category of farmers, whereas the respective percentage was 40, 36 and 75 for wheat crop. Balanced dose of fertilizer is not given to the crops. Fifty per cent of

the farmers felt lack of finance as the economic constraint for fertilizers application to the crops. Lack of knowledge about fertilizers, irrigation facilities, not using improved seed were also reported as constraints for the fertilizer use.

As the size of holding increases, the percentage area covered by weeding also increases. Farmers carried out weeding only once in paddy crop. Non-availability of human labour for weeding purposes poses a major constraint with the farmers, specially to the medium and large size of land holding farmers. Small land holding farmers felt more about the high wage rates as compared to medium and large.

Not a single sample farmer used insecticide and pesticide on his farm. The reason for non-use of insecticides and pesticides was lack of knowledge.

Out of 20 farmers in each size of land holding group, 10, 14 and 16 farmers in small, medium and large size group, respectively, could not carry out harvesting in proper time due to shortage of human labour.

It was reported that 50 per cent of the sample farmers could not carry out threashing in proper time due to shortage of human and bullock resources. Threshers have now come to the rescue of the farmers of other regions but the economic and other factors with the tribal farmers come in the way of adoption of threshing by threshers.

In case of winnowing of crops by majority of small size farmers; both factors, i.e., utilization of family labour and no knowledge of alternative method of winnowing are responsible for doing the winnowing operation by traditional method.

It was revealed by the sample farmers that lack of human resource is the major constraint in carrying out various agricultural operations in time with the tribal farmers. Maximum severity was expressed for carrying out harvesting operation; then sowing, threshing and interculture.

Bullock labour do not form a serious problem with the farmers. The agricultural operation on every farm comes at the same time and if bullocks are not available, it will reflect on the production of crops and therefore, a farmer likes to have his own bullocks. Thirty to 40 per cent of the sample farmers reported for the poor quality of bullocks. Small and medium category of farmers also reported lack of finance and high prices as the reasons for not having the bullocks of the required number.

The tribal farmers require credit for bullocks, seed, fertilizers, wells and diesel pumpts. The small farmers had a demand of credit for bullocks, seeds and fertilizers, whereas the medium and large land holding farmers also need for well and diesel pumps for irrigation purposes. Twenty five per cent of credit received by the farmers is from money lenders

and the rest from the banks. Small farmers although made demand for credit but could not get the same percentage as was obtained by medium and large size of land holding farmers. All the farmers who received credit from various sources, could not get the required quantum of money. Out of these, about 30 per cent reported that the credit was not supplied in time and 40 per cent expressed that the procedure of obtaining loam was lengthy. Some of the small and medium size of land holding farmers had no security to obtain credit.

All the farmers who had marketable surplus sold it immediately after harvest as they had demand of capital to meet various requirements. In addition to demand of money, the farmers sold commodities due to lack of storage and transport facilities. The latter two constraints were felt more by medium and large size of land holding farmers as compared to small.

## Recommendations

The results and conclusions drawn from this study lead to the following recommendations to break the yield barriers of important crops of Shahdol district, specially of the tribal farmers.

1. Land shaping and consolidation of land holding be taken up immediately.

2. Adequate provision be made to supply the crucial inputs like seed, manure fertilizer and insecticides at reasonable prices either through blocks or depots at the village level.

3. Availability of human labour to carry out agricultural operations like sowing, weeding, harvesting, is inadequate to meet the requirements. Therefore, the farmers be educated to use labour saving machinery to carry out some of the operations, specially the weeding, threshing and winnowing. Efforts be made to develop labour saving machinery for harvesting.

4. Plant protection measures should be taken by the village panchayats under the technical guidance of Agril. Extension Officer or village level worker. Plant protection should be executed in the form of a campaign and not as an individual effort. Village panchayats can raise the "Crop Improvement Fund", to utilize for common needs of the farmers.

5. Crop loans should be made available in time and efforts be made by the government to set up institutional agencies for supply of credit so that the farmers do not come in the clutches of money lenders.

6. The need of finance by the farmers forced them to sell their commodities immediately after their production. Efforts be made to set up cooperative marketing societies.

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# APPENDIX

SCHEDULE/QUESTIONNAIRE

Constraints in crop productivity of tribal farms of Shahdol District (M.P.)

I. Identification

Village Name

Caste

Size of holding Source of irrigation

Irrigated area

II. Land details

| Particulars | 1980-81 | 1981-82 | 1982-83 |
|---|---|---|---|
| 1. Land owned | | | |
| 2. Land under cultivation | | | |
| 3. Cultivable waste | | | |
| 4. Barren land | | | |
| 5. Unculti./pasture | | | |

(B) Area irrigated by :

1. Tank/diesel or electric pump set - owned/hired
2. Well/diesel or electric pump set - owned/hired
3. Others

Total

(C) Current fallow :

1. Kharif
2. Rabi

III. Cropping pattern (Area in acres)

| Crops | 1980-81 | | 1981-82 | | 1982-83 | |
|---|---|---|---|---|---|---|
| | Tot. | Irri. | Tot. | Irri. | Tot. | Irri. |
| Kharif : Paddy | | | | | | |
| kodo | | | | | | |
| urd | | | | | | |
| Rabi : Wheat | | | | | | |

Labour (a) Human labour

(i) Hired labour :- (a) High wage rates
(b) Quality of the labour is poor as the wages rates.
(c) Labour is not available in peak time.

(ii) Contract labour:- (a) Contract labour is not available in peak time.
(b) They are not working properly.
(c) High level of contract.

(iii) Family labour:- (a) Male family labour is not available due to status for field work.
(b) Quality of male labour is poor due to poor health.
(c) Male labour engaged in other business.
(d) Lack of interest in farming.
(e) Female family labour is not free from home work.
(f) In the family, female labour is not working in the field.

(b) Bullock labour

Hired and contract bullock labour

(i) High wages rates
(ii) Quality of bullock is not good
(iii) Bullocks are not available in peak period.

Family bullock labour

(i) Do not have the required number
(ii) Health of bullock is poor. Lack of Vety. aid/the sick bullocks came in way of work/deteriorated in health.
(iii) Due to high prices could not purchase the desired bullocks.
(iv) Due to non-availability of finance could not purchase bullocks.

Seed - Local seed or improved seed.

(a) If local seed : why
(i) Timely availability
(ii) All types of knowledge about local seed
(iii) No problem about fertilizer, insecticide, pesticide purchasing
(iv) No irrigation problem
(v) Would not like to be in the problem of purchase of improved seed

(b) All area covered under seed, or some under the improved seed.

| Local seed | Crop | Area | Improved seed | Crop | Area |
|---|---|---|---|---|---|

(B) Improved seed - Why not

i) Seeds are not available in time.
ii) Lack of proper knowledge about improved seeds.
iii) Unknown about the sources from which improved seeds can be obtained.
iv) Susceptible to diseases, pests and insects.
v) Not suitable in the field.
vi) Low demand in the market
vii) Lack of finance to purchase improved seeds.
viii) Lack of irrigation
ix) It requires more supervision.

4. Seed treatment : Carried out/not

If carried out why - (i) Protection against diseases pest and insects.

Why not (i) No knowledge
(ii) Not available in time
(iii) Not available in required quantity
(iv) Unknown about the sources
(v) Feel uneconomic
(vi) Equipment to use insecticide is not owned/available

5. Method of sowing : (i) Broadcasting
(ii) Seed drill.
(iii) Narri plough.
(iv) Others
(v) What is the best way

Why you are not using improved method of sowing ?

(i) No knowledge about improved methods.
(ii) Equipment is not available
(iii) Size of land holding or shape or location of field.
(iv) Costly
(v) Lack of finance for purchase of equipment
(vi) Proper equipment

6. Manure (i) You are using manure or not ?

In case of use :- In which crop Area Quantity

If not then why :(i) Lack of resources (Dung and litter)
(ii) Transporting upto the field is not possible
(iii) Lack of finance to purchase the manure
(iv) Manure is not available in the market
(v) Not available in time.

7. Fertilizer : In case of use -

(i) In which crop Area Quantity

(ii) Whether proper quantity or not.

If not then why ?

(i) Not available in time.
(ii) Not known about fertilizer
(iii) Irrigation facilities are not available
(iv) Not suitable due to quality of soil/topography
(v) Not using improved quality of seed
(vi) Availability sources not known
(vii) Lack of finance
(viii) No proper guidance
(ix) Past result not satisfactory
(x) Concept that it spoils texture of the soil

8. Plant protection measures (Insecticides and pesticides)

(i) Using insecticides and pesticides :

If used : In which crop Its area Quantity

If not used then why ?

(i) No knowledge
(ii) Notion of its being harmful to human beings as well as animals
(iii) The results are not upto expectation
(iv) Harmful to crops
(v) It deteriorates the taste of seeds
(vi) Unknown about the sources from which chemicals can be obtained

9. Interculture operation : (Weeding and hoeing)

Interculture operation is done or not.

If done : In which crop Its area No.

If not then why ?

(i) Labour problem at the weeding time
(ii) High wages rates at the weeding time
(iii) There is no use ofweeding

10. Harvesting of crop

(i) Harvesting is done in proper time or not, if not why ?

(ii) High wages rates
(iii) Labour is not available in proper time
(iv) Any problem of equipment.

11. Threshing (i) Threshing is done in proper time of not ?

(ii) By old method or by new equipment
If not then why
(i) Labour is not available
(ii) Bullocks are not available
(iii) High wages rates of human and bullock labour
(iv) No knowledge about threshing equipments
(v) Lack of finance
(vi) Costly equipment
(vii) Small land holding
(viii) No use of threshing equipment in thefarm house
(ix) Others

12. Winnowing (i) Winnowing is done by old method or new ?

If old method which and why

(i) All condition favourable for the winnowing
(ii) Labour is available due to small total production
(iii) Un-used new equipment

Why not using new equipment :

(i) No knowledge
(ii) Lack of finance
(iii) Unknown about the sources
(iv) Trained labour is not available

13. Finance

(i) Do you have enough finance to carry your farming business?
(ii) For which purpose you need finance and yes/no
how much : Need Amount
(iii) The sources of getting finance and amount

Current amount Past amount

Sources : 1. Banks, 2. Cooperative societies, 3. Govt. Soci.
4. Money lenders, 5. Others.
(iv) Do you receive the finance from the source you menttioned yes/no
Problem
(v) If problem then what
1. In proper time yes/no
2. Amount of loan sufficient to fulfil the requirement yes/no
3. Old dues, so further loan is not available Yes/no
4. Procedure of financing is quite long and difficult Yes/no
5. Rate of interest is high
6. Unknown about the institutional sources
7. Reasons for not getting loan:small holdings/security
8. Others

14. Marketing problem :- Where and when you sell your product

(i) Do you get the seed improved/local on proper prices yes/no

If no why

(ii) Proper transport facility is not available upto market

(iii) Godown is not available

(iv) Do you sell commodity immediately after hargest Yes/no

Why

15. From where you learn improve method of farming ?

(i) Demonstration in the field
(ii) Visit of the Govt. farms
(iii) Knowledge through VLW
(iv) Through radio and papers
(v) Others

Total Production

| Crop | Improved/Irri. | Improved/ unirrigated | Local/Irri. | Local/ Unirri. |
|---|---|---|---|---|
| Paddy | | | | |
| Kodo | | | | |
| Urd | | | | |
| Wheat | | | | |

# V I T A

The author was born on December 19, 1959 at Kotma, district Shahdol (M.P.). He passed his higher secondary school certificate examination from Govt. Venkat School No. I, Satna.

The author joined the College of Agriculture, JNKVV, Jabalpur, leading to his collegiate education and successfully completed his B.Sc.(Ag). In continuation, he joined the Department of Agril. Economics and Farm Management at the same institute for M.Sc.(Ag) and now this thesis is being submitted in partial fulfilment of the requirements for the degree, after completion of course work.

The author took active part in social and extra curricular activities during his school and college period. He was the General Secretary of the JNKVV Student's Union for the Jubillee Year 1980-81.

The author has the honour of having awarded Merit Scholarship of the University during graduate and post-graduate education.