A STUDY OF THE IMPACT OF COMMAND AREA DEVELOPMENT PROGRAMME

A thesis submitted to the

MAHATMA PHULE KRISHI VIDYAPEETH

RAHURI, DIST.- AHMEDNAGAR.

in partial Fulfilment of the requirements

for the degree

of

MASTER OF SCIENCE (AGRICULTURE)

in

AGRICULTURAL EXTENSION

by

SHINDE ASHOK JAGANNATH

B. Sc. (Agri) First Class

Department of Agricultural Extension

Post Graduate School, Rahuri

1979

A STUDY OF THE IMPACT OF COMMAND AREA DEVELOPMENT PROGRAMME

By

ASHOK JAGANNATH SHINDE
B.Sc.(Agri.) First Class

A Thesis submitted to the
MAHATMA PHULE KRISHI VIDYAPEETH
(AGRICULTURAL UNIVERSITY)
RAHURI, District: Ahmednagar
(Maharashtra State)

In partial fulfilment of the requirements
for the degree

of

MASTER OF SCIENCE (AGRICULTURE)

in

AGRICULTURAL EXTENSION

1979

Approved by the Advisory Committee

Chairman	(Shri K.R. Kadam)
Member	(Dr. S.S. Thorat)
Member	(Dr. S.B. Jadhav)
Member	(Shri V.R. Karandikar)

Shri K.H. Kadam,
M.Sc.(Agri.),
Associate Professor,
Department of Agricultural Extension,
Mahatma Phule Krishi Vidyapeeth,
Rahuri, District: Ahmednagar,
Maharasntra.

CERTIFICATE

This is to certify that the thesis entitled "A Study of The Impact of Command Area Development Programme", submitted to the Mahatma Phule Krishi Vidyapeeth, Rahuri, (M.S), in partial fulfilment of requirements for the degree of MASTER OF SCIENCE (AGRICULTURE) in AGRICULTURAL EXTENSION, embodies the results of a piece of bona fide research carried out by SHRI SHINDE ASHOK JAGANNATH, under my guidance and supervision and that no part of the thesis has been submitted by him for any other degree or publication.

(K.H. Kadam)
Chairman,
Advisory Committee

Rahuri,
August 1st, 1979.

Dr. G.K. Zende,
Associate Dean (PG),
Post Graduate School,
Mahatma Phule Krishi Vidyapeeth,
Rahuri, District: Ahmednagar,
Maharashtra.

CERTIFICATE

This is to certify that the thesis entitled "A Study of The Impact of Command Area Development Programme", submitted to the Mahatma Phule Krishi Vidyapeeth, Rahuri, (M.S), in partial fulfilment of requirements for the degree of MASTER OF SCIENCE (AGRICULTURE) in AGRICULTURAL EXTENSION, embodies the results of a piece of bona fide research carried out by Smt. ASHA JAGANNATH SHINDE, under the guidance and supervision of Shri K.R. Kadam, Associate Professor of Agricultural Extension and that no part of the thesis has been submitted by him for any other degree or publication.

G. K. Zende

(Dr. G.K. Zende)

Rahuri,
August 4th, 1979.

ACKNOWLEDGEMENTS

The exploration of an opportunity claims versatile guidance which I was fortunate enough to gain from Shri K.R. Kadam, Associate Professor of Agricultural Extension, Mahatma Phule Krishi Vidyapeeth, Rahuri. The present thesis is a issue comming out of unlimited and restless efforts made by him while directing me to carry out the research and writting the manuscript.

No words are descriptive enough to express my sincere sense of gratitude to Dr. S.S. Thorat, Head, Department of Agricultural Extension of the aforesaid institution. He has been a friend philosopher and guide in the truest sense of terms.

I wonder if words can fully acknowledge the assistance rendered by Dr. S.B. Jadhav, Professor of Agronomy and Shri V.H. Karandikar, Professor of Agricultural Statistics during the period of this investigation.

I am grateful to Dr. T.S. Khuspe, Professor of Agricultural Extension, Dr. V.G. Salunkhe, Pooled Officer, Shri G.A. Sawant, Assistant Professor of Agricultural Extension and Shri S.D. Nimbalkar, Information Officer and Shri S.S.Bajaj, Public Relations Officer, and staff members of Department of Agricultural Extension and Post Graduate School, Rahuri, for their kind co-operation during the period of this investigation.

It gives me pleasure to acknowledge Shri Naware, (I.A.S.), Administrator Command Area Development Authority, Ghod Dhima Project Camp, Pune-1 and Shri K.A. Malawade, Technical Assistant, CADA, for their timely help during the data collection.

Grateful thanks are also extended to farmers and village Revenue Authorities without whose co-operation and willingness in volunteering the information this study would not have seen the light of the day.

I wish to express my cordial feeling of love to my mother, brothers and sisters who are the source of inspiration and bright light for me in every dark night.

I am thankful to Post Graduate School, Sahuri for awarding me merit scholarship. Thanks are also due to Shri Harischandre, M.H. for typing the thesis neatly and accurately.

While travelling on this path of education, many hands pushed me forth, many lips put elixir in my heart, learned hearts put me on the right path, enlightened by their knowledge and experience, I ever rest thankfully to them all.

(SHINDE A.J.)

Sahuri,
August 1st, 1979.

Contents

List of Tables

Introduction

CHAPTER - I

INTRODUCTION

Among the major influences of Green Revolution the most obvious mainfestation is the relationship of ruralities with external world. The key recent concept of 'Green Revolution' aiming at self sufficiency in food grains will meet with global achievements only when Indian farming communities will understand. accept and adopt the latest agricultural technology without any undue time leg.

Indian economic situation has for long been characterised by low growth rate, growing unemployment and underemployment, large number of people liying below the poverty line and glaring inequality in distribution of income and capital assets. The average growth rate of 3.50 per cent realised during last 20 years is woefully inadequate to meet the growing needs of our country. In a predominently agrarian country like India, where more than 80 per cent population lives in villages, solution to the massive problem of poverty and unemployment lies in the development of agriculture and intergrated development of rural areas. In recognition of this fact, the present Government has taken up a policy decision to give maximum empasis on agriculture and rural development during sixth plan (1978-83). As a first step Government of India have raised the share of agriculture and rural development to over 40 per cent in public sector investible resources, for agriculture and electritication of villages.

A new approach to the rural development has been the out come of a long evolutionary process in India. A begining was made in the community development programme which was

launched in October 1952 with the main objective of bringing about an overall improvement in the rural areas. Though the programme has made its own contribution by setting up a viable infrastructure in the rural areas including an extension machinery, it has not succeeded in generating community efforts and combining them with those of Government for bringing about process of self sustaining growth in the rural areas.

The community development programmes was followed by package programmes like Intensive Agricultural District Programme and High Yielding Varieties Programme during the mid sixtees. Although these programmes helped to usher in the "Green Revolution" and contributed to rapid increase in agricultural production particularly food grains, they were largely concentrated in the areas with assured natural advantages, and comparatively better endowments. As a consequence, these programmes tended to increase the regional disparities and accentuate economic inequalities. In this situation corrective measures became necessary and certain special programmes like Small Farmers Development Agency, Marginal Farmers Agricultural Labourers Development Agency were introduced during the Forth Plan with major emphasis on the development of weaker sections of the population. Also Area Development Programmes like Drought Prone Area Programme, Hilly Area Development Programme and " Command Area Development Programme " were taken up.1 (hereafter refer' as CAD programme).

The present strategy is to intensify efforts towards integrated development in the selected blocks, while allowing on-going programmes like Tribal Area Development , Hilly Area

---

1. Marmala S.S. (1979) New strategy for Rural Development, Yojna, 23(4): 5-6.

Development etc. to operate at the present level for the stipulated period, for this 2000 blocks out of total 5004 in the country have been selected for taking programmes under IRD (Intergrated Rural Development) programme. These blocks are already covered under one or more of the three special programmes viz. DPAP, DDP or CAD.

Future of predominantly agricultural country like India depends considerably upon the progress of agriculture. The farming today is much more different from that of yester years. The days have gone when the farmer was just stirring the soil and used to sow the crops in convenient seasons. It is no more so. Now, it is the era of farming with diffierent norms and technology. In all the developing nations in the world including India the growth rate of agricultural production mainly determines the growth rate of whole economy. In human terms, when farming prospers, the people prosper phisically and economically. [2]

Agriculture to be successful and well-developed requires supply of irrigation water at regular intervals and in required quantities. This could only be done by an artificial application of water to land for growing crops.

It is generally observed that introduction of irrigation is associated with the changes in cropping pattern. The subsistance agriculture under rainfed condition is changed to commercial farming. Because of the regular supply of water, the use of farm inputs as well as capital use in agriculture increases with the consequent positive results on crop yields and income from agriculture.

---

2. David Mason - F.A.O. helps to build new technology in India Yojana, April, 1968 P.7.

Thus irrigation has assumed an increasing significance in Indian agriculture in the context of new technology where high yielding varieties and multiple cropping patterns are being advocated.

Before the first five year plan i.e. prior to 1951, the irrigation potential in Maharashtra was 2.74 lakh hectares. There after, during the subsequent five year plans, much attention was paid to create additional irrigation potential through major, minor and medium irrigation projects. The total irrigation potential created in Maharashtra by the end of 1976-77 was 14.67 lakh hectares.

Establishment of Command Area Development Authority.

The command area development programme was introduced as a central sector scheme in 1974 with the objective of ensuring optimum utilization of irrigation potential created in the command area of major irrigation projects, Apart from laying emphasis on the improvement of water conveyance and drainage systems, Command Area Development, also embraces various on farm development activities.

Presently the scheme covers 47 major irrigation projects administered by 36 Command Area Development Authorities, covering 961 blocks.

Role of Command Area Development Authority.

It has been agreed upon that the best way of tackling the development of potential of irrigation command and at the same time ensuring social justice to small and marginal farmers, agricultural labourers, the developmental activities will have to be co-ordinated and unified and fairly autonomous

organisation CADA (Command Area Development Authority) has to carry out all these functions. This organisation has a full control over the various services in the area where co-ordination is essential for the success of programme.

The unified control is desirable in the areas of intensive cultivation to over come the possibility of lack of co-ordination among the departmental hierarchies and loyalty to different organisations. Multifaceted orzanisations become ineffective if they take up too many detailed lines of action under their direct control. It was soon realised that the proper utilization of irrigation potenifal created needs to be organised on sound basis, so as to obtain full benefits from various irrigation projects. A separate organisation for planning, co-ordinating and implementing the plans was therefore set up for various irrigation projects.

It is agreed that in the command area, the main objective of authority shall be water control and crop planning and to help in agricultural development programmes with special reference to improvement of small marginal farmers. Where rural electrification is required for ground water utilization the field electricity organisation will have to write to the authority so that energy will be utilised for proper purpose to increase productivity of lands and reduce the lengthy channel of administration.

The development in the command area therefore can be separated into following unit programmes.

i) Modernisation and efficient operation of irrigation systems, (ii) Development of main drainage system and its improvement, (iii) Land shaping of water shed areas in the

command, (iv) exploitation of ground water to supplement the surface water, (v) Fixing and enforcing the suitable cropping schedule according to availability of water, (vi) Preparing plan of input supply of seeds, fertilizers tractors, plant protection services and credit facilities, (vii) Planning and arranging the necessary marketing, transport and processing facilities and (viii) Preparing individual programmes of action for small marginal farmers.

General Objective

The present study is planned with the general objective of investigating whether CAD programme has made any impact of otherwise on the lives of farmers included in command area of Ghod Irrigation Project, in Shrigonda taluka of Ahmednagar, District.

Specific Objectives

(1) To study the socio-economic characteristics of the farmers included in command area of Ghod Irrigation Project.

2) To study the nature of association if any between the socio-economic characteristics and the impact of CAD programme under Ghod Irrigation Project.

3) To study and determine the extent of impact of CAD programme under Ghod Irrigation Project on the lives of respondent farmers.

4) To study the attitude of respondents towards CAD programme.

5) To study the problems faced by the respondents in receiving the benefits of CAD programme under Ghod Irrigation Project.

6) To study the suggestions of respondents regarding solution to over come the problems and more effecient execution of activities of CAD programme.

Hypothesis

It was hypotnised that there exists association between the socio-economic characteristics and impact of CAD programme.

Scope of the study

The present study on the impact of Command Area Development Programme under Ghod Irrigation Project in Shrigonda taluka of Ahmednagar district will furnish to the administrators, economists, social reformers and policy makers a sound informative foundation of carefully ascertained facts which will serve as a basis for future decisions and actions and formulating and executing the plans for development.

This survery will be a part of planning process, of command area development and provide statistics to depict basic material to plan for infrastructural development in a scientific manner. This survey will also throw a light on various aspects such as socio economic position, utilization of water and problems faced by the farmers in the command area. It will also give an idea regarding scope for development of agro-industries and subsidiary occupations.

Limitations of the study.

This study is limited to a population of 150 farmers in selected villages in Shrigonda taluka of Ahmednagar district.

The ignorance and illiteracy of the selected farmers to provide correct and latest information on different points under study may be major limitation to arrive at correct inferences.

However, the findings may be applicable to similar projects having identical agro-climatic conditions.

REVIEW OF LITERATURE

CHAPTER - II
REVIEW OF LITERATURE

Since the Command Area Development Agencies are of recent origin, there were not many research studies available on the subject. To formulate a conceptual frame-work in our emperical jurisdiction, a brief review of studies done previously on Agricultural Development Programmes has been presented in this chapter.

The sequential aspects considered are -

i) Impact of different Agricultural Development Programmes.

ii) Characteristics of Respondents in Relation to the Impact, of various Programmes.

1) Impact of different Agricultural Development Programmes.

Programme Evaluation Organisation (1959) reported the impact of a compaign on wheat production. It was reported that wheat yields were increased due to seasonal and natural factors on one hand and food campaign on the other hand.

Neilson (1961) studied farmers reactions towards extension experimental programme over a period of five years. The farmers thought that the programme was most useful for bringing about adoption of improved practices, increasing the farm income, or efficiency and increasing the crop yields and diffusion of agricultural information upto the farmers.

Nanavatty (1966) studied the reasons for the restricted growth of the applied nutrition programme and stated that unless the programme has been made a social

action programme, affecting change habits of the individuals, families, groups and community, thus creating an urge for improvement in the way of their life, it is not likely to make the desired impact.

Shetty (1968) stated that in South Canara district, due to new techniques of lift irrigation, the area under irrigation increased from 15000 acres to 17000 acres between 1957-67. After installation of pump sets, the average family income from agriculture increased by 118 per cent, average yield increased by 35 per cent and considerable shift in cropping pattern appeared in favour of high yielding varieties.

Shrinath (1969) studied the economic impact of well irrigation and revealed that area under irrigation increased to 3885 hectares. The gross cropped area increased to 72.00 per cent of the total cultivable land.

Anonymous (1971) in the report on Evaluation of Minor Irrigation in Goa, stated that as a result of impact of minor irrigation projects, gross cultivated area in the selected blocks had gone up by 300 per cent during the period of 5 years and irrigated area has been increased by 11 per cent.

Murthy (1971) reported about the IR-8 Extension Campaign. The results of campaign indicated that IR-8 can usefully replace other varieties, farmers earn twice as much net profit.

Misawa Adachi et al (1971) reported that a Japanease extension Programme was provided with supervision and guidance to five villages in 1968-69 season. The results indicated

that bigger yields are possible with existing varieties, with better management, irrigation and fertilizers.

Shalerao and Mishra (1972) studied the impact of co-operatives and revealed that the service co-operatives had created positive impact on the adoption of improved technology.

Chopra (1972) studied the regional effect of Bhakara Mangal Project and stated that the quantitative impact of the project on the region was significant and there was significant increase in the regional income.

Kumar (1972) predicted on the basis of his study that the economic impact of improved irrigation systems could include an additional area being irrigated and greater use of high yielding varieties and inputs.

Dutta (1973) reported that Small Farmers Development Agency in Assam has failed to achieve the desired results.

Garg and Singh (1974) reported that there was a significant positive impact of SFDA on the relative economic position of the small farmers.

Narayanswami (1974) reported that the performance of the SFDA has been uneven from area to area and between the projects in the same state.

Pandey (1974) observed that the general oojective of Marginal Farmers Agricultural Labourers Development Agency was fairly well defined, though in actual operation the project varied quite a lot.

Ram and Deonath (1974) stated that impact of co-operative effort was the change of crop husbandry to animal husbandry and change of food grains to cash crops.

Workers (1975) on the basis of his study, reported that social impact of tube-well irrigation was reduction in exploitation and improvement in the social standing of the farmers.

Alam (1976) stated that with the introduction of Integrated Area Development Programme farmers in Aligarh district have become profit-conscious and they are doing farming on business lines. He revealed from his study that there was 50 to 60 per cent increase in food grain production.

Asthana (1976) stated that Command Area Development Authority is helping the farmers in the command area. The land levelling has been taken up on large scale in the areas of command with the help of Haryana Land Reclamation and Development Corporation. As a result of the efforts, the water utilisation has gone up to the extent of 30 to 40 per cent.

Salunkhe (1977) reported that the impact of Small Farmers Development Agency on the relative economic position of the beneficiaries than that of non-beneficiaries was not significant. His study pointed out that the impact is yet to be felt by the beneficiaries in terms of monetary returns.

Moda (1978) studied that factors in agricultural development and stated that rate of agricultural development has become the greatest concern of our planners. Despite of our ambitious planning, enormous expenditure and adequate skill, our destination remains a distant goal contrary to

our expectations, even a quarter century what appears to be, our faitnful execution of project, has not yielded what other countries harvested during the same period. He further stated that a careful and critical insight into what happens behind the screen will reveal that large scale infiltration, corruption, officialdom, complexity of procedures and indifference ignited by ignorance are major contributing factors towards slow progress.

Mukherji (1978) described CAD programme as dynamic process of harmonising the rhythum of water (its availability at different points of time) with rythum of crops (their requirment of water at crucial stages) and rythum of soils (its moisture retention capacity). He further stated that the rythum of water, soil and crops have thus to be orchestrated by CADA, so that all the three elements are able to participate most beneficially in "Bio-Chemical Miracle of Crop Production".

Characteristics of the Farmers in relation to impact of Various programmes.

1 Age :

Jamadar (1973) observed non significant association between age and milk production of the farmers in the area of Government Milk Scheme, Chiplun.

Kadam (1974) inferred that not the age but education had significant association with the participation of youth club members in agricultural development programmes of the clubs.

Mane (1975) found significant association between age and the adoption behaviour of farmers in the Integrated Area Development Scheme in Tasgaon taluka of Sangli district.

Deokar (1976) found that there was significant association between age and impact of operation jowar programme in terms of productivity achieved.

Gaund (1978) observed non significant association between age and impact of wheat pilot project in terms of yield, on the participatn farmers.

2 Education

Jamadar (1975) studied the relationship between the education and milk supply to co-operative societies, in the Government milk scheme, Chimpiun and found non significant association between education and milk supply.

Deokar (1976) reported that education and impact of operation jowar programme were not associated to each other.

3. Size of Family.

Deokar (1976) reported that there was no significant association between the size of family and impact of operation jowar programme.

Gaund (1978) found that family size was not significantly associated with the impact of sugarcane pilot project on the participant farmers.

Patil (1979) studied that impact of wheat pilot project and reported that there is no association between the size of family and impact of wheat pilot project on the participant farmers.

4. Size of landholding

Kulkarni (1961) studied the impact of extension programme on the rural population in the college development block and concluded that the land owned by the farmers was significantly associated with impact in terms adoption of improved agricultural practices.

Sironi (1972) stated that farm size had positive association with impact of High Yielding Varieties Programme. Furtner he stated that yields of crops wheat and bajra were highest on large farms.

Jamadar (1973) investigated the relationship between the size of land holding and milk production and concluded that there existed non significant correlation between the size of land holdings and milk production in Goverment milk scheme, Chiplun.

Mane (1975) revealed that the adoption level increases as there is increase in the size of land holding of a farmers in the Integrated Area Development Scheme, in Tasgaon taluka of Sangli District.

Gayake (1976) studied the impact of Agricultural Development Programme on Farmers in Jayakwadi command area and revealed that farm size had positive association with the impact in terms of adoption of high yielding varieties.

5 Socio-economic status

Mane (1975) reported that the socio-economic status of participant farmers covered by the Integrated Area Development scheme was better than those uncovered farmers.

Patil (1976) studied Dry Farming Programme and stated that respondents belonging to higher socio-economic status were change prone to Dry Farming Programme.

Gaund (1978) studied the impact of sugarcane pilot project and stated that there was significant association between socio-economic status and impact of sugarcane pilot project in terms of productivity, on the participant farmers.

6 Income

Swaminathan (1969) reported that farmers participated in the high yielding varieties programme were benefited from the increased income.

Chopra (1972) studied the regional effect of Bhakra Bangal Project and stated that there was significant relationship between the impact of the project and the regional income.

Mangle (1976) studied the problems of farmers in relations to use of canal water in Purna command area and revealed that there existed positive association between income and canal water utilization.

Chauhan and Singh (1978) found positive correlation between impact of mechanisation and income in terms of crop yields.

7. Cosmopolitenss.

Bhujbal (1973) studied the cosmopolitenss index of managing committee members of the co-operative society and the progress of the society and observed highly significant association between the cosmpopolitenss index and the progress of the society.

Salvi (1971) analysed the profile of low income farmers and concluded that low income farmer has limited contacts with the extension agents and very rarely attends demonstrations and meetings sponsored by the extension campaigns.

Patil (1979) studied the impact of wheat pilot project and found that there existed close association between cosmopolitenss and impact of the polit project in terms of productivity on the participant farmers.

8. Planning orientation

Westermarck (1974) revealed that marked successive improvement of profitability took place in farm groups whichwere object of farm planning.

Deokar (1976) observed that there was significant association between the planning orientation and impact of operation jowar programme in terms of productivity.

Ramane (1977) indicated that the planning orientation of member farmers of co-operative irrigation society and the changed aspects of their life i.e. income, animal management, standard of living were strongly and positively related with impact of co-operative irrigation societies.

Gaund (1978) reported non significant association between planning orientation and the impact of sugarcane pilot project, on producivity behaviour of the participant farmers.

9. Social Participantion

Dhankar (1965) revealed that education and land holding of farm families had significant association with participation in agricultural programme.

Junghare (1965) found that education, land owned and adoption of improved agricultural practices were positively correlated with formal social participation of farm families in the Rural Development Programmes.

Saha (1973) revealed on the basis of his study that those respondents who participate in the Community Development Programme adopt more than those who do not participate.

Kadam (1974) inferred that education had significant association with the participation of youth club members , in agricultural development programmes of the club.

Mane (1975) concluded that the more the social participation in the Integrated Area Development scheme, the more is the adoption of improved technology .

Deokar (1976) found out that there was significant association between the social participation and the impact of Operation Jowar Programme.

Gaund (1978) observed that there existed no significant association between the social participation and impact of sugarcane pilot project.

10. Attitude

Agolaca (1952) determined the extent of farmers participation in and knowledge about extension programmes and their attitute towards the programme and stated that those participated in the programme had favourable attitude

towards the programme and they desired to continue the programme.

Chowkidar and George (1971) on the basis of their study reported that farmers had favourable attitude towards the "High Yielding Varieties Programme".

Dakh (1972) on the basis of his study "Impact of Zilla Parishad on Agricultural Development" and revealed that majority of farmers had favourable attitude towards Zilla Parishad Programme.

Tripathi (1974) concluded from his studies that majority of the farmers have favourable attitudes towards Soil Conservation Programme. He also stated that farmers had favourable attitude towards soil conservation personnel.

Vasare (1976) concluded that utilization of canal irrigation water in Mula Commana area had positive association with the attitude of the respondents.

SETTING

Chapter - III

Setting

The climatic and geographical conditions are the two most important factors which determine the type of farming and income of the farmers. Before undertaking any problem related to agriculture, it is necessary that one should know the climatic conditions and geographical conditions in that particular area. Such information will help to understand more correctly the results of the study.

In this chapter background information about the area under study is presented under two broad heads, viz.

1) General information of the Ghod Command Area.
2) General information of the Ghod Irrigation Project.

General information of the Ghod Command Area

A) The Command area.

There are in all 41 villages covered by the programme under Ghod irrigation project. Of these 14 villages are in Shirur taluka of Pune district, 16 villages are in Shrigonda taluka and 11 villages are in Karjat taluka of Ahmednagar district.

B) Soils and Topography

This area represents the scarcity zone of the state on the basis of its agro-climatic conditions. The soils vary from light to deep black. About 37.00 per cent of the soils are light where as 35.00 per cent are medium heavy and well-drained. Only 28.00 per cent soils adjoining river Ghod are deep black and clayey in nature. Topography is mostly undulating and in many places surface rock is exposed.

Classification of soils on the basis of percentage of slope is given in Table - 1.

Table-1 : Classification of soils on the basis of percentage in Shrigonda taluka.

Slope	Per cent area
i) Flat land, upto 1 per cent slope	31.50
ii) 1 to 2 per cent slope	30.50
iii) 2 to 3 per cent slope	13.00
iv) Mavins lands, heavily undulating with more than 3 per cent slope	7.00
v) Lands unfit for cultivation being rocky or hilly	18.00
Total :	100.00

C) Climate

i) Seasons Command area has mainly two agricultural seasons viz., Kharif and rabi. Rabi jowar, wheat and gram are principal crops of rabi season. Bajra, onion, paddy kharif, jowar are grown in kharif season. Cultivation of Ground nut in hot whether season is also observed. Sugarcane is the principal cash crop of the area.

ii) Rainfall and Temperature The most of the command area receives very scantly rainfall. The average annual rainfall recorded at Shrigonda rain-guage station is about 491 mm and in Shirur it is 473.35 mm. Rainfall in this zone records two peaks, one in June-July and another in September.

The average maximum temperature is 31.08°C while the minimum average is 8°C.

B) Land utilization pattern

Table 2 represents the land utilization pattern of Shrigonda Taluka for the year 1970-71.

Table-2 : Land utilization pattern in Shrigonda Taluka during 1970-71.

	Item	Area in ha	per cent
1)	Geographical area	160481	100
2)	Area under forest	15175	9.46
3)	Area not available for cultivation.	16329	10.18
4)	Other uncultivated land excluding fallow land	7091	4.42
5)	Fallow land	2103	1.31
6)	Net area sown	119749	74.62
7)	Area sown more than once	5446	3.39
8)	Gross cropped area	125195	78.01
9)	Percentage of area sown more than once to net sown area.	-	4.45
10)	Intensity of cropping per cent	-	104.55

Source : District statistical abstract of Ahmednagar district 1971-72.

B) Area irrigated by different sources during the year 1970-71

The area irrigated by different sources during the year 1971-72 is given following table-3.

Table-3 : Area irrigated by different sources in Shrigonda Taluka during the year 1970-71.

Sources of irrigation	Total Area in hectares	Per cent
1) Government canal	6688	48.11
2) Private canal	-	
3) Wells	7190	51.90
4) Total net area irrigated	13878	100.00
5) Per centage of net area irrigated to net area sown	-	11.58
6) Area irrigated more than once	2281	16.43
7) Gross irrigated area	16159	116.43
8) Percentage of gross area irrigated to gross cropped area	-	12.90

* Percentage to the total net area irrigated.

Source : District Statistical abstract of Ahmednagar district, 1971-72.

b) Cropping pattern

The rabi jowar is the main crop of the area. Rabi Jowar, wheat, bajra, Sugarcane, Ground nut and Cotton are the important irrigated crops of the command area. The area under different crops during the year 1970-71 is given in table-4.

Table-4 : The area under different crops in Shrigonda Taluka during the year 1970-71.

Sr.No.	Crops	Total Area in hectares	Total Irrigated Area in hectares
1	Bajra	3301.20	470.00
2	Rabi Jowar	34211.20	3040.40
3	Wheat	1012.40	582.40
4	Sugarcane	645.60	645.60
5	Total cereals	38650.80	4217.60
6	Total pulses	3926.80	180.00
7	Total food grains	42577.60	-
8	Fruits, vegetables	406.00	398.40
9	Total fibres	656.00	611.60
10	Oilseeds	5000.80	-
11	Total Nonfood crops	6448.80	1013.20
12	Total gross cropped area	50076.40	6463.60

Source : District statistical abstract of Ahmednagar district 1971-72.

A) Agricultural Development Activities.

As the area is popularly known for recurring droughts the cultivators hesitate to adopt new agricultural practices. In spite of the several programmes undertaken by the Zilla Parishad and Department of Agriculture, farmers have not yet shifted from traditional agriculture to commercial one. Only those farmers who possess ample irrigation facilities with large size of holding take advantage of such programmes. The use of inputs like fertilizers, insecticides and pesticides is also not found up to the desired mark.

The Project

The eastern part of Pune district and adjoining parts of Ahmednagar district are chronically famine affected areas. The rainfall is scanty and that too is not uniformly distributed during the mansoon season. To protect these chronic famine affected areas it was thought by the Government that immediate steps are necessary and the Ghod Project is outcome of this realization.

A) Site of the Project

The Ghod Project is located near the village Vadgaon in Shrigonda taluka of Ahmednagar district, on one side and Chincholi in Shirur taluka of Pune district on other side.

B) The River Ghod

The river Ghod which gives its name to the dam rises near Bhimashankar in the Sahyadri hills, flows in Eastern direction, on the border of Pune and Ahmednagar districts and finally joins the river Bhima near Dhond, about 22.4 kms.

below the Ghod dam site. The principal tributaries of this river, viz. Mina and Kukadi meet it up stream near the village Pargaon and Shirur town respectively.

C) Catchment Area

The catchment area of the river is 3627 Sq. kms at the site of the dam and produces an average annual yield of 40,000 M. Cft. (1134 M.cm.) of water.

D) The Dam

The dam consists entirely of an earthen embankment of 2604 metres long (excluding the waste weir portion) with a maximum height of 28.64 metres in gorge and width of 200 metres. The total earth required was 36.37 M. cft. (1.02 M.cm.) The lake sub-merges an area of 2812 hactares of 7 villages.

E) The Canals

There are two canals of the dam. The Ghod left Bank Canal (GLBC) is 86.40 kms in length and has a discharging capacity of 500 cusecs. This canal benefits 16 villages from Shrigonda taluka and 11 villages from Karjat taluka from Ahmednagar district. It irrigates about 17920 hactares of mixed crop every year.

The Ghod Right Bank Canal (GRBC) is comparatively short one having length of 32 km. with discharging capacity of 185 cusecs. It irrigates about 7040 hectares of land from 11 villages of Shirur taluka.

METHODOLOGY

CHAPTER - IV

METHODOLOGY

General

The methodological approach adopted for the present study is discussed in brief in this chapter. In other words this chapter deals with the sampling technique, designing of schedule, method of collection of data and compilation of the data.

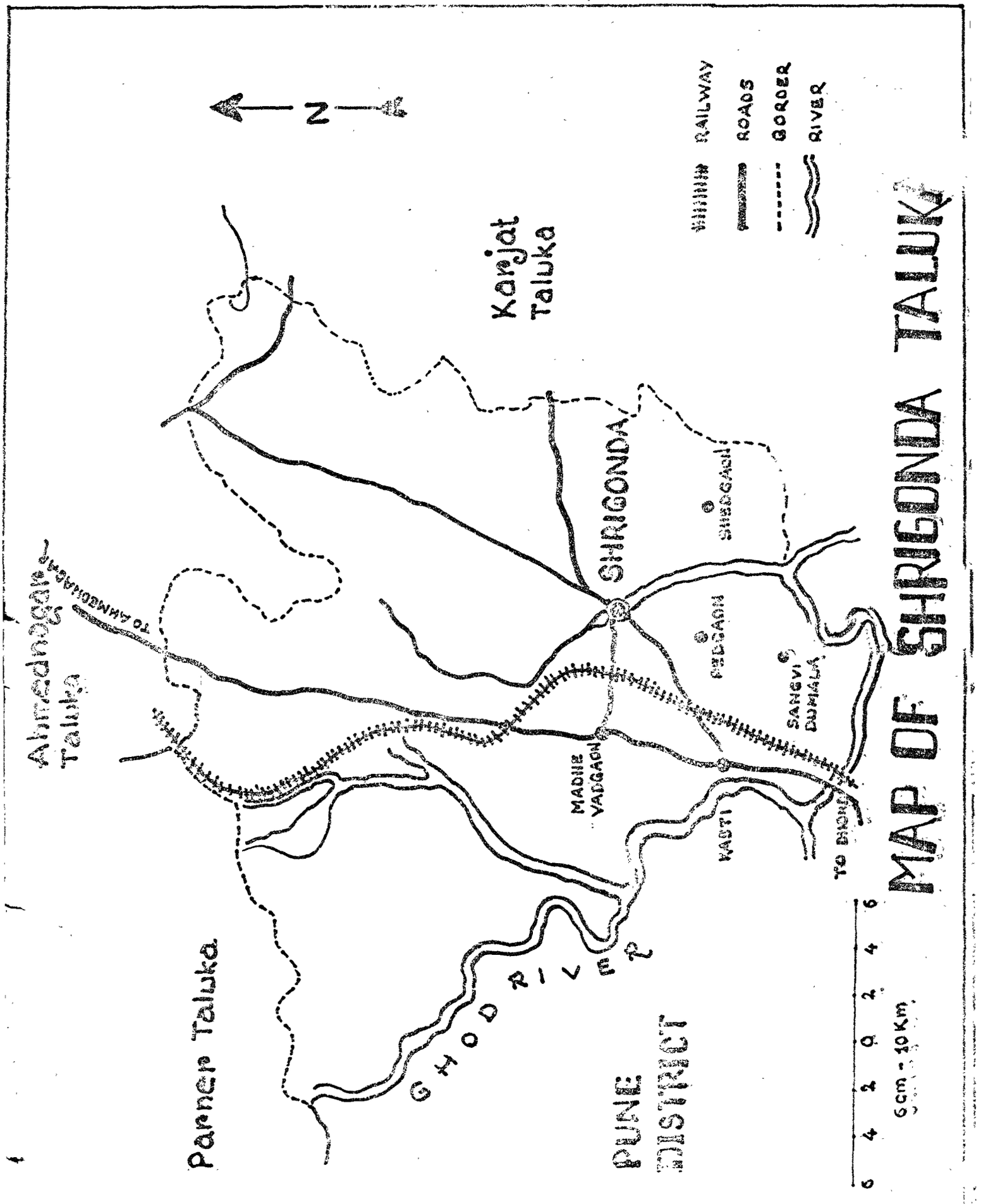
Selection of Irrigation Project

It has been observed by various authorities in the field of irrigation that there existed a problem of under-use of irrigation resources created under almost all newly constructed irrigation dams. The reasons for under-use of created irrigation potential being enormous the problem remained more serious particularly in the areas of scanty and erratic rainfall. Considering the seriousness of the problem of under utilization of irrigation potential in such scarcity tract, the Ghod Project has been selected for study.

Sampling Technique

The list of villages covered by Command Area Development Programme in the Ghod irrigation project was obtained from the Command Area Development Authority's office situated at Pune. Among the three talukas namely Shirur, Karjat and Shrigonda, the Shrigonda taluka in Ahmednagar district was selected randomly for the purpose of present investigation. Out of 16 villages, from Shrigonda taluka five villages were selected randomly for data collection. Lists of farmers were obtained from village

FIG. 1. Selected villages under CAD programme.



revenue authority of each village. Thirty respondents were selected, from each of the five villages by n'th number method of random sampling. Thus in all 150 respondents were selected for the study.

The farmers from the following (table-5) five villages constitute the population for the present investigation.

Table-5 : List of selected villages and number of respondents.

Sr.No.	Name of village	No.of respondents
1	Kashti	30
2	Pedgaon	30
3	Madhe-Vadgaon	30
4	Sangvi-Dumala	30
5	Shedgaon	30
	Total	150

Designing of schedule

After having detailed study of the available research literature on the topic, a schedule was designed to meet the requirements of the objectives of the study and to obtain the relevant information from the respondents. The schedule was designed in the local language avoiding constrasting statements and questions having two meanings. The pertinent questions were included in the schedule in a logical manner. The schedule is reproduced at the Appendix-I.

Pre-testing of the schedule

The schedule so prepared was pre-tested in the villages not included in the study but where agro-climatic complex was similar.

In light of the experience of pre-testing of the schedule some questions were deleted, which were found to be unnecessary and some modifications were made. Thus the schedule was finalised for data collection.

Procedure for Data Collection

The author personally interviewed 150 farmers selected for the study. The help of local leaders, Gramsevaks and Agricultural Assistants was taken for establishing the rapport. The object of collection of information was made clear to the respondents so as to build up confidence and faith. As far as possible the respondents were contacted during their leisure time.

Compilation of Data

Whenever necessary the qualitative data were quantified and computation of scores was done. The quantified data were used for finding out the nature of association between independent and dependent variables.

Variables

Independent variables

1) Age : It is one of the basic characteristics of an individual linked with his maturity, physical fitness, and productivity etc. In this study chronological age at the time of interview was considered. The respondents were classified according to their age into three groups viz.

i) upto 35 years

ii) 36 to 50 years

iii) 51 and above years

2) Education : According to the formal education of the respondents, they were classified into three categories viz.

i) Illiterate

ii) Primary education (upto 7th std.)

iii) Secondary and above education (above 7th std.)

3) Size of family : The size of family is likely to influence the out put of farm. The size of family here refers to the actual number of individuals in the family. The respondents were classified into two categories on the basis of their family size, viz.

i) Small family - upto 5 members

ii) Big family - above 5 members

4) Size and land holding : The respondents were classified according to their size of land holding into three groups viz.

i) upto 2 hectares

ii) 2.1 to 4.00 hectares

iii) above 4.00 hectares

5) Socio-economic status : The scale prepared by Bareek and Trivedi (1963), was used for computing socio-economic status score with slight modification. The respondents were classified into three groups according to their socio-economic status level, viz.

i) Low socio economic status - upto 27 score

ii) Medium socio-economic status - 27 to 33 score

iii) High socio-economic status - above 33 score.

6) Income : The gross annual income from agriculture and allied occupation was considered for calculating the annual income. The respondents were classified according to their

income into three groups viz.

i) upto Rs. 6000

ii) Rs. 6001 to 12000

iii) above Rs. 12000

7) Social Participation score : Social participation score was computed by assigning score one to each of respondents having membership in one organisation. Additional score one was assigned to those who were office bearers in one organisation. Thus total score of each respondent in all the organisations namely Gram Panchayat, Co-operative Society, Sugar Factory, Youth Club and others was computed. The respondents were then grouped into two categories viz.

i) Low social participation - upto 2 score

ii) High social participation - Above 2 score

8) Cosmopolitenss score

Cosmopolitenss is the tendency to be in contact with outside community based on the belief that - individual's all needs can not be satisfied, within his own co munity. The respondents visiting the places namely, weekly bazaar place taluka head quarter, district head quarter, Co-operative society, Agricultural university, Demonstration plots and others, seldom were assigned score one for each place of visit, while, those visiting frequently were assigned score two for each place of visit. The respondents were then classified as below.

i) Low cosmopolitenss - upto 7 score

ii) High cosmopolitenss - above 7 score

9) Planning orientation score : It was measured by asking questions to the respondents regarding, whether they were planning any changes on their farm in next few years about the cropping pattern, soil conservation, secondary occupation and irrigation facilities etc. For each change planned by the respondent one score was assigned. Thus the total score was computed. The respondents were then classified as below -

i) Low planned orientation - upto 3 score

ii) High planned orientation - 4 and above score

10) Attitude score : Attitude theory should provide an insight into cause and process of Attitude formation and change. The definition of attitude as given by Newcomb (1950) is "the predisposition to perform, perceive, think and feel in relation to something. This means that individual has learnt to orient himself towards an object or symbol as a result of his previous experience.

The CAD programme created a situation in which attitude changes were expected due to performance of CAD programme officials, their functioning and specific activities related to farming.

In the present study in all five positive and six negative statements were exposed to the respondents. Their responses in terms of yes or no, were noted. For each favourable statement pertaining to positive thinking one score was assigned. Zero score was assigned for negative thinking. Thus the total attitude score was computed. The respondents were then grouped into two categories viz.

i) Unfavourable attitude - upto 5 score

ii) Favourable Attitude - 6 and above score

Dependent variable

Impact : The term impact is operationally defined as an influence of CAD programme in Ghod irrigation project in terms of agricultural development of the farmers. In the present investigation the impact was measured in terms of developments made by the respondents in respect of :

I) Land development

II) Crop production

III) Animal Management

IV) Implements and accessories and

V) Agricultural employment

The raw score was computed in respect of the changes in the above aspects and the over all impact score was worked out by summing up these raw scores.

I) Land Development score

For determining the changes brought about by the respondents as a result of CAD programme in Ghod irrigation project in developing their lands, seven statements related to land development activities namely release of land from money lenders, levelling and bunding of additional land, increase in the area under irrigation and installation of pipe line, were exposed to the respondents.

The proportion of feasibility of development to the land actually developed was calculated by using following formula

$$I = \frac{\text{Area developped}}{\text{Total land holding}} \times 100$$

if Y = 0, then zero score was assigned, if Y is ranging between 1 to 25, one score was assigned, if Y = 25 to 50, two score was assigned, if Y = 51 to 75, three score was assigned and if Y = 75 to 100, score 4 was assigned. The score of each respondent was then multiplied by time factor in terms of number of years passed, since they undertook the related land development activities.

The scoring system in respect of purchase of additional land and tenanted land was as follows. One score was assigned for land holding upto one acre. Further additional one score was given for every two acres of land purchased or cultivated as a tenant.

In case of diging of wells, repair and development of an old well, the total years of development were considered. Thus one year period was given one score. Thus the total score in respect of seven items of land development was computed as raw land development score of each respondent.

ii) Crop Production score

For determination of changes brought about by the respondent farmers due to CAD programme, in case of crop production, questions pertaining to multiple cropping, crop patterns, cropping intensity, reduction or increase in the area under various crops, adoption of scientific methods of crop production and new varieties of crops, crop rotations, use of fertilizers, insecticides and pesticides, were asked.

The crop production score was worked out by using following formula.

$$Y = \frac{\text{Area put under change}}{\text{Total cultivable land}} \times 100$$

if Y = 0, then zero score was assigned, if Y 1 to 25, one score was assigned, if Y = 25 to 50, two score was assigned if Y = 51 to 75, three score was assigned, if Y = 75 to 100 four score was assigned. The score of each respondent was then multiplied by time factor i.e. number of years passed from the year of change made. Thus the total score of each respondent in respect of seven items was calculated as raw crop production score.

iii) Animal Management score

For determination of changes brought about by respondents in respect of animal management, 10 statements related to animal management were exposed. The statements asked were regarding whether they have purchased cross bred cows and buffaloes for milk purpose and bullocks for draft purpose, whether farmers adopted artifical insemination. The questions such as whether they used medicines for animal disease control, built cattle byre and started dairy, poultry and sheep Farming as the secondary occupations were also included. The respondents were also asked as to when they accepted this change. If the respondent has followed a practice for a year, then score one was assigned to that particular practice. Furtner additional score one was given for every one year period if he continued the practice. Thus the total score of a respondent for all above practices was based on the number of practices followed and period of their adoption. Thus the animal management raw score of each respondent was computed.

IV) Implements and accessories score

For determing changes brought about by the respondents in adoption of improved implements and appliences due to CAD programme, farmers were asked to state whether they had purchased any improved implement or appliance. The list of recommended implements and appliances was obtained from the Department of Agriculture, (M.S.) Pune. One score was assigned for each implement they purchased after the commencement of CAD programme. Thus the total raw score of implements and accessories was computed.

V) Agricultural employment score

With the view to find out the extent of impact of CAD programme in Ghod irrigation project on agricultural employment six statements regarding changes in daily wage rate, migration for employment, regularity in employment, increase in the intensity of employment, lack of availability of agricultural labourers etc. were exposed to the respondents. For each positive change one score was assigned. Thus, agricultural employment raw score was computed.

Overall Impact score

The overall impact raw score was computed by summing up all the raw scores of the above five development activities. The overall impact raw score of each respondent was then standardised, by calculating arithmetic mean and standard deviation.

The standard overall impact score of each respondent was calculated by using the following formula.

formula :

$$Z = \frac{X - \bar{X}}{S}$$

where, Z = Standard score

X = Any raw score

$\bar{X}$ = Arithmatic mean of raw scores

S = Standard deviation of raw scores

The respondents were then classified into two categories viz. i) Low impact upto 0.34 score

ii) High impact - above 0.34 score

where in 0.34 is the mid-point range of standard over-all impact score.

The problems and suggestions

The problems faced by the respondents in receiving the benefits of CAD programme and the suggestions offered by the respondents as a solution to over-come the problems and the efficient implementation of CAD programmes, were recorded and are presented in the following chapter.

Statistical analysis :

In the present study the following statistical tools were used for the presentation of data and interpretation the results.

i) Frequency distribution

ii) Percentage distribution

iii) The chi-square test

The use of statistical tools were made at appropriate places wherever needed.

The following formula was used to find out association between dependent variables and independent variable.

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

where, χ^2 = Chi square

O = Observed frequency

E = Expected frequency

$\sum$ = Summation

PRESENTATION OF DATA

CHAPTER - V

PRESENTATION OF DATA

This chapter deals with the interpretation of data collected from 150 respondents selected randomly from five villages in Shrigonda taluka of Ahmednagar district, covered by command area of Ghod irrigation project i.e. CAD programme.

The study deals with impact of CAD programme on the lives of the farmers in Shrigonda taluka of Ahmednagar district. The relevant data pertaining to age, education, size of family size of land holding, socio-economic status, income, cosmopoliteness planning orientation, social participation and attitude of respondents towards CAD programme are presented in the following sequence.

I) socio-economic characteristics of the respondents, their distribution and association with impact of CAD programme.

II) Attitude of respondents towards CAD programme.

III) Association between attitude of respondents and impact of CAD programme.

IV) Distribution of respondents according to difficulties faced by them and

V) Suggestions offered by them in proper implementation CAD programme.

I) Socio-economic characteristics of the respondents and their association with the impact of CAD programme.

1) Age : Age is important determinent of persons behaviour, since it is related to his likes, dislikes, interest and personal views. The agewise distribution of the respondents is given in table-6.

FIG.2. ASSOCIATION BETWEEN AGE AND IMPACT OF CAD PROGRAMME.

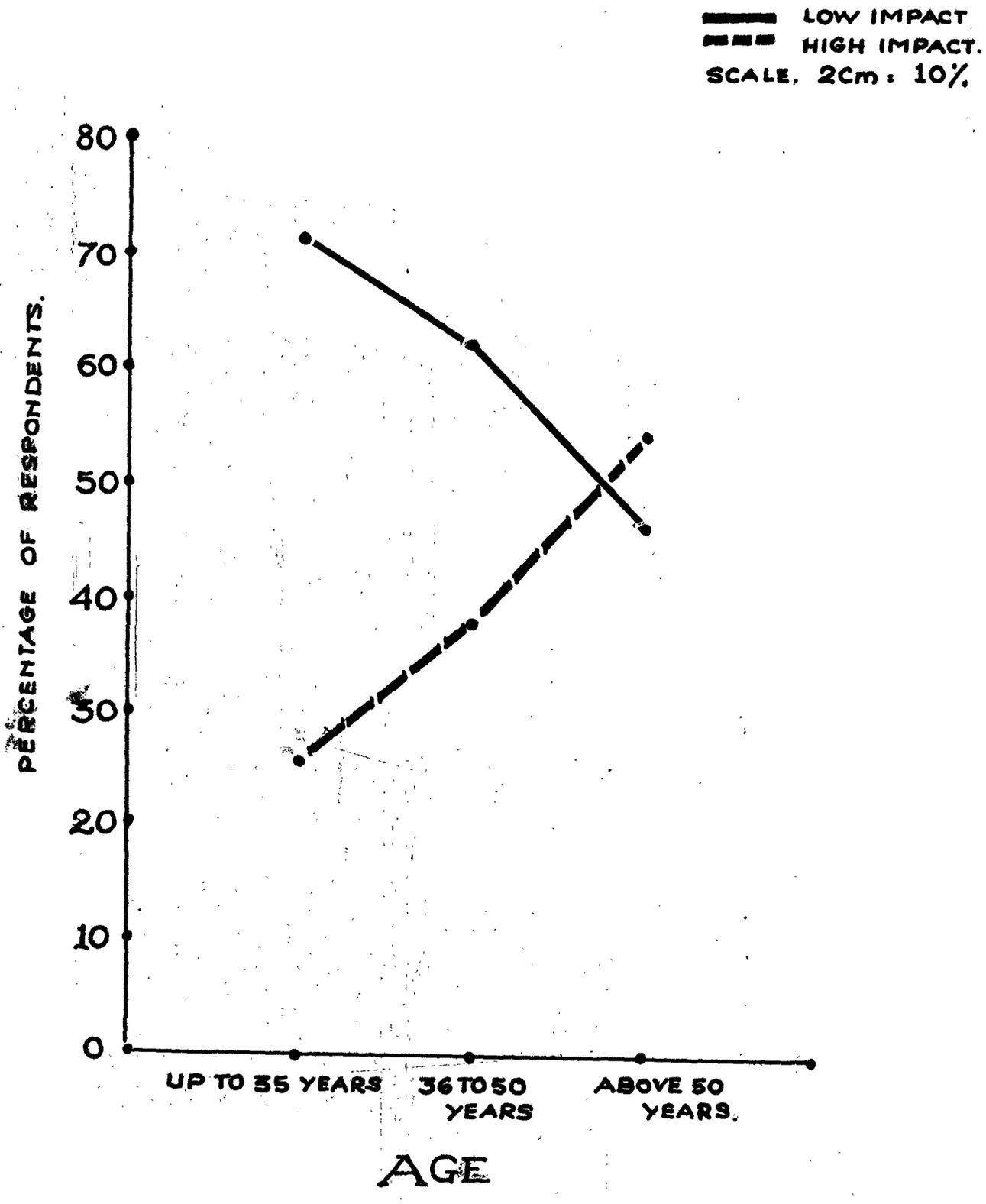


Table No.6 : Respondents by their age.

Sr.No.	Age group (years)	Number of respondents	Per cent
1	Upto 35	21	14.00
2	36 to 50	103	68.67
3	Above 50	26	17.33
	Total	150	100.00

It is seen from the above table that large proportion of the respondents i.e. 68.67 per cent were belonging to the age group of 36 to 50 years followed by 17.33 per cent of the respondents belonging to the age group of above 50 years. The young age group of upto 35 years comprised of only 14.00 per cent of the total respondents.

Table No. 7 : Association between age and the impact of CAD programme.

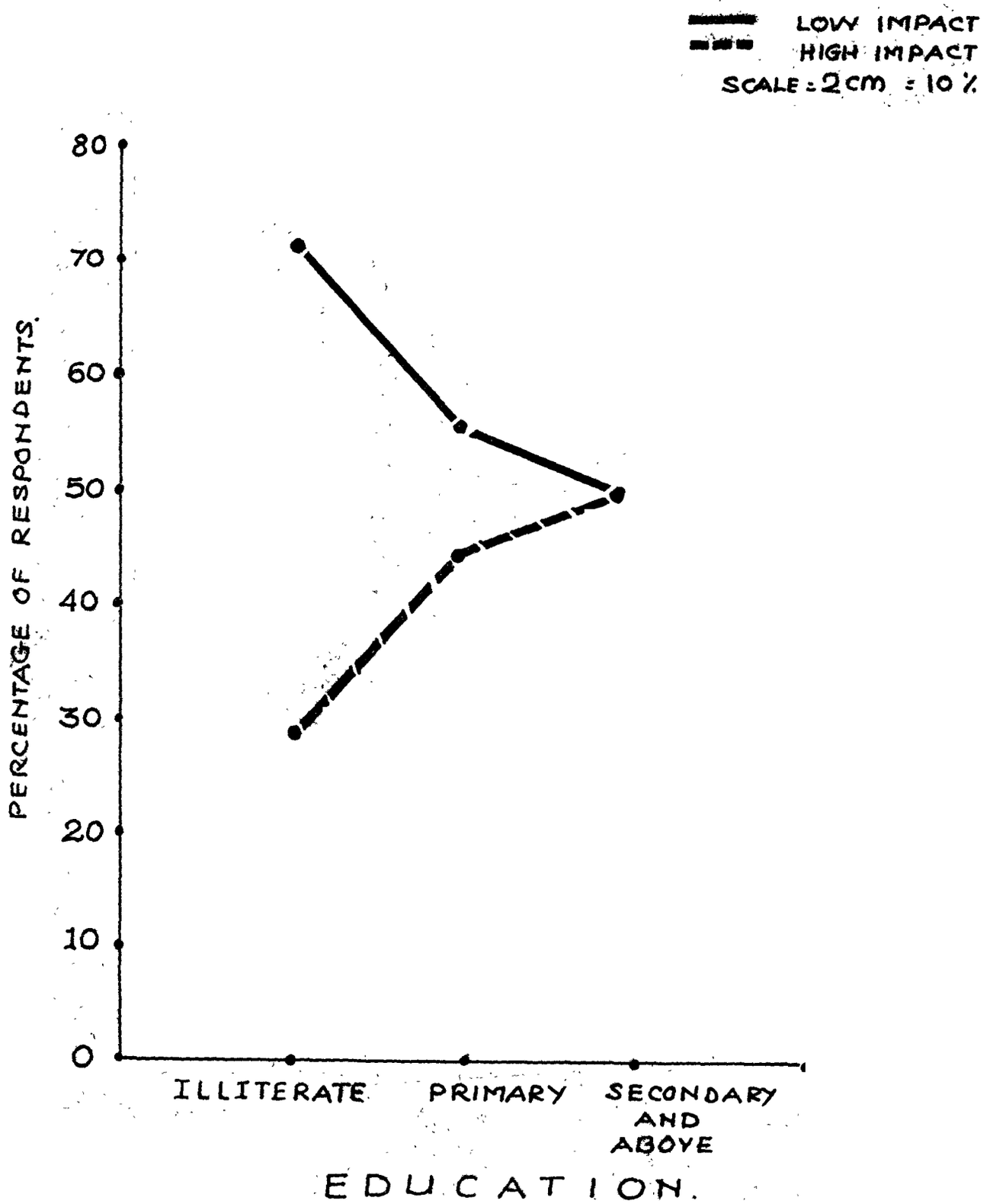
Sr.No.	Extent of Impact	Upto 35 n=21	36 to 50 N=103	Above 50 n=26	Total n=150
		Per cent			
1	Low	71.43	62.14	46.15	60.67
2	High	25.57	37.86	53.85	39.33
	Total	100.00	100.00	100.00	100.00

Chi - square = 3.95 D.F. = 2

Not significant at 0.05 level.

The above table reveals that there was no statistically significant association between age of the respondents and the impact of CAD programme.

FIG:3. ASSOCIATION BETWEEN EDUCATION AND IMPACT OF CAD PROGRAMME.



2) Education : Education is generally meant for widening the mental horizon of a person and thereby preparing him to be receptive of new ideas. Education as referred to above, means the formal education received by the responders in school or college. The distribution of the respondents according to their formal education is presented in table-8.

Table No. 8 : Respondents by their formal education.

Sr.No.	Formal education	No.of respondents	Per cent
1	Illiterate	56	37.33
2	Primary	70	46.67
3	Secondary and above	24	16.00
	Total	150	100.00

Above table shows that more than 60 per cent of the respondents were educated. The percentage of respondents educated upto primary level was 46.67, while about 16.00 per cent were educated up to secondary level. The percentage of illiterate respondent was 37.33.

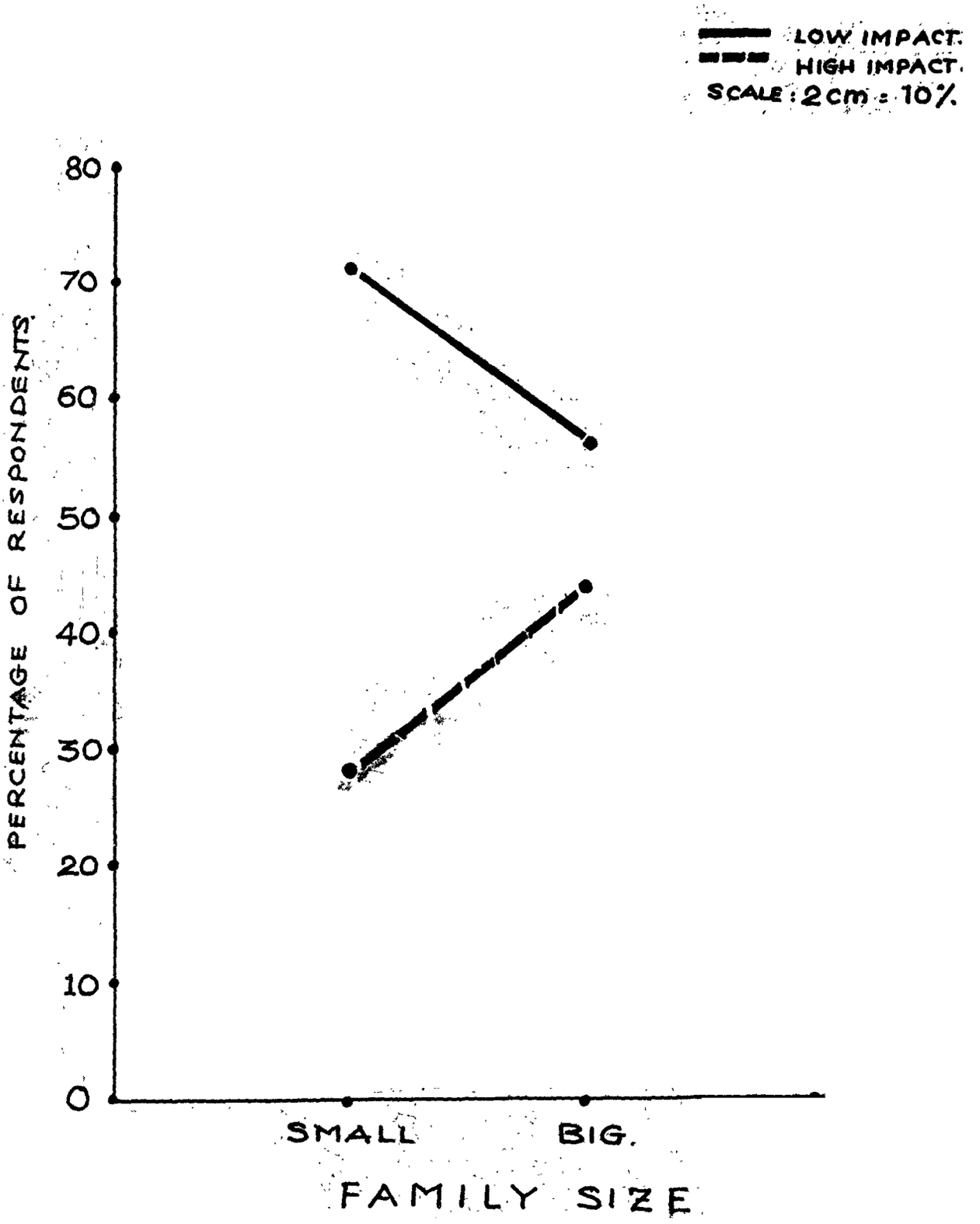
Table No.9 : Association between formal education and the impact of CAD programme.

Sr.No.	extent of Impact	Illiterate n=56	Primary n=70	Secondary & n =24	Total n-150
			Per cent		
1	Low	71.43	55.71	50.00	60.67
2	High	28.57	44.29	50.00	39.33
	Total	100.00	100.00	100.00	100.00

Chi-square = 4.58 D.F. = 2

Not significant at 0.05 level

FIG. 4. ASSOCIATION BETWEEN SIZE OF FAMILY AND IMPACT OF CAD PROGRAMME.



Above table reveals that there was no statistically significant association between formal education of the respondents and the impact of CAD programme. Both the variables were independent of each other.

3) Size of family : The size of family here, refers to the total number of members in the family. The distribution of respondents according to their size of family is presented in table-10.

Table No.10 : Respondents by their size of family.

Sr.No.	Size of family	No.of respondents	Per cent
1	Small (upto 5)	42	28.00
2	Big (6 and above)	108	72.00
	Total	150	100.00

It is seen from the above table that majority of the respondents belonged to the large size families having 6 and above 6 members. The percentage of the respondents possessing small family size i.e. upto 5 members was 28.00 per cent.

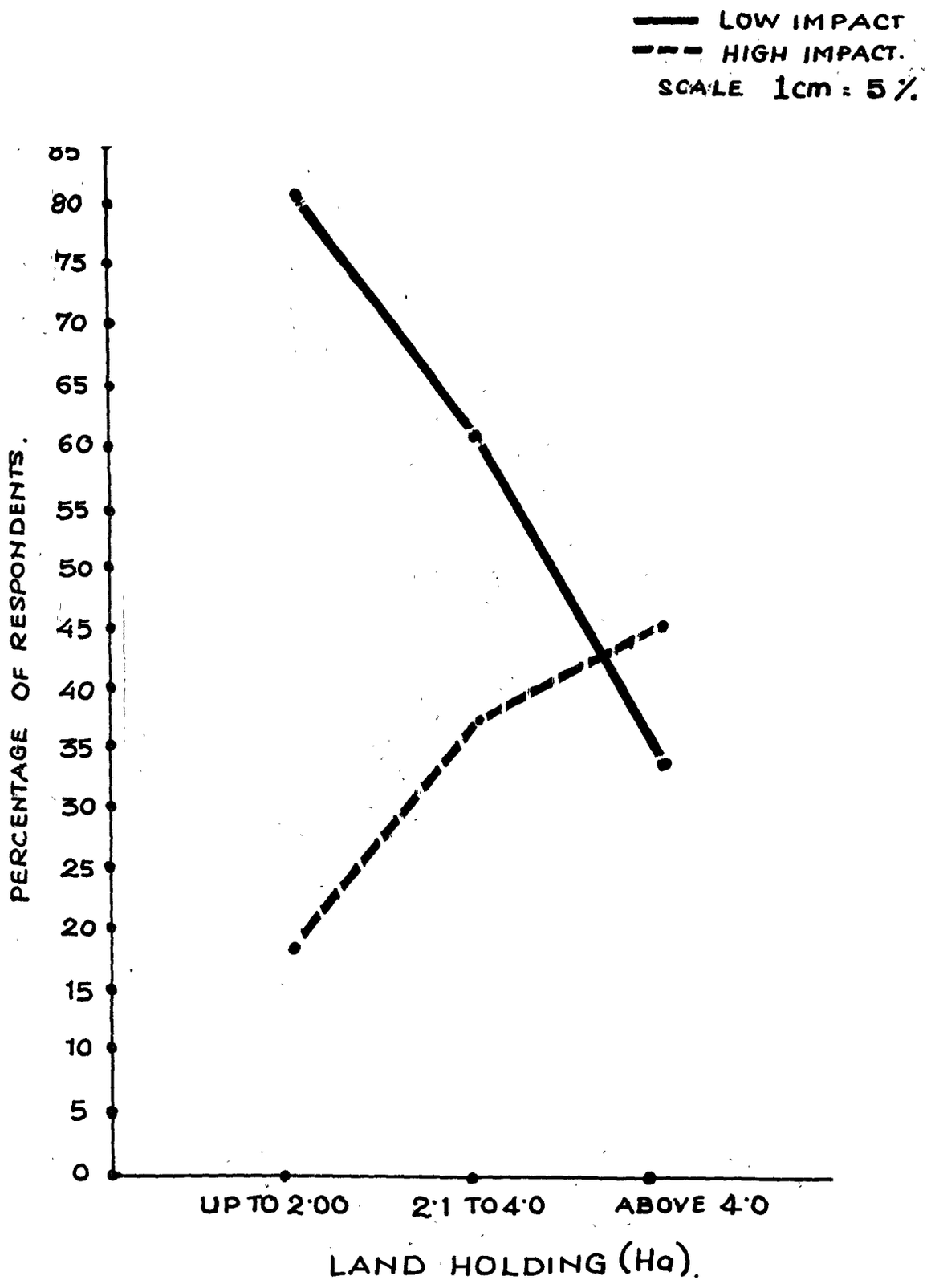
Table No. 11 : Association between size of family and the extent of impact of CAD programme.

Sr.No.	extent of impact	Small n=42	Big n=108	Total n=150
1	Low	71.43	56.48	60.67
2	High	28.57	43.52	39.33
	Total	100.00	100.00	100.00

Chi-square = 2.83 D.F. = 1

Not significant at 0.05 level

FIG. 5. ASSOCIATION BETWEEN LAND HOLDING AND IMPACT OF CAD PROGRAMME.



The above table reveals that there existed no statistically significant association between size of family and the extent of impact of CAD programme.

4) Size of land holding : The size of land holding here, refers to the actual area cultivated by the respondents. The distribution of farmers according to size of land holding is given in table-12.

Table No. 12 : Respondents by their size of land holding

Sr.No.	Land holding (hectares)	No.of respondents	Per cent
1	Upto 2	42	28.00
2	2.1 to 4.00	49	32.67
3	Above 4	59	39.33
	Total	150	100.00

It is seen from the above table that nearly 28.00 per cent of the respondents possessed land holding upto 2 ha. each. The percentage of the respondents possessing land holding between 2.1 to 4.00 ha. was 32.67. About 39.33 per cent of the respondents had land holding of above 4 ha. each.

Table No. 13 : Association between size of land holding and the impact of CAD programme.

Sr.No.	Extent Impact	Upto 2 ha n=42	2.1 to 4 ha. n=49	Above 4 ha n=59	Total n=150
1	Low	80.15	61.22	45.76	60.67
2	High	19.05	38.78	54.24	39.33
	Total	100.00	100.00	100.00	100.00

Chi-square = 11.24 D.F. = 2

Significant at 0.05 level

Above table reveals that there was a statistically significant association between size of land holding and the extent of impact due to CAD programme. With the increase in size of land holding there was increase in the extent of impact of CAD programme.

5) Socio-economic status : The socio-economic status of an individual has a greater influence on the impact of any programme, hence the socio-economic status of the respondents was studied. The distribution of the according to their socio-economic status is given in table-14.

✓ Table No. 14 : Respondents by their socio-economic status

Sr.No.	Socio-economic status	No.of respondents	Per cent
1	Low	53	35.33
2	Medium	60	40.00
3	High	37	24.67
	Total	150	100.00

Above table indicates that majority of the respondents i.e. 40.00 per cent had medium socio-economic status. The number of responnents possessing low socio-economic status was 53 i.e. 35.33 per cent, while the percentage of respondents possessing high socio-economic status was 24.67.

It reals from the table No.15 below that there existed statistically significant association between socio-economic status and the impact due to CAD programme. It can be said

FIG.6. ASSOCIATION BETWEEN SOCIO-ECONOMIC STATUS AND IMPACT OF CAD PROGRAMME.

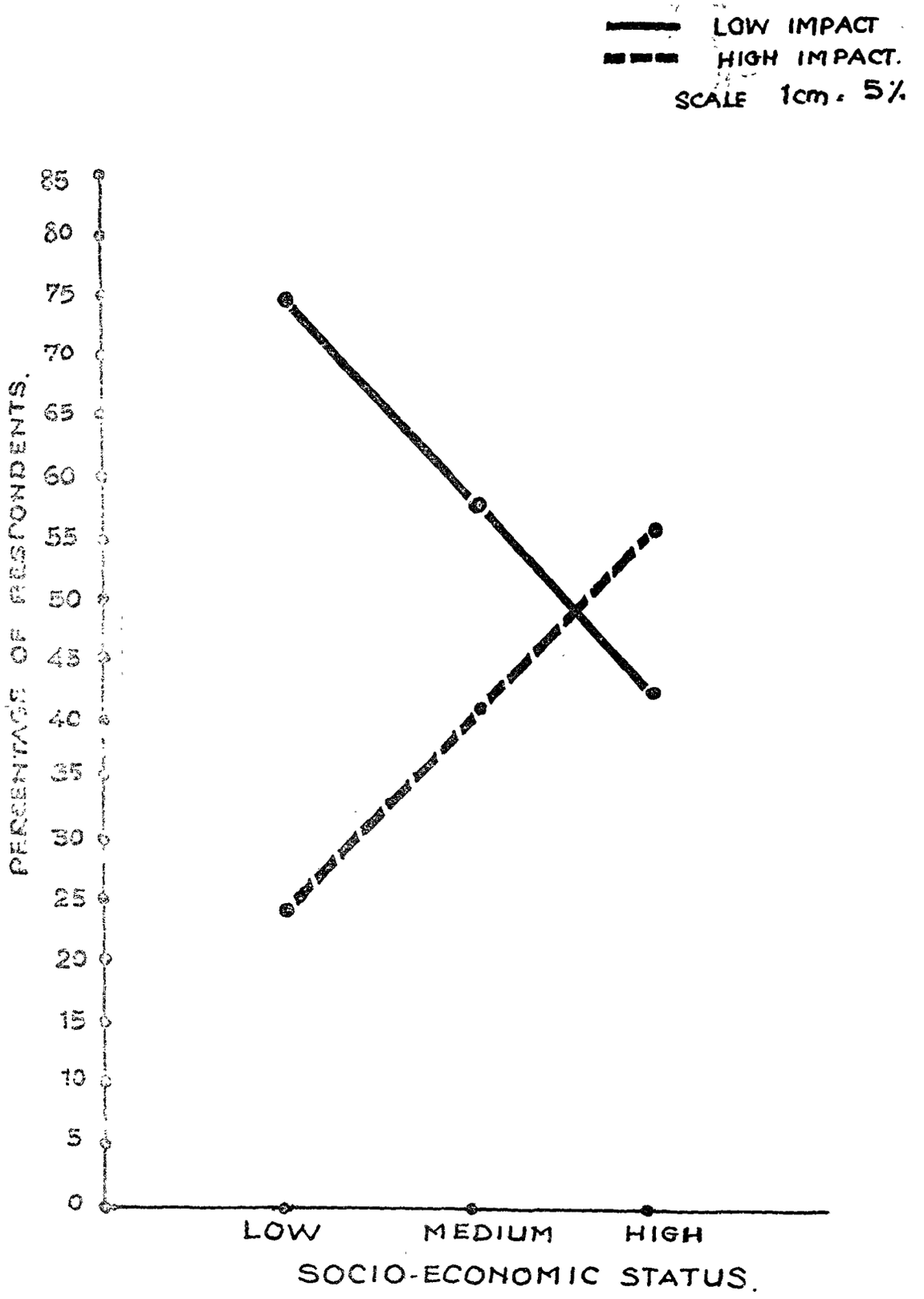


Table No. 15 : Association between socio-economic status and the impact of CAD programme.

Sr.No.	Extent of Impact	Socio-economic status			Total
		Low n=53	Medium n=60	High n=37	
1	Low	75.47	58.33	43.24	60.66
2	High	24.53	41.67	56.76	39.34
	Total	100.00	100.00	100.00	100.00

Chi-square = 9.72 D.F. = 2

Significant at 0.05 level

therefore, that the impact of CAD programme was more on the respondents with high socio-economic status than those with low socio-economic status.

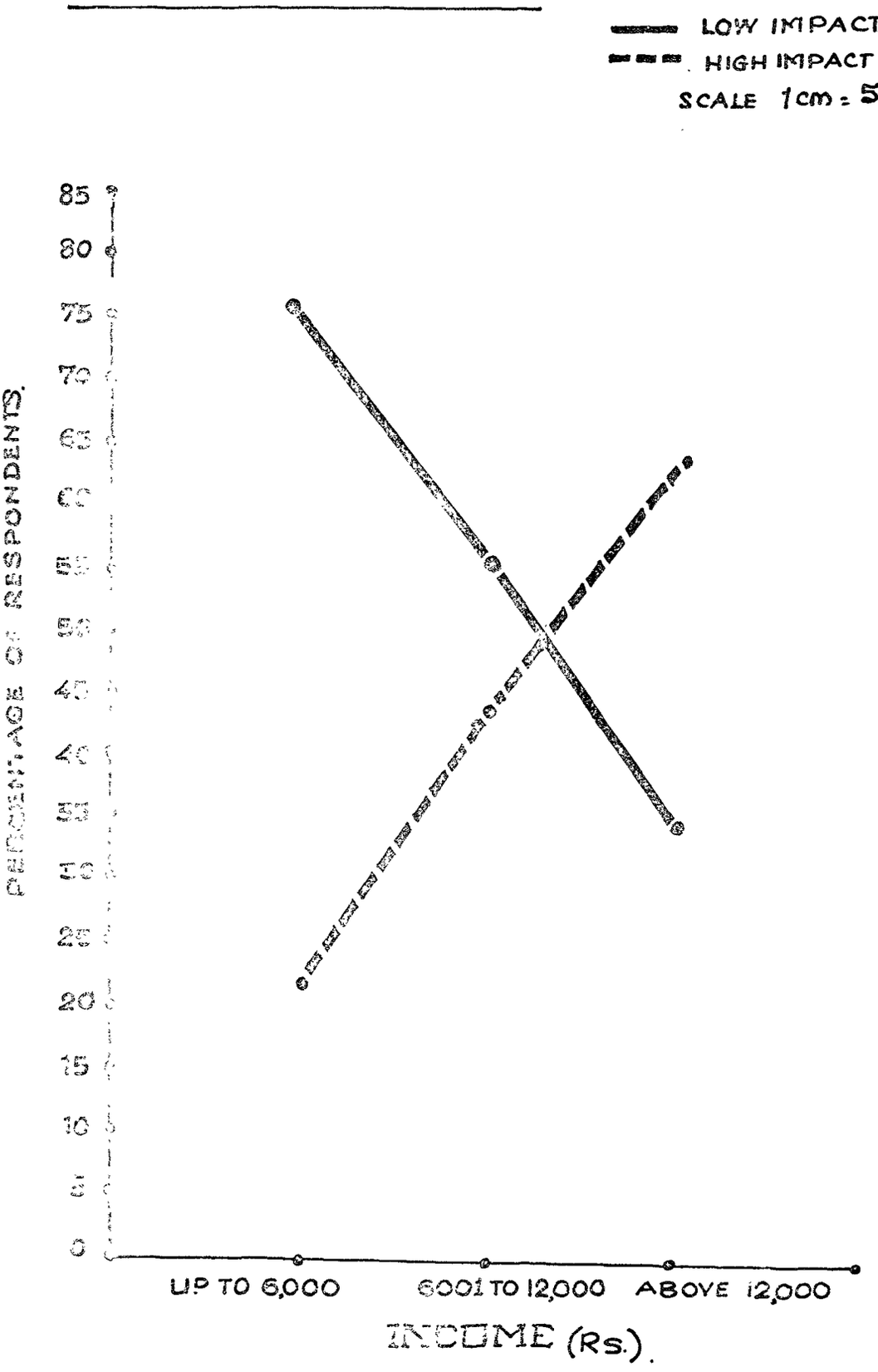
6) Income : The income of the farmers has also bearing on the impact of any development programme. Hence income of the respondents was also studied. The distribution of respondents according to their income is presented in the table given below.

Table No. 16 : Respondents by their income.

Sr.No.	Income Rs.	No.of respondents	Per cent
1	Upto 6000	68	45.33
2	6001 to 12000	43	28.67
3	Above 12000	39	26.00
	Total	150	100.00

It can be observed from the above table that majority of the respondents i.e. 45.33 per cent were belonging to low

FIG. 7. ASSOCIATION BETWEEN INCOME AND IMPACT OF CAD PROGRAMME.



income group. The respondents having income between Rs.6001 to 12000 were 28.67 per cent while the percentage of respondents having income above Rs.12000 was 26.00 per cent.

Table No. 17 : Association between income of the respondents and the impact of CAD programme.

Sr.No.	Extent of Impact	Income Rs.			Total Rs.
		Upto 6000 n=68	6001 to 12000 n = 43	Above 12000 n=39	n=150
1	Low	77.94	55.81	35.90	60.67
2	High	22.06	44.19	64.10	39.33
	Total	100.00	100.00	100.00	100.00

Chi-square = 25.69 D.F. = 2
Significant at 0.05 level

Above table reveals that there was a statistically significant association between income and the extent of impact of CAD programme.

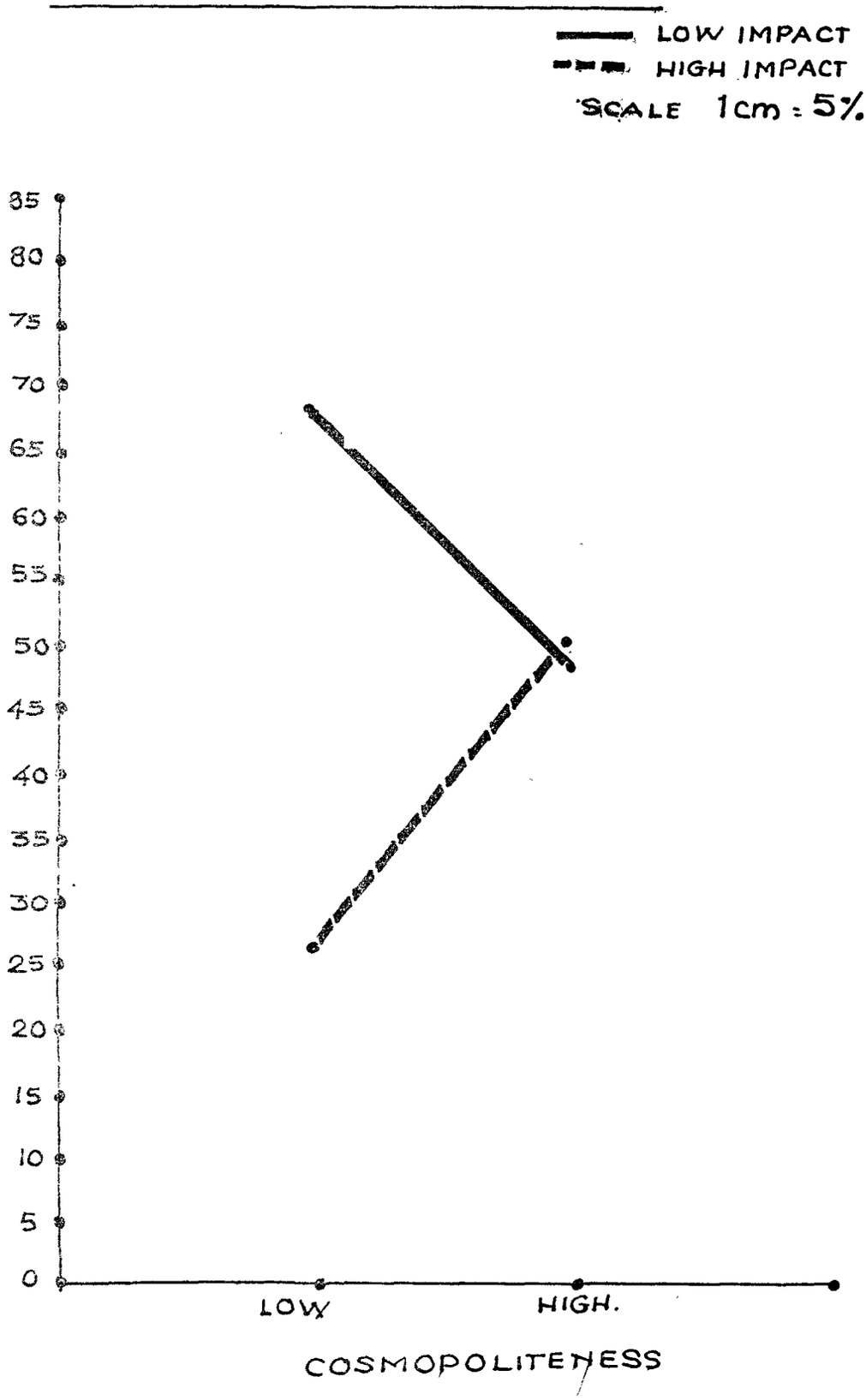
The trend of respondents having high income and high impact was increasing, hence income is positively association with the impact of CAD programme.

7) Cosmopoliteness : The data pertaining to the cosmopoliteness of the respondents are given in table 18 below.

Table No. 18 : Respondents by their cosmopoliteness

Sr.No.	Cosmopoliteness	No.of respondents	Per cent
1	Low	87	58.00
2	High	63	42.00
	Total	150	100.00

FIG. 8. ASSOCIATION BETWEEN COSMOPOLITENESS AND IMPACT OF CAD PROGRAMME.



Above table indicates that percentage of the respondents having low cosmopoliteness was high i.e. 58.00, while the number of respondents having high cosmopoliteness was comparatively low i.e. 42.00 per cent.

Table No. 19 : Association between cosmopoliteness and the impact of C&D programme.

Sr.No.	Extent of Impact	Cosmopoliteness		Total
		Low n=87	High n=63	n=150
1	Low	68.97	49.21	60.67
2	High	31.03	50.79	49.33
	Total	100.00	100.00	100.00

Chi-square = 5.97 D.F. = 1
Significant at 0.05 level

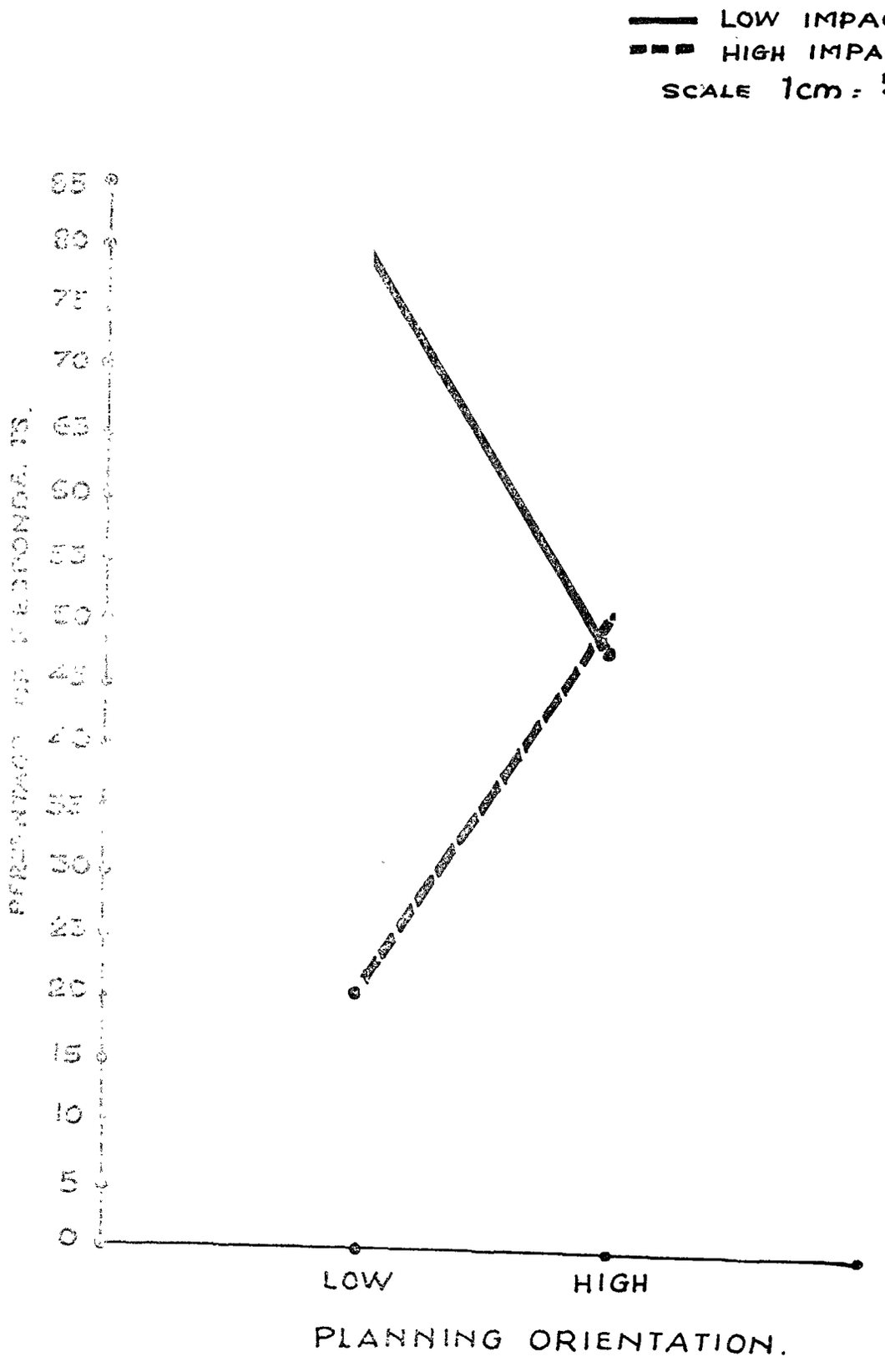
It reveals from the above table that there was a statistically significant association between cosmopoliteness and the extent of impact of C&D programme. The respondents with low cosmopolitness had low impact and it was observed to be more with the increase in cosmopoliteness.

8) Planning orientation : Planning orientation of a farmer is also important in acceptance of new agricultural technology. The distribution of the respondents pertaining to their planning orientation is presented in table-20 below.

Table No.20 : Respondents by their planning orientation.

Sr.No.	Planning Orientation	No.of respondents	Per cent
1	Low	57	38.00
2	High	93	62.00
	Total	150	100.00

FIG. 5. ASSOCIATION BETWEEN PLANNING ORIENTATION AND IMPACT OF CAD PROGRAMME.



Above table shows that about one third of the respondents had low planning orientation while about two third of them had high planning orientation.

Table No. 21 : Association between planning orientation and the impact of CAD Programme.

Sr.No.	Extent of Impact	Planning orientation		Total
		Low n=57	High n=93	n=150
		Per cent		
1	Low	80.70	48.39	60.67
2	High	19.30	51.61	39.33
	Total	100.00	100.00	100.00

Chi-square = 15.47 D.F. = 1
Significant at 0.05 level

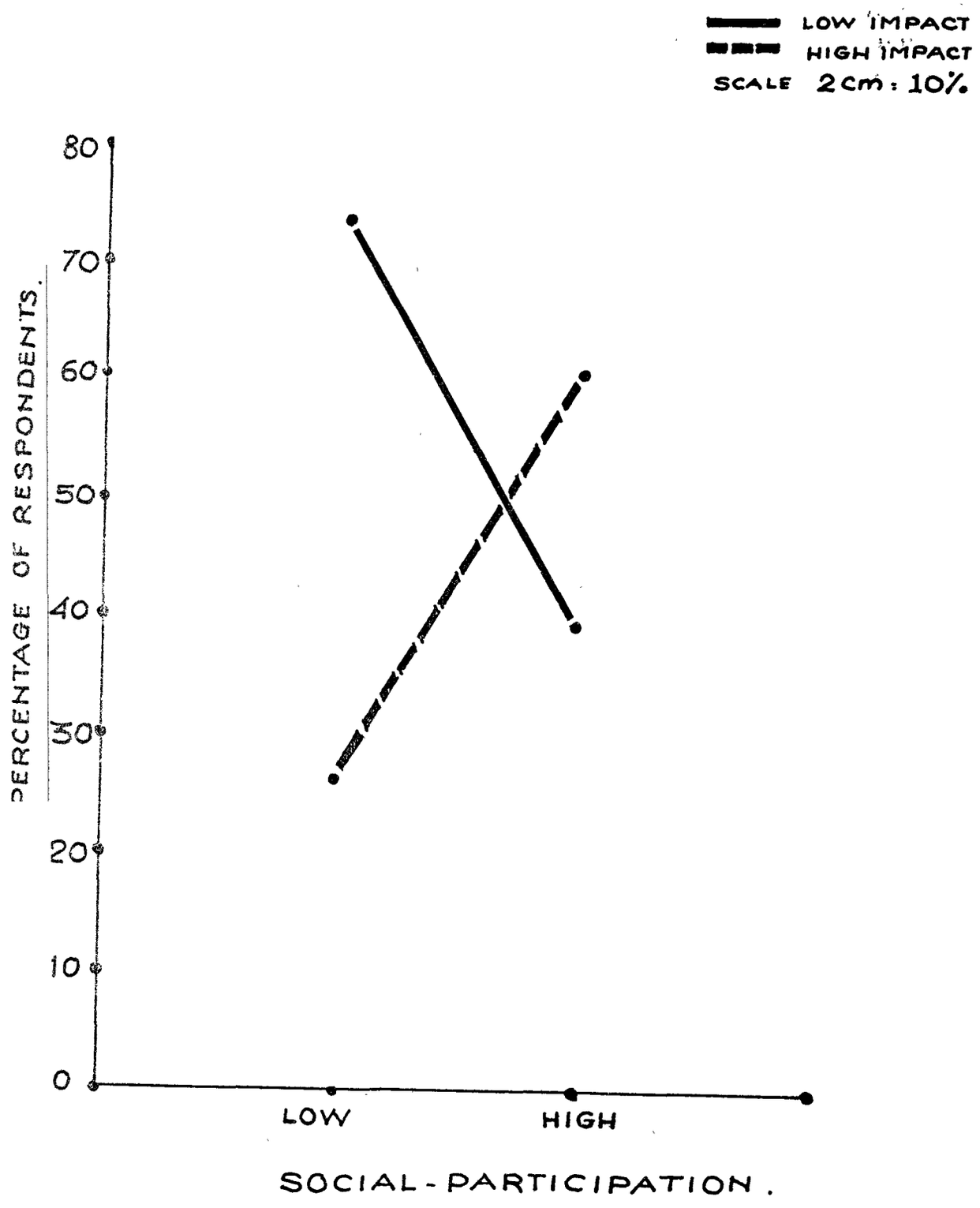
It is clear from the above table that there existed a statistically significant association between planning orientation and the extent of impact of CAD programme. Higher the planning orientation, higher was the impact of CAD programme on the respondents.

9) <u>Social Participation</u> : Social participation generates, we feeling among the people, broadens the horizon of views and develops leadership and personality of the individuals. The data pertaining to the social participation of the respondents are presented in the table given below.

Table No.22 : Respondents by their social participation.

Sr.No.	Social participation	No.of respondents	Per cent
1	Low	94	62.67
2	High	56	37.33
	Total	150	100.00

FIG. 10. ASSOCIATION BETWEEN SOCIAL-PARTICIPATION AND IMPACT OF CAD PROGRAMME.



It is seen from the table No.22 that majority of the respondents were belonging to the category of low social participation i.e. 62.67 per cent. Only 37.33 per cent of them had higher social participation.

Table No.23 : Association between social participation and the impact of CAD programme.

Sr.No.	Extent of impact	Social participation		Total
		Low n=94	High n=56	n=150
		Per cent		
1	Low	73.40	39.29	60.66
2	High	26.60	60.71	39.34
	Total	100.00	100.00	100.00

Chi-square = 17.10 D.F. = 1
Significant at 0.05 level

Above table reveals that there existed statistically significant association between social participation and the impact of CAD programme.

The propertion of farmers having low social participation and low impact was more, while the proportion of respondents having high social participation and high impact was high. Thus there existed positive association between social participation the impact of CAD programme.

II) Attitude

The data pertaining to the attitude of the respondents are given in the table No. 24.

FIG. 11. ASSOCIATION BETWEEN ATTITUDES AND IMPACT OF CAD PROGRAMME.

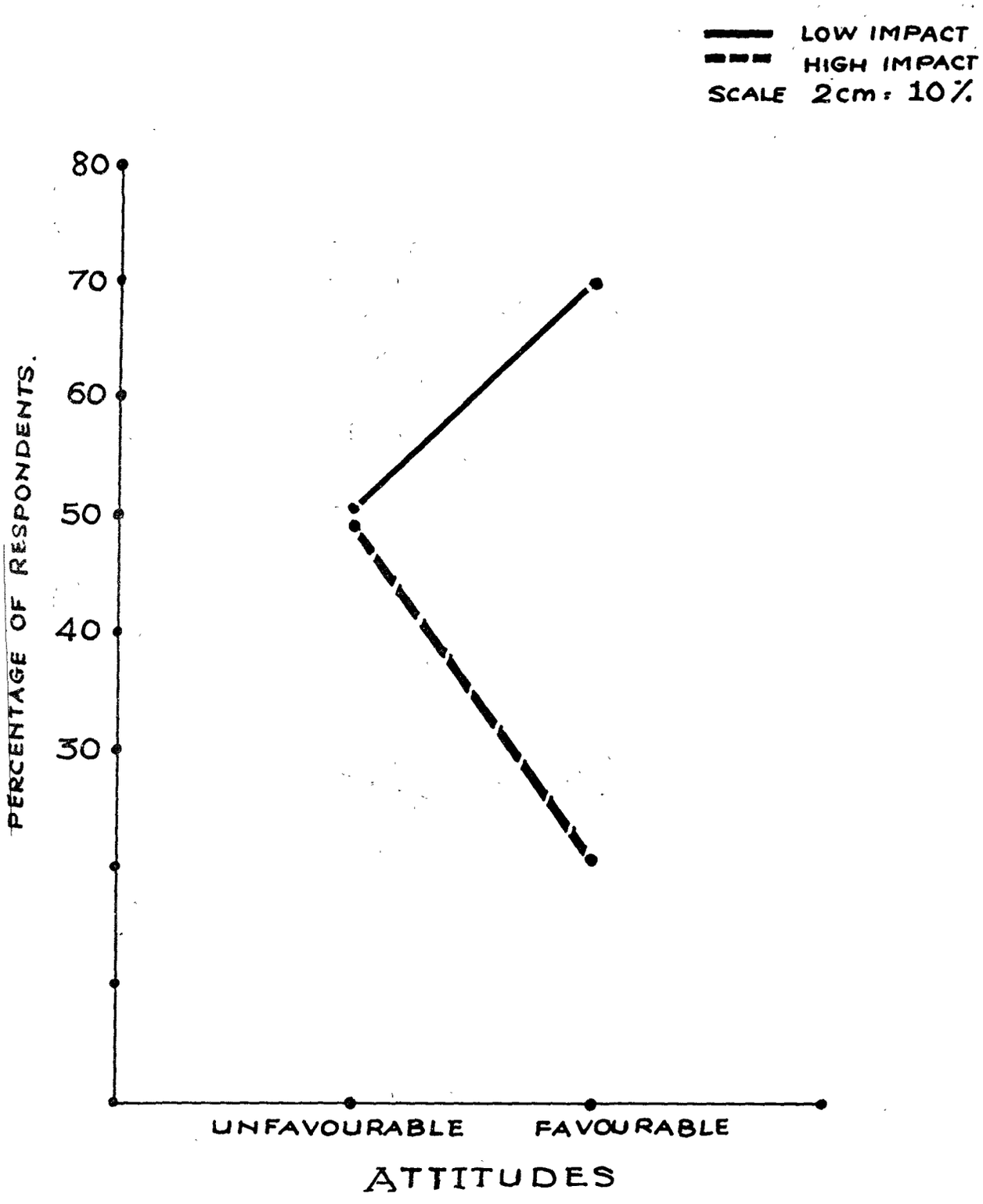


Table No. 24 : Respondents by their attitude towards CAD programme.

Sr.No.	Attitude	No.of respondents	Per cent
1	Unfavourable	61	40.33
2	Favourable	89	59.67
	Total	150	100.00

It can be observed from the above table that the percentage of respondents having unfavourable attitude i.e. 40.33 per cent, towards CAD programme was less while of those having favourable attitude was comparatively high i.e. 59.33 per cent.

III) Association between attitude of respondents and impact of CAD programme. Table No.25 :

Sr.No.	Extent of Impact	Attitudes		Total
		Unfavourable n=61	Favour-able n=89	n=150
1	Low	50.52	79.25	60.67
2	High	49.48	20.75	39.33
	Total	100.00	100.00	100.00

Chi-square = 11.83 D.F. = 1

Significant at 0.05 level

It reveals from the above table that there existed statistically significant association between attitude of the respondents towards CAD programme and the impact of CAD programme.

IV) Difficulties faced by the respondents while receiving the benefits of C&W Programme.

The information pertaining to the difficulties and problems faced by the respondents while receiving the benefits of C&W programme was collected as part of assessment of C&W programme. The data pertaining to the difficulties faced by the respondents are presented in the following table.

Table No. 26 : Respondents by their difficulties.

Sr.No.	Difficulties	No.of respond-ents.	Per cent
1	Low market rates for farm produce.	107	71.33
2	Difficulties in irrigating the land due to undulating topography	86	57.33
3	Lack of proper guidance from extension officers or Gramsevaks	59	39.33
4	Trouble from neighbouring farmers while getting irrigation water.	56	37.33
5	Improper distribution of canal irrigation water	53	35.33
6	Non availability of credit to purchase farm inputs	52	34.67
7	Lack of transport and marketing facilities	43	28.67
8	High irrigation charges	38	25.33
9	Lack of pre-intimation about releasing out irrigation water in the canal	34	22.67
10	Unsuitable irrigation rotation	29	19.33

The above table indicates that maximum number of respondents faced the difficulties in getting proper price for their farm produce and difficulty in applying irrigation water due to undulating topography of land. Their percentages being 71.33 and 57.33 respectively. More than one third (1/3rd) of the respondents faced the difficulties viz lack of proper guidance from extension officers and Gramsevaks trouble from neighbouring Farmers while getting irrigation water, Improper distribution of canal irrigation water, Non availability of credit to purchase farm inputs etc.

The difficulties viz lack of transport and marketing facilities, high irrigation charges, lack of preintimation about releasing out irrigation water in the canal and unsuitable irrigation schedule were expressed by about one fourth of the respondents.

V) Suggestions offered by the respondent Farmers.

The majority of the respondents only put forth their problems but could not offer solutions to overcome those problems and to increase the efficiency of the C.A.D programme. The data pertaining to suggestions as solution to overcome the problems are presented in the following table.

The nature of suggestions made by the respondents was mainly to overcome the problems faced by them. In their opinion the C.A.D programme officials should take immediate steps to overcome their difficulties. However the over-all percentage of Farmers offering suggestions was less than 18.00 per cent.

Table No. 27 : Respondents by their suggestions.

Sr.No.	Suggestions	No.of respond-ents.	Per cent
1	Irrigation water should be made available according to size of holding.	27	18.00
2	Care should be taken to minimize the trouble from neighbouring farmers in getting irrigation water.	23	15.33
3	Preintimation about release out of water in the canal should be given	13	8.67
4	Farmers should get credit at low interest rate	19	12.67
5	Extension officer and Gramsevaks should give more guidance regarding improved agricultural technology	22	14.67
6	Cad programme officials should assist the farmers in levelling their lands	11	7.33
7	The schedule of irrigation rotation should be strictly followed	8	5.33

The major suggestions of respondents were about irrigation water. Eighteen per cent of the respondents suggested that irrigation water should be made available according to size of land holding. While 15.33 per cent suggested that trouble from neighbouring Farmers in getting irrigation water should be minimized. About 1/10th of the respondents suggested that Extension officer and Gramsevaks should give more guidance regarding improved Agricultural technology, Cad programme officials should assist the farmers

in levelling their lands and that Farmers should get credit at low interest rate, while less than 8.00 per cent suggested that preintimation about release of water in the canal should be given and that time schedule should be strictly followed. In general it can be said that farmers were not keen enough to offer the suggestions.

DISCUSSION

Chapter - VI

Discussion

In this chapter, an attempt is made to review and assess critically the results presented in the previous chapter, in the light of previous studies and the objectives under study. While discussing the findings, the points such as statistical support, the hypothesis, the trend of results obtained, and their justification, are taken into consideration.

The discussion will throw a light on the following points in sequence.

I) The socio-economic and psychological characteristics of the respondents and their association with the impact of C.D programme.

II) Attitude of respondents towards C.D programme

III) The difficulties faced by the respondents in harvesting the benefits of C.D programme

IV) The suggestions made by the respondents as a remedy to solve those problems and to increase the efficiency of implementation of C.D programme

I) Characteristics of the respondents and their association with impact of C.D programme.

1. Age : It was revealed that majority of the respondents i.e. 60.67 per cent belonged to the age group of 36 to 50 years, while only 14.00 per of them belonged to the age group of upto 35 years. The rest of the respondents i.e. 17.33 per cent belonged to the age group of above 50 years.

It was found that there was no statistically significant association between age and the impact of C.D programme.

both the variables were found to run parallel to each other i.e. they were independent of each other. The reason for this might be the impact of CAD programme on respondents irrespective of their age. This finding is in agreement with the observations made by Jamadar (1973), Kadam (1974), Gaund (1978).

2) education : It was observed that more than 62.00 per cent of the respondents were educated. Among the educated respondent farmers, 46.67 per cent were educated upto primary level i.e. upto 7th standard, while 16.00 percent were found to be educated upto secondary level. It was also noticed that 37.33 per cent of the total respondents were illiterate.

The proportion of farmers receiving high school level education was found to be less which might be due to lack of facilities for high school education and also lack of interest in education on the part of farmers.

The association between education and the impact of CAD programme was found to be not significant. The reason for this might be the impact of CAD programme itself on the respondents irrespective of education. This also indicates that education and the impact, both were independent of each other.

This finding is in line with the results of Jamadar (1973), Deokar (1976).

3) size of family : The study indicated that about 72.00 per cent of the respondents had large size families of above five members, while only 28 per cent of them had small size families of upto five members.

The association between family size and the impact of CAD programme was found to be statistically not significant. This might be due to the fact that expenditure on the household commodities, food and clothing etc. might be more and as such a very small amount of expenditure might have been invested in agricultural development. Moreover the heads of the families might be the only earning hands in the most of families and because of this they might have spent more amount on their dependents at the cost of investment in agriculture.

The finding coincide with the results of Deokar (1976), Gaund (1978), Patil (1979).

4) Size of land holding : Land is the basic source of income to the farmers. The farm size mainly determines the level of their income.

The study indicated that 28.00 per cent of the respondents had land holding upto 2 hectares. The respondents possessing land holding from 2.1 to 4.0 ha were 32.67 while the those possessing land above 4 hectares were 39.33 per cent. The association between land holding and the impact of CAD programme was found to be statistically significant.

It is obvious that the farmers with larger farm size have adequate income and hence they can afford to apply new agricultural technology to their farms.

The results are in confirmity with the results obtained by Kulkarni (1961), Sirohi (1972), Jamadar (1973), and Mane (1975), Gayake (1976).

5) Socio-economic status : The socio-economic status of an individual has a greater influence on the impact of any programme.

In the present study, it was found that majority of the respondents i.e. 40.00 per cent had medium socio-economic status while 35.33 per cent of them had low socio-economic status. About 25.00 per cent had high socio-economic status. It was also found that there was a statistically significant association between socio-economic status and the impact of C.D programme.

The obvious reason for this might be that people belonging to higher socio-economic status are more cosmopolite, innovative and early adopters of new technology. The persons having high socio-economic status due to their more social prestige and resources available with them, might have shown more interest in receiving the benefits of C.D programme.

The finding is similar to the findings of Rane (1975), Patil (1976), Jaunde (1978).

Thus, it was revealed that the higher the socio-economic status the higher the impact of C.D programme.

6) Income :

The income of a farmer has also bearing on the impact of any programme. The income is a limiting factor for success or failure of any enterprise. The same is true with farming enterprise. In the present investigation it was found that 45.33 per cent respondents belonged to the income category of upto Rs.6000/- p.a. The respondents having income from Rs. 6001 to 12000/- p.a. were 28.67 per cent and the

rest of respondents i.e. 26.00 per cent belonged to the income category of above Rs. 12000/- p.a.

The association between income and the impact of CAD programme was found to be statistically significant and positive. This might be due to the fact that farmers having higher income, can afford to invest more capital in agriculture.

Therefore, it can be concluded that the higher the income higher the impact of CAD programme.

The findings coincide with the findings of Swaminathan (1969), Chopra (1972), Bangle (1976), and Chauhan and Singh (1978).

7) Cosmopoliteness : Cosmopoliteness is the degree to which individuals orientation is external to a particular soical system as individual is product of society and the environment. The results of the present study indicated that about 58.00 per cent of the respondents had low cosmopoliteness while 42.00 per cent of them had high cosmopoliteness.

It is seen from the results that respondents with low cosmopoliteness had low impact and respondents with high cosmopoliteness had high impact of CAD programme.

It was also found that there was statistically significant and positive association between cosmopoliteness and the impact of CAD programme. As the cosmopolite persons are early adopters and venturesome, they might have taken risk to follow improved practices and hence the impact on them might be positive.

The results resemble with the findings of Salvi (1971), Anujbal (1973), Patil (1979).

8) Planning orientation : The planning orientation is also an important factor in acceptance of new technology. In the present investigation it was found that 62.00 per cent of the respondents had nigh planning orientation while 38.00 per cent of the respondents had low planning orientation.

The association between planning orientation and the impact was found to be statistically significant and positive.

The impact of O&M programme was found to be increasing with increase in planning orientation of the respondents. The reason can be attributed to the good foresight of the farmers with high planning orientation. The farmers with nigh planning orientation are eager to plan changes in their cropping pattern and adopt package of practices after confirming their profitability.

The findings are in agreement with Westermarck (1974), Deokar (1976), Samane (1977), Gaund (1978).

9) Social participation : In the present study social participation refers to the membership of respondents in one or more social institutions. Social participation, generates we-feeling among the people, broadens the horizon of views, develops leadership qualities and personality. It exposes the farmers to sources of knowledge, supplies and services.

The study revealed that 62.67 per cent of the respondents had low social participation while only 37.33 per cent respondents had high social participation. The figures indicate that majority of the respondents had low social participation.

It was also seen that the respondents having low social participation had low impact while those having high social participation had high impact of CAD programme.

The association between social participation and the impact of CAD programme was statistically significant and positive. This might be due to the reason that social participation facilitates face to face contacts with persons dealing with services, supplies, credit and technical knowledge. This might have helped to contribute towards the high impact of CAD programme.

The findings are in line with the findings of Dhankar (1965), Junghare (1965), Saha (1973), Kadam (1974), Mane (1975), Deokar (1976) and Gaund (1978).

10) Attitude : Attitude theory should provide an insight into cause and process of attitude formation and change. The definition of attitude given by New Comb (1950) is the predisposition to perform, perceive, think and feel in relation to something. The concept attitude was operationalized as a learned predisposition to react positively or negatively towards CAD programme. The success or failure of any programmes depends on attitude of the persons involved towards that programme.

In the present study attitude of the respondents was studied and it was revealed that about 60.00 per cent of the respondents held favourable attitude, while about 40.00 per cent held unfavourable attitude towards CAD programme. This indicates that majority of respondents expressed favourable attitude towards CAD programme.

The association between attitude and the impact of CAD programme was found to be statistically significant and positive. This indicates that respondents were optimistic in their views about CAD programme.

The finding resemble with the results of Apodaca (1952), Chokidar and George (1971), Lakh (1972), Tripathi (1975), Vasans (1976).

On the basis of the finding of the study and the supporting literature we can conclude that CAD programme has created favourable attitude towards its functioning.

III) Difficulties faced by the respondent farmers in receiving the benefits of CAD programme.

The maximum number of respondents faced the difficulties in getting proper price for their farm produce and difficulty in applying irrigation water due to undulating topography of their lands their percentages being 71.33 and 57.33 respectively. More than 1/3rd of the respondents faced the difficulties viz lack of proper guidance from extension officers and gramsevaks, trouble from neighbouring farmers in getting irrigation waters. Improper distribution of canal irrigation water, Non availability of credit to purchase farm inputs etc.

The difficulties viz lack of transport and marketing facilities, high irrigation charges, lack of preintimation about releasing out irrigation water in the canal and unsuitable irrigation schedule were expressed by about one forth of the respondents.

The CADA (Command Area Development Authority) is newly established organisation of recent origin. Apart from the theoritical objectives, the CAD programme officials high have faced the practical problem to render efficient services to the farmers due to many natural calamilies etc.

The results obtained are in confirmity with the findings of Vasane (1976) and Ramane (1977).

IV) Suggestions offered by the respondent Farmers.

The nature of suggestions made by the respondents was mainty to overcome the problems faced by them. In their opinion the CAD officials should take immediate stps to overcome their difficulties. The over-all percentage of respondents offering suggestions was less than 18.00 per cent. The main suggestions of the respondents were about irrigation water. About 18.00 per cent of the respondents suggested that irrigation water should be made available according to the size of holding, while 15.33 per cent of them suggested that trouble from neighbouring farmers should be minimized.

About 1/10th of the respondents suggested that extension officers and Gramsevaks should give more guidance regarding improved agricultural technology, CAD officials should assist in levelling their land and that the farmers should get credit at low interest rate, while less than 8.00 per cent of them suggested that pre-intimation about release out, of water in the canal should be given and that time schedule should be strictly followed. In general it can be said that farmers were not keen enough to offer suggestions.

SUMMARY AND CONCLUSIONS

Chapter - VII

Summary and Conclusions

The concept of command area development is directed towards maximum utilization of resources of land and water, both of which are limited in our country. This requires multi-disciplinary approach involving water management, soil engineering and crop husbandry. The emphasis is on reducing the loss of water through seepage to bring maximum area under irrigation and by following improved agronomic practices increasing the intensity of cropping and yield per unit of land and water.

The concept also comprehends equitable distribution of water and serves the principle of social justice to small and marginal farmers, particularly the tail enders while simultaneously helping in increasing the over all productivity.

In the Fifth Plan, a target of 51 Command Area Development Authorities to cover 60 irrigation projects was fixed of which 45 have been established uptil now in the various States of the country. Each authority is headed by an administrator of a rank of Commissioner or Chief Engineer with unified line of command over at least agriculture, irrigation, soil conservation, water distribution and land development. The Central Government gives 50.00 per cent amount as grant-in-aid and remaining 50.00 per cent as loan for additional staff at the State, the project and the field level.

In Maharashtra there are four Command Area Development Authorities functioning at Gnod Project, Jayakwadi Project, Katiha-dohe Project and the Ghod Project.

The eastern part of Pune district and adjoining parts of Ahmednagar district are chronically famine affected areas. The rainfall is scanty and that too is not uniformly distributed during the monsoon season. To project these chronic famine affected areas, Government of Maharashtra started one project in the command area of Ghod irrigation project.

The Ghod project is located near village Wadgaon in Shrigonda taluka of Ahmednagar district on one side and Chinchani in Shirur taluka of Pune district on the other. There are 41 villages covered by CAD programme under this project. Of these, 14 villages are in Shirur taluka of Pune district, 16 in Shrigonda taluka and 11 in Karjat taluka of Ahmednagar district.

The study pertaining to the impact of command area development programme in Ghod irrigation project on the selected aspects of lives of the farmers in Shrigonda taluka of Ahmednagar district was undertaken to assess the impact of CAD programme on the over all development of agriculture in project area.

The study was conducted in five villages namely, Kashti, Mashe-Wadgaon, Pedgaon, Shedgaon and Sangvidusala in Shrigonda taluka of Ahmednagar district which are included

in the command area of Ghod project. The list of villages was obtained from CAD office situated at Pune. The above mentioned five villages were selected randomly from the list of 16 villages in the block.

The lists of farmers in the selected villages were obtained from revenue authority of each village. The respondents were then arranged alphabetically and selected randomly by n'th number method of random sampling. Every 10th number was selected. Thus the total sample comprised of 150 respondent farmers. The selected respondents were interviewed with the help of specially designed interview-schedule.

The data obtained were tabulated and statistically analysed. The nature of association between the dependent variables and independent variable was studied by applying chi-square test.

The socio-economic characteristics of the respondent farmers studied were age, education, size of family, size of land holding, socio-economic status, income cosmopolite-ness, planning orientation and attitudes towards CAD programme. The problems faced by the respondents while receiving the benefits of CAD programme were also studied and the suggestions offered by them as a remedy to solve these problems and for more efficient functioning of the programme were also recorded.

Conclusions

The salient features of the findings of the study are as follow :

Ten independent variables were studied in relation to the impact of CAD programme.

1 It was revealed that majority i.e. 68.67 per cent of the respondents came from the age group of 36 to 50 years followed by 17.33 per cent who came from age group of above 50 years. Only 14 per cent came from age group of upto 35 years. The association between age and the impact of CAD programme was found to be statistically non significant.

2 The study indicated that majority of the respondents were educated upto primary level (46.67 per cent) followed by illiterate respondents who were 37.33 per cent. Only 16.00 per cent of the respondents had high school and above education. The association between education and the impact of CAD programme was statistically non significant.

3 It was seen that majority of the respondents belonged to large size families having more than 5 members each, (72.00 per cent) while only 28.00 per cent came from small size families. The association between size of family and the impact of CAD programme was also found to be statistically non significant.

4 As regards land holdings, it was noticed that 39.33 per cent of the respondents possessed land holdings of above 4 hectares followed by 32.67 per cent of the respondents

who possessed land holding from 2.1 to 4.00 hectares. Only 28.00 per cent possessed land holding upto hectares.

The association between the size of land holding and impact of CAD programme was found to be statistically significant and positive.

5 It was found that majority of the respondents had medium socio-economic status (40.00 per cent) followed by the respondents with low economic status who accounted to be about 35.33 per cent. Only 24.67 per cent had high socio-economic status.

The association between the socio-economic status and the impact of CAD programme was found to be statistically significant and positive. The impact was found to be increasing with the increase in the level of socio-economic status.

6 The study indicated that majority of the respondents were from the income group of upto Rs.6000/- p.a. followed by income group between Rs.6000/- to Rs.12000/-, their percentages being 45.34 and 28.66 respectively. Only 26.00 per cent of them came from higher income group of above Rs.12000/- p.a. Statistically significant and positive association was observed between income and the impact of CAD programme.

7 It was observed that majority of respondents i.e. 58.00 per cent had low cosmopoliteness while 42.00 per cent of them had high cosmopoliteness. The cosmopoliteness of the respondents was significantly associated with the impact of CAD programme.

8 The study also showed that 62.00 per cent of the respondents were having high planning orientation while 38.00 per cent of them had low planning orientation. The association between the planning orientation and the impact of CAD was statistically non significant.

9 In respect of soical participation it was seen that majority (62.67 per cent) of the respondents had low social participation followed by 37.33 per cent of the respondents who had high social participation. The association between social participation and the impact of CAD programme was satistically significant and positive.

10 The study in respect of attitude of the respondent farmers towards CAD programme indicated that about 60.00 per cent of the respondents held favourable attitude while only about 40.00 per cent of them held unfavourable attitude towards CAD programme. The association between the attitude and the impact of CAD programme was found to be statistically significant.

11 The major problems expressed by the respondent farmers were, difficulties in getting proper prices for the farm produce and difficulty in applying irrigation water due to undulating topography of their land i.e. 71.33 per cent and 57.33 per cent of the respondents.

12 Among the other difficulties expressed were lack of proper guidance from extension officers Gramsevaks (39.33 per cent) trouble from neighbouring farmers while getting

irrigation water (37.33 per cent), improper distribution of canal irrigation water (35.33 per cent), Non availability of credit to purchase farm inputs (34.67 per cent), lack of transport and marketing facilities (28.67 per cent), high irrigation charges (25.33 per cent), lack of pre-intimation regarding releasing out of irrigation water (22.67 per cent), and unsuitable irrigation schedule (19.33 per cent).

13 The major suggestions made by the respondent farmers were about irrigation water and that it should be made available according to size of holding (18.00 per cent), trouble from neighbouring farmers in getting irrigation water should be minimised (15.33 per cent), Extension officers and Gramsevaks should give more guidance regarding improved agricultural technology (14.67 per cent), CAD officials should assist in leveling their lands (7.33 per cent), the farmers should get credit at low interest rate (12.67 per cent), pre-intimation should be given about release out of water in canal (8.67 per cent), and time schedule should strictly be followed (9.33 per cent).

Implications

Based on the findings of the study the following implications have been drawn.

1 Irrigation Department and CADA should render better administrative services to the farmers in respect to regular supply of irrigation water.

2 Government authorities should give more attention towards timely supply of farm inputs and technical guidance about effective use of available irrigation water.

3 CADA officials should render better guidance to the farmers in respect of latest technical know-how, about crop planning, plant protection soil consevation, improved varieties etc.

4 It is inferred that efforts on the part of Irrigation Department and Agricultural Department needs to be strengthened to nullify the causes of under-utilization of water from Good Irrigation Project, which may in turn help in maximum utilization of irrigation potential in due cource of time.

5 On the basis of study on the topography of land which affects the utilization of canal irrigation water, the problems of uneven topography of land was found to be acute. Hence it is necessary to have topographical and soil survey of the area and take corrective measures in respect of solving this problem.

6 It is necessary to strengthen the agricultural extension machinery for diffusion of new agricultural technology.

7 As the emphasis is on land development and optimum utilization of irrigation water, the small and marginal farmers who own a small percentage of irrigated land receive only an insignificant share of benefits flowing from the scheme and only benefit that is received by landless labour is in the form of slightly enlarged opportunities.

It is incontrovertible fact that lions share of benefits of C&W programme goes to large and medium land owners. It is advisable that small and marginal farmers should be paid adquate attension in respect of their improvement.

Even though national planners have given more emphasis on natural and techno-economic factors, the agricultural productivity has not been raised to an expected level as less importance is given to human factors i.e. personal, psychological and socio-economic ones. In the present situation it should be necessary to change the quality of man behind the plough.

LITERATURE CITED

Bibliography

Alam, I.B.	1976	"Achievements of I.A.D.P. in Aligarh Dist," Kurukshetra. 24 (9) : 11.
Anonymous,	1959	"Evaluation of the 1958-59 Rabi crops campaign in Punjab, Rajstnan and Utter Pradesh, " Programme Evaluation Organisation Report No.33, Planning Commission, Government of India.
anonymous,	1971	"An evaluation study of Minor Irrigation in Goa," Bureau of Economics, statistics and Evaluation, Government of Goa, Panji, Report 5 : 39-42.
Apodaca, A.G.	1952	"The Spanish-American Farmers in Iowa Basin and Extension Services", Extension service circular No.486, U.S.A.D.
Asthana, M.D.	1976	"From Deficit to Surplus - A Break-through in Agriculture, Kurukshetra, 9 (3) : 92.
Bangle, R.A.	1974	"Problems of Farmers in Relation of Use of Canal Irrigation Water", Astract of theses, 1972-74, Marathwada Agricultural University, Parbhani, (M.S.)
Barnala, S.S.	1979	"New Strategy for Rural Development" Yojna, 23 (4) : 5-6.
Bhalerao, A.M. & Mishra, S.D.	1972	"Impact of Co-operatives", Kurukshetra, 20 (2) : 6.
Bhujbal, A.A.	1973	"Study of Some Salient Features of Members of Service Co-operatives and Their Influence towards, The Progress of the Same", Unpub. M.Sc.(Agri.) Thesis, M.P.K.V., Rahuri (M.S.)
Chopra, K.K.	1972	"The Regional Affect of Bhakra-Nangal Project A case study". Indian Economic Review, 7 (2) : 170-188.

Chaunan, J.S., Singh, S.N.	1976	"Impact of Farm Mechanisation on Levels of Employment" Rural India, 41 (11 & 12) : 292.
Choukidar, M.A., George, P.S.	1971	"Adoption Behaviour and the Characteristics of the Farmers" Indian Jr. of Ext. Edn., 12(3&4): 34.
Dakh, A.M.	1974	"Impact of Zilla Parishad on Agricultural Development" Theses Abstract" Marathwada Agri. Uni. Parbhani, 1972-74.
David, A.	1968	"F.A.O. Helps to Build New Technology in India. Yojna, 22 (4) : 7.
Deokar, S.B.	1976	"An evaluation study of Operation Jowar Programme in the Pravaranagar area of Ahmednagar District." Unpub. M.Sc. (Agri.), Thesis, M.P.K.V., Rahuri (M.S.)
Dhankar, G.M.	1965	"A Study of Family Characteristics associated with Participation in Extension Programme", Unpub. M.Sc. (Agri.), Thesis, College of Agri. Nagpur (M.S.)
Dutta, P.C.	1973	"Role of Small Farmers Development Agency in Assam". Kurukshetra, 21 (3) : 13.
Garg, A.K., Singh, K.N.	1974	Impact of SFDA on its Beneficiaries in Punjab, Department of Economics and Sociology, Annual Research Report 1974-75, P.A.U. Ludhiana.
Gaund, D.D.	1976	"Study of Characteristics of Participant Farmers in Sugarcane Pilot Project", Unpub. M.Sc.(Agri.) Thesis, M.P.K.V., Rahuri (M.S.)
Gayake, T.S.	1976	"Impact of Agricultural Development Programme On Small Farmers Under Jayakwadi Command area of Ambad Panchayat Samiti", Abstract of Theses, 1972-76, Marathwada Agri. Uni. Parbhani.

Boda, M.V.	1978	"Factors in Agricultural Development" Rural India, 41 (5) : 123-125.
Jamadar, M.S.	1973	"Impact of Different Factors on Milk Production in The Area of Government Milk Scheme, Chiplun, District Ratnagiri", Unpub. M.Sc. (Agri.), Thesis, M.P.K.V., Rahuri (M.S.)
Junghare, Y.N.	1965	"Comparision of Participating and Non Participating Farm Families in Rural Development Programmes", Annals. of Agril. Research,1960-65, College of Agri. Nagpur (M.S.)
Kadam, K.H.	1974	"Yourh Clubs and Agricultural Development", "Society and Culture" 1 (5) : Institute of Social Studies, Calcutta (W.B.)
Kulkarni, K.H.	1961	"A Study of Impact of Extension Programmes on The Rural Population", Summaries of Desserations in Agril. Extension, 1960-61, P.K.V., Akola (M.S.)
Kumar, P.	1972	"Economic Analysis of Village Irrigation Systems Ind Sambalpur District" (Orissa) Unpub. Ph.D. Thesis, I.A.R., New Delhi.
Mane, A.V.	1975	"A Comparative Study of Adoption of Improved Agricultural Practices Among the Samll Farmers, Covered by I.A.D.P., and Other Uncovered Farmers", Unpub. M.Sc.(Agri.), Thesis, M.P.K.V., Rahuri (M.S.)
Misawa, K., Adachi, J.	1971	"Agriculture Practices in Comillia, Pakistan", Academy of Rural Dev. Agri. Econ. and Rural Socio. Abstract, 14 (4) : 101.
Murthy, S.J.	1971	"An-S Adoption and Influence of Extension Campaign", Research Series, Uni. of Agri. Sc.Banglore, 13 : 27.

Banavati, M.C.	1966	"Applied Nutrition Programme, role of extension workers", Kurukshetra, 12 (4) : 2.
Narayanswami, N.	1974	"Two Schemes For Rural Poor - Progress and Prospectus", Kurukshetra, 22 (8): 7-9.
Newcomb, T.M.	1950	"Social Psychology, "New-York The Dryden Press : 275.
* Pandey, S.M.	1974	Development of Marginal Farmers and Agricultural Labourers, Shri Ram Centre, New Delhi.
Patil, D.R.	1976	"An Evaluation Study of Dry Farming Programme in Terms of Change Proneness of The Farmers In Kopergaon Taluka of Ahmednagar District" Unpub. M.Sc.(Agri.) Thesis, M.P.K.V., Rahuri (M.S.)
Patil, P.S.	1979	"Impact of Wheat Pilot Project on Productivity Level of Participant Farmers" In Rahuri Block of Ahmednagar District, Unpub. M.Sc.(Agri.) Thesis, M.P.K.V., Rahuri.
Salvi, P.V.	1971	"Characteristics of Low Income Farmers In South Central New-York, Unpub. Ph.D., Thesis, Cornell University.
Shetty, M.V.	1968	"Power Orientation of Lift Irrigation - A case study of Potentialities and situation In South Canera District" Asian Economic Review 15 (3): 371-388.
* Shrimath, S.K.	1969	The Economic Impact of Well Irrigation in Mysore State, Technical Report, Indian, Institute of Socio-economic Studies, 35 Banglore.
Sirohi, A.S.	1972	Impact of High Yielding Varieties Programme in Rural Delhi, Yojna, 16(22) : 913.

Swaminathan, M.S.	1969	"Transforming Farm Break-Through into Revolution," Yojana, 14(12): 23.
Ram and Deonath	1974	"Co-operative Impact on Rural Profile," Indian Co-operative Review, 11 (2) : 123.
Ramane, P.B.	1977	Differential Impact of Co-operative Lift Irrigation Societies on The Selected Soical and Agril. Aspects of Life of Member Farmers Unpub. M.Sc.(Agri.), Thesis, M.P.K.V., Rahuri (M.S.)
Tripathi, A.B.	1974	"Attitudes of Farmers Towards Soil Conservation Programme", Rural India, 38 (1) : 22.
* Trivedi, C., Pareek, U.	1963	"Analysis of Socio economic status of Rural Families" Unpub. Ph.D. Thesis, I.A.R.I., New Delhi (1963).
Vasane, B.B.	1976	"Study of Utilization of Canal Irrigation water in Mula Command Area", Unpub. M.Sc.(Agri) Thesis, M.P.K.V. , Rahuri.
Westermarck,	1974	"Influence of Certain Enterpreneurial Variables on Economic Success of Farming", European Review of Agril. Economics, 1 (4) : 435.
Workers, F.A.O.I.	1975	"Social Impact of Irrigation", Voluntary Action, 17 (8):212.

* Original not seen.

APPENDIX

APPENDIX

INTERVIEW SCHEDULE

A Study of the Impact of Command Area Development Programme.

1) Name of the Respondent _____

2) Age _____Years

3) Village _____Taluka _____

4) Caste _____

5) Education _____

6) Family Members _____

7) Cultivable land — Hectares

i) Irrigation

ii) Non-Irrigated _____

Total : _____

8) Annual Gross Income

a) From Farming

Sr.No.	Crops	Area ha.	Yield q/ha.	Total Yield q.	Income Rs.
1	Jowar				
2	Bajra				
3	Wheat				
4	Sugarcane				
5	Cotton				
6	G.nut				
7	Any other				
				Total:	_____

b) From subsidiary occupation Rs._____

Grand Total Rs._____

9) Socio economic Status

Size of land holding	Score	Caste	Score
Upto 1 acre	1	Chamor, Mhangi	1
2 to 5 acres	2	Manar, Mang	2
6 to 10 acres	3	Balluteder	3
11 to 15 acres	4	Vaishas	4
16 to 20 acres	5	Brahmin	5
Above 20 acres	6	Maratha	6

Education	Score	Occupation	Score
Illiterate	0	Labour	1
Can read	1	Balluteder	2
Can write	2	Trading	3
Primary School	3	Independent Profession	4
Secondary	4	Farming	5
Higher Secondary	5	Service	6
Collegiate	6		

Family size	Score	House	Score
Small	1	One house	1
Large	2	Two houses	2
Family type		Three houses	3
Single	1	Type of house	
Joint	2	Kachha	1
		Mixed	2
		Pakka	3

Material Possession	Score	Social Participation	Score
Bullock cart	1		
Cycle	1	Member of one organisation.	1
Radio	1		
Chair	1	Member of more than one organisation	2
Motor Cycle	2		
Improved in implements.	2	Office bearer	3

Farm Power	Score	Other features	Score
1 to 2 Bullocks	2		
3 to 4 Bullocks	4	Service-man	1
5 to 6 Bullocks	6		
Oil engine or electric motor	6	Income from other than farming	2

10) Social Participation

Are a you a member or office bearer of following institutions ?

Sr.No.	Institution	Member	Office bearer
1	Gram - Panchayat		
2	Youth club		
3	Co-operative society		
4	Sugar Factory		
5	Any other		

11) Please give your opinion on the following statements.

i)	CADA is a propaganda tool of the Government	Yes/No
ii)	CADA is nothing but wastage of time, Money and energy.	Yes/No
iii)	CADA helps farmers to acquire new scientific technology of farming.	Yes/No
iv)	CADA helps to increase income by giving latest know how of farming .	Yes/No
v)	As the CADA helps to make available irrigation water, there is a guarantee of assured income.	Yes/No
vi)	Farmers can meet their credit requirement through CADA.	Yes/No
vii)	CADA is helping for over all progress of farmers from the command area.	Yes/No
viii)	CADA is not serving from small, marginal, and needy farmers.	Yes/No
ix)	CADA has been started only to create employment opportunities.	Yes/No
x)	Technical guidance given by CADA is not timely.	Yes/No
xi)	Assistance given by CADA in respect of supplies and services is not timely.	Yes/no

12) Do you wish to make any changes on your farm, Yes/No
if yes,

A) About cultivation of crops

i) Crop Rotations
ii) New methods of cultivation

B) About soil conservation

i) Levelling of land
ii) Burning of land
iii) Soil reclamation

C) About Secondary Occupation

i) Poultry
ii) Dairy
iii) Trade

D) About Irrigation

i) Digging of well
ii) Repairs to old well
iii) Installation of pump set.

13) Please give information about your visits to the following places.

Sr.No.	Place	Seldom	Frequently
1	Weekly market place		
2	Taluka place		
3	District place		
4	Mahatma Phule Krishi Vidyapeeth.		
5	Demonstration plots		
6	Capital of the state		
7	Any other		

14) Please give information on the following activities you have undertaken after the commencement of CAD programme.

I) Land Development	Area acres	When year
1) Bunding and leveling of land		
2) Brought additional land under irrigation.		
3) Installed pipe line		
4) Wells dug or repaired		
5) Land owned by others taken on lease for cultivation		
6) Released land from morey lenders		
7) Purchased additional land		

II) Crop Production

1) Crops grown in three successive seasons.
   i) _____(ii)_____(iii)_____

2) Started growing new crops
   i) _____(ii)_____(iii)_____

3) Increased area under the following crops
   i)_____(ii)_____(iii)_____

4) Used improved practices in respect of the following crops.
   i) _____(ii)_____(iii)_____

5) Reduced area under following crops.
   i) _____(ii)_____(iii)_____

6) Used chemical fertilizers
   i) _____(ii)_____(iii)_____

7) Used seeds of new varieties of crops
   i)_____(ii)_____(iii)_____

8) Adopted crop rotations/multiple cropping pattern in respect of.
   i) _____(ii)_____(iii)_____

9) Used pesticides namely
   i) _____(ii)_____(iii)_____

16) Agricultural employment

Give your opinion on following statements in terms of yes or no.

i)	Got guaranteed employment	Yes/No
ii)	Faced problem of shortage of labour	Yes/No
iii)	Used migrated labourers for farm operations	Yes/No
iv)	Increased work-load on agril.Operations	Yes/No
v)	Increased wage rates	Yes/No
vi)	Reduced migration for employment	Yes/No

17) You might have faced some problems while receiving the benefits of CAD programme, if yes please state your problems.

i) _____

ii) _____

iii) _____

iv) _____

v) _____

18) What suggestions would you like to make to over come the problems and for efficient operation of CAD programme?

i) _____

ii) _____

iii) _____

iv) _____

v) _____