

Impact Of Irrigation On Socio-Economic Structure Of Farm Families In Himachal Pradesh



M. L. SHARMA
RANVEER SINGH
B. K. SIKKA

Agro-Economic Research Centre
HIMACHAL PRADESH UNIVERSITY,
SHIMLA, INDIA.
APRIL 1992

Impact Of Irrigation On Socio-Economic Structure Of Farm Families In Himachal Pradesh



**M. L. SHARMA
RANVEER SINGH
B. K. SIKKA**

**Agro-Economic Research Centre
HIMACHAL PRADESH UNIVERSITY,
SHIMLA, INDIA.
APRIL, 1992.**

RESEARCH TEAM

Overall Guidance and Project Chief	:	Dr. B.K. Sikka
Project Leaders	:	Sh. M.L. Sharma Dr. Ranveer Singh
Data Collection	:	Sh. M.L. Sharma Sh. A.M. Mishra Sh. Pran Nath Sharma Sh. Rakesh Kumar
Data Tabulation	:	Sh. M.L. Sharma Sh. A.M. Mishra Sh. Khem Raj Sh. Rakesh Kumar
Analysis of Data	:	Dr. Ranveer Singh Sh. M.L. Sharma Sh. Kem Raj
Report Writing	:	Dr. Ranveer Singh Sh. M.L. Sharma
Editing	:	Dr. B.K. Sikka
Computer Assistance	:	Sh. Sanjay Sharma
Secretarial Assistance	:	Sh. B.C. Mohanan Mrs. Meera Verma Mrs. Nirmla Sh. Tulsi Ram Sh. Amar Chand

CONTENTS

<u>Chapter</u>	<u>Title</u>	<u>Page</u>
I	INTRODUCTION	1-6
	The Problem	3
	Objectives	4
	Irrigation Pattern	4
II	METHODOLOGY	7-11
	Selection of Area & Irrigation Scheme	7
	Selection of Farmers	8
	Data Collection	10
	Data Analysis	10
III	SOCIO-ECONOMIC STRUCTURE OF SAMPLED FARMERS	12-32
	Salient Features of the Schemes	12
	Family Size	13
	Sex Ratio	14
	Educational Level	14
	Occupational Pattern	18
	Size of Holdings	20
	Land Utilization Pattern	21
	Irrigated Land	24
	Cropping Pattern	24
	Live Stock Composition	27
IV	IMPACT OF IRRIGATION ON PRODUCTION SYSTEM	33-47
	Change in Cropping Pattern	33
	Cropping Intensity	35
	Crops Irrigated	37
	Productivity of Crops	38
	Input Use Pattern	39
	Use of Manure	39
	Use of Fertilizer	40
	Plant Protection	41
	Value of Seed	41
	Human Labour Used	43
	Bullock Labour	43
	Efficiency Ratio in Crop Production	45
	Perhectare Net Return from Different Crops	46

V	IMPACT OF IRRIGATION ON FARM INCOME AND EMPLOYMENT	48-63
	Per Farm Income from Different Crops	48
	Per Farm Employment	52
	Impact of Irrigation on Farm Income	54
	Impact of Irrigation on Farm Employment	60
VI	VALUE OF ASSETS POSSESSED BY SAMPLED HOUSEHOLDS 64-73	
	Value of Land	64
	Value of Livestock	65
	Value of Buildings	66
	Value of Farm Implements & Machinery	67
	Value of Modern Durables	69
	Inequality in Assets Possessed by Households	70
VII	SUMMARY AND SUGGESTION	74-77
	Summary of Main Findings	74
	Suggestions	76
	TABLES	78-125
	APPENDICES	126-136

LIST OF DIAGRAMS

<u>TITLE</u>	<u>PAGE</u>
- SOURCES OF IRRIGATION - HIMACHAL PRADESH(1987-88)	5
- EDUCATIONAL STATUS (LIS KANDA-PANESH)	15
- EDUCATIONAL STATUS (FIS GALLIAN)	17
- LAND UTILIZATION (LIS KANDA-PANESH)	22
- LAND UTILIZATION (FIS GALLIAN)	23
- CROPPING PATTERN (LIS KANDA-PANESH) BENEFICIARY	25
- CROPPING PATTERN (LIS KANDA-PANESH) NON-BENEFICIARY	26
- CROPPING PATTERN (FIS GALLIAN) BENEFICIARY	28
- CROPPING PATTERN (FIS GALLIAN) NON-BENEFICIARY	29
- COMPOSITION OF LIVESTOCK (LIS KANDA-PANESH)	31
- COMPOSITION OF LIVESTOCK (FIS GALLIAN)	32
- AREA UNDER CROPS (LIS KANDA-PANESH)	34
- AREA UNDER CROPS (FIS GALLIAN)	36
- INPUT USE PATTERN (LIS KANDA-PANESH)	42
- INPUT USE PATTERN (FIS GALLIAN)	44
- NET INCOME FROM CROPS (LIS KANDA-PANESH)	49
- NET INCOME FROM CROPS (FIS GALLIAN)	51
- MANDAYS UTILIZATION IN CROPS (LIS KANDA-PANESH)	53
- MANDAYS UTILIZATION IN CROPS (FIS GALLIAN)	55
- NET INCOME FROM CULTIVATED LAND (LIS KANDA-PANESH)	57
- NET INCOME FROM CULTIVATED LAND (FIS GALLIAN)	59
- EMPLOYMENT FROM CULTIVATED LAND (LIS KANDA-PANESH)	61
- EMPLOYMENT FROM CULTIVATED LAND (FIS GALLIAN)	63
- HOUSEHOLD ASSETS (LIS KANDA-PANESH)	71
- HOUSEHOLD ASSETS (FIS GALLIAN)	73

LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page No</u>
1.1	Source Wise Irrigated Area in Himachal Pradesh, 1987-88.	78
1.2	District Wise Net Area Irrigated in Himachal Pradesh.	79
3.1	Demographic Profile of Sampled Households of Kanda-Panesh LIS.	80
3.2	Demographic Profile of Sampled Households of Gallian FIS.	81
3.3	Educational Status of Sampled Households of Kanda-Panesh LIS.	82
3.4	Educational Status of Sampled Households of Gallian FIS.	83
3.5	Occupational Pattern of Sampled Farmers of Kanda-Panesh LIS (Main Occupation).	84
3.6	Occupational Pattern of the Sampled Farmers of Gallian FIS (Main Occupation).	85
3.7	Occupational Pattern of the Sampled Farmers of Kanda-Panesh LIS (Secondary Occupation).	86
3.8	Occupation Pattern of the Sampled Farmers of Gallian FIS (Secondary Occupation).	87
3.9	Number and Area of Land Possessed by Different Category of Sampled Farmers.	88
3.10	Land Utilization Pattern of Sampled Farmers.	89
3.11	Per Farm Cultivated Land Possessed by Sampled Farmers.	90
3.12	Cropping Pattern of Sampled Farms of Kanda-Panesh LIS.	91
3.13	Cropping Pattern of Sampled Farms of Gallian FIS.	92
3.14	Composition of Different Livestock Possessed by Sampled Farmers of Kanda-Panesh LIS.	93
3.15	Composition of Different Livestock Possessed by Sampled Farmers of Gallian FIS.	94
4.1	Proportion of Different Crops Grown in Kanda-Panesh LIS.	95
4.2	Proportion of Different Crops Grown in Gallian FIS.	96
4.3	Cropping Intensity on Different Farms.	97
4.4	Proportion of Area Irrigated Under Different Crops Grown by Beneficiary Farmers of Kanda-Panesh LIS.	98

4.5	Proportion of Area Irrigated Under Different Crops Grown by Beneficiary Farmers of Gallian FIS.	99
4.6	Crop Wise Per Hectare Yield of Sampled Farmers in Kanda-Panesh LIS.	100
4.7	Crop Wise Per Hectare Yield of Sampled Farmers in Gallian FIS.	101
4.8	Per Farm Use of Different Inputs, Among Sampled Farmers of Kanda-Panesh LIS.	102
4.9	Per Farm Use of Different Inputs Among Sampled Farmers of Gallian FIS.	103
4.10	Per Hectare Net Income From Various Crops in Kanda-Panesh LIS.	104
4.11	Per Hectare Income From Various Crops in Gallian FIS.	105
5.1	Per Farm Net Income From Various Crops Among Beneficiary Farmers of Kanda-Panesh LIS.	106
5.2	Per Farm Net Income From Various Crops Among Non-Beneficiary Farmers of Kanda-Panesh LIS.	107
5.3	Per Farm Net Income From Various Crops Among Beneficiary Farmers of Gallian FIS.	108
5.4	Per Farm Net Income From Various Crops Among Non-Beneficiary Farmers of Gallian FIS.	109
5.5	Per Farm Mandays Utilized in Different Crops Grown by Sampled Farmers of Beneficiaries in Kanda-Panesh LIS.	110
5.6	Per Farm Mandays Utilized in Different Crops Grown by Sampled Farmers of Non-Beneficiaries in Kanda-Panesh LIS.	111
5.7	Per Farm Mandays Utilized in Different Crops Grown by Sampled Farmers of Gallian FIS.	112
5.8	Net Returns Per Hectare of Cultivated Land Among Sampled Farmers of Both the Irrigation Schemes.	113
5.9	Per Hectare of Cultivated Land Human Labour Used by Sampled Farmers of Both Irrigation Schemes.	114
5.10	Net Returns Per Mandays on Different Farms.	115
6.1	Per Farm Value of Land Possessed by Sampled Farmers.	116
6.2	Per Farm Value of Livestock Possessed by Sampled Farmers of Kanda-Panesh LIS.	117
6.3	Per Farm Value of Livestock Possessed by Sampled Farmers of Gallian FIS.	118
6.4	Per Farm Value of Buildings Possessed by Sampled Households.	119
6.5	Per Farm Value of Farm Implements and Machinery Possessed by Sampled Farmers in Kanda-Panesh LIS.	120

6.6	Per Farm Value of Farm Implements and Machinery Possessed by Sampled Farmers in Gallian FIS.	121
6.7	Per Farm Value of Modern Durables Possessed by Sampled Farmers of Kanda-Panesh LIS.	122
6.8	Per Farm Value of Modern Durable Possessed by Sampled Farmers of Gallian FIS.	123
6.9	Per Household Value of Different Assets Possessed by Sampled Farmers of Kanda-Panesh LIS.	124
6.10	Per Household Value of Different Assets Possessed by Sampled Farmers of Gallian FIS.	125

LIST OF APPENDIX

<u>No.</u>	<u>Title</u>	<u>Page No.</u>
I	Per Farm Different Type of Land Possessed by Sampled Farmers.	126
II	Per Hectare Costs And Returns From Different Crops Grown by Sampled Farmers of Kanda-Panesh LIS.	127-128
III	Per Hectare Costs And Returns From Different Crops Grown by Sampled Farmers in Gallian FIS.	129-130
IV	Per Farm Costs And Returns From Crops Grown by Sampled Farmers in Kanda-Panesh LIS.	131
V	Per Farm Costs And Returns From Crops Grown by Sampled Farmers in Gallian FIS.	132
VI	Per Household Off-Farm Income of Sampled Farmers in Kanda-Panesh LIS.	133
VII	Per Household Off-Farm Income of Sampled Farmers in Gallian FIS.	134
VIII	Map of LIS Kanda-Panesh.	135
IX	Map of FIS Gallian.	136

Chapter -I

INTRODUCTION

Economic growth with Social justice is one of the most important goals of the developing countries like India. Attainment of the objective calls for a sustained development of different sectors of the economy. The economy is usually divided into two sectors: agriculture and non-agriculture. Agriculture is the mainstay in our country as more than 70 per cent of the population is dependent on this and it contributes about 46 per cent of the national income. Thus, agriculture sector holds the key for economic development. Therefore, the development of agriculture sector is a pre-condition for the economic development of the country.

For economic development, an increase in agricultural production is an imperative necessity which is possible either by increasing the productivity of land or by putting more area under cultivation. However, the scope, to divert more area under cultivation is very limited, only alternative left is to increase the productivity. The productivity of crops can be increased through adoption of full package of latest technology in the crop production. Since agriculture production is risky venture in the absence of assured irrigation, farmers generally avoid heavy doses of critical inputs like fertilizer, chemicals required in the crop production when grown on scientific lines. Therefore, productivity of agriculture crops can be increased if irrigation facilities are provided to the farmers.

In most parts of the country crops can be raised without irrigation during the rainy season. But where rainfall is inadequate or erratic, yields are poor. If

irrigation supplies are made available for timely sowing, good yield can be secured. Often during a prolonged break in rain, a small support from irrigation supplies makes all the difference between crop failure and its successful maturing. With the increase in yield the cost of production per unit will also be less and this would be in the interest of both producers and the consumers. Thus, irrigation like other modern inputs of agriculture is needed for the development of agriculture. This factor of production becomes more important if the distribution of rainfall is uneven and there are great fluctuations in rainfall from year to year. Irrigation is the means of making agriculture relatively independent of the vagaries of rains. Irrigation can be used to make up the moisture deficiency in soils during the cropping season so as to ensure proper and sustained growth of crops being grown and to enable more crops being raised which could not otherwise be grown. With the introduction of modern inputs, the use of irrigation alongwith fertilizers and improved varieties of seeds has increased to a great extent. Availability of perennial irrigation, not only raises the cropping intensity but also enable the farmers to use best quality of seeds, and can earn more profits. Irrigation raises farm employment and income and thus provides means for capital formation.

Himachal Pradesh is one of the States which could not be benefited more through new farm technology/green revolution. This has been mainly due to poor production base in terms of irrigational facilities, mountainous topography, non-suitability of available farm technology to prevailing environment/production base, etc. Consequently, the growth in agricultural sector remained almost stagnant during the last one decade; and the State had to depend heavily on food grain imports from other States to feed its ever increasing population. The poor performance is due to lack of irrigational facilities and non-suitability of the developed farm technology in hill areas. This may be

substantiated from the fact that net irrigated area during last one decade increased merely at the rate of 0.137 per cent per annum, while the yield of major crops declined substantially. Fertilizer use per hectare was as low as 17 kgs. which is the half of the national average. Consequently due to lower returns and higher risk involved in crop production there was no force which can motivate the farmers to go in for intensive or extensive cultivation. Hence cropping intensity and net sown area in the State did not show any upward trend. Further, stagnancy in net area sown and cropping intensity may also be attributed to the limited alternative uses of land due to rainfed conditions.

The Problem:

The main objective of development planning in the under developed hilly areas is to achieve higher standard of living for the process through generating more employment, and increasing productivity of per unit of land. In hilly areas like Himachal Pradesh, the potential for industrialization is very low, hence the farm sector is and would remain the major employer. The question generally raised is whether the farm sector will be able to absorb growing labour force and provide satisfactory income and standard of living to local people in the State. Due to varied agro-climatic conditions and mild climate Himachal Pradesh has vast potential for the production of various crops like fruit, vegetables, ginger, potato and vegetable seeds etc. These crops have good demand in the markets of plains. The studies conducted in the State clearly reveal that both farm income and employment could be substantially increased by shifting suitable area from cereals crops to these crops. Since the production of these crops is highly risky venture in the absence of assured irrigation. Therefore, commercialisation of agriculture through propagation of high pay off crops can play an important role

in the economic development of Himachal Pradesh if adequate infrastructural facilities particularly irrigation are made available to the farmers.

Keeping in view all these factors in mind, the present study has been designed to evaluate the impact of irrigation on socio-economic structure of farm families in Himachal Pradesh.

Based on this broad aim, the following specific objectives are enumerated.

Objectives of the Study:

1. to assess the level of social structure of sampled farmers;
2. to study the impact of irrigation on income, employment, education, introduction of modern technology of farming, cropping intensity and production pattern of the farmers;
3. to examine the pattern of inequality in the distribution of agricultural income after the introduction of irrigation facility.

Irrigation Pattern:

In Himachal Pradesh cultivated land was 98026 hectares and out of this, 17.7 per cent covered under irrigation during 1987-88. The sources of irrigation are different in different parts of the State due to varied agro-climatic conditions prevailing in the State, (Table 1.1). The Kuhl is the main source of water in all the district in the State. Besides Kuhl, canal is also the source of irrigation in Sirmour, Solan and Bilaspur district. Tank irrigation is observed only in Solan,

SOURCES OF IRRIGATION HIMACHAL PRADESH (1987-88)



AREA IRRIGATED BY TANKS IS NEG.

Hamirpur and Sirmour district. The irrigation through tube wells is relatively high in Una district followed by Sirmour, Solan, Mandi, Bilaspur, Kangra and Hamirpur. On the whole, the proportion of irrigated area under kuhl, wells, tube wells, canal, and tank in the State was 85.84, 6.74, 6.84 and 0.06 respectively during 1987-88.

The net and gross irrigated area has not shown significant growth in the State (Table 1.2) due to stagnant conditions during the last one decade, uneven topography, terraced fields, small land holding and high cost value in installation of irrigation system. Besides this, temporal distribution of water flows, incompatibility between hill terrain and conventional approach of irrigation systems and failure to develop appropriate irrigation design suited to the terrain are the important responsible for this. Despite this, little has been achieved for the development of irrigation in the State by way of installation of minor irrigation project with the aid of International Agencies such as HALWD.

The Hill Area Land and Water Development Project (HALWD) was established in September 1984 to support State's initiatives in developing land and water resources. In this project number of minor irrigation schemes have been installed in the State with the financial assistance of USAID through Department of Irrigation, Public Health and Agriculture. Beside the creation of new schemes, some traditional systems mainly of gravity flow schemes were also renovated under this project. The irrigation schemes installed/created under HALWD project helped farmers in increasing productivity of crops, cropping intensity and induced them to shift their land towards commercial crops such as vegetables, etc.

Chapter -II

METHODOLOGY

This chapter presents the methodology used for selection of study areas, selection of sample, collection of data and analytical techniques used in the study.

Selection of Area and Irrigation Schemes :

The present study is based on the data collected from Shimla and Bilaspur districts of Himachal Pradesh. These districts were assigned for this study by HALWD Project Cell of Irrigation and Public Health Department of Government of Himachal Pradesh. For the Study purpose only those irrigation schemes were considered which were under HALWD Project. Thus, for the selection of irrigation schemes, a list was prepared with the help of I & P.H. Department. It was considered worthwhile to select one flow irrigation scheme which is most familiar in hill areas and one lift irrigation system, which is developing as a new irrigation system. Moreover, the systems of these two schemes are different from each other. Therefore, for evaluating the impact of irrigation the following schemes were finally selected:

Shimla District : Lift Irrigation Scheme, Panesh
(i.e. Kanda-Panesh LIS).

Bilaspur District : Flow Irrigation Scheme, Gallian
(Gallian-FIS).

Data Collection:

A preliminary field visit was made to get an idea or overview of the cultivation practices, irrigation system, customs and traditions, etc. of the command area of selected schemes. A questionnaire was developed based on this visit. A multidimensional procedure was adopted to collect relevant information to meet out the objectives of the study. The procedure include panel discussion, interview of individual cultivators and Pradhan of Gram Panchayats, Patwaris, etc. Preliminary data in respect of socio-economic structure, land utilization, cropping system, input used, livestock and farm problems was collected by personal survey method on pre-tested schedule/questionnaire for the year 1990-91. The secondary information related to various aspects of irrigation and farming of Himachal Pradesh was obtained from various departments of Himachal Pradesh Government.

Data Analysis:

The general information regarding socio-economic structure, such as information on family size, work force, occupation, educational status, land utilization pattern, cropping pattern, productivity of crops and cropping intensity and value of assets were calculated by simple tabulation procedure.

The concepts used in working out costs and returns structure of crops are summarized as follows:

Cost A¹

It pertains to all paid out costs or expenses incurred either in cash or kind or hired labour, owned and hired oxen labour, seed, manure (both purchased and farm

produced) irrigation charges, interest paid in cash on crop loan, depreciation of implements and other implements maintenance charges.

Cost B: Cost A¹ + imputed interest on owned fixed capital + imputed rental value of owned land.

Cost C: Cost B + imputed value of family labour.

Gross Farm Income: Defined as gross value of output including by-products priced at farm harvest rates.

Net Farm Income: This represents the remuneration for the farm management and has been calculated by deducting farm expenses from the gross farm income.

Chapter -III

SOCIO-ECONOMIC STRUCTURE OF SAMPLED FARMERS

Socio-economic conditions of farmers greatly affect the organization and management of farms. The nature of ownership of land, cropping pattern, work force, size of family and educational level of farmers have great bearing on decision making process of the farms. Therefore, in this chapter, salient feature of the scheme, socio-economic aspects of the beneficiaries and non-beneficiaries households selected in command area of LIS Shimla district and FIS in Bilaspur district have been discussed.

Salient Features of the Schemes :

LIS Kanda-Panesh:

Water flowing in nala was diverted to a catchpit where 4 electric operated pumps are lifting water to the site (Panesh). Lifted water used to rise in a 9" iron pipe whose length is 1950 mt. upto its distribution site. The flow of water decreases during summer and it remain constant i.e. 9" during sowing season of Rabi crops. At its distribution point water flowed into RCC pipes with 6" diameter and these pipe irrigating fields by further distribution into 3.5" pipes. The length of these RCC pipes is about 3790 mt. There are 7 out lets, three in Panesh two in Glot and one each in Fagera and Shilroo (see map in appendix). The number of these outlets are going to be increased shortly. Directions of flow of water can be understand in a map given in annexure. The LIS Kanda-Panesh is irrigating about 32 hectare, in all.

FIS Gallian:

Sukar Khad is the source of water for this scheme from where a Kuhl has been constructed. The total length of the kuhl is 1485 mtrs. out of which 1250 mtrs. have been completed in all respects. At present the kuhl is benefiting two villages i.e. Paniyala and Daloh. In fact, there was an old kuhl originating from similar point of the new one. At about 100 mtrs. distance the old channel was diverted into new channel indicating a rised level of water and proved suitable for unirrigated field around (see map in appendix).

Family Size:

The study of family size is important from the labour point of view. The average family size of beneficiary and non-beneficiary household of Kanda-Panesh lift irrigation scheme is given in Table 3.1. An examination of family size among different categories of households of beneficiary and non-beneficiary revealed that the persons per family were comparatively higher among beneficiary than non-beneficiary households under study. On an average, per household number of persons were 6.66 among beneficiary and 6.40 among non-beneficiary households. Further, table indicates that the number of persons per family increased as the farm size increases in both the cases i.e. beneficiary and non-beneficiary in command area of Kanda-Panesh lift irrigation scheme in Shimla district.

The average number of persons per household among sampled households selected in command area of Gallian Flow Irrigation Scheme in district Bilaspur are presented in Table 3.2. It can be observed from the table that the number of persons per family were relatively higher among non-beneficiary households than beneficiary households. The number of persons per households in case of non-beneficiary

were 6.1 while in case of beneficiary households the average family size was 5.85 persons. Among beneficiary households family size increases as the farm size increased. On the other hand, number of persons per household among known beneficiaries were relatively lesser in case of small farmers than marginal farmers.

On the whole, the family size was found to be higher among sampled households of LIS in Shimla than FIS in Bilaspur district.

Sex Ratio:

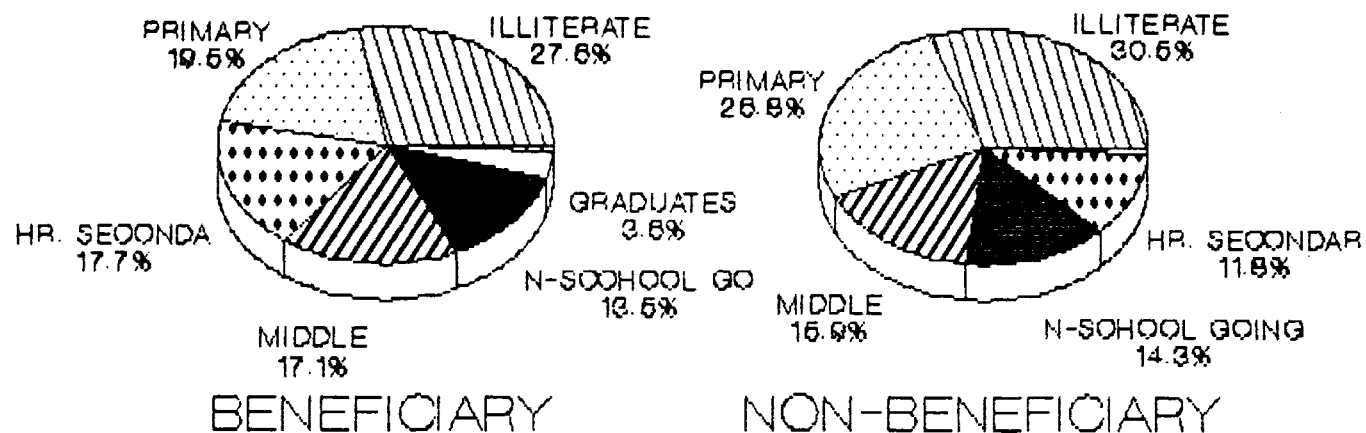
Female sex ratio was higher among non-beneficiary households than beneficiary households in LIS Shimla (Table 3.1). Number of families per thousand of male were 834 in non-beneficiary and 820 in beneficiary households. The females per 1000 of male were relatively higher in case of small categories of farmers followed by marginal and lesser in medium farmers of beneficiary households. In case of non-beneficiary households, the females per 1000 males were higher in medium category of farmers followed by marginal and lesser in small farmers.

In case of FIS in Bilaspur district, the sex ratio was more among beneficiary households than non-beneficiary households. The number of females per 1000 males were 878 in beneficiary and 774 in non-beneficiary households (Table 3.2).

Educational Level:

Education is an important factor for the economic development of any society. For scientific management of the farms, the educational level becomes more significant, which will determine the profitability of the innovations. For obtaining better productivity of crops, the knowledge of

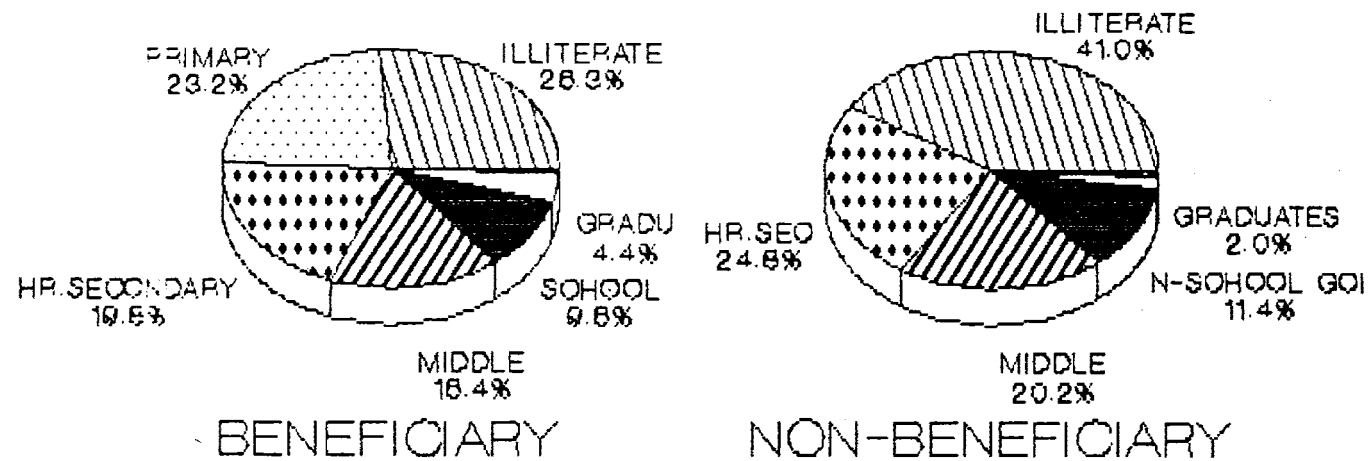
EDUCATIONAL STATUS (LIS KANDA-PANESH)



different modern inputs and techniques of production and marketing is essential. For this educational level of every member of farm family plays a crucial role. Keeping in view the importance of education, the level of literacy of sampled households was worked out and presented in Table 3.1 and 3.3. From the table it can be seen that more than 56 per cent of the total family members were literate in case of beneficiary and 60 per cent in non-beneficiary households, of Kanda-Panesh LIS. The rate of literacy among different category of beneficiary households was higher in small followed by marginal and medium categories of households. Among non-beneficiary households the literacy rate was positively related with the size of farms. Further, Table 3.3 revealed that the proportion of family members having education above middle standard were higher in case of non-beneficiary households as compared to beneficiary households. The proportion of graduates in total literates was 4.44 per cent in beneficiary and 1.95 per cent in non-beneficiary households of Kanda-Panesh LIS.

The educational status of family member of sampled households in Gallian FIS is presented in Tables 3.2 & 3.4. It may be seen from the table that the literacy rate was relatively higher (64.16%) in case of beneficiary households than non-beneficiary households (47.56%). The level of education of beneficiary households was better than the non-beneficiary households of this scheme. In case of beneficiary households, proportion of graduates and Higher Secondary persons in total educated persons was 3.60 and 17.72 per cent while in case of non-beneficiary households the proportion was 1.77 per cent and 11.24 per cent respectively (Table 3.4).

EDUCATIONAL STATUS (FIS GALLIAN)



Occupational Pattern:

All the persons in the age group of 16-60 years have been considered as workers. Every worker in the family was asked about primary and secondary occupations followed by them during the period of study and the results are summarized in Tables 3.5 to 3.8.

Primary Occupation: Cultivation was the main occupation of 81.62 per cent of the workers and 17.84 per cent of the workers reported service in public/private sector as their main occupation among beneficiary households of Kanda-Panesh LIS (Table 3.5). In case of non-beneficiary households, 78.09 per cent of total workers reported agriculture as their main occupation while 20.78 per cent of the total workers reported service as their main occupation. The other occupation followed by workers of beneficiary and non-beneficiary was business and only one worker each in both the categories was engaged in this activity. The participation of males and females in various activities is also presented in the Table 3.5. It may be observed from this table that only agriculture activity was undertaken by males and females workers in both the beneficiary and non-beneficiary households. While service and business activities were entirely done by male workers.

The proportion of workers of Gallian LIS engaged in various activities is shown in Table 3.6. It may be seen from this table that among beneficiary households about three-fourth of the total workers were engaged in agriculture, one-fifth in service and 4 per cent in non-agriculture labour. The other activities were business which accounted for two per cent of the total workers. The main occupation of the workers of non-beneficiary households is also presented in this table wherein it may be observed that about 63 per cent workers were engaged in agriculture and 23 per cent in service. The proportion of total

workers engaged in wage labour in non-agricultural activities was 4.8 per cent while 8.17 per cent reported other activities i.e. rural artisan work. As far as participation of females worker is concerned, it was observed that only in agriculture activities and the other activities were carried out by male workers only. Among non-beneficiary households, females workers were engaged in agriculture and other activities (i.e. rural artisans etc.).

Secondary Occupation: The secondary occupational structure of the sampled workers in both the schemes under study was also studied alongwith their main occupation. The proportion of workers undertaking any subsidiary occupation is given in Table 3.7 and 3.8. Here, too, cultivation was preferred followed by wage labour in non-agricultural activities, business and other activities among workers of beneficiary households in command area of Kanda-Panesh LIS. Among non-beneficiary households, more than 96 per cent of the workers reported agriculture as their subsidiary occupation. The female participation in subsidiary activities was nil in case of beneficiary households while in case of non-beneficiary households females workers reported agriculture as their subsidiary occupation. The other occupations were reported by male workers only.

The proportion of workers engaged in various subsidiary activities is given in Table 3.8 for Gallian FIS in Bilaspur district. It may be seen from this table that 77 per cent of the total workers reported agriculture and about 19 per cent service as their subsidiary occupation in case of beneficiary households. Only one worker in service and one in other activities was engaged during the period of survey of this study. In case of non-beneficiary households nearly 52 per cent of the workers reported agriculture as their subsidiary occupation and 2.04 as business. The female participation was observed only in

agriculture while other occupations were carried out by male workers only. Among beneficiary households, all subsidiary activities were carried out by male workers only.

Size of Holdings:

Land holdings in Himachal Pradesh are generally small. As a result 68 per cent of the total farmers in case of beneficiary of Kanda-Panesh LIS were marginal, 24 per cent small and 8 per cent were medium (Table 3.9). The proportionate share in land of these categories was 53.2 per cent, 34.51 per cent and 12.28 per cent respectively. The same trend was observed in case of non-beneficiary households. The average size of operated land was 0.62 , 1.25 and 2.40 ha. in marginal, small and medium farms of beneficiary households respectively (Table 3.10). On an average per farm cultivated land was 0.92 ha. among beneficiary farmers. In case of non-beneficiary farmers, the average size of cultivated land was 1.08, ha. which is 0.54 ha. in marginal , 1.44 ha. in small, and 2.95 ha. in medium farmers.

The number and area possessed by various category of farmers in Gallian FIS is presented in Table 3.9. It may be observed from the table that the proportion of marginal and small farmers in total was higher while the proportion of total land possessed by them was comparatively lesser than the medium category of farmers in case of beneficiary. In case of non-beneficiary farmers there were only marginal and small farms in the sample. The average size of operational holding was 0.77 ha. in beneficiary and 0.52 ha. in non-beneficiary farmers (Table 3.10).

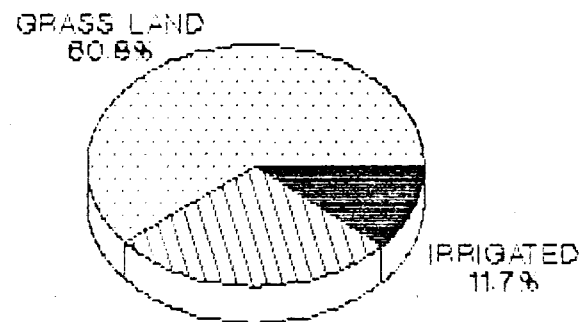
Land Utilization Pattern:

The land of the sampled farmers was not fully cultivated. The land owned by these farmers were partly cultivated and partly used as ghasni (grass land, Table 3.10). This was true for all categories of farmers in each of the two command areas of irrigation schemes under study. The proportion of land under ghasni was relatively higher among beneficiary farmers than non-beneficiary farmers. The percentage of total land under ghasni ranged between 33.33 per cent among medium farmers to 65.90 per cent among marginal farmers in case of beneficiary farmers while in non-beneficiary farmers it ranged between 34.90 per cent among small farmers to 49.33 per cent among medium farmers.

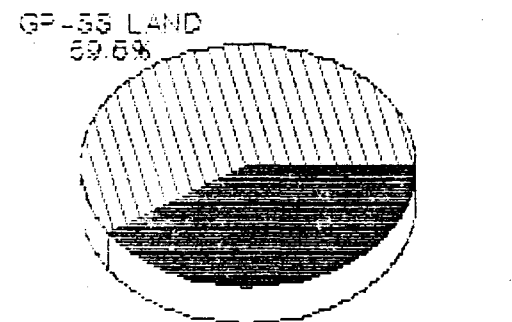
The utilization of land among sampled farmers of Gallian FIS indicated that area under ghasni was 44.79 per cent of the total land in case of beneficiary farmers which is slightly lesser (42.91%) in case of non-beneficiary farmers (Table 3.10). The proportion of total land under ghasni among different categories of beneficiary farmers showed that the maximum proportion was in medium farmers (51.75%), followed by marginal farmers (42.15%) and minimum (39.09%) in small farmers. In case of non-beneficiary farmers, the proportion of total land under ghasni was higher among small farmers (65.29%) than marginal farmers (34.04%).

On the whole, the proportion of land under ghasni was comparatively higher among different categories of sampled farmers in Kanda-Panesh LIS than Gallian FIS. The average total land per farm was 2.34 hectares in case of Kanda Panesh LIS and 1.39 hectares in case of Gallian FIS.

LAND UTILIZATION (LIS KANDA-PANESH)

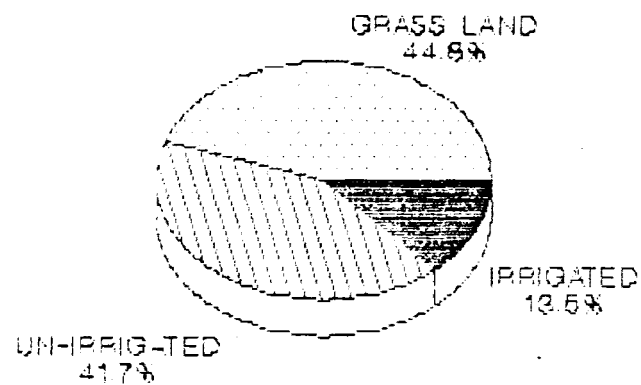


BENEFICIARY

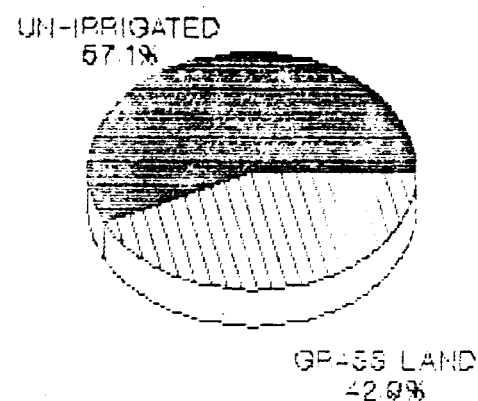


NON-BENEFICIARY

LAND UTILIZATION (FIS GALLIAN)



BENEFICIARY



NON-BENEFICIARY

Irrigated Land:

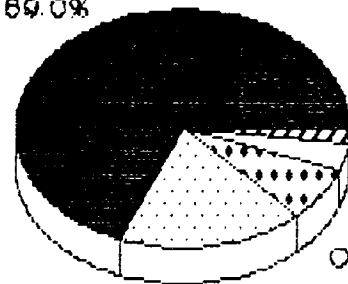
The cultivated land under irrigation among sampled farmers of Kanda-Panesh LIS is given in Table 3.11 wherein it may be seen that on an average, 29.80 per cent of the cultivated land was under irrigation. The proportion of irrigated land to total cultivated land was higher among medium farmers followed by marginal and lesser in case of small farmers. Among farmers of Gallian FIS command area, the proportion of cultivated land under irrigation was relatively higher among small farmers followed by marginal and lesser in medium farmers.

Cropping Pattern:

A study of cropping pattern would reveal the proportion of area under different crops. Economic studies on cropping pattern normally emphasize two important characteristics of agricultural land viz. its heterogeneity and possibility of crop substitution. Heterogeneity arises from agro-climatic differences which include soil, temperature, rainfall etc. differing from region to region within the State. Difference in irrigational facilities also contribute to land heterogeneity among regions. The total area devoted to various crops by different categories of sampled farmers in LIS is given in Table 3.12. It may be observed from this table that like elsewhere in the State, cereals predominate the cropping pattern accounting for about 71 per cent of the gross cropped area among sampled beneficiaries farmers of Kanda-Panesh LIS. Among cereals wheat, maize and barley were the major crops accounting for 39.29, 30.80, and 1.15 per cent of the gross cropped area respectively. The irrigation facilities were provided by the USAID through LIS and hence farmers cultivating vegetables on their farms. The proportion of vegetables including ginger were 29.12 per cent of the gross

CROPPING PATTERN (LIS KANDA-PANESH) BENEFICIARY

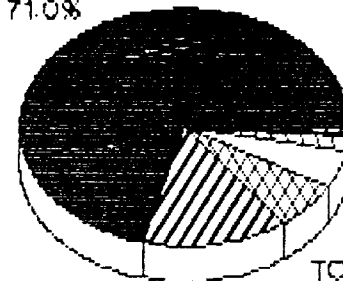
MAIZE 69.0%



BEAN 1.6%
BRINJAL 3.9%
CAPSICUM 7.3%

KHARIF

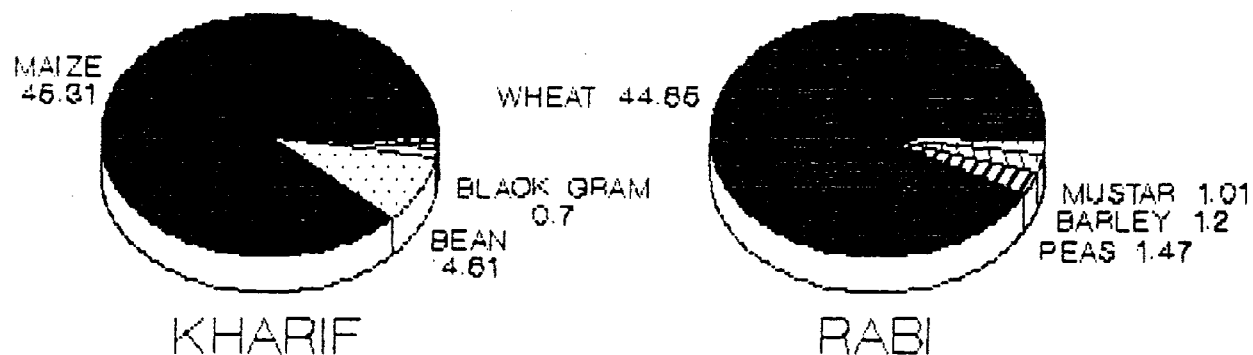
WHEAT 71.0%



BARLEY 2.1%
CAULIFL 4.9%
TOMATO 6.6%

RABI

CROPPING PATTERN (LIS KANDA-PANESH) NON-BENEFICIARY



AREA UNDER GINGER, H. GRAM, S. MILLETS
& LENTIL IS NEG.

cropped area. The proportion of gross cropped area under vegetable crops was relatively higher among marginal farmers followed by medium and small farmers of this scheme.

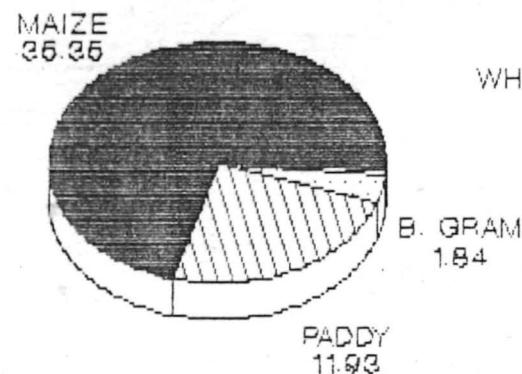
The cropping pattern of sampled non-beneficiaries farmers of the area is also presented in Table 3.12 wherein it may be observed that the farmers were growing traditional crops on their land. This may be due to the lack of irrigational facilities on the farms of these farmers. Maize, wheat and barley were the important crops grown by these farmers accounting for 45.31, 44.65 and 1.20 per cent of the gross cropped area respectively.

Proportionate area under various crops in different categories of beneficiary farms of Gallian FIS is given in Table 3.13. It may be observed that wheat, maize and paddy were the popular crops grown by the sampled beneficiary farmers of this scheme claiming about 88 per cent of the gross cropped area. The area under commercial crops i.e. sugarcane, onion, berseem and potato was 6.83 per cent of the gross-cropped area. On the other hand, these crops were not grown by the non-beneficiaries farmers of this area (Table 3.13). Therefore, after introduction of irrigation in the command area of this scheme, farmers shift some land towards these commercial crops. The farmers who have all the land un-irrigated growing traditional crops. The important crops grown by these farmers were maize, wheat, paddy accounting for 44.49, 48.42 and 5.64 per cent of the gross cropped area (Table 3.13).

Livestock Composition:

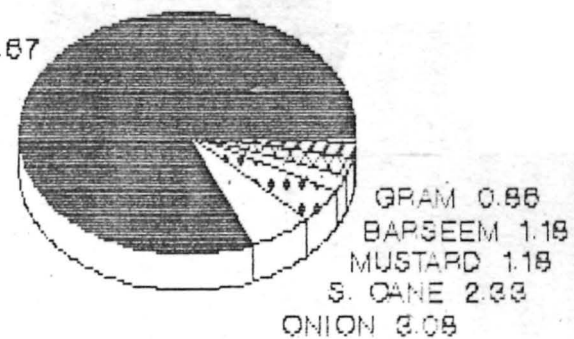
Livestock rearing is also important sector providing employment and income to the farmers. The number of various livestock possessed by sampled farmers of Kanda-Panesh LIS is given in Table 3.14. It may be seen from this table that the number of livestock per farm were relatively higher

CROPPING PATTERN (FIS GALLIAN) BENEFICIARY



KHARIF

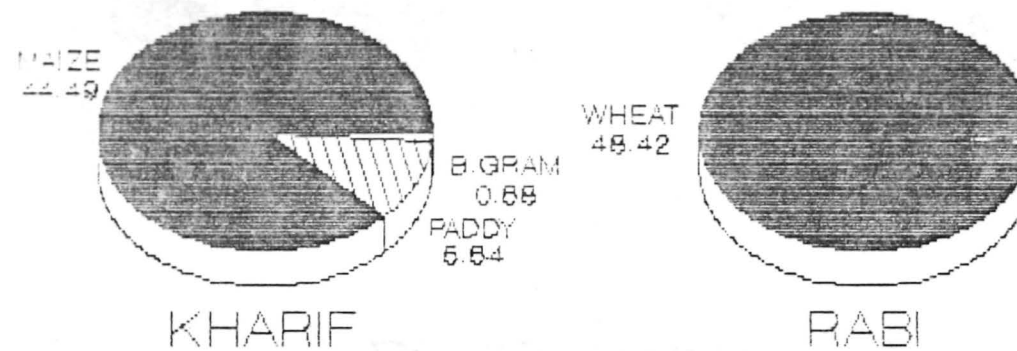
WHEAT 40.67



RABI

AREA UNDER MOONG, TORIA, KULTH,
BARLEY & POTATO IS NEG.

CROPPING PATTERN (FIS GALLIAN) NON-BENEFICIARY

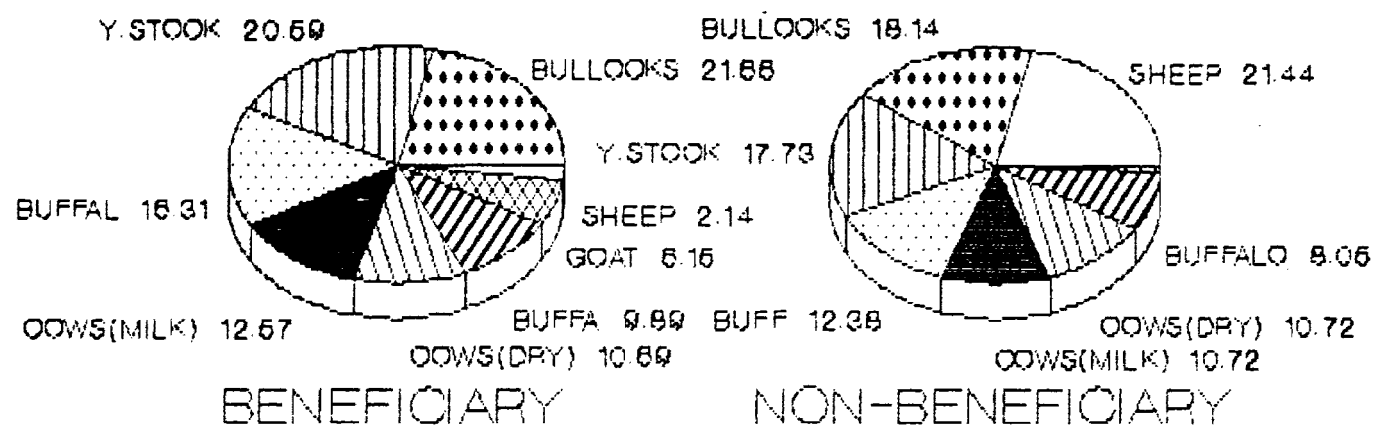


AREA UNDER BARLEY, MUSTARD &
LENTIL IS NEG.

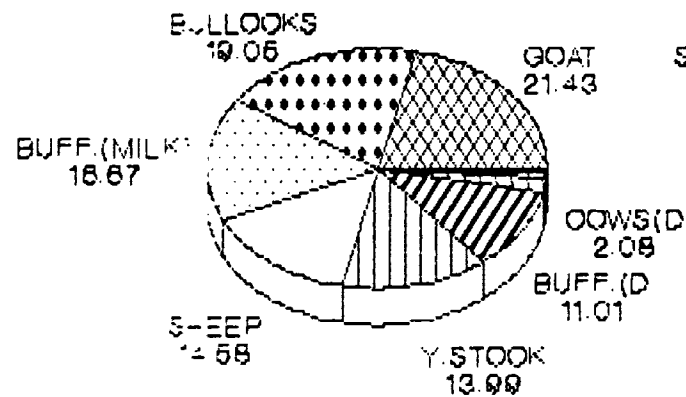
among non-beneficiary farmers of this scheme. The total number of livestock per farm were 9.7 in non-beneficiary farmers and 7.48 in beneficiary farmers. The number of livestock per farm increases as the farm size increase in both the categories i.e. beneficiary and non-beneficiary. Among various livestock possessed by these farmers, cattle accounted for about 45 per cent in beneficiary and about 40 per cent in non-beneficiary farms of this area. Buffaloes constitute about 26 per cent and 20 of the total livestock respectively. The proportion of sheep and goats were relatively higher (22.26%) in non-beneficiary and lesser (8.29%) in beneficiary farms.

Per farm livestock possessed by beneficiary and non-beneficiary farmers of Gallian FIS is presented in (Table 3.15). On an average per farm total number of livestock possessed by beneficiary were 6.7 while the number of livestock per farm were 5.36 in non-beneficiary farmers. The number of livestock per farm among beneficiary farmers were directly related with the size of holding while in case of non-beneficiary the situation was inverse. Among different livestock possessed by beneficiary farmers 27.35 per cent were buffaloes, 20.67 cattle, 35.59 per cent sheep/goats and 0.88 per cent horses and mules. Among non-beneficiary farmers the proportion of buffaloes, cattle, sheep/goats was 24.99, 31.34, and 28.73 per cent respectively.

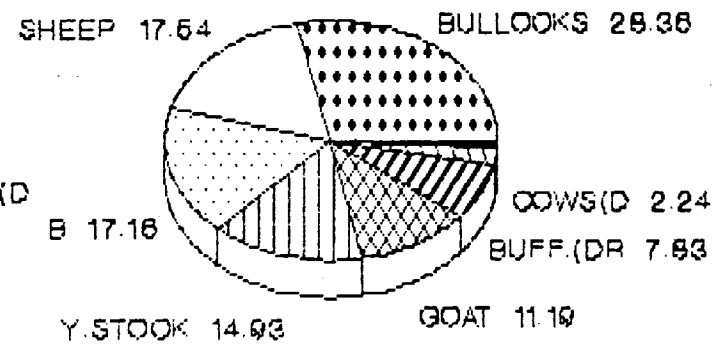
COMPOSITION OF LIVE STOCK (LIS KANDA-PANESH)



COMPOSITION OF LIVE STOCK (FIS GALLIAN)



BENEFICIARY



NON-BENEFICIARY

Chapter -IV

IMPACT OF IRRIGATION ON CROP PRODUCTION SYSTEM

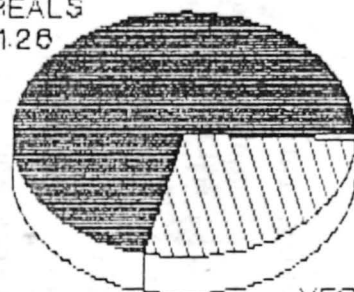
Irrigation has a key role in the development of agriculture by way of intensive cultivation. It helps in bringing more area under double cropping, increasing yield rates, promotion of short duration crops like vegetables, etc. In this chapter an attempt has been made to study the impact of irrigation on cropping pattern, yield, input use, net returns from various crops, etc. in command areas of Kanda-Panesh LIS in Shimla district and Gallian FIS in Bilaspur district. The impact of irrigation based on above mentioned indicators was evaluated by "with" and "without" approach, i.e. beneficiary and non-beneficiary farmers in the command areas under study.

Change in Cropping Pattern:

Cropping pattern indicates the level of development and the economic prosperity of the region. If the proportion of area under a high value crop increases, it is likely to result an increase in the total farm returns. Irrigation facility plays an important role in determining the cropping pattern. Cropping pattern of beneficiary and non-beneficiary farmers of Kanda-Panesh LIS indicates that the irrigation facilities provided to the farmers induced them to shift towards high value short duration cash crops (Table 4.1). The farmers who received irrigation water from LIS were growing vegetable crops like tomato, cauliflower, cabbage, capsicum and brinjal on their farms. While non-beneficiary farmers of the same area were not growing these crops due to lack of irrigation water. Thus, irrigation facilities provided by USAID through LIS to the farmers of Kanda-Panesh areas induced them to shift their

AREA UNDER CROPS (LIS KANDA-PANESH)

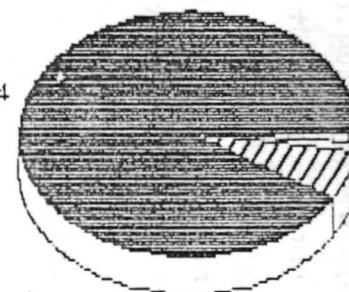
OEREALS
71.26



VEGETABLES
28.32

BENEFICIARY

OEREALS 91.24



OIL SEE 1.01
PULSES 1.28
VEGETAB 8.47

NON-BENEFICIARY

AREA UNDER OIL SEEDS AMONG
BENEFICIARY IS NEG.

land towards commercial crops. The proportion of these crops on the farms of these farmers was 28.32 per cent of the gross cropped area. The proportionate area under these crops was marginally higher on marginal farms followed by small and medium farms showing positive relationship with the size of holding.

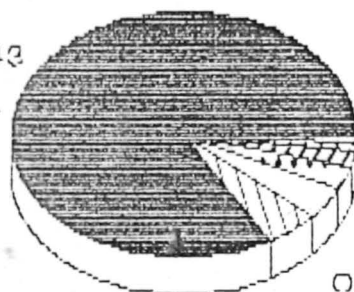
A comparison of cropping pattern between beneficiary and non-beneficiary farmers of Gallian FIS indicated that beneficiary farmers growing sugarcane, barseem, potato and onion which were not grown by non-beneficiary farmers (Table 4.2). The irrigation facilities provided by USAID through FIS to the farmers of this area encouraged them to grow these crops. Moreover, these crops cannot be grown in rainfed condition in the area under study. The area under these crops was 6.84 per cent of the gross cropped area among beneficiary. The proportion of gross cropped area under these crops was relatively higher in small farmers (8.80%) followed by marginal farmers (7.42%) and lesser (4.29%) in medium farms.

Cropping Intensity:

The cropping intensity on the farms of various categories in both the irrigation schemes under study is presented in (Table 4.3). It may be seen from the table that intensity of cropping was relatively higher on non-beneficiary farms than beneficiary farms of Kanda-Panesh LIS. On an average, cropping intensity was 190.74 per cent on beneficiary farms and 165.22 per cent on non-beneficiary farms. The reason was that the beneficiary farmers adopted vegetable crops on their farms which require fallow land for the better production. The size-wise cropping intensity shows that the small farmers in beneficiary and marginal farmers in non-beneficiary category were growing more number of crops on their farms as compared to other farmers.

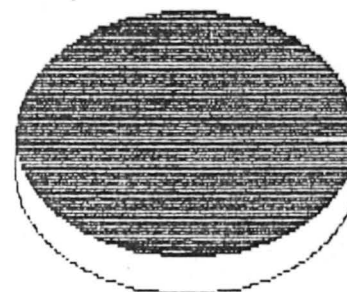
AREA UNDER CROPS (FIS GALLIAN)

OEREAL 58.43



BENEFICIARY

OEREALS
98.89



NON-BENEFICIARY

BARSEEM 1.18
MUSTARD 1.18
SOANE 2.33
ONION 3.08
PULSES 3.34

AREA UNDER POTATO, TORIA AMONG BENEFICIARY
& AREA UNDER PULSES, MUSTARD AMONG
NON-BENEFICIARY IS NEG.

Among sampled farmers of Gallian FIS the cropping intensity was higher in case of beneficiary farms than non-beneficiary farms. Cropping intensity was 193.51 per cent among beneficiary farmers and 180.77 per cent among non-beneficiary farms. In case of small category among beneficiary farmers, the cropping intensity was higher than other categories of farmers. This was due to the reason that these farmers are growing toria as a short duration crop.

Crops Irrigated:

The proportion of total area irrigated in different crops grown by sampled beneficiary farmers of Kanda-Panesh LIS is presented in (Table 4.4). It may be seen from the table that except maize and wheat, entire area under crops grown by the farmers of this scheme was irrigated. Maize was grown in un-irrigated land while 6.61 per cent of the total area under wheat was observed only among marginal farmers. Among these farms, the proportion of total wheat area irrigated was 14.78 per cent of the total area. On an average, 30.58 per cent of the cropped area in Kharif and 30.88 per cent in rabi was irrigated. On the whole, 30.94 per cent of the gross cropped area was irrigated among beneficiary farmers of this scheme. The proportion of gross cropped area irrigated in marginal, small and medium farms was 40.18, 25.65 and 23.36 per cent respectively.

The percentage of total area irrigated among sampled beneficiary farmers of Gallian FIS is given in Table 4.5. The table reveals that 0.38 per cent of maize, 1.64 per cent of black-gram and 12.30 per cent of the total area of wheat was irrigated. In case of sugar cane, onion, barseem, potato and paddy crops, entire area was under irrigation. The proportion of area irrigated in Kharif and rabi crops was 24.20 and 24.08 per cent respectively. On the whole, 24.14 per cent of the gross cropped area was under

irrigation. The proportion of area under irrigation was higher in small farms (27.8%) followed by marginal (27.07%) and medium farms (16.26%).

Productivity of Crops:

The yield of crops depend on soil, climate, irrigation and level of input used. The productivity of crops in a particular area differ according to the availability of irrigational facilities. In the absence of irrigation facilities farmers generally hesitate to use heavy doses of fertilizer etc. required in growth of the plant. Therefore, irrigation facilities have direct impact on crop yield. The yield of various crops grown by sampled farmers of Kanda-Panesh LIS is given in Table 4.6. It may be seen from the table that peas, barley, wheat and maize were the common crops grown by beneficiary and non-beneficiary farmers of this area. The per hectare yield of peas was 35.74 quintals among beneficiary farmers while it was 31.33 quintals among non-beneficiary farmers. The yield rate of peas on different categories of farmers in beneficiary were higher than the various farms of non-beneficiary farms. The productivity of wheat was also higher on the farms of beneficiary than non-beneficiary farmers. On an average, the yield of wheat was 16.69 quintals per hectare in beneficiary and 14.46 quintals per hectare in non-beneficiary farmers. Again, yield of maize was also more (16.05 quintals/ha.) on the farms of beneficiary farmers than non-beneficiary farmers. But the yield of barley was lesser on beneficiary farms than non-beneficiary farmers. This was due to the reason that the beneficiary farmers grow this crop for fodder only while non-beneficiary farmers use it for home consumption.

The productivity of various crops grown by the sampled farmers of Gallian FIS in Bilaspur district is given in Table 4.7. It may be observed from this table that the

yield of barley was higher among beneficiary farmers than non-beneficiary farmers. On an average, yield of barley was 20.66 quintals per hectares in beneficiary farmers and 19.85 quintals per hectare in non-beneficiary farmers. The average yield of wheat was almost equal on beneficiary and non-beneficiary farms. The yield of this crop ranged between 15.54 quintals per hectare in marginal farmers to 17.89 quintals in medium farmers. In case of non-beneficiary farmers it ranged between 16.46 quintal to 17.39 quintals per hectare. The yield of paddy was 22.98 quintals per hectare in beneficiary farms and 22.51 quintals per hectare in non-beneficiary farmers. The productivity of maize and black-gram was also higher on the farms of beneficiary than non-beneficiary farms. On an average, the yield of maize and black-gram was 19.84 quintals and 4.85 quintals among beneficiary farmers and 19.25 quintal and 4.72 quintals per hectare among non-beneficiary farmers of this area.

Thus, it can be concluded that the average yield of all competing crops was relatively more on irrigated farms than un-irrigated farms of both the schemes under study.

Input Use Pattern

Use of Manure: Per hectare use of gross cropped area of manure among different categories of farmers in Kanda-Panesh LIS is given in Table 4.8. It can be observed from this table that beneficiary farmers were applying more manure in the crops grown by them as compared to non-beneficiary farms. On an average, 87.32 quintals of manure per hectare of GCA was used by beneficiary farms and 66.43 quintals by non-beneficiary farmers. The application of manure among different categories of farmers in case of beneficiary farmers was inversely related with the size of holding.

Whereas in case of non-beneficiary farmers the quantity of manure per hectare of gross cropped area was higher in small farms followed by medium and marginal farms.

Per hectare of gross cropped quantity of manure used among sampled farmers of Gallian FIS is given in Table 4.9 wherein it may be seen that the non-beneficiary farmers, applying more quantity of manure than the beneficiary farms. On an average, per hectare of gross cropped area, 121.90 quintals of manure was used by non-beneficiary farms and 116.27 quintals by beneficiary farms. The use of manure was directly related with the size of farms in beneficiary and non-beneficiary farmers of this area.

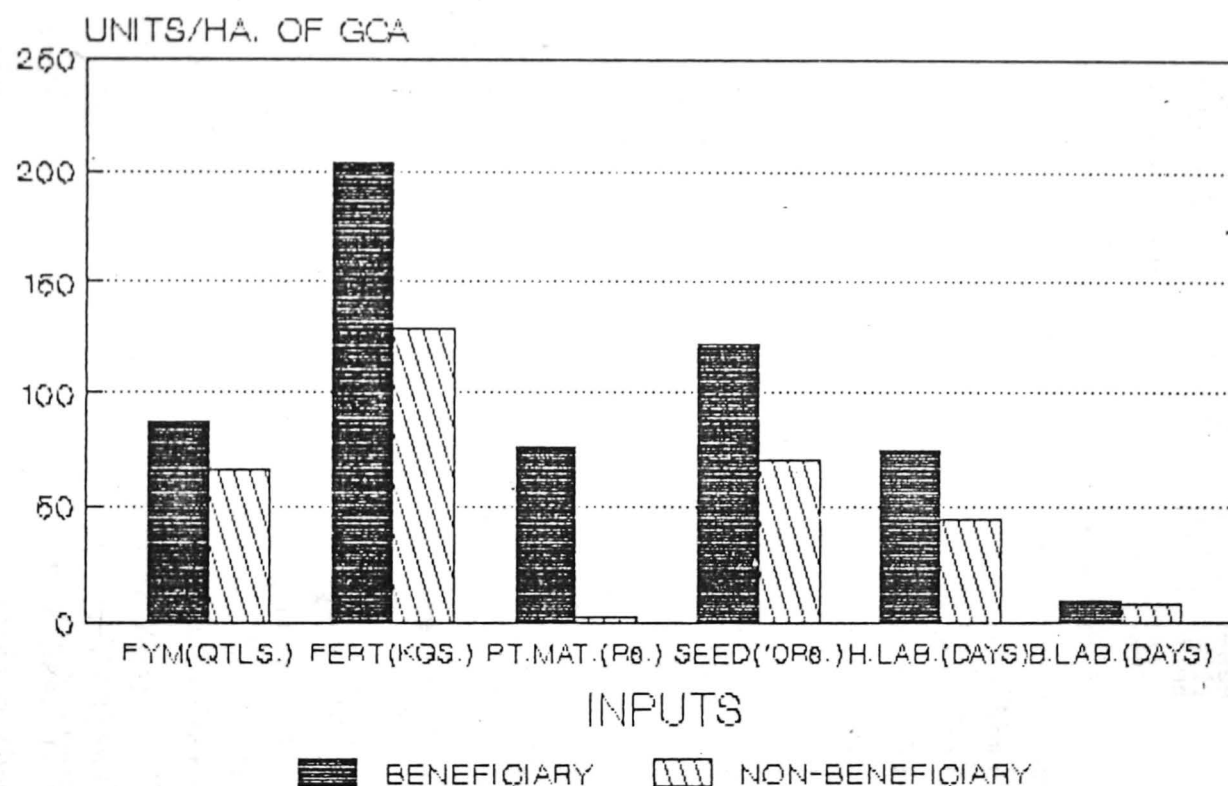
Use of Fertilizer: In order to increase productivity of land, soil nutrients need to be replenished and supplemented. The use of improved varieties for higher yield requires more plant nutrients in the form of fertilizer to support the added plant growth. The figures for fertilizer used per hectare of gross cropped area is given in Tables 4.8 and 4.9 indicating that use of fertilizer per hectare of gross cropped area was higher i.e. 2.03 quintals among beneficiary farms than non-beneficiary farms, i.e. 1.29 quintals in Kanda-Panesh LIS in Shimla district.

The use of fertilizer per hectare of gross cropped area was also higher on irrigated farms than un-irrigated farms in Gallian FIS (Table 4.9). The quantity of fertilizer used per hectare of gross cropped area was 1.50 quintal among beneficiary farmers and 1.33 quintals among non-beneficiary farmers. Therefore, use of fertilizer was higher in irrigated conditions than rainfed condition on both the schemes under study.

Plant Protection: Use of insecticides and pesticides have become an urgent need for highly perishable crops.. These crops are very sensitive in nature and generally get damaged with various kind of diseases. Therefore, farmers used to spray chemicals to save the crops against insect and pests and diseases. It was observed during the course of study that farmers applied these chemicals only in vegetable crops. The value of plant protection material used per hectare of gross cropped area among different categories of farms is given in Table 4.8 and Table 4.9. It may be observed from the table 4.8 that use of plant protection material was more among beneficiary farmers than non-beneficiary farms of Kanda-Panesh LIS. On an average, Rs. 76.10 per hectare of gross cropped area was invested by the beneficiary farmers while in case of the non-beneficiary farms, it was Rs. 2.25 per hectare. This was due to the reason that the proportion of vegetable crops was higher on the farm of beneficiary farmers than non-beneficiary farms. As very little area was devoted towards vegetable crops by the farmers of Gallian FIS so the use of plant protection material was very low. Only beneficiary farmers used plant protection material worth Rs. 6.39 per hectare of gross cropped area.

Value of Seed: The value of seed used in cultivation of crops among sampled farmers of Kanda-Panesh LIS and Gallian FIS is given in Tables 4.8 and 4.9. It can be observed from the table 4.8 that the value of seed used per hectare of gross cropped area was high among beneficiary farmers than non-beneficiary farmers of Kanda-Panesh LIS. The value of seed in case of beneficiary farmers ranged between Rs. 923 in medium farms to Rs. 1546 in marginal farmers while it was Rs. 504 in medium to Rs. 906 in small farmers of non-beneficiary farmers. The reason for higher seed cost in case of beneficiary farmers was due to use of high quality seed as well as more area under cash crops (i.e. vegetable)

INPUT USE PATTERN (LIS KANDA-PANESH)



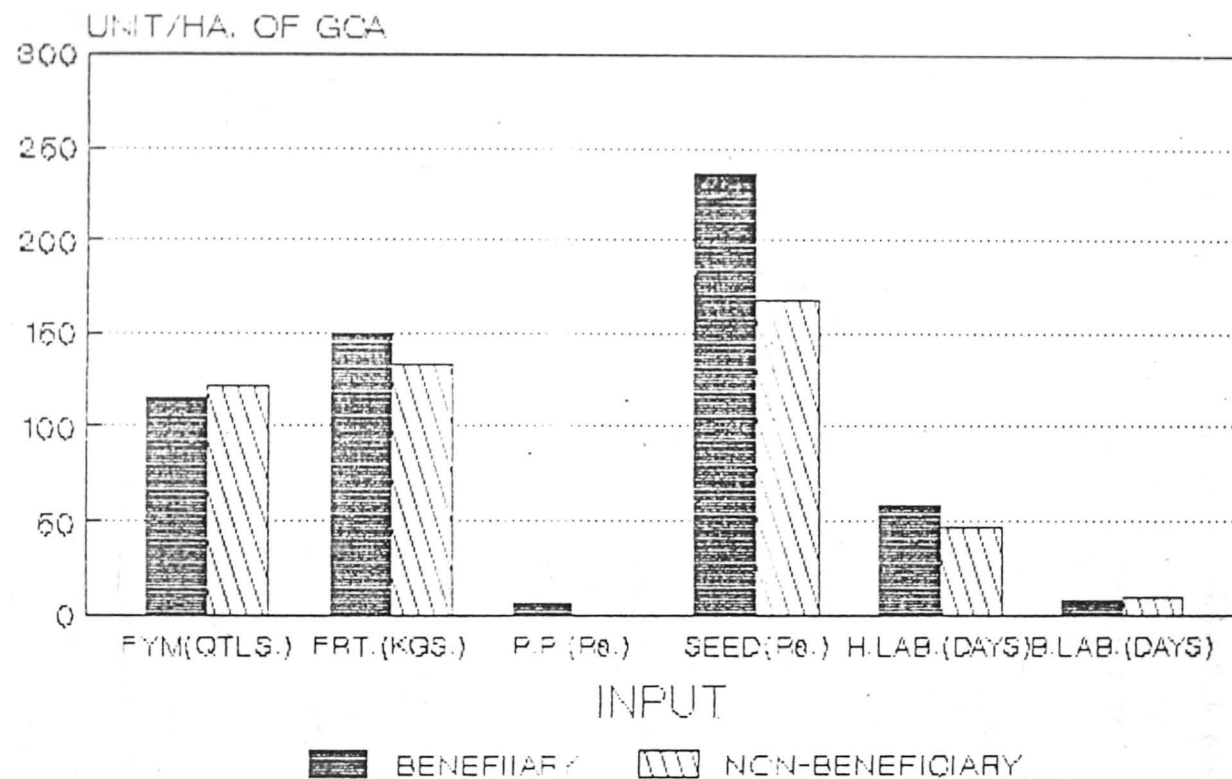
grown by these farmers as compared to non-beneficiary farmers. The vegetable cultivation required relatively higher value seed than cereals.

The value of seed used in cultivation of different crops grown by sampled farmers of Gallian FIS is given in Table 4.9 wherein it may be seen that the value of seed per hectare of gross cropped area was comparatively higher in case of beneficiary farms as compared to non-beneficiary farms. This was due to introduction of commercial crops like sugar cane, onion, barseem and toria on the farms of beneficiary farms; on average, value of seed per hectare of gross cropped area was Rs. 236.56 among beneficiary farmers and Rs. 167.08 among non-beneficiary farmers.

Human Labour Used: Human labour used in cultivation of various crops grown by sampled farmers of Kanda-Panesh LIS is given in Table 4.8. It may be observed from the table that the average mandays per hectare of gross cropped area utilized by beneficiary farmers was higher than non-beneficiary farms on this area. On an average, mandays utilized by beneficiary farmers were 75.16 per hectare of gross cropped area and 44.53 days in non-beneficiary farmers. The same trend was observed among farms of Gallian FIS (Table 4.9). The average mandays utilized per hectare of gross cropped area among beneficiary farmers were higher (58.54 man days) than non-beneficiary farmers (46.48 man days). This was due to the fact that the beneficiary farmers grow labour intensive crops (i.e. vegetables and other commercial crops) which required more labour than traditional crops grown by non-beneficiary farmers.

Bullock Labour: Per farm and per hectare of gross cropped area utilization of bullock labour in all the crops grown by sampled farmers of Kanda-Panesh LIS and Gallian FIS is given in Tables 4.8 and 4.9 respectively. It can be seen from Table 4.8 that in per hectare of gross cropped area

INPUT USE PATTERN (FIS GALLIAN)



utilization of bullock labour was higher (9.47 days) in case of beneficiary farmers than non-beneficiary farmers (8.36 days) of Kanda-Panesh LIS. While in Gallian FIS the utilization of bullock labour per hectare of gross cropped area was higher among non-beneficiary than beneficiary farms. On an average, 8.48 bullock days were used on the farms of beneficiary and 8.67 on non-beneficiary farms.

The above discussion on the utilization of various inputs indicated that the use of all inputs was relatively higher on beneficiary farms than non-beneficiary farms in both the irrigation schemes under study. This suggested that the irrigation facilities induced farmers to grow commercial crops which are capital as well as labour intensive in nature. Thus, if assured irrigation facilities are provided, farmers adopt full or near to full package of practice in growing various crops.

Efficiency Ratio in Crop Production:

To examine the production efficiency of different crops grown by beneficiary and non-beneficiary farms of irrigation schemes under study the output-input ratios have been computed and are presented in Tables 4.10 and 4.11. The Table 4.10 indicated that output-input ratio in production of wheat, maize and peas was comparatively higher in case of beneficiary farms of Kanda-Panesh LIS. The output-input ratio was 1.28, 1.77 and 1.28 respectively among beneficiary farms while the ratios were 1.20, 1.15 and 1.20 respectively among non-beneficiary farms in case of common crops. This means that for each rupee of inputs invested on common crops the returns were higher in case of beneficiary farms than non-beneficiary farms. The output-input ratio in production of various crops ranged between 1.04 to 3.46 among beneficiary farms and 1.07 to

1.31 among non-beneficiary farms. Further, the output-input ratios were higher in cultivation of vegetable crops than other crops grown by sampled beneficiary farms of this area.

The output input ratios in Gallian FIS are given in Table 4.11 wherein it may be observed that in cultivation of maize and black gram the output-input ratios were higher in beneficiary farmers than non-beneficiary farmers while in production of wheat and maize the ratios were more in non-beneficiary than beneficiary farms. In case of paddy production the ratio was equal in both the categories. On the whole, output ratios ranged between 1.13 to 1.46 in beneficiary farms and 1.12 to 1.30 in non-beneficiary farms. Further table shows that the output-input ratios were more in case of commercial crops than other traditional crops grown by beneficiary farms of this area.

Per Hectare Net Returns From Different Crops:

Per hectare net returns over cost C from different crops grown by sampled farmers of irrigation schemes under study are presented in Tables 4.10 and 4.11. It can be observed from Table 4.10 that the net returns varied from Rs. 73 in barley to Rs. 24504 in cauliflower among sampled beneficiary farms of Kanda-Panesh LIS. Among non-beneficiary farmers the returns ranged between Rs. 160 in barley to 8118 in ginger cultivation. Further in barley and ginger the returns from other competing crops were higher in beneficiary than non-beneficiary farms. The net returns from peas, maize and wheat were Rs. 2323, Rs. 440 and Rs. 735 per hectare in case of beneficiary farms and Rs. 1577, Rs. 384 and Rs. 493 per hectare respectively in case of non-beneficiary farms. In ginger and barley, net returns per hectare were Rs. 8059 and Rs. 78 in case of beneficiary farms and Rs. 8118 and Rs. 160 respectively in case of non-beneficiary farms.

The table 4.11 contains the information regarding net returns from different crops grown by sampled farmers of Gallian FIS. The table shows that except wheat the net returns from other common crops grown by beneficiary and non-beneficiary farms were more in case of beneficiary farmers. The net returns from wheat and barley were comparatively more in non-beneficiary farmers than beneficiary farmers. On an average, net returns from maize, black gram and paddy were Rs. 436, Rs. 646 and Rs. 716 per hectare respectively among beneficiary while Rs. 385, Rs. 544 and Rs. 696 per hectare among non-beneficiary farmers respectively. Further, table indicates that the net returns from commercial crops introduced by beneficiary farmers were higher than other crops grown by them. The net returns from commercial crops ranged between Rs. 1435 per hectare in sugarcane to Rs. 4128 per hectare in potato among beneficiary farmers of this area.

Thus, from the above discussion it can be concluded that impact of irrigation on crop production in both the areas were observed. Moreover, the beneficiary farmers have shifted their areas toward high value crops which resulted in higher net returns. The productivity of both cereals and cash crops have increased in the areas where irrigation is available. The use of purchased inputs such as fertilizer, HYV seeds, insecticides and pesticides was observed to be more with beneficiaries. The efficiency of production was also higher in case of beneficiaries in both the command areas under study.

IMPACT OF IRRIGATION ON FARM INCOME AND EMPLOYMENT

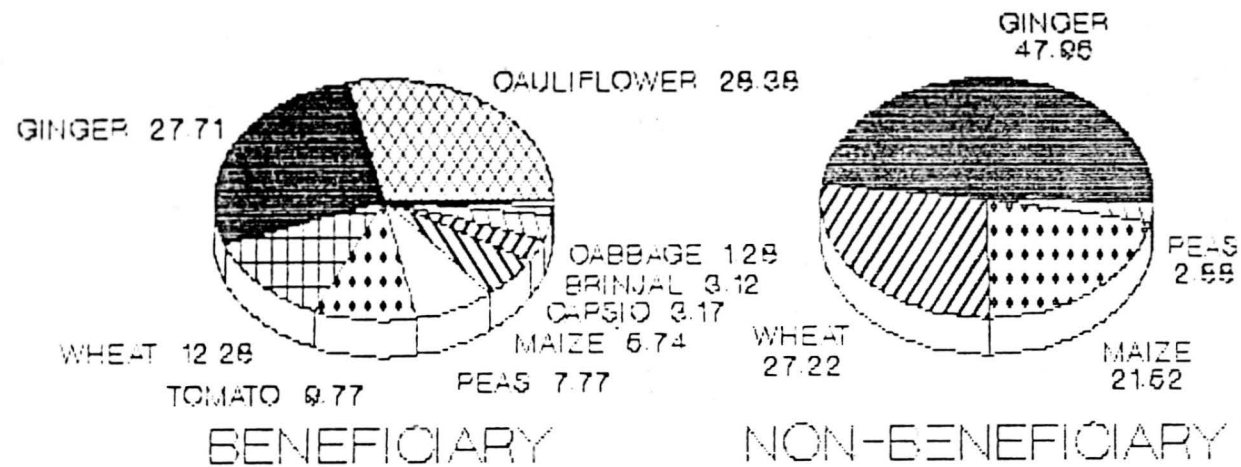
In this chapter an attempt has been made to study the impact of irrigation on farm income of farmers in command areas of Kanda-Panesh LIS and Gallian FIS under study. The farm income from various crops on beneficiary and non-beneficiary farms is also discussed in this chapter.

Per Farm Income From Different Crops:

Kanda-Panesh LIS: Per farm net income from different crops grown by sampled farmers in Kanda-Panesh LIS is given in Table 5.1 and 5.2 for beneficiary and non-beneficiary farmers. It can be observed from Table 5.1 that cash crops were the main sources of income constituted about 82 per cent towards total farm income of beneficiary farmers. In cash crops, the major contribution was from cauliflower (28.38%) and ginger (27.71%) in the total farm income. The other main vegetables were tomato contributing 9.77 per cent, peas 7.78 per cent, beans 3.17 per cent and brinjal 3.12 per cent of the total farm income. In case of cereals, wheat contributed more than 12 per cent towards total farm income and contribution from maize towards total income was 5.74 per cent. On an average, net income from all the crops grown by beneficiary farmers was Rs. 3591 which ranges between Rs. 2206 in marginal farms to Rs. 9246 in medium farms.

Per farm net income from different crops among non-beneficiary farmers of Kanda-Panesh LIS is given in Table 5.2 wherein it may be seen that ginger was the main crops contributing 47.96 per cent towards total farm income followed by wheat 27.22 per cent, maize 21.52 per cent, and peas 2.88 per cent of the total farm income. The proportion

NET INCOME FROM CROPS (LIS KANDA-PANESH)

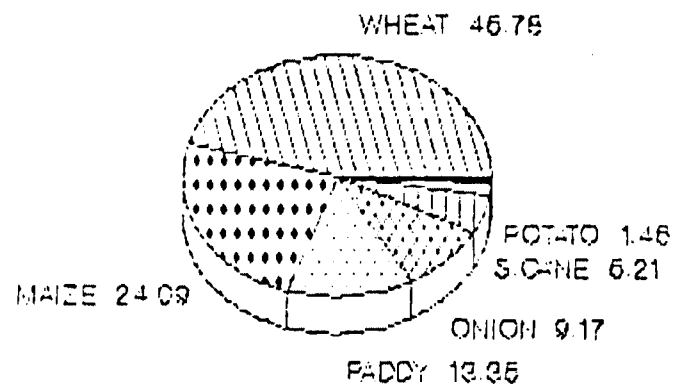


of total income from ginger was higher among small farmers than marginal and medium farmers. On an average, total income was Rs. 1668 per farm among non-beneficiary farmers. The average per farm net income was Rs. 918 in marginal, Rs. 2377 in small and Rs. 3534 in medium farmers.

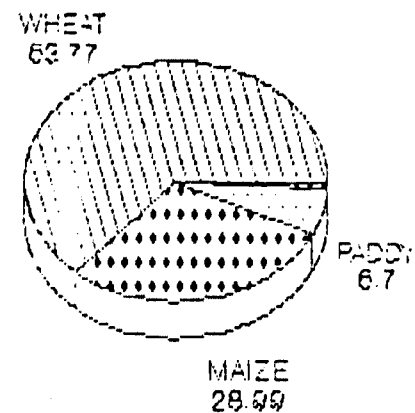
Gallian FIS: Per farm net income from various crops grown by sampled farmers of Gallian FIS is given in Table 5.3 for beneficiary and Table 5.4 for non-beneficiary farmers. It can be observed from the Table 5.3 that main contribution was from wheat crop towards total farm income of beneficiary farmers followed by maize and paddy. The proportion of total income from wheat, maize and paddy was 45.78, 24.09 and 13.35 per cent respectively. The commercial crops account for about 16 per cent (i.e. 9.17 per cent from onion, 5.21 per cent from sugarcane and 1.46 per cent from potato). The lesser contribution from commercial crops towards total farm income was due to the low area under the cash crops as compared to other crops. On an average, net income per farm was Rs. 959 among all the sampled beneficiary farmers of this scheme. The net income per farm ranges between Rs. 568 in marginal to Rs. 323 in medium farmers.

The net income from different crops grown by sampled non-beneficiary farmers of Gallian FIS is presented in Table 5.4. It may be observed from this table that wheat was the major crop contributing 63.77 per cent towards total farm income. The contribution of maize, paddy and black gram was 29.99, 6.70 and 0.54 per cent towards total net income per farm. On an average, net income per farm was Rs. 403 in marginal and Rs. 1201 in small farms.

NET INCOME FROM CROPS (FIS GALLIAN)



BENEFICIARY



NON-BENEFICIARY

Per Farm Employment:

One of the problems that besets the hill economy is to provide gainful employment to the rural folks. The reason for rural unemployment in the hills are lack of industrial development, lack of skill and absence of proper diversification of farming activities. the human labour used in different crops in different categories of sampled farmers in both the schemes under study is discussed below:

Kanda-Panesh LIS: The labour requirements in cultivation of various crops grown by beneficiary and non-beneficiary farmers of this scheme are presented in Table 5.5. It can be observed from the table that vegetables crops were the main contributor towards total farm employment of beneficiary farmers of this scheme. On an average, 56.74 per cent of the total mandays utilized in vegetable crops grown by these farmers. Among vegetable crops, the proportion of mandays utilized were higher in peas (15.14%) followed by capsicum (14.01%), tomato (13.82%), cauliflower (5.09%) and ginger (4.99%). Among cereal crops, the share of maize in total farm employment was 24.02 per cent and wheat 19.24 per cent. On an average, 116.64 mandays were utilized in cultivation of different crops grown by beneficiary farmers of this scheme during the period of this survey. Per farm employment of human labour was 70.12 days in marginal farmers 179.25 mandays in small farmers, and 323.50 mandays in medium farmers.

The utilization pattern of human labour on non-beneficiary farms is also presented in Table 5.6 wherein it may be observed that more than 91 per cent of the total mandays were utilized in cereal crops (i.e. maize, wheat, paddy and barley). Among cereal crops, main contribution was from maize followed by wheat, paddy and barley. The proportion of mandays utilized in peas and ginger was 4.50 and 4.28 per cent of the total farm employment. The per

53



farm average mandays utilized in all the crops were 46.46 in marginal, 125.37 in small and 244.84 mandays annually in medium farms. On the whole, 92.92 mandays annually were used in all the crops by sampled farmers of non-beneficiary farms of this scheme.

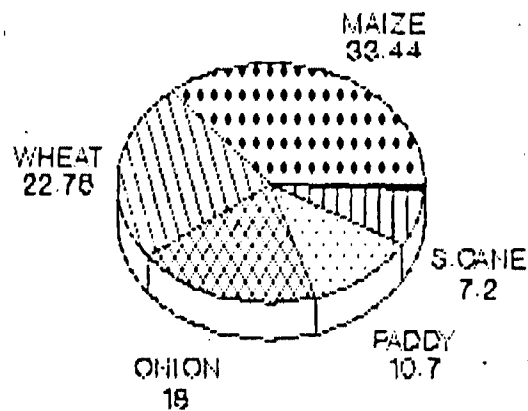
Gallian FIS: Human labour utilization pattern of sampled farmers of Gallian FIS is presented in Table 5.7. It can be observed from the table that the proportion of total mandays used in commercial crops grown by beneficiary farmers was 27.51 per cent. Among these crops, the main contribution was from onion followed by sugarcane. The percentage share of onion in total farm employment was 19.37 per cent and 7.75 per cent of sugarcane. Among cereals, maize and wheat were the main crops contributing 36.01 and 24.51 per cent toward total farm employment. On an average 92.86 mandays were utilized among beneficiary farmers during the period of this survey. Per farm mandays utilized in marginal, small and medium farmers were 58.14, 122.61 and 245.60 mandays annually respectively.

The employment pattern of non-beneficiary farmers is also presented in Table 5.7. It may be seen from the table that the percentage share of maize, wheat and paddy was 59.96, 32.77 and 6.88 per cent of the total farm employment respectively. On an average, 38.73 mandays in marginal and 88.40 mandays per farm in small farmers were utilized during reference year.

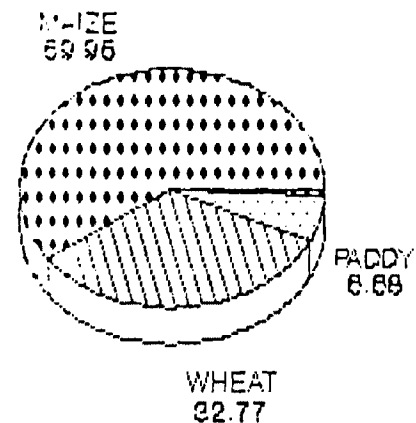
Impact of Irrigation on Farm Income:

The net income per hectare of cultivated land over total cost earned by various categories of farmers irrigated i.e. beneficiary and un-irrigated (non-beneficiary) farmers in the irrigation schemes under study was computed to work out the impact of irrigation on farm income of the farmers.

MANDAYS UTILIZATION IN CROPS (FIS GALLIAN)



BENEFICIARY

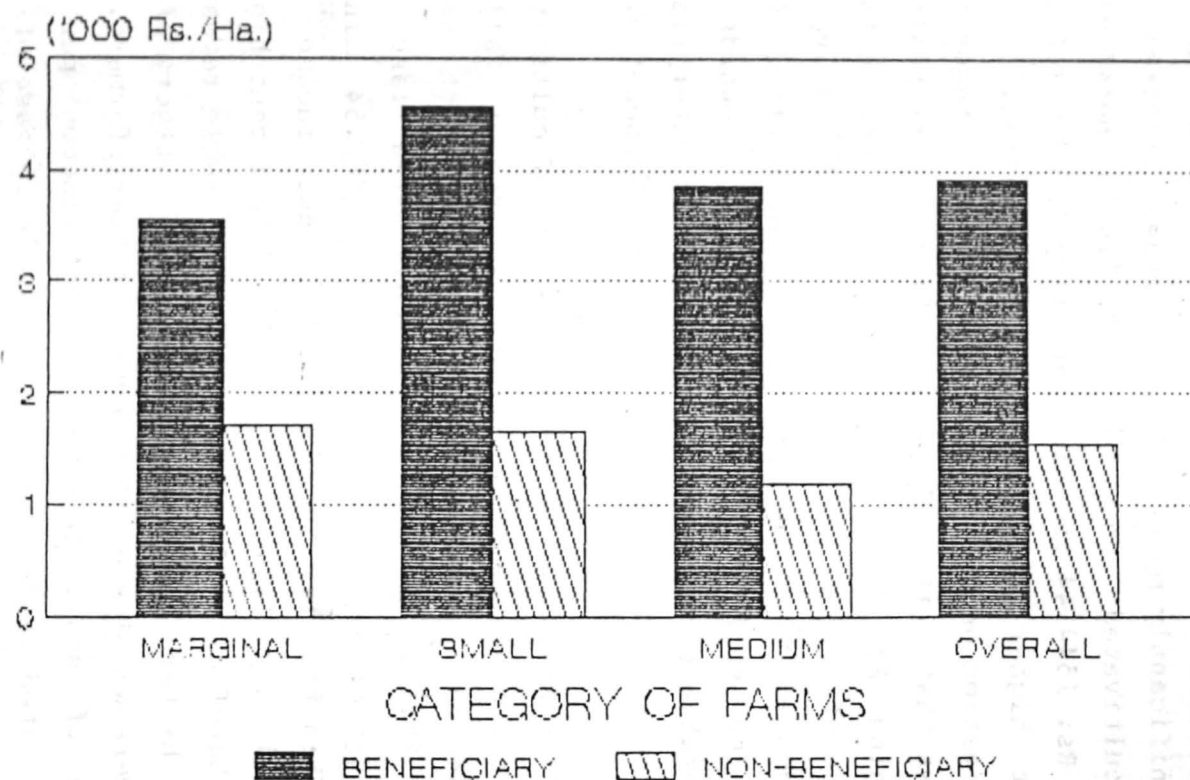


NON-BENEFICIARY

Kanda-Panesh LIS: The impact of irrigation on farm income has been worked out with the help of calculating the difference between net income per hectare of cultivated land of beneficiary and non-beneficiary farmers of this scheme. The net income per hectare of cultivated land was higher among beneficiary farmers than non-beneficiary farmers (Table 5.8). The difference between these farms was significantly more. On an average, net income per hectare of cultivated land was Rs. 3903.26 in beneficiary farmers and Rs. 1544.44 in non-beneficiary farms which is 152.73 per cent higher than non-beneficiary farms. The impact of irrigation on farm income of different categories of farmers shows that small and medium farmers of beneficiary were earning Rs. 2924.51 and Rs. 2654.53 per hectare more than those of non-beneficiary farms. The above discussions suggested that the higher income of beneficiary farmers was due to shift of cropping pattern towards off-season vegetable crops which is higher paying enterprise. The use of modern inputs was also higher on the beneficiary farms.

Gallian FIS: Net income per hectare of cultivated land from all the crops grown by sampled farmers of Gallian FIS is presented in Table 5.8. On an average the net income was Rs. 1245.45 per hectare of cultivated land in case of beneficiary farmers and Rs. 1061.54 in case of non-beneficiary farmers. The net income received by beneficiary farmers was 17.33 per cent higher than the non-beneficiary farmers. Further, table reveals that the per hectare net income of marginal category of beneficiary farmers was lesser than non-beneficiary farmers. But, in case of small farmers the net income per hectare of cultivated land was Rs. 419.68 more in case of beneficiary than non-beneficiary farms. However, the net income per hectare of cultivated land among different categories of farmers in beneficiary was positively related with the size of land holding. Among marginal, small and medium

NET INCOME CULT. LAND (LIS KANDA-PANESH)

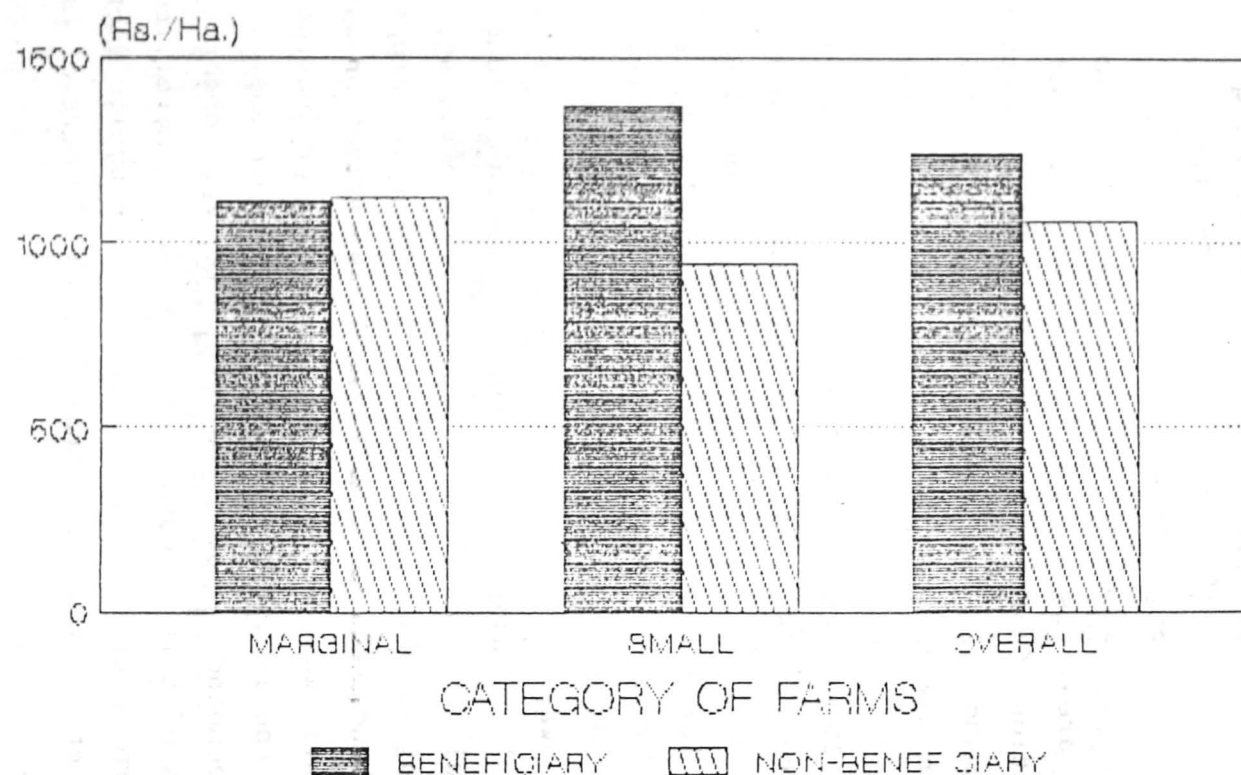


categories of farmers the net income was Rs. 1113.72, Rs. 1365.35 and Rs. 1429.65 per hectare of cultivated land respectively.

It may be concluded from the above discussions that the impact of irrigation on farm income was quite higher in command area of Kanda-Panesh lift Irrigation Scheme in Shimla district. This was due to the reasons that the well planned irrigation facilities provided to farms by USAID and this area is agro-climatically best suited from the production of off season vegetable crops. Also, the farmers in command area of this scheme shifted their cropping pattern towards vegetable crops.

In Gallian Flow Irrigation Scheme the impact was negative in marginal farmers, but over-all impact was observed to be 17.33 per cent. In command area of this scheme farmers shifted toward commercial crops but the area put under these crops was very low. It was reported by the farmers during the period of survey of this study that the scheme was originally planned for Gallian village area but due to local disputes the command area was reduced to the particular villages. The soil of Gallian village is fertile and suited for growing various commercial crops. On the other hand, in other villages where irrigation was provided the soil was not good for the better production of crops. Thus, the impact of irrigation on farm income was less in this command area. Further, it was observed that the farmers of this command area were earning more income from off-farm activities (i.e. services in public sector, wage labour etc. etc.) as compared to the farmers of LIS Kanda-Panesh.

NET INCOME FROM CULT. LAND (FIS GALLIAN)



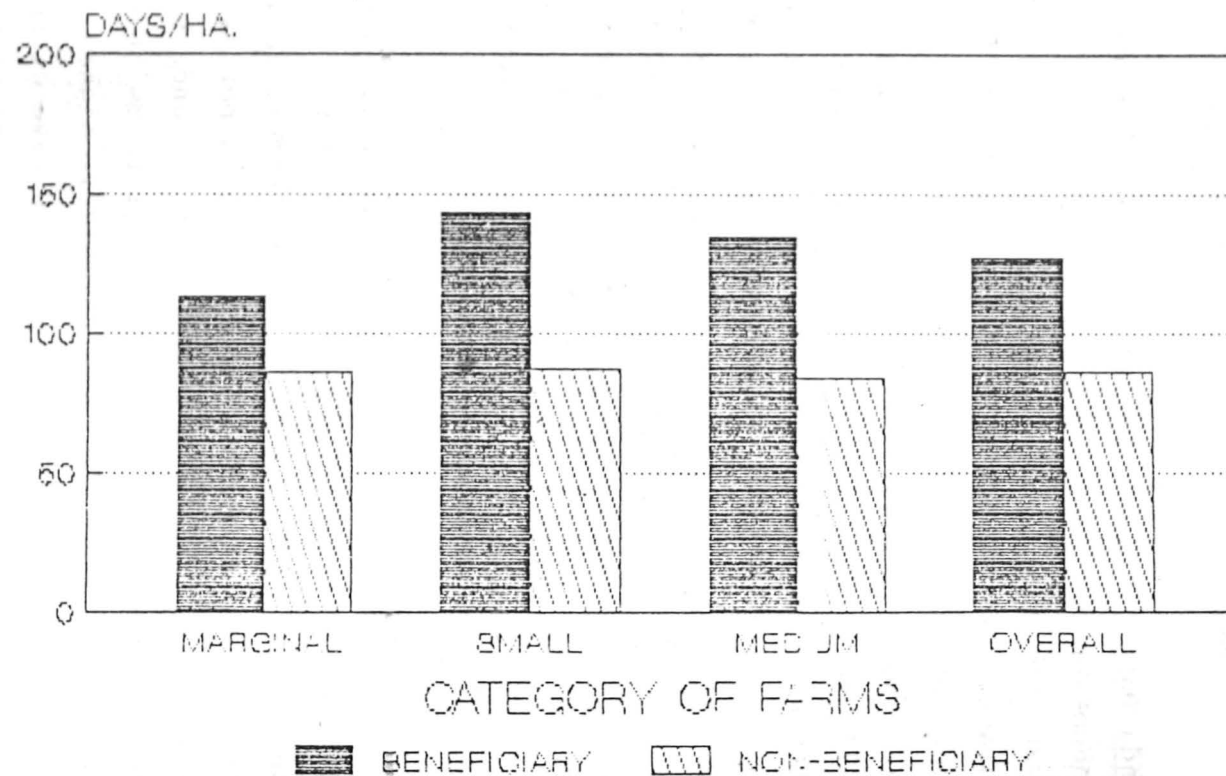
Impact of Irrigation on Farm Employment:

Like income the impact of irrigation on farm employment was worked out by calculating the difference between per hectare utilization of human labour on beneficiary and non-beneficiary farms of irrigation schemes under study.

Kanda-Panesh LIS The per hectare mandays utilized in production of crops among sampled farms of this scheme are given in Table 5.9 wherein it can be observed that on an average, the labour utilization was higher (126.78 mandays) among beneficiary farmers than non-beneficiary farmers (i.e. 86.04 man days). The employment on beneficiary farms was 40.74 man days more than non-beneficiary farms. The difference in human labour used was 47.35 per cent higher on beneficiary than non-beneficiary farms. As far as category wise difference in mandays utilized is concerned the per hectare of cultivated land was 64.71 per cent more on small farms followed by medium farm i.e. 62.40 per cent and lesser (31.45%) in marginal farms. Thus, small farms generated more employment in crop production in the command area of this irrigation scheme.

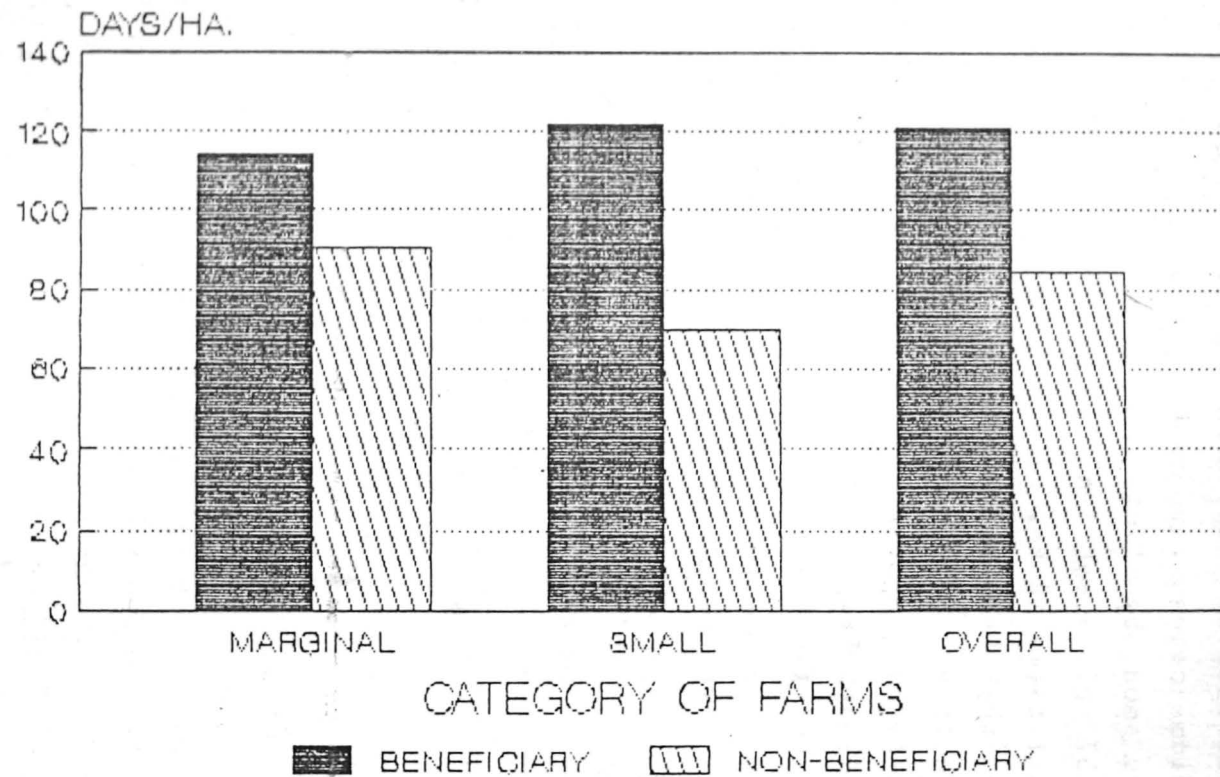
The net returns per labour day were also calculated and presented in Table 5.10. The table reveals that the returns per man day were high on beneficiary farms than non-beneficiary farms. The returns per man day were Rs. 30.79 and Rs. 17.95 in beneficiary and non-beneficiary farms respectively. Among small farms of beneficiaries, returns per labour day were relatively higher, followed by marginal and medium farms while in case of non-beneficiary the returns per labour were inversely related with size of farm.

EMPLOYMENT FROM CULT. LAND (LIS KANDA-PANESH)



Gallian FIS: The employment generated by one hectare of cultivated land among sampled farms of this scheme is presented in Table 5.9. On an average, 120.60 and 84.04 man days per hectare of cultivated land were utilized on beneficiary and non-beneficiary farms. Per hectare of cultivated land the human labour used by small marginal and medium category of farms was 114.00, 121.40 and 106.67 man days among beneficiaries respectively. The labour used was 26.57 per cent and 74.40 per cent higher in marginal and small farms of beneficiary than non-beneficiary farms. On the other hand, the returns per labour day were more in all categories of sampled farms among non-beneficiaries than beneficiaries farmers. Returns per labour day were Rs. 12.47 and Rs. 13.59 among marginal and small farms of non-beneficiary and Rs. 9.77 and 11.25 respectively in beneficiary farms. On an average, net returns per labour day were higher (Rs. 12.63) in non-beneficiary and lesser (Rs. 10.33) in beneficiary farmers. This suggested that the non-beneficiary farms providing more gainful employment to the labour than beneficiary farms.

EMPLOYMENT FROM CULT. LAND (FIS GALLIAN)



Chapter -VI

VALUE OF ASSETS POSSESSED BY SAMPLED HOUSEHOLDS

In the preceding chapter the impact of irrigation on farm income and employment was discussed and it was revealed that the facility of irrigation provided to the farmers increased their farm income considerably. The increased income of farmers would be spent on consumption, saving and investment in shape of assets formation. Thus, level of different assets possessed by different categories of farmers in the command areas of irrigation schemes is discussed in this chapter. The purpose behind the analysis of value of assets possessed by farmers is to examine the impact of irrigation on assets formation due to increase in farm income of beneficiary households.

Value of Land:

Land is the most vital factor affecting economic condition and operational efficiency of farm families. Man's economic and social progress depends on land. An attempt is made here to analyse in detail the value of land possessed by different categories of farmers under study. On an average, the value of lands per farm was Rs. 85027 in beneficiary and Rs. 75399 in non-beneficiary farmers in case of Kanda-Panesh LIS (Table 6.1). The value of land possessed by different categories of farmers was positively related with the size of farms in both the type i.e. beneficiary and non-beneficiary farmers. The per hectare value of different type of land was 62963, Rs. 49827, and Rs. 25097 for cultivated irrigated, un-irrigated and grass land respectively in command area of Kanda-Panesh LIS. The value of irrigated land per hectare was Rs. 13136 more than the value of un-irrigated land. Thus, the price of irrigated land was about 26 per cent higher than the

un-irrigated land. The difference in prices of irrigated and un-irrigated per farm was Rs. 2757 in marginal, Rs. 4597 in small and Rs. 7092 in medium farms of beneficiary farmers. On the whole, Rs. 3546 per farm was the difference due to availability of irrigation in the command area.

The value of various types of land possessed by sampled farmers of Gallian FIS is also given in the Table 6.1 wherein it may be observed that the value of all lands per farm was higher i.e. Rs. 45428 in beneficiary and lesser i.e. Rs. 28050 in non-beneficiary farms. The value of land per farm was positively related with the size of farms in both the categories. On an average, the value of irrigated land was Rs. 51200 per hectare, un-irrigated land Rs. 37500 and grass land Rs. 22500 per hectare in beneficiary farms. On the whole the value of all type of land was Rs. 32682 per hectare. The value of irrigated land was Rs. 13700 per hectare more than the value of un-irrigated land possessed by the farmers of this area. On an average, the value of land increased due to irrigation was Rs. 1918 in marginal, Rs. 3836 in small, and Rs. 5343 in medium farms. On the whole, the difference between irrigated and un-irrigated land was Rs. 2603 per farm. Thus, it may be concluded that the irrigation schemes introduced in both the areas under study increased the value of land of the farmers.

Value of Livestock:

The value of livestock per farm among sampled farmers of Kanda-Panesh LIS is presented in Table 6.2. It may be observed from the table that the value of livestock per farm was relatively higher with beneficiary farms than non-beneficiary farms of this area. On an average, per farm value of livestock possessed was Rs. 11731, among beneficiary and Rs. 12632 among non-beneficiary farmers possessed lesser number of livestock than non-beneficiary farmers.

Table 6.3 presents the value of livestock possessed by sampled farmers of Gallian FIS. On an average, the value of total livestock per farm was Rs. 10353 in case of beneficiary farms and Rs. 8082 in case of non-beneficiary farms. The per farm value of livestock has the positive correlation with farm size in both the categories i.e. beneficiary and non-beneficiary.

Value of Farm Buildings:

In the hilly regions like Himachal Pradesh where farming is exposed to the severities of the climate and vagaries of nature, buildings occupy an important position of the farms. With the advancement of production technology, the importance of buildings has enhanced because the number of implements, machines, etc. has increased. The type of building possessed by the farmers also reflects his economic status. As the income of the farmers increase, the quality of building also increase.

The value of different type of buildings possessed by sampled farmers of Kanda-Panesh LIS is given in Table 6.4. On an average, the value of buildings possessed by beneficiary farmers was Rs. 37424 per farm. The value of farm buildings per farm ranged between Rs. 41947 in marginal farm to Rs. 51333 in medium farms. On the whole the value of residential houses accounted for 78 per cent, cattleshed 21 per cent, and store 1 per cent of the total value of all buildings possessed by the beneficiary farmers. The provision of store for farm products/machinery was observed only in medium farms. In case of non-beneficiary farmers, per farm value of all building possessed by them was Rs. 17878 which is higher on medium farms (Rs. 19430) followed by small (Rs. 16838) and lesser (Rs. 12,542) in marginal farms. Among different types of buildings, residential houses accounted for 78 per cent and remaining 22 per cent

constituted by value of cattleshed. The provision of separate store for farm production and machinery was not observed in all categories of non-beneficiary farms.

The value of different types of buildings possessed by sampled farmers of Gallian FIS is also presented in Table 6.4. On an average, per farm value of all building was Rs. 28390 in beneficiary and Rs. 21175 in non-beneficiary farms. The value of buildings possessed by different sizes of farm ranges between Rs. 26297 to Rs. 46200 in beneficiary farms and Rs. 20677 to Rs. 25650 in non-beneficiary farms. Among different types of building, residential houses accounted for about 84 per cent of the total value of all buildings in beneficiary farms and about 81 per cent in non-beneficiary farms. The remaining 16 per cent in case of beneficiary farms and 19 per cent in case of non-beneficiary farms was accounted for the value of cattleshed.

On the whole, it may be concluded that the value of buildings possessed by beneficiary farmers was higher than the non-beneficiary farmers in both the irrigation schemes under study.

Value of Farm Implements and Machinery:

Mechanization of selected farm operations is a key factor in the successful implementation of an intensive farming system based on intensive use of yield increasing technology and multiple cropping. Due to the seasonal nature of agricultural operations, the farmers are facing difficulty in the timely and successful performance of agricultural operations, especially during the peak labour-load periods; at the time of sowing, harvesting and threshing. To smoothen these peaks, labour saving devices can be introduced by mechanizing some selected agricultural operations. This would make it possible to introduce multiple cropping or labour intensive crops on the farms.

Thus, switch over to mechanical power will not only help the farmer to adopt more profitable crop rotations. In Himachal Pradesh, due to small and scattered land holding and terraced fields the scope of mechanization is very limited. Except t resher, farmers depends mostly on human and bullock drawn implements and machinery.

The value of different implements and machinery possessed by sampled farmers of Kanda-Panesh LIS is given in Table 6.5. On an average, per farm value of implements/machinery was Rs. 1002 among beneficiary and Rs. 636 among non-beneficiary farmers of this command area. The value of there assets among different category of farms increases as the farm size increase in beneficiary farms while in case of non-beneficiary farms the value was high in small farms, followed by marginal and medium farms. Further, table reveals that the thresher and spray pumps were observed only among small and medium farms of beneficiary farmers. This indicates that the mechanization of agriculture was relatively more on beneficiary farms than non-beneficiary farms of this area.

Table 6.6 presents the value of different implements and machinery possessed by sampled farmers of Gallian FIS. It may be observed from the table that the value of implements and machinery was higher with the beneficiary farmers than non-beneficiary farmers. On an average, per farm value of implements and machinery was Rs. 652 in case of beneficiary and Rs. 503 in case and non-beneficiary farmers. Among different category of beneficiary farmers the value of implements and machinery was Rs. 523, Rs. 610 and Rs.1672 per farms in marginal, small and medium farmers respectively. In non-beneficiary farmers the value was Rs. 489 in marginal and Rs. 638 in small farms.

Thus, it may be concluded from the above discussions that the value of implements and machinery possessed by beneficiary farmers was higher than non-beneficiary farmers. Further, the machineries such as threshers and spray pumps were observed only large farms of beneficiary farmers.

Value of Modern Durables:

The possession of modern durables and other assets also determines the level of living of the people. Now-a-days, modern durable items such as T.V., radio, pressure cooker, watches, and furniture are owned by most of the households in rural areas. The Table 6.7 reveals that these items were observed in all categories of sampled farms in Kanda-Panesh LIS. The value of modern durables and other assets possessed by beneficiary households was Rs. 17472 while it was Rs. 16109 in non-beneficiary households. The values of modern durables and farm size were positively related with the size of farms in all the sampled farms of this command area. On an average, the value of modern durables among different category of beneficiary households was Rs. 15884, Rs. 20771 and Rs. 22212 in marginal, small and medium farms respectively. In case of non-beneficiary households the value of modern durables was Rs. 13575 in marginal, Rs. 18885 in small and Rs. 22300 in medium farms.

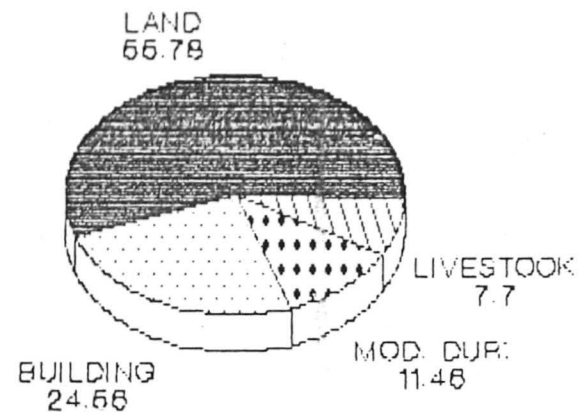
The value of modern durables and other assets possessed by sampled farmers of Gallian FIS is presented in Table 6.8. On an average, the value of modern durables per household was Rs. 17139 in beneficiary and Rs. 13236 in non-beneficiary households. The value of modern durables possessed by beneficiary households ranged between Rs. 16315 in marginal farms to Rs. 22100 in medium farms while in case of non-beneficiary it was Rs. 11828 in marginal farms and Rs. 25914 in small farms.

Thus, the above results confirm that the beneficiary household's expenditure on modern durables was relatively higher than non-beneficiary households in both the irrigation schemes under study.

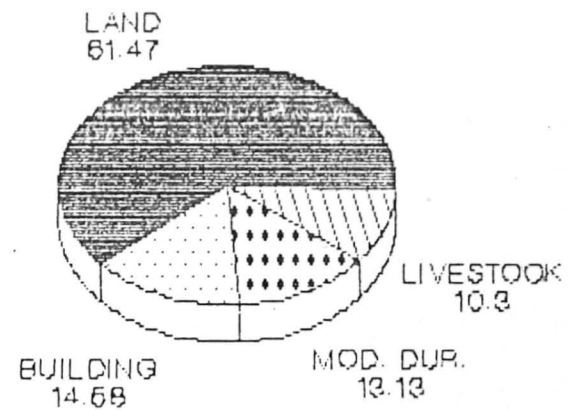
Inequality in Assets Possessed by the Households:

The value of different assets and their proportion in total assets possessed by sampled farmers in the irrigation schemes is given in Tables 6.9 and 6.10. Table 6.9 presents the value of assets possessed by sampled farmers of Kanda-Panesh LIS. The pattern of assets held by different categories of farmers show quite glaring inequalities. On an average land represents more than 55 per cent of total assets, being lowest in marginal farms in beneficiaries. Among non-beneficiaries, value of land accounted for more than 61 per cent which is positively related with the size of farms. The value of residential buildings accounts for 24.55 per cent in beneficiary and 14.58 per cent of total assets in non-beneficiary farmers. In case of farm buildings, livestock, land and modern durable, the value in absolute as well as percentage terms has positive correlation with farm size among different categories of beneficiary and non-beneficiary farmers. On an average, the proportion of value of livestock in total assets was 7.7 per cent in beneficiary and 10.30 per cent in non-beneficiary farmers. The share of farm implements and machinery in total assets value, was 0.50 and 0.51 per cent among beneficiary and non-beneficiary farmers respectively. Among beneficiary farmers, the percentages as well as absolute share of implements and machinery in total assets was directly related with the farm size while in case of non-beneficiary farmers the proportion as well as absolute value was higher in small farmers, followed by medium and marginal farmers. The value of modern durables accounts for 11.46 per cent in case of beneficiary and 13.13 per cent of the total value of assets in non-beneficiary farmers. The

HOUSE HOLD ASSETS (LIS KANDA-PANESH)



BENEFICIARY

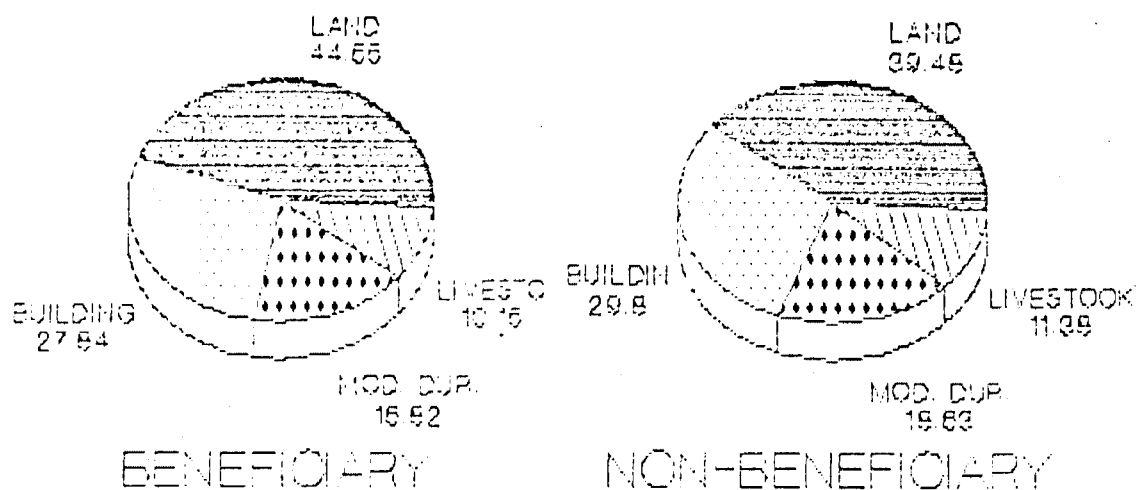


NON-BENEFICIARY

total value of all assets possessed by sampled farmers bears positive relationship with farm categories in beneficiaries and non-beneficiaries. On the whole, the value of total assets worked out to be Rs. 152421 in beneficiary and Rs. 122654 in non-beneficiary farmers.

The value of various assets possessed by sampled households of Gallian FIS under study is given in Table 6.10. On an average land represented 44.55 per cent in beneficiary and 39.48 per cent of the total assets in non-beneficiary households. The proportion as well as absolute value of land was positively related with the farm sizes in all the sampled farmers. In case of farm buildings, livestock and modern durables, the value in absolute terms has positive correlation with farm size, but in percentage terms the relation between farm size and value of assets come out to be inverse. On an average, the proportion of value of buildings in total assets was 27.84 per cent among beneficiaries and 29.80 per cent in non-beneficiaries. The value of livestock, accounted for 10.15 per cent in beneficiary and 11.38 per cent in non-beneficiary farmers. The share of implements/machines and modern durables in total assets value, was 0.64 and 16.81 per cent in beneficiaries and 0.71 and 18.63 per cent respectively in non-beneficiaries. Overall average of the total value of all assets possessed by beneficiary farmers ranged between Rs. 81631 in marginal and Rs. 230590 in medium farms. On the whole, the total assets value was Rs. 101962 per household among beneficiaries. In case of non-beneficiaries, the value of all assets was Rs. 71046 per household.

HOUSE HOLD ASSETS (FIS GALLIAN)



Chapter -VII

SUMMARY AND SUGGESTIONS

The main findings of the study on the basis of data collected from sampled farmers in the command areas of selected irrigation schemes are summarized as under:

Summary of Main Findings:

Items	Kanda Panesh LIS		Gallian FIS	
	Bene- ficiary	Non-bene- ficiary	Bene- ficiary	Non-bene- ficiary
Sampled Farms	50	50	50	50
Family size	6.65	6.40	5.85	6.10
Dependency ratio	0.49	0.80	0.53	0.47
Literacy(%)	56.46	60.12	64.16	47.56
Total land (Per Farm in Ha.)	2.34	2.67	1.39	0.90
- Cultivated(ha.)	0.92	1.08	0.77	0.52
- % Irrigated	29.35	-	24.68	-
Grass Land(ha.)	1.42	1.58	0.62	0.38
Cropping Intensity (%)	165.22	190.74	193.51	180.77
Cropping Pattern(%)				
- Cereals	71.26	91.24	88.43	98.89
- Pulses	-	1.28	3.34	0.94
- Oil seeds	6.42	1.01	1.39	0.17
- Vegetables	28.32	6.47	0.25	0.00
- Others	0.00	0.00	6.59	0.00
Input use per ha. of gross cropped area:				
- F.Y.M.(Qtls.)	87.32	66.43	116.27	121.90
- Fertl.(Kgs.)	203.00	129.00	150.00	133.00
- Plant Prot(Rs)	76.10	2.25	6.39	0.00
- Seed (Rs.)	1219.08	698.42	236.56	167.08
- Human labour(days)	75.16	44.53	58.54	46.48

Items	Kanda Panesh LIS		Gallian FIS	
	Bene- ficiary	Non-bene- ficiary	Bene- ficiary	Non-bene- ficiary
<hr/>				
Productivity of crops (kg./ha.)				
- Maize	1605	1574	1984	1925
- Wheat	1669	1446	1664	1665
- Barley	1433	1582	2066	1985
- Peas	3574	3133	-	-
- Paddy	-	-	2298	2251
Range of output-input ratio in crop production:	1.04	1.05	1.13	1.12
	to	to	to	to
	3.46	1.31	1.46	1.30
Net Returns from Crops. (Rs./Ha.)				
- Wheat	735	493	722	778
- Maize	440	384	436	385
- Barley	78	160	583	589
- Paddy	-	-	716	696
- Peas	2323	1577	-	-
Per Farm:				
- Net returns(Rs.)	3591	1668	959	552
- Employment(days)	117	93	93	44
Per Ha. cultivated:				
- Net income(Rs.)	3903	1544	1245	1062
- Employment(days)	127	86	121	84
- Incremental Income(Rs.)	2359	-	184	-
- Increased employment (days)	41	-	37	-
Value of assets per farm(Rs.)	152421	122654	101962	71046
<hr/>				

Suggestions:

On the basis of the findings, observations and discussions with the farmers during the field survey of this study, the following problems were identified for which suitable suggestions have been made for the efficient use of irrigation in the command areas under study.

1. Socio-economic structure of different families falling under beneficiary and non-beneficiary groups reflects that LIS of Kanda-Panesh has proved successful towards area's specification approach but FIS of Gallian could not achieve its target in this direction due to local politics and dispute among two groups of the society. It was also found out that the farmers of FIS Gallian were engaged in non-farm activities. The reason for more preference for non-farm activities was due to lack of cash crops in their cropping scheme.
2. In Kanda-Panesh LIS, due to poor maintenance of water pipe line by the I & P.H. Department the leakage of water from joint of pipes was reported by the farmers. The farmers whose fields are near the joints use this water for irrigation illegally. Moreover, partiality in distribution of irrigation water was also observed in this command area. In this regard, it is suggested that the maintenance and management of irrigation water should be handed over to the villagers so that they can participate themselves in the maintenance etc. The department should also impart training to the villages in this regard. Moreover, a suitable amount should be allotted to the respective Panchayats for minor repair etc. so that the dependence on department may be minimum with least formalities.

3. Lack of modern inputs like fertilizers, insecticides/pesticides and HYV seed was reported by the farmers of command areas under study. Therefore, to speed up the process of shifting cropping pattern towards high value perishable crops, the provisions of supply of these inputs should be made available to the farmers in the command areas.
4. The production of high value perishable crops like vegetables requires proper knowledge of modern agronomic practices. In the absence of modern techniques in production of these crops, the desired production cannot be achieved. Therefore, technical know-how and do-how in the production of these crops should be provided to the farmers of the command areas.
5. During the field survey, the problems of transportation, packing material were reported by the farmers in marketing of vegetables. In this regard, it is suggested that the cooperative marketing in vegetables should be encouraged.

Table 1.1: Source Wise Irrigated Area in Himachal Pradesh, 1987-88.

(Hectares)

Districts	Govt. Canal	Pvt. Canal	Tanks	Well and Tube-Well	Other Sources and Kuhls	Total
Bilaspur	569	-	-	213	3528	4310
Chamba	-	-	-	-	3513	3513
Hamirpur	-	-	41	10	1715	1766
Kangra	-	-	-	184	32327	32511
Kinnaur	-	-	-	-	4373	4373
Kullu	-	-	-	-	2105	2105
Lahaul-Spiti	-	-	-	-	3092	3092
Mandi	-	-	-	302	13331	13633
Shimla	-	-	-	-	4875	4875
Sirmour	3818	-	15	1840	8017	13690
Solan	2315	-	515	1126	5804	9760
Una	-	-	-	2937	1461	4398
H.P. State	6702	-	571	6612	84141	98026

Source: Directorate of Agri. Census, Himachal Pradesh, Shimla.

Table 1.2: District Wise Net Area Irrigated in Himachal Pradesh.
(Percentages)

Districts	1977-78		1982-83		1987-88	
	%age of irri. area to net area sown	%age of irri. area to gross area	%age of irri. area to net area sown	%age of irri. area to gross area	%age of irri. area to net area sown	%age of irri. area to gross area
Bilaspur	7.3	8.1	8.8	8.7	13.6	9.4
Chamba	8.6	10.6	8.4	11.3	8.8	10.0
Hamirpur	3.8	4.0	5.4	3.9	4.5	4.7
Kangra	29.2	30.4	28.1	29.7	27.0	29.0
Pinnaur	52.0	55.1	54.7	48.2	56.0	56.6
Kullu	7.0	4.5	6.1	4.0	6.0	3.7
Lahaul-Spiti	100.0	100.0	100.0	100.0	99.5	98.9
Mandi	15.2	16.7	14.6	16.0	14.0	15.7
Shimla	6.9	6.6	6.6	7.0	6.6	6.6
Sirmour	25.8	25.7	27.6	28.6	31.5	31.0
Solan	17.9	16.4	20.1	20.3	23.0	22.5
Una	5.6	5.0	6.2	5.3	10.0	9.0
H.P. State	16.0	16.5	16.2	16.6	17.0	17.7

Source: Directorate of Land Record, Himachal Pradesh, Shimla.

Table 3.1: Demographic Profile of Sampled Households of
Kanda-Panesh LIS.

Particulars	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
No. of sampled household	34	12	4	50	30	14	6	50
Total population								
Male	109	48	26	183	96	54	25	175
Female	90	42	18	150	82	40	24	146
Total	199	90	44	333	178	94	49	321
Sex Ratio(Females per 1000 males)	826	875	692	820	854	741	960	834
Family size	5.85	7.50	11.00	6.66	5.9	6.7	8.2	6.4
Workers (16-60 yrs.)								
Male	76	30	19	125	50	27	12	89
Female	60	28	10	98	48	27	14	89
Total	136	58	29	223	98	54	26	178
Proportion of total workers of their total population	68.34	64.44	65.91	66.97	55.05	57.45	53.06	55.45
Dependency ratio	0.32	0.55	0.52	0.49	0.81	0.74	0.88	0.80
Literacy (%age)								
Male	64.22	81.25	65.38	68.85	67.71	74.07	80.00	71.43
Female	44.44	40.48	27.78	41.33	42.68	50.00	54.16	46.57
Total	55.28	62.22	50.00	56.46	56.18	63.83	67.35	60.12

Table 3.2: Demographic Profile of Sampled Households
of Callian FIS.

Particulars	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
No. of sampled household	37	8	5	50	45	5	-	50
Total population								
Male	104	25	27	156	158	15	-	173
Female	89	25	23	137	120	14	-	134
Total	193	50	50	293	278	29	-	307
Sex Ratio(Females per 1000 Males)	858	1000	852	878	759	933	-	774
Family size	5.22	6.25	10.00	5.85	6.16	5.8	-	6.14
Workers(16-60 yrs.)								
Male	78	17	19	114	106	14	-	120
Female	50	15	13	78	79	9	-	88
Total	128	32	32	192	185	23	-	208
Proportion of total workers of total population	66.32	64.00	64.00	65.53	66.55	79.31	-	67.75
Dependency	0.51	0.56	0.56	0.53	0.50	0.26	-	0.47
Literarcy(%age)								
Male	79.80	80.00	85.18	80.77	62.02	80.00	-	63.58
Female	46.31	24.00	56.52	45.25	25.00	42.86	-	26.86
Total	65.28	52.00	72.00	64.16	46.04	62.07	-	47.56

Table 3.3: Educational Status of Sampled Households of
Kanda-Panesh LIS.

(Number)

Particulars	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Non school going children	25 (11.56)	13 (14.44)	9 (20.45)	45 (13.51)	32 (17.98)	6 (6.38)	8 (16.33)	46 (14.33)
Illiterate	66 (33.16)	13 (14.44)	13 (29.54)	92 (27.63)	57 (32.02)	32 (34.04)	9 (18.37)	98 (30.53)
Primary	41 (20.63)	18 (20.00)	6 (13.64)	65 (19.52)	49 (27.53)	28 (29.79)	9 (18.37)	86 (26.79)
Middle	32 (16.09)	20 (22.22)	5 (11.36)	57 (17.12)	21 (11.80)	15 (15.97)	15 (30.60)	51 (15.89)
Hr. Secondary	35 (17.59)	18 (20.00)	6 (13.64)	59 (17.72)	18 (10.11)	12 (12.76)	8 (16.33)	38 (11.84)
Graduates	1 (0.50)	7 (7.78)	4 (9.10)	12 (3.60)	1 (0.56)	1 (1.06)	-	2 (0.62)
Above graduates	1 (0.50)	1 (1.12)	1 (2.27)	3 (0.90)	-	-	-	-
Technical diploma	-	-	-	-	-	-	-	-
Total	199 (100)	90 (100)	44 (100)	333 (100)	178 (100)	94 (100)	49 (100)	321 (100)

Note: Figures in parentheses are the percentages of total literate.

Table 3.4: Educational Status of Sampled Households of Gallian FIS.

(Number)

Particulars	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Non school going children	15 (7.77)	7 (14.00)	6 (12.00)	28 (9.56)	34 (12.23)	1 (3.45)	-	35 (11.40)
Illiterate	52 (26.94)	17 (34.00)	8 (16.00)	77 (26.28)	116 (41.73)	10 (34.48)	-	126 (41.64)
Primary	45 (23.84)	8 (16.00)	14 (28.00)	68 (23.21)	-	1 (3.45)	-	1 (0.33)
Middle	32 (16.58)	8 (16.00)	8 (16.00)	48 (16.38)	56 (20.14)	6 (20.69)	-	62 (20.20)
Hr. Secondary	57 (29.12)	8 (16.00)	13 (26.00)	56 (19.79)	69 (24.82)	7 (24.14)	-	76 (24.76)
Graduates	10 (5.18)	2 (4.00)	1 (2.00)	13 (4.44)	2 (0.72)	4 (13.79)	-	6 (1.95)
Above graduates	1 (0.51)	-	-	1 (0.34)	1 (0.36)	-	-	1 (0.32)
Technical diploma	-	-	-	-	-	-	-	-
Total	193 (100)	50 (100)	50 (100)	293 (100)	278 (100)	29 (100)	-	307 (100)

Note: Figures in parentheses are the percentages of total literate.

Table 3.5: Occupational Pattern of Sampled Farmers of
Kanda-Panesh LIS (Main Occupation).
(Numbers)

Category	Beneficiaries							
	Agriculture		Service		Business		Total workers	
	M	F	M	F	M	F	M	F
Marginal	49 (73.13)	53 (100.00)	17 (25.38)	-	1 (1.49)	-	67 (100.00)	53 (100.00)
Small	15 (60.00)	18 (100.00)	10 (40.00)	-	-	-	25 (100.00)	18 (100.00)
Medium	8 (57.14)	8 (100.00)	6 (42.86)	-	-	-	14 (100.00)	8 (100.00)
Total	72 (67.93)	79 (100.00)	33 (31.13)	-	1 (0.94)	-	106 (100.00)	79 (100.00)

Non-Beneficiaries								
Marginal	31 (56.36)	44 (100.00)	23 (41.82)	-	1 (1.82)	-	55 (100.00)	44 (100.00)
Small	19 (63.34)	24 (100.00)	10 (33.33)	-	1 (3.33)	-	30 (100.00)	24 (100.00)
Medium	11 (73.33)	10 (100.00)	4 (26.67)	-	-	-	15 (100.00)	10 (100.00)
Total	61 (61.00)	78 (100.00)	37 (37.00)	-	2 (2.00)	-	100 (100.00)	78 (100.00)

Note: Figures in parentheses are the percentage to total.

Table 3.6: Occupational Pattern of the Sampled Farmers
of Gallian FIS (Main Occupation).

(Numbers)

Category	Beneficiaries											
	Agriculture		Non-Agriculture		Service		Business		Others		Total workers	
	M	F	M	F	M	F	M	F	M	F	M	F
Marginal	33 (50.00)	46 (100.00)	7 (10.61)	-	25 (37.80)	-	1 (1.51)	-	-	-	66 (100)	46 (100)
Small	10 (62.50)	13 (100.00)	-	-	6 (37.50)	-	-	-	-	-	16 (100)	13 (100)
Medium	11 (61.11)	13 (100.00)	-	-	3 (16.67)	-	3 (16.67)	-	1 (5.55)	-	18 (100)	13 (100)
Total	54 (54.00)	72 (100.00)	7 (7.00)	-	34 (34.00)	-	4 (4.00)	-	1 (1.00)	-	100 (100)	72 (100)
Category	Non-Beneficiaries											
	Agriculture		Non-Agriculture		Service		Business		Others		Total workers	
	M	F	M	F	M	F	M	F	M	F	M	F
Marginal	47 (44.04)	70 (68.61)	10 (9.47)	-	43 (40.57)	-	1 (0.94)	-	5 (4.72)	9 (11.39)	106 (100)	79 (100)
Small	6 (42.86)	9 (100.00)	-	-	5 (35.71)	-	-	-	3 (21.43)	-	14 (100)	9 (100)
Medium	-	-	-	-	-	-	-	-	-	-	-	-
Total	53 (44.27)	79 (69.77)	10 (9.31)	-	48 (40.00)	-	1 (0.83)	-	8 (6.67)	9 (10.23)	120 (100)	88 (100)

Note: Figures in parentheses are percentage to total.

Table 3.7: Occupational Pattern of the Sampled Farmers of
Kanda-Panesh LIS (Secondary Occupation).

(Number)

Category	Beneficiaries									
	Agriculture		Non-Agriculture		Business		Others		Total workers	
	M	F	M	F	M	F	M	F	M	F
Marginal	7 (33.33)	-	12 (57.15)	-	1 (4.76)	-	1 (4.76)	-	21 (100.00)	-
Small	6 (100.00)	-	-	-	-	-	-	-	6 (100.00)	-
Medium	2 (100.00)	-	-	-	-	-	-	-	2 (100.00)	-
Total	15 (51.72)	-	12 (41.38)	-	1 (3.45)	-	1 (3.45)	-	29 (100.00)	-
Category	Non-Beneficiaries									
	Agriculture		Non-Agriculture		Business		Others		Total workers	
	M	F	M	F	M	F	M	F	M	F
Marginal	30 (56.77)	8 (100.00)	-	-	-	-	1 (3.23)	-	31 (100.00)	8 (100.00)
Small	12 (92.31)	3 (100.00)	-	-	1 (7.69)	-	-	-	13 (100.00)	3 (100.00)
Medium	5 (100.00)	2 (100.00)	-	-	-	-	-	-	5 (100.00)	2 (100.00)
Total	47 (95.92)	13 (100.00)	-	-	1 (2.04)	-	1 (2.04)	-	49 (100.00)	13 (100.00)

Note: Figures in parentheses are percentage to total.

Table 3.8: Occupation Pattern of the Sampled Farmers
of Gallian FIS (Secondary Occupation).

(Number)

Category	Beneficiaries									
	Agriculture		Non-Agriculture		Service		Others		Total workers	
	M	F	M	F	M	F	M	F	M	F
Marginal	34	-	8	-	1	-	1	-	44	-
	(77.27)		(18.18)		(2.27)		(2.27)		(100)	
Small	6	-	2	-	-	-	-	-	8	-
	(75.00)		(25.00)						(100)	
Medium	7	-	2	-	-	-	-	-	9	-
	(77.78)		(22.22)						(100)	
Total	47	-	12	-	1	-	1	-	61	-
	(77.05)		(19.67)		(1.64)		(1.64)		(100)	
Category	Non-Beneficiaries									
	Agriculture		Non-Agriculture		Service		Others		Total workers	
	M	F	M	F	M	F	M	F	M	F
Marginal	10	5	10	4	-	-	-	-	20	9
	(50.00)	(55.56)	(50.00)	(44.44)					(100.00)	(100.00)
Small	-	-	-	-	-	-	-	-	-	-
Medium	-	-	-	-	-	-	-	-	-	-
Total	10	5	10	4	-	-	-	-	20	9
	(50.00)	(55.56)	(50.00)	(44.44)					(100.00)	(100.00)

Note: Figures in parentheses are percentages to total.

Table 3.9: Number and Area of Land Possessed by Different
Category of sampled Farmers.

(Area in ha.)

	Kanda-Panesh LIS				Gallian FIS			
	Beneficiaries		Non-Beneficiaries		Beneficiaries		Non-Beneficiaries	
	Number	Area	Number	Area	Number	Area	Number	Area
Marginal	34 (68.00)	62.34 (53.26)	30 (60.00)	39.90 (29.84)	37 (74.00)	32.88 (47.35)	45 (90.00)	35.16 (78.41)
Small	12 (24.00)	40.44 (34.52)	14 (28.00)	58.00 (43.38)	8 (16.00)	13.20 (19.01)	5 (10.00)	9.69 (21.59)
Medium	4 (8.00)	14.40 (12.23)	6 (12.00)	35.84 (26.78)	5 (10.00)	23.36 (33.64)	-	-
Overall	50 (100)	117.18 (100)	50 (100)	133.74 (100)	50 (100)	169.44 (100)	50 (100)	44.84 (100)

Note: Figures given in parenthesis are the percentages of total.

Table 3.10: Land Utilization Pattern of Sampled Farmers.

(% of total)

Categories	Beneficiaries				Non-Beneficiaries			
	per farm	Cultivated land			Per Farm	Cultivated land		
	total land (Ha.)	Irri.	Un-irri.	Ghasni	total land (Ha.)	Irri.	Un-irri.	Ghasni
<u>Panda Padesh:</u>								
Marginal	1.83	11.68	22.42	65.90	1.33	-	40.70	59.30
Small	3.37	10.48	26.64	62.88	4.14	-	34.90	65.10
Medium	3.60	15.00	51.67	33.33	5.97	-	49.33	50.67
Overall	2.34	11.67	27.48	60.85	2.66	-	40.50	59.50
<u>Gallian FIS:</u>								
Marginal	0.89	15.70	42.15	42.15	0.78	-	54.84	45.16
Small	1.65	17.27	43.64	39.09	1.94	-	65.29	34.71
Medium	4.67	8.22	40.07	51.71	-	-	-	-
Overall	1.39	13.48	41.73	44.79	0.90	-	57.09	42.91

Table 3.11: Per Farm Cultivated Land Possessed by Sampled Farmers.
(Hectare)

Crops	Marginal	Small	Medium	Overall
<u>Kanda-Panesh LIS</u>				
Beneficiary:				
- Total	0.62	1.25	2.40	0.92
- Irrigated	0.21	0.35	0.54	0.27
Non-Beneficiaries(Ha.)	0.54	1.44	2.95	1.08
<u>Gallian FIS</u>				
Beneficiary:				
- Total	0.51	1.01	2.26	0.77
- Irrigated	0.14	0.28	0.39	0.19
Non-Beneficiaries(Ha.)	0.43	1.27		0.52

Table 3.12: Cropping Pattern of Sampled Farms of Kanda-Panesh LIS.
(Percentage)

Crops	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
<u>Kharif:</u>								
Maize	22.06	37.54	35.05	30.80	44.83	45.53	45.50	45.31
Paddy	0.07	-	-	0.03	-	-	-	-
Ginger	10.97	6.41	5.84	8.10	0.51	-	0.72	0.39
Bean	0.53	1.11	0.47	0.73	4.34	6.24	3.60	4.61
Capsicum	3.08	3.07	3.97	3.28	-	-	-	-
Brinjal	1.64	1.95	1.40	1.70	-	-	-	-
Small Millet	-	-	-	-	-	-	0.24	0.08
Horse gram	-	-	-	-	0.51	-	0.60	0.35
Black gram	-	-	-	-	0.51	0.42	1.20	0.70
Total	38.35	50.08	46.73	44.64	50.70	52.19	51.26	51.44
<u>Rabi:</u>								
Wheat	43.99	36.80	35.05	39.28	46.10	45.32	42.50	44.65
Barley	0.26	-	4.67	1.15	1.16	0.21	2.40	1.20
Mustard	-	-	1.87	0.42	0.51	0.41	2.16	1.01
Peas	10.18	6.69	5.84	7.89	1.28	1.87	1.20	1.47
Cabbage	0.26	-	0.93	0.31	-	-	-	-
Cauliflower	2.89	3.08	1.87	2.73	-	-	-	-
Tomato	4.67	3.35	3.04	3.58	-	-	-	-
Lentil	-	-	-	-	0.25	-	0.48	0.23
Total	61.65	49.92	53.27	55.36	49.30	47.81	48.74	48.56
Grand Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	(0.89)	(2.39)	(1.28)	(1.52)	(1.04)	(2.75)	(5.55)	(2.06)

Note: Figures in parenthesis are the per farm gross cropped area in hectares.

Table 3.13: Cropping Pattern of Sampled Farms of Callian FIS.

(Percentage)

Crops	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
<u>Kharif:</u>								
Maize	35.46	27.07	41.50	35.35	45.87	39.24	-	44.49
Paddy	13.21	13.90	8.22	11.93	4.50	10.13	-	5.64
Black gram	-	0.97	-	0.21	0.43	1.67	-	0.68
Moong	-	-	0.75	0.21	-	-	-	-
Urd	0.81	5.61	-	1.63	-	-	-	-
Toria	0.43	-	-	0.21	-	-	-	-
Kulath	0.22	1.46	-	0.43	-	-	-	-
Total	50.13	49.01	50.47	49.97	50.80	51.04	-	50.81
<u>Rabi:</u>								
Wheat	40.71	36.58	43.74	40.67	48.77	47.26	-	48.42
Barley	0.22	1.71	-	0.48	0.11	0.85	-	0.34
Mustard/Toria	1.30	1.95	0.37	1.18	0.21	-	-	0.17
Gram	0.22	1.95	1.13	0.86	-	-	-	-
Sugar-cane	2.06	3.91	1.59	2.33	-	-	-	-
Onion	3.63	3.91	1.49	3.02	-	-	-	-
Barseem	1.51	0.49	1.12	1.18	-	-	-	-
Potato	0.22	0.49	0.09	0.25	-	-	-	-
Lentil	-	-	-	-	0.11	0.85	-	0.26
Total	49.87	50.99	49.53	50.03	49.20	48.96	-	49.19
Grand Total	100.00	100.00	100.00	100.00	100.00	100.00	-	100.00
	(1.00)	(2.05)	(4.28)	(1.49)	(0.33)	(1.90)		(0.94)

Note: Figures in parenthesis are the per farm gross cropped area in hectares.

Table 3.14: Composition of Different Livestock Possessed
by Sampled Farmers of Kanda-Panesh LIS.

(Percentage)

Type of livestock	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
<u>Cows:</u>								
In milk	10.00	14.29	23.08	12.57	10.15	11.97	10.39	10.72
Dry	10.43	12.38	7.69	10.69	12.03	11.97	3.90	10.72
<u>Buffaloes:</u>								
In milk	15.65	17.14	17.95	16.31	11.66	16.20	7.79	12.38
Dry	9.13	9.52	15.38	9.89	6.39	7.75	14.29	8.05
Bullocks	23.05	20.95	15.38	21.66	19.55	16.90	15.58	18.14
Sheep	3.04	0.95	-	2.14	21.80	17.60	27.27	21.44
Goat	8.70	2.87	-	6.15	1.50	-	-	0.82
Young stock	20.00	21.90	20.52	20.59	16.92	17.61	20.78	17.73
Total livestock	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of livestock per farm	6.76	8.75	9.75	7.48	8.86	10.14	12.80	9.70

Table 3.15: Composition of Different Livestock Possessed
by Sampled Farmers of Gallian FIS.

(Percentage)

Type of livestock	Beneficiaries				Non-Beneficiaries		
	Marginal	Small	Medium	Overall	Marginal	Small	Overall
<u>Cows:</u>							
In milk	0.44	-	-	0.30	0.66	-	0.75
Dry	2.19	-	3.85	2.68	2.59	-	2.24
<u>Buffaloes:</u>							
In milk	17.54	16.07	13.46	16.67	17.24	16.67	17.16
Dry	9.65	12.50	15.38	11.01	7.33	11.11	7.83
Bullock	18.42	25.00	15.38	19.65	28.45	27.77	28.36
Horse/Mules	1.32	-	-	0.89	-	-	-
Sheep	15.36	10.71	15.38	14.58	16.80	22.22	17.54
Goat	20.17	23.22	25.00	21.43	12.07	5.56	11.19
Young stock	14.91	12.50	11.55	13.99	14.66	16.67	14.93
Total livestock	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of livestock per farm	6.16	7.00	8.67	6.72	5.15	7.20	5.36

Table 4.1: Proportion of Different Crops Grown in Kanda
Panesh LIS.

(Percentage)

Crops	Marginal	Small	Medium	Overall
Beneficiaries:				
Cereals	66.38	74.34	74.77	71.26
Oil seeds	-	-	1.87	0.42
Vegetables	33.62	25.66	23.36	28.32
Total	100.00	100.00	100.00	100.00
Non-Beneficiaries:				
Cereals	92.09	91.06	90.64	91.24
Oil seeds	0.51	0.41	2.16	1.01
Pulses	1.27	0.42	2.28	1.28
Vegetables	6.13	8.11	4.92	6.47
Total	100.00	100.00	100.00	100.00

Table 4.2: Proportion of Different Crops Grown in Gallian FIS.

(Percentage)				
Crops	Marginal	Small	Medium	Overall
Beneficiaries:				
Cereals	89.60	79.26	93.46	88.43
Pulses	1.25	9.99	1.88	3.34
Toria	0.43	-	-	0.21
Mustard	1.30	1.95	0.37	1.18
Sugar-cane	2.06	3.91	1.59	2.33
Onion	3.63	3.91	1.49	3.08
Barseem	1.51	0.49	1.12	1.18
Potato	0.22	0.49	0.09	0.25
Total	100.00	100.00	100.00	100.00
Non-Beneficiaries:				
Cereals	99.25	97.48	-	98.89
Pulses	0.54	2.52	-	0.94
Toria	-	-	-	-
Mustard	0.21	-	-	0.17
Sugar-cane	-	-	-	-
Onion	-	-	-	-
Barseem	-	-	-	-
Potato	-	-	-	-
Total	100.00	100.00		100.00

Table 4.3: Cropping Intensity on Different Farms.

(Percentage)				
Scheme/Category	Marginal	Small	Medium	Overall
<u>Kanda-Panesh LIS:</u>				
Beneficiary	143.55	191.20	178.33	165.22
Non-Beneficiary	192.59	190.97	188.14	190.74
<u>Gallian FIS:</u>				
Beneficiary	196.08	202.97	189.38	193.51
Non-Beneficiary	193.03	149.61	-	180.77

Table 4.4: Proportion of Area Irrigated Under Different
Crops Grown by Beneficiary Farmers of Kanda-
Panesh LIS.

(Percentage)

Crops	Marginal	Small	Medium	Overall
<u>Kharif:</u>				
Maize	0.00	0.00	0.00	0.00
Paddy	100.00	-	-	100.00
Ginger	100.00	100.00	100.00	100.00
Bean	100.00	100.00	100.00	100.00
Capsicum	100.00	100.00	100.00	100.00
Brinjal	100.00	100.00	100.00	100.00
Total	42.47	25.05	25.00	31.01
<u>Rabi:</u>				
Wheat	14.78	0.00	0.00	6.61
Barley	-	-	0.00	0.00
Mustard	-	-	0.00	0.00
Peas	100.00	100.00	100.00	100.00
Cabbage	100.00	-	100.00	100.00
Cauliflower	100.00	100.00	100.00	100.00
Tomato	100.00	100.00	100.00	100.00
Lentil	-	-	-	-
Total	38.76	26.26	21.93	30.88
Total gross cropped area	40.18	25.65	23.36	30.94

Table 4.5: Proportion of Area Irrigated Under Different Crops
Grown by Beneficiary Farmers of Gallian FIS.
(Percentage)

Crops	Marginal	Small	Medium	Overall
<u>Kharif:</u>				
Maize	0.76	0.00	0.00	0.38
Paddy	100.00	100.00	100.00	100.00
Black gram	-	0.00	-	0.00
Moong	-	-	0.00	0.00
Urd	6.67	0.00	-	1.64
Toria	0.00	-	-	0.00
Kulath	0.00	0.00	-	0.00
Total	27.00	28.36	16.30	24.20
<u>Rabi:</u>				
Wheat	15.03	11.33	8.55	12.30
Barley	0.00	57.14	-	0.44
Mustard	0.00	0.00	0.00	0.00
Gram	0.00	0.00	0.00	0.00
Sugar-cane	100.00	100.00	100.00	100.00
Onion	100.00	100.00	100.00	100.00
Barseem	100.00	100.00	100.00	100.00
Potato	100.00	100.00	100.00	100.00
Lentil	-	-	-	-
Total	27.14	27.03	16.23	24.08
Total gross cropped area	27.07	27.80	16.26	24.14

Table 4.6: Crop Wise per Hectare Yield of Sampled
Farmers in Kanda-Panesh LIS.

(Qtls/Ha.)

Crops	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Ginger	54.72	56.94	63.44	56.83	55.30	56.56	59.64	56.85
Brinjal	74.09	98.34	99.77	89.27	-	-	-	-
French bean	46.72	44.38	47.45	45.49	-	-	-	-
Capsicum	62.69	60.65	61.86	61.75	-	-	-	-
Tomato	70.49	79.09	85.69	76.43	-	-	-	-
Peas	33.94	33.28	49.41	35.74	30.60	30.28	33.94	31.33
Cauliflower	74.00	85.42	59.10	76.55	-	-	-	-
Barley	17.72	-	14.00	14.33	17.04	16.72	16.22	15.82
Wheat	15.54	17.47	12.89	16.69	13.93	14.94	15.81	14.46
Cabbage	62.28	-	60.17	60.86	-	-	-	-
Maize	15.92	15.76	16.73	16.05	15.64	15.41	16.20	15.74
Paddy	-	-	-	-	14.86	-	16.14	16.55

Table 4.7: Crop Wise Per Hect. Yield of Sampled
Farmers in Gallian FIS.

Crops	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Barley	20.46	20.72	-	20.66	19.85	-	-	19.85
Wheat	15.54	17.46	17.89	16.64	16.46	17.39	-	16.65
Paddy	23.01	22.42	23.65	22.98	22.44	22.64	-	22.51
Black gram	-	4.85	-	4.85	4.63	4.82	-	4.72
Maize	19.73	19.32	20.24	19.84	19.14	19.72	-	19.25
Potato	61.97	57.11	44.08	57.80	-	-	-	-
Onion	48.94	49.58	58.59	50.46	-	-	-	-
Sugarcane	173.36	151.20	252.88	180.72	-	-	-	-

Table 4.3: Per Farm Use of Different Inputs Among
Sampled Farmers of Kanda-Panesh LIS.

Particulars	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
(i) P.Y.M.	82.08	204.10	359.10	133.60	56.17	195.23	354.04	136.85
(Qtls.)	(92.82)	(85.40)	(83.90)	(87.32)	(63.62)	(70.99)	(63.79)	(66.43)
(ii) Fertilizer	1.78	4.99	8.60	3.11	1.21	3.87	7.14	2.66
(Qtls.)	(2.00)	(2.69)	(2.00)	(2.03)	(1.16)	(1.41)	(1.29)	(1.29)
(iii) Plant pro- tection(Rs.)	70.57	168.46	274.23	116.44	2.01	7.76	10.40	4.63
	(79.23)	(70.40)	(64.06)	(76.10)	(1.93)	(2.82)	(1.87)	(2.25)
(iv) Seed (Rs.)	1375.51	2557.83	3949.77	1865.19	666.84	2491.20	2797.85	1438.74
	(1545.52)	(1070.22)	(922.84)	(1219.03)	(641.19)	(905.89)	(504.11)	(698.42)
(v) Human labour	69.95	172.39	325.58	115.00	46.09	125.13	242.66	91.73
(days)	(76.59)	(72.12)	(76.07)	(75.16)	(44.32)	(45.50)	(43.72)	(44.53)
(vi) Bullock labour(days)	8.96	21.60	40.37	14.49	9.26	20.82	44.91	17.24
	(10.59)	(9.04)	(9.43)	(9.47)	(8.90)	(10.48)	(8.09)	(8.36)

Note: Figures in parenthesis are the inputs per
hectare of gross cropped area.

Table 4.9: Per Farm use of Different Inputs Among
Sampled Farmers of Gallian FIS.

Particulars	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
(i) P.Y.M.	105.83	223.40	583.72	173.24	99.22	252.92	-	114.59
(qtls.)	(105.83)	(111.41)	(136.38)	(116.27)	(119.54)	(133.11)		(121.90)
(ii) Fertilizer	1.36	2.90	7.79	2.24	1.10	1.78	-	1.25
(qtls.)	(1.36)	(1.41)	(1.82)	(1.50)	(1.32)	(0.94)		(1.33)
(iii) Plant pro- tection (Rs.)	6.97	19.19	13.04	9.52	-	-	-	-
	(6.97)	(9.32)	(3.05)	(6.39)				
(iv) Seed (Rs.)	239.48	578.60	894.46	352.48	298.94	321.19	-	157.06
	(239.48)	(281.95)	(208.98)	(236.56)	(360.17)	(169.05)		(167.08)
(v) Human labour	55.15	122.61	245.71	87.22	38.73	88.37	-	43.69
(days)	(58.15)	(59.81)	(57.41)	(58.54)	(46.66)	(46.51)		(46.48)
(vi) Bullock labour	8.52	16.55	36.70	12.64	7.15	17.16	-	8.15
(days)	(8.52)	(8.07)	(8.57)	(8.48)	(8.61)	(9.03)		(8.67)

Note: Figures in parenthesis are the inputs used
per hectare of gross cropped area.

Table 4.10: Per Hectare Net Income From Various Crops in Kanda-Panesh LIS.

(Rs./ha.)

Crops	Marginal		Small		Medium		Overall	
	Output- Input ratio	Net return	Output- Input ratio	Net return	Output- Input ratio	Net return	Output Input ratio	Net return
<u>Beneficiaries:</u>								
Ginger	1.28	7126	1.38	9381	1.30	8748	1.31	8059
Brinjal	1.17	2696	1.28	5345	1.26	5241	1.24	4309
French bean	1.26	2152	1.26	2075	1.43	3261	1.28	2260
Capsicum	1.27	3363	1.12	1663	1.11	1594	1.17	2283
Tomato	1.30	5744	1.30	6473	1.37	8150	1.32	6461
Peas	1.28	2257	1.12	1090	1.66	5894	1.28	2323
Cauliflower	3.68	24265	3.32	26878	3.34	18637	3.46	24504
Cabbage	1.88	7882	-	-	2.81	10456	2.40	9596
Maize	1.12	336	1.20	492	1.17	459	1.17	440
Wheat	1.29	595	1.32	850	1.30	846	1.28	735
Barley	1.24	518	-	-	1.02	34	1.04	78
<u>Non-Beneficiaries:</u>								
Ginger	1.34	8566	1.29	7786	1.31	8577	1.31	8116
Peas	1.32	2233	1.65	1289	1.16	1443	1.20	1577
Maize	1.18	451	1.10	278	1.17	444	1.15	384
Paddy	1.05	150	-	-	1.06	185	1.05	172
Wheat	1.27	598	1.21	514	1.25	644	1.20	493
Barley	1.16	358	1.17	359	1.09	205	1.07	160

Table 4.11: Per Hectare Income From Various Crops in Gallian FIS.

(Rs./ha.)

Crops	Marginal		Small		Medium		Overall	
	Output- Input ratio	Net return	Output- Input ratio	Net return	Output- Input ratio	Net return	Output Input ratio	Net return
<u>Beneficiaries:</u>								
Sugarcane	1.64	1667	1.31	977	1.38	1738	1.46	1435
Onion	1.19	1551	1.24	1937	1.40	3363	1.23	1910
Potato	1.43	5576	1.24	3311	1.14	1614	1.31	4128
Maize	1.10	347	1.12	409	1.18	582	1.13	436
Black gram	-	-	1.34	646	-	-	1.23	646
Paddy	1.17	675	1.20	756	1.20	778	1.18	716
Wheat	1.24	594	1.32	849	1.31	846	1.28	722
Barley	1.24	594	1.23	579	-	-	1.23	583
<u>Non-Beneficiaries:</u>								
Maize	1.11	375	1.13	430	-	-	1.12	385
Black gram	1.21	568	1.18	519	-	-	1.20	544
Paddy	1.20	749	1.15	602	-	-	1.18	696
Wheat	1.30	664	1.31	835	-	-	1.30	778
Barley	1.25	589	-	-	-	-	1.25	589

Table 5.1: Per Farm Net Income From Various Crops Among
Beneficiaries Farmers of Kanda-Panesh LIS.

Crops	Marginal		Small		Medium		Overall	
	Net returns (Rs.)	%age	Net returns (Rs.)	%age	Net returns (Rs.)	%age	Net returns (Rs.)	%age
Ginger	700	31.73	1439	25.16	2187	23.65	995	27.71
Brinjal	39	1.77	249	4.35	315	3.41	112	3.12
French bean	10	0.45	55	0.96	64	0.69	26	0.72
Capsicum	93	4.22	122	2.13	271	2.93	114	3.17
Tomato	210	9.52	518	9.06	1060	11.46	351	9.77
Peas	265	9.29	175	3.05	1474	15.94	279	7.77
Cauliflower	628	28.47	1971	34.47	1491	16.13	1019	28.38
Barley	1	0.04	-	-	7	0.08	2	0.06
Wheat	234	10.61	743	13.08	1269	13.78	441	12.28
Cabbage	13	0.86	-	-	419	4.53	46	1.28
Maize	67	3.04	442	7.73	639	7.45	206	5.74
Total	2206	(100.00)	5719	(100.00)	9246	(100.00)	3591	(100.00)

Table 5.2: Per Farm Net Income From Various Crops Among
Non-Beneficiary Farmers of Kanda-Panesh LIS.

Crops	Marginal		Small		Medium		Overall	
	Net returns (Rs.)	%age	Net returns (Rs.)	%age	Net returns (Rs.)	%age	Net returns (Rs.)	%age
Ginger	335	41.94	1321	55.57	1429	40.43	300	47.96
Peas	29	3.15	65	2.73	96	2.72	48	2.88
Barley	5	0.55	2	0.08	27	0.76	6	0.36
Wheat	287	31.26	640	26.93	653	24.14	454	27.22
Maize	211	22.98	348	14.64	1122	31.75	359	21.52
Paddy	1	0.11	-	-	7	0.20	1	0.06
Total	918	(100.00)	2377	(100.00)	3534	(100.00)	1668	(100.00)

Table 5.3: Per Farm Net Income From Various Crops Among
Beneficiary Farmers of Gallian FIS.

Crops	Marginal		Small		Medium		Overall	
	Net return (Rs.)	%age	Net return (Rs.)	%age	Net return (Rs.)	%age	Net return (Rs.)	%age
Barley	2	0.35	21	1.52	-	-	4	0.42
Wheat	241	42.43	637	46.19	1584	49.03	439	45.78
Paddy	89	15.67	216	15.67	274	8.48	128	13.35
Black gram	-	-	13	0.94	-	-	5	0.52
Maize	133	23.42	226	16.39	1033	31.97	231	24.09
Potato	12	2.11	33	2.39	7	0.02	14	1.46
Onion	56	9.86	155	11.24	215	6.65	88	9.17
Sugar cane	35	6.16	78	5.66	118	3.65	50	5.21
Total	568	(100.00)	1379	(100.00)	3231	(100.00)	959	(100.00)

Table 5.4: Per Farm Net Income From Various Crops Among
Non-Beneficiary Farmers of Gallian FIS.

Crops	Marginal		Small		Overall	
	Net returns (Rs.)	%age	Net returns (Rs.)	%age	Net returns (Rs.)	%age
Barley	1	0.20	-	-	-	-
Wheat	309	63.98	748	62.28	352	63.77
Paddy	28	5.80	116	9.66	37	6.70
Black gram	2	0.41	17	1.42	3	0.54
Maize	143	29.61	320	26.64	160	28.99
Total	483	(100.00)	1201	(100.00)	552	(100.00)

Table 5.5: Per Farm Man Days Utilized in Different Crops Grown by
Sampled Farmers of Beneficiaries in Kanda-Panesh LIS.

Crops	Beneficiaries							
	Marginal		Small		Medium		Overall	
	Man days	%age	Man days	%age	Man days	%age	Man days	%age
Ginger	4.41	6.29	7.33	4.09	13.25	4.10	5.82	4.99
Brinjal	0.61	0.87	2.17	1.21	3.00	0.93	1.18	1.01
French bean	0.59	0.84	3.83	2.14	3.00	0.93	1.56	1.34
Capsicum	9.73	13.88	22.17	12.37	55.00	17.00	16.34	14.01
Tomato	11.73	16.73	21.58	12.04	37.00	11.44	16.12	13.82
Peas	12.94	18.45	23.83	13.29	39.00	12.06	17.66	15.14
Cauliflower	4.00	5.71	10.00	5.58	10.00	3.09	5.94	5.09
Barley	0.29	0.41	0.17	0.10	6.25	1.93	0.74	0.64
Wheat	13.79	19.67	33.42	18.64	63.00	19.47	22.44	19.24
Cabbage	0.38	0.54	-	-	7.00	2.16	0.82	0.70
Maize	11.65	16.61	54.75	30.54	87.00	26.89	28.02	24.02
Paddy	-	-	-	-	-	-	-	-
Total	70.12	100.00	179.25	100.00	323.50	100.00	116.64	100.00

Table 5.6: Per Farm Man Days Utilized in Different Crops Grown by
Sample Farmers of Non-Beneficiaries in Kanda-Panesh LIS.

Crops	Non-Beneficiaries							
	Marginal		Small		Medium		Overall	
	Man days	%age	Man days	%age	Man days	%age	Man days	%age
Ginger	1.90	4.09	7.00	5.58	7.33	2.99	3.98	4.28
Brinjal	-	-	-	-	-	-	-	-
French bean	-	-	-	-	-	-	-	-
Capsicum	-	-	-	-	-	-	-	-
Tomato	-	-	-	-	-	-	-	-
Peas	1.80	3.87	6.71	5.35	18.17	4.15	4.18	4.50
Cauliflower	-	-	-	-	-	-	-	-
Barley	0.40	0.86	0.44	0.35	4.17	1.70	0.78	0.84
Wheat	14.93	32.14	39.86	31.80	89.67	36.63	30.88	33.23
Cabbage	-	-	-	-	-	-	-	-
Maize	27.13	58.39	71.36	56.92	131.33	53.64	52.02	55.99
Paddy	0.30	0.65	-	-	2.17	0.89	1.08	1.16
Total	46.46	100.00	125.37	100.00	244.84	100.00	92.92	100.00

Table 5.7: Per Farm Man Days Utilized in Different Crops
Grown by Sampled Farmers of Gallian FIS.

Crops	Beneficiaries								Non-Beneficiaries							
	Marginal		Small		Medium		Overall		Marginal		Small		Overall			
	Man days	%age	Man days	%age	Man days	%age	Man days	%age	Man days	%age	Man days	%age	Man days	%age	Man days	%age
Barley	0.08	0.13	1.13	1.12	-	-	0.28	0.30	0.02	0.05	-	-	0.02	0.05	-	-
Wheat	13.81	23.75	29.25	23.86	78.60	32.00	22.76	24.51	12.53	32.35	30.40	34.39	14.32	32.77	-	-
Paddy	7.65	13.16	17.62	14.37	22.20	9.04	10.70	11.52	2.09	5.40	10.40	11.77	2.92	6.68	-	-
Black gram	-	-	0.75	0.61	-	-	0.12	0.13	0.11	0.28	1.40	1.58	0.24	0.55	-	-
Maize	23.00	39.56	32.75	26.71	111.80	45.52	33.44	36.01	23.98	61.92	46.20	52.26	26.20	59.95	-	-
Potato	0.22	0.38	1.00	0.81	0.40	0.16	0.36	0.39	-	-	-	-	-	-	-	-
Onion	9.08	15.62	23.37	19.06	18.80	7.66	18.00	19.37	-	-	-	-	-	-	-	-
Sugar cane	4.30	7.40	16.50	13.46	13.80	5.62	7.20	7.75	-	-	-	-	-	-	-	-
Total	58.14	100.00	122.61	100.00	245.60	100.00	92.86	100.00	38.73	100.00	88.40	100.00	43.70	100.00	-	-

Table 5.8: Net Returns Per Hectare of Cultivated Land
Among Sampled Farmers of Both the Irrigation
Scheme.

(Rs./ha. cultivated land)

Scheme/ Category	Marginal	Small	Medium	Overall
<u>Kanda Panesh LIS:</u>				
Beneficiary	3558.26	4575.20	3852.50	3903.26
Non-Beneficiary	1700.00	1650.69	1197.97	1544.44
Difference:				
- In rupees	1858.06	2924.51	2654.55	2358.82
- In percentage	109.30	177.17	221.58	152.73
<u>Gallian FIS:</u>				
Beneficiary	1113.72	1365.35	1429.65	1245.45
Non-Beneficiary	1123.26	945.67	-	1061.54
Difference:				
- In rupees	9.54	419.68	-	183.91
- In percentage	0.08	44.38	-	17.33

Table 5.9: Per Hectare of Cultivated Land Human Labour Used
by Sampled Farmers of Both the Irrigation Schemes.

(Mandays)

Scheme/ Category	Marginal	Small	Medium	Overall
<u>Kanda-Panesh LIS:</u>				
Beneficiary	113.10	143.40	134.79	126.78
Non-Beneficiary	86.04	87.06	83.00	86.04
Difference:				
- In days	27.06	36.34	31.79	40.74
- In percentage	31.45	64.71	62.40	47.35
<u>Gallian FIS:</u>				
Beneficiary	114.00	121.40	108.67	120.60
Non-Beneficiary	90.07	69.61	-	84.04
Difference:				
- In days	23.93	51.79	-	36.56
- In percentage	26.57	74.40	-	43.50

Table 5.10: Net Returns Per Mandays on Different Farms.

(Rs./Mandays)				
Scheme/ Category	Marginal Farms	Small Farms	Medium Farms	All Farms
<u>Kanda-Panesh LIS:</u>				
Beneficiary	31.46	31.90	28.58	30.79
Non-Beneficiary	19.76	18.96	14.43	17.95
<u>Gallian FIS:</u>				
Beneficiary	9.77	11.25	13.16	10.33
Non-Beneficiary	12.47	13.59	-	12.63

Table 6.1: Per Farm Value of Land Possessed by Sampled Farmers.

(Rupees)

Type of land	Beneficiary				Non-Beneficiary			
	Marginal	Small	Medium	All	Marginal	Small	Medium	All
<u>Kanda-Panesh LIS:</u>								
Cultivated land								
- Irrigated	13222	22037	34000	17000	-	-	-	-
- Un-Irrigated	20430	44846	92682	32388	26908	71754	146995	53815
Grass Land (Ghasni)	30368	53208	38117	35639	19827	67764	75796	21584
Total value	64020	120091	156799	85027	46735	1,39518	222791	75399
Impact of Irrigation	2757	4597	7892	3546	-	-	-	-
<u>Gallian FIS:</u>								
Cultivated land								
- Irrigated	7162	14336	19968	9728	-	-	-	-
- Un-Irrigated	13875	27375	70125	21750	16125	47625	-	19500
Ghasni(Grass land)	8550	14400	54225	13950	7875	15075	-	8550
Total value	29593	56111	144318	45428	24000	62700	-	28050
Impact of Irrigation	1918	3636	5343	2603	-	-	-	-

Table 6.2: Per Farm Value of Livestock Possessed by
Sampled Farmers of Kanda-Panesh LIS.

(Percentage)

Livestock	Beneficiary				Non-Beneficiary			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
<u>Cows:</u>								
In milk	4.60	6.27	9.13	6.61	5.74	5.71	5.96	5.76
Dry	3.43	3.88	2.17	3.41	4.86	4.07	1.60	4.12
<u>Buffaloes:</u>								
In milk	51.42	53.73	50.72	52.00	47.08	55.14	31.97	47.50
Dry	18.00	17.91	26.09	18.92	15.49	15.82	35.16	18.52
Bullocks	16.66	14.45	9.57	15.19	17.38	12.66	14.06	15.33
Sheep/Goat	3.27	1.01	-	2.24	6.72	4.20	7.83	6.05
Young stock	2.62	2.75	2.32	2.63	2.73	2.40	3.42	2.72
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	(10296)	(13918)	(17250)	(11731)	(10973)	(14896)	(15642)	(12632)

Note: Figures in parentheses are the value of livestock per farm.

Table 6.3: Per Farm Value of Livestock Possessed by
Sampled Farmers of Gallian FIS.

(Percentage)

Livestock	Beneficiary				Non-Beneficiary			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
<u>Cows:</u>								
In milk	0.21	-	-	0.14	0.53	-	-	0.45
Dry	0.89	-	1.47	0.81	1.03	-	-	0.87
<u>Buffaloes:</u>								
In milk	50.47	41.10	41.72	46.36	51.15	48.43	-	50.73
Dry	17.51	27.40	31.90	21.06	15.78	22.60	-	16.83
Bullocks	15.73	19.98	11.78	15.47	21.04	20.98	-	21.03
Horse/Mules	5.34	-	-	3.48	-	-	-	-
Sheep/Goat	7.65	9.82	11.41	10.19	8.68	5.89	-	7.74
Young stock	2.20	1.70	1.72	2.49	2.39	2.10	-	2.35
Total	100.00	100.00	100.00	100.00	100.00	100.00	-	100.00
	(9103)	(10950)	(16300)	(10353)	(7603)	(12390)		(8082)

Note: Figures in parenthesis are the value of
livestock per farm.

Table 6.4: Per Farm Value of Buildings Possessed by
Sampled Households.

(Percentage)

Category of farmers	Type of Houses			Total Value (Rs./Farm)	
	Residential	Cattle shed	Store	Total	
<u>Kanda-Panesh LIS:</u>					
Beneficiary:					
Marginal	83.05	16.95	-	100.00	41947
Small	79.88	20.12	-	100.00	42250
Medium	78.57	18.99	2.44	100.00	51333
All	78.21	20.99	0.80	100.00	37424
Non-Beneficiary:					
Marginal	80.03	19.97	-	100.00	12542
Small	80.88	19.12	-	100.00	16838
Medium	76.63	23.37	-	100.00	19430
All	78.03	21.97	-	100.00	17878
<u>Gallian FIS:</u>					
Beneficiary:					
Marginal	83.87	16.13	-	100.00	26297
Small	85.85	14.13	-	100.00	26937
Medium	82.68	17.32	-	100.00	46200
All	83.97	16.03	-	100.00	28390
Non-Beneficiary:					
Marginal	80.06	19.94	-	100.00	20677
Small	84.21	15.79	-	100.00	25650
Medium	-	-	-	-	-
All	80.57	19.43	-	100.00	21175

Table 6.5: Per Farm Value of Farm Implements & Machinery
Possessed by the Sampled Farmers in Kanda-Panesh LIS.

(Percentage)

Implements	Beneficiary				Non-Beneficiary			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Iron plough	1.23	1.00	1.16	0.90	0.51	-	-	0.31
Wooden plough	16.81	14.93	4.26	10.18	17.77	16.04	14.95	16.82
Yoke	5.25	3.64	1.72	3.09	5.25	5.12	6.19	5.35
Planker	3.68	2.63	0.86	2.10	3.04	3.04	2.57	3.14
Kudali/Khilna	26.09	30.74	12.65	18.36	26.39	30.84	34.59	28.77
Spade	5.08	3.01	0.69	2.69	4.57	3.18	2.57	3.93
Kassi	3.35	3.64	1.07	2.40	3.70	3.60	3.32	3.62
Gainti	5.98	1.51	1.03	2.50	4.76	3.67	2.87	4.25
Jhabba	4.38	4.14	1.07	2.69	4.06	4.01	3.33	3.93
Drat/Drati	28.53	30.61	12.05	19.16	29.95	29.88	29.61	29.88
Thresher	-	-	53.76	9.98	-	-	-	-
Spray pump	-	4.15	9.68	25.95	-	-	-	-
Overall	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	(571)	(797)	(2325)	(1092)	(591)	(723)	(662)	(636)

Note: Figures in parenthesis are the value of implements
& Machinery per farm.

Table 6.6: Farm Value of Farm Implements & Machinery Possessed
by the Sampled Farmers in Gailian FIS.

(Percentage)

Implements	Beneficiary				Non-Beneficiary			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Power sprayer	-	-	59.82	15.34	-	-	-	-
Iron plough	3.63	-	1.20	2.45	2.66	3.14	-	2.78
Wooden plough	16.25	29.82	6.89	14.57	18.21	17.08	-	18.70
Yoke	7.27	10.16	3.35	6.75	8.79	8.78	-	8.75
Suhaga	3.44	4.44	1.85	3.07	4.29	4.23	-	4.17
Kudali/Khilna	19.88	18.63	7.77	16.56	21.68	20.22	-	21.47
Spade	5.93	5.73	1.61	4.75	4.91	3.92	-	4.77
Kassi	5.16	5.90	0.72	4.14	4.91	1.38	-	4.57
Gainti/Pickaxe	5.35	5.25	2.69	4.75	4.29	6.27	-	4.57
Jhabba!	4.40	5.03	3.16	4.15	3.48	6.58	-	3.98
Drat/Sickle	28.69	23.93	10.94	23.47	26.18	27.90	-	26.24
Total	100.00	100.00	100.00	100.00	100.00	100.00	-	100.00
	(523)	(610)	(1672)	(652)	(489)	(638)	-	(503)

Note: Figures in parenthesis are the value farm
implements and machinery per farm.

Table 6.7: Farm Value of Modern Durables Possessed by
Sampled Farmers of Kanda-Panesh LIS.

(Percentage)

Item	Beneficiary				Non-Beneficiary			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Television	5.84	10.23	10.69	7.62	5.16	6.43	10.65	6.48
Radio/Transistor	2.16	2.37	2.59	1.76	2.53	1.89	1.94	2.22
Wristwatch/Clock	2.35	2.08	1.63	2.21	2.72	1.21	1.23	1.97
Sewing machine	0.68	0.64	1.69	0.77	0.63	0.30	1.87	0.73
Kerosene stove	0.33	0.24	0.28	0.30	0.31	0.15	0.26	0.30
Pressure cooker	0.39	1.04	0.96	0.94	1.03	1.13	1.09	1.07
Furniture	1.09	1.56	2.25	1.35	1.18	1.25	2.24	1.38
Ornaments	86.66	81.84	79.91	85.05	86.44	87.64	80.72	85.85
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	(15884)	(20771)	(22212)	(17472)	(13575)	(18885)	(22300)	(16109)

Note: Figures in parenthesis are the value of modern
durables per household.

Table 6.8: Per Farm Value of Modern Durable Possessed by
Sampled Farmers of Gallian FIS.

(Percentage)

Item	Beneficiary				Non-Beneficiary			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Television	5.87	3.63	7.37	5.65	7.84	13.35	-	8.28
Radio/transister	2.49	2.32	2.69	2.84	1.72	1.85	-	1.75
Wristwatch/clock	2.56	3.27	2.73	2.70	2.22	1.73	-	2.14
Sewing machine	1.18	2.60	1.50	1.47	0.76	1.47	-	0.89
Kerosene stove	0.14	0.20	0.18	0.12	0.32	0.74	-	0.39
Bicycle	0.14	-	0.09	0.10	-	-	-	-
Motor cycle/scooter	-	-	0.91	0.12	-	-	-	-
Pressure cooker	0.66	0.70	1.27	0.74	0.98	2.26	-	1.24
Cooking gas	-	-	-	-	0.23	-	-	0.18
Furniture	6.29	6.15	5.91	6.22	8.00	6.74	-	7.75
Ornaments	82.17	81.07	77.35	79.93	78.73	71.86	-	77.38
Total	100.00	100.00	100.00	100.00	100.00	100.00	-	100.00
	(16315)	(17666)	(21932)	(17139)	(11828)	(25914)	-	(13236)

Note: Figures in parenthesis are the value of modern
durables per household.

Table 6.9: Per Household Value of Different Assets Possessed
by Sampled Farms of Kanda Panesh LIS.

(Percentage)

Type of Assets	Beneficiary				Non-Beneficiary			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Land	48.24	60.69	62.74	55.78	55.36	73.10	79.33	61.47
Livestock	7.76	7.05	6.91	7.70	13.00	7.81	5.57	10.30
Buildings	31.61	21.36	20.54	24.56	14.85	8.82	6.92	14.58
Implements/Machinery	0.42	0.40	0.92	0.50	0.70	0.58	0.24	0.52
Modern durable	11.97	10.50	8.89	11.46	16.63	9.89	7.94	13.13
Total assets	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	(132718)	(197867)	(249919)	(152421)	(84416)	(190860)	(280325)	(122654)

Note: Figures in parenthesis are the value of total assets per farm.

Table 6.10: Per Household Value of Different Assets Possessed
by Sampled Farmers of Gallian FIS.

(Percentage)

Type of Assets	Beneficiary				Non-Beneficiary			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
Land	36.16	49.88	62.59	44.55	37.15	49.26	-	39.48
Livestock	11.13	9.73	7.07	10.15	11.77	9.73	-	11.38
Buildings	32.14	23.94	20.04	27.84	32.01	20.15	-	29.80
Implements/machinery	0.63	0.54	0.72	0.64	0.76	0.50	-	0.71
Modern Durable	19.94	15.51	9.56	16.62	15.31	20.36	-	18.63
Total assets	100.00	100.00	100.00	100.00	100.00	100.00	-	100.00
	(31831)	(112494)	(230590)	(101962)	(64597)	(127292)	-	(71046)

Note: Figures in parenthesis are the value of total assets per farm.

APPENDIX - I

Per Farm Different Type of Land Possessed by Sampled Farmers.

(Ha./Farm)

Type of land	Beneficiary				Non-Beneficiary			
	Marginal	Small	Medium	All	Marginal	Small	Medium	All
<u>Kanda Panesh LIS:</u>								
Irrigated	0.21	0.35	0.54	0.27	-	-	-	-
Un-Irrigated	0.41	0.90	1.86	0.65	0.54	1.45	2.95	1.88
Sub-Total	0.62	1.25	2.40	0.92	0.54	1.44	2.95	1.08
Ghasni (Grass land)	1.21	2.12	1.20	1.42	0.79	2.70	3.02	1.58
Total land	1.83	3.37	3.60	2.34	1.33	4.14	5.97	2.67
<u>Gallian FIS:</u>								
Irrigated	0.14	0.28	0.39	0.19	-	-	-	-
Un-Irrigated	0.37	0.73	1.87	0.58	0.43	1.27	-	0.52
Sub-Total	0.51	1.01	2.26	0.77	0.43	1.27	-	0.52
Ghasni (Grass land)	0.38	0.64	2.41	0.62	0.35	0.67	-	0.38
Total land	0.89	1.65	4.67	1.39	0.78	1.94	-	0.90

APPENDIX - II

Per Hectare Costs and Returns From Different Crops
Grown by Sampled Farmers of Kanda Panesh LIS.

(Rupees)

Crops	Cost A ₁				Cost B			
	Marginal	Small	Medium	All	Marginal	Small	Medium	All
<u>Beneficiary:</u>								
Ginger	18235	21737	20578	20183	18925	22409	21201	20845
Brinjal	9460	9571	9235	9422	10167	10364	10675	10420
French bean	4500	5077	3180	4252	5820	6452	4612	5628
Capsicum	7595	5896	6549	6680	8960	7348	8130	8146
Tomato	10461	10211	10778	10483	12187	12040	12651	12292
Peas	4215	5786	4566	4889	5385	5961	5855	5734
Cauliflower	4478	5889	5396	5254	5762	7107	5464	6111
Cabbage	4557	-	2605	3581	5808	-	3936	4872
Maize	1327	1439	1549	1438	1852	1932	1983	1922
Wheat	1438	1324	1592	1451	1984	1949	1981	1971
Barley	1123	-	992	1050	1717	-	1556	1637
<u>Non-Beneficiary:</u>								
Ginger	17149	20937	20183	19423	17989	22569	28045	22867
Peas	3915	4286	4556	4252	4985	5358	6734	5692
Maize	1227	1339	1449	1338	1952	1989	1983	1975
Paddy	1266	-	1149	1207	2757	-	2559	2658
Wheat	1236	1224	1451	1304	1684	1739	1972	1798
Barley	1189	1059	1065	1104	1779	1743	1660	1729

Contd.....

Contd.....

(Rupees)

Crops	Cost C				Gross Return			
	Marginal	Small	Medium	All	Marginal	Small	Medium	All
<u>Beneficiary:</u>								
Ginger	25768	24785	29437	26647	32834	34165	38185	35052
Brinjal	15828	19235	19687	18250	18524	24584	24928	22679
French bean	8360	7907	7461	7909	10512	9986	10677	10392
Capsicum	12311	13500	13872	13228	15674	15163	15466	15434
Tomato	18928	21211	21843	20661	24672	27684	29993	27450
Peas	7925	6896	8530	8586	10182	9956	14824	11664
Cauliflower	9051	11561	7962	9525	33316	38439	26599	32785
Cabbage	8936	-	5729	7363	16818	-	16245	16531
Maize	2689	2502	2719	2637	3025	2994	3178	3056
Wheat	2514	2644	2733	2630	3169	3494	3579	3394
Barley	2138	-	2066	2102	2656	-	2100	2378
<u>Non-Beneficiary:</u>								
Ginger	24679	26228	27207	26038	33185	33934	35784	34301
Peas	6949	7796	8739	7828	9182	9085	10182	9483
Maize	2522	2649	2634	2602	2973	2927	3078	2993
Paddy	3275	-	3043	3159	3434	-	3228	3331
Wheat	2149	2475	2518	2394	2787	2989	3162	2979
Barley	2198	2149	2249	2199	2556	2508	3434	2833

APPENDIX - III

Per Hectare Costs and Returns From Different Crops
Grown by Sajoled Farmers of Gallien FIS

(Rupees)

Crops	Cost A ₁				Cost B			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
<u>Beneficiary:</u>								
Sugar-cane	3224	4169	4325	3933	7316	9203	9409	8643
Onion	5265	5654	5238	5185	7296	7274	7654	7408
Potato	2720	9943	8430	9031	11901	12909	10699	11836
Maize	1427	1539	1533	1501	1952	2032	2089	2024
Black gram	-	1256	-	1256	-	2254	-	2254
Paddy	2649	2107	2393	2183	3035	3135	3463	3211
Wheat	1438	1124	1592	1451	1984	1949	1991	1971
Barley	1679	1065	-	1672	1709	1660	-	1685
<u>Non-Beneficiary:</u>								
Maize	1298	1349	-	1324	1869	2083	-	1976
Black gram	1232	1364	-	1298	2159	2269	-	2214
Paddy	2659	2298	-	2179	3185	3479	-	3332
Wheat	1389	1400	-	1395	1884	1979	-	1932
Barley	1179	-	-	1179	1809	-	-	1809

Contd.....

Contd.....

(Rupees)

Crops	Cost C				Gross Return			
	Marginal	Small	Medium	Overall	Marginal	Small	Medium	Overall
<u>Beneficiary:</u>								
Sugar-cane	7807	9651	9884	9127	17372	13521	11432	14108
Onion	8237	7930	8359	8162	9788	9917	11719	10474
Potato	13017	13821	11611	12816	18593	17132	13225	16316
Maize	3403	3263	3264	3310	3750	3671	3846	3756
Black gram	-	2750	-	2750	-	3396	-	3396
Paddy	3927	3729	3952	3869	4602	4485	4730	4605
Wheat	2514	2644	2732	2630	3108	3493	3579	3393
Barley	2476	2529	-	2503	3070	3108	-	3089
<u>Non-Beneficiary:</u>								
Maize	3263	3318	-	3291	3038	3748	-	3693
Black gram	2679	2855	-	2767	3247	3374	-	3310
Paddy	3739	3927	-	3833	4488	4529	-	4508
Wheat	2529	2644	-	2587	3293	3479	-	3386
Barley	2389	-	-	2369	2978	-	-	2978

APPENDIX -IV

Per Farm Costs and Return From Crops Grown by
Sampled Farmers in Kanda-Panesh LIS.

(Rupees/Farm)

Crops	Area in Hect.	Family	Hired	Bullock Labour	Seed	Manure	Ferti- lizer	Insec- ticide & Pesticide	Total Vari- able crop	Gross return
<u>Beneficiary:</u>										
Maize	0.47	616.44	-	200.50	22.46	348.00	62.22	-	1249.62	1441
Ginger	0.12	128.00	-	72.00	14.83	273.00	54.00	-	541.88	4207
Bean	0.01	34.00	-	6.00	5.90	14.00	3.00	2.19	65.09	104
Capsicum	0.05	359.22	-	24.50	19.09	78.00	16.00	10.33	507.84	772
Brinjal	0.03	26.00	-	12.00	9.42	22.00	13.00	5.75	88.17	680
Wheat	0.60	493.68	-	289.00	166.76	303.90	82.62	-	1335.96	2036
Barley	0.02	14.96	-	5.00	3.50	6.80	1.02	-	31.28	48
Peas	0.12	353.32	-	62.00	73.25	143.20	40.80	65.31	737.88	1400
Cabbage	0.0043	18.04	-	2.50	2.50	5.40	2.04	1.36	31.11	79
Cauliflower	0.041	130.46	-	20.00	33.20	29.20	14.28	13.31	240.45	1311
Tomato	0.054	354.64	-	31.00	41.86	112.20	27.54	18.19	585.43	1373
<u>Non-Beneficiary</u>										
Maize	0.93	1144.44	-	402.50	42.63	663.50	113.22	-	2366.29	2783.00
Ginger	0.008	87.78	-	56.00	1126.68	223.70	33.66	-	1527.82	343.00
Wheat	0.92	677.62	-	382.50	246.57	433.20	117.30	-	1857.39	2741.00
Barley	0.02	16.28	-	7.50	5.24	9.30	-	-	38.32	57.00
Peas	0.03	91.74	-	13.50	17.62	38.80	7.14	4.63	173.43	284.00

APPENDIX - V

Per Farm Costs and Return From crops Grown by
Sampled Farmers in Gailian FIS.

(Rupees/Farm)

Human labour										
Crops	Area in Hect.	Family	Hired	Bullock labour	Seed	Manure	Ferti- lizer	Insec- ticide & Pesticide	Total cost variable	Gross return
<u>Beneficiary</u>										
Wheat	0.61	500.94	-	252.50	169.98	800.70	102.90	-	1826.12	2070.00
Barley	0.0072	5.94	-	3.60	1.54	5.60	-	-	16.08	31.00
Sugar cane	0.00	158.18	-	18.00	77.06	43.90	4.08	-	301.22	423.00
Onion	0.65	271.70	-	26.00	21.53	56.80	5.10	8.73	383.86	524.00
Potato	0.0036	7.22	-	2.00	20.70	4.10	-	0.79	35.51	59.00
Maize	0.53	736.12	-	229.00	25.00	701.90	97.92	-	1789.94	1991.00
Paddy	0.18	235.40	-	100.00	35.93	123.50	19.38	-	514.21	865.00
Black gram	0.0032	2.64	-	1.50	0.74	1.90	-	-	6.78	11.00
<u>Non-Beneficiary</u>										
Maize	0.42	575.96	-	173.50	19.44	509.10	67.32	-	1345.32	1551.00
Paddy	0.05	64.24	-	27.50	10.37	37.90	4.08	-	144.09	225.00
Black gram	0.01	5.28	-	2.50	1.54	4.10	-	-	13.42	33.00
Wheat	0.45	315.26	-	204.00	125.56	594.20	56.10	-	1295.12	1524.00
Barley	0.0032	0.44	-	0.20	0.15	0.60	-	-	1.30	10.00

APPENDIX - VI

Per Household Off-Farm Income of Sampled Farmers in Kanda-Panesh LIS.

(Rupees)

Activities	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	All	Marginal	Small	Medium	All
Service	10405.88	19750.00	35250.00	14636.00	17703.33	17571.43	18333.33	17742.00
Business	832.35	-	7500.00	1200.00	-	4285.71	-	1200.00
Wage labour								
- Agriculture	905.88	-	-	616.00	-	-	-	-
- Non-agriculture	4131.76	-	-	2809.60	-	-	-	-
Sub-Total	5037.64	-	-	3425.60	-	-	-	-
Other	617.65	-	-	420.00	-	-	-	-
Total	16943.52	19750.00	42750.00	19681.60	17703.33	21857.14	18333.33	18942.00

APPENDIX - VII

Per Household Off-Farm Income of Sampled Farmers in Gallian FIS.

(Rupees)

Activities	Beneficiaries				Non-Beneficiaries			
	Marginal	Small	Medium	All	Marginal	Small	Medium	All
Service	17443.34	10875.00	7120.00	15360.00	22655.55	26000.00	-	22990.00
Business	189.19	-	6200.00	760.00	111.11	-	-	100.00
Wage Labour								
- Agriculture	459.46	-	-	340.00	-	-	-	-
- Non-Agriculture	2467.57	650.00	5400.00	2470.00	2562.22	100.00	-	2316.00
Sub-Total	2927.03	650.00	5400.00	2810.00	2562.22	100.00	-	2316.00
Other	567.57	-	1400.00	560.00	-	-	-	-
Total	21127.03	11525.00	20120.00	19490.00	25328.88	26100.00	-	25406.00

LIFT IRRIGATION SCHEME KANDA-PANESH'

135

