بسم الله الرحمن الرحيم

FARMING SYSTEM RESEARCH

SHAHKOT AREA

MART

Management of Agricultural Research and Technology Project

BY

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AN ECONOMIC APPRAISAL OF SESAME CULTIVATION IN FSR PROJECT AREA, SHAHKOT

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SUMMARY

Sesame is an improtant oilseed crop but little attention has been devoted for its research and extension. The crop is specially suitable for poor and marginal land under stress conditions.

The main objectives of the study were the investigation of the suitability of intervention and its economic appraisal for increasing itsarea and production in the country.

About 46 farmers belonging to different farm categories of the villages of the project area were interviewed for the study.

About 67 percent of the interviewed farmers were uneducated while 33 percent have different education level. The data has been collected from the matured and experienced farmers.

On an average, Rs.210 were spent by the farmers for crop sowing. Broad cost method is the most common technique for crop sowing. The variety white tilli is used by the farmers. About 1 kg seed is considered sufficient. Sowing is almost completed in the month of August.

About 76 percent crop adopter did not use any kind of fertilizer. While, the rest spent Rs.315 per acre as fertilizer cost.

About 78 percent of the crop cultivator used different kind of pesticide for which cost amounted to Rs.138 per acre in the project area.

The crop harvesting is completed in the month of November. About Rs.170 per acre are spent for crop harvesting cost. Majority of the farmers used family labour for this purpose.

The technology adoption rate were found much high for sesame

cultivation in the area.

The sesame cultivator fetch a gross return of Rs.2639 per acre while spending Rs.722 as input cost. The net income of Rs.1917 per acre could be earned during this short period alongwith other allied benefit while sowing this crop. The per form net income came to Rs.4180 during the crop year 1991 in the project area.

The recommendation includes the evaluation of high yielding varieties and popularisation of crop cultivation in the Punjab.

INTRODUCTION:

Sesame is an important oil seed crop. It contains more oil content compared with sunflower, soyabean, cotton seed etc. The sesame oil quality is also used to improve the quality of the vegetable ghee industry. The sesame contains oil content of 50 percent compare with cotton seed (20%) Oil seed (40%), Groundnut (36%), Kasumba (40%), Soyabean (20%) and Alsi (40%). It is also used as cooking oil, medicine and for the manufacturing of quality soap. Its cakes are palatable and are fed to milch animals and are used as poultry feed. The area under sesame crop is about 35300 hectare in the Punjab with production of 13400tonnes. The per hectare yield thus stood at 380 kg. during the year, 1989-90. Sesame is cultivated mostly under rainfed conditin on poor and marginal land. There has been remarkable increase in the area and production of this crop with the passage of time. Our country spent billion of rupees on the import of edible oil.

Sesame is very import amongst the small land holders as crop can be adopted in stress condition and to marginal land. It remained a neglected crop and very little research and extension services has been devoted to it so far.

The sesame intervention crop trials were started during the year 1987-88 in the Farming System Research Project area, Shshkot. The crop has widely been adopted by the farmers of the project area. The study entitled, "An Economic Appraisal of the Sesame cultivation in the project area" has been undertaken with the following objectives.

Source: GOVERNMENT OF PAKISTAN: FOOD AND AGRI. DIVISION
ECONOMIC WING, ISLAMABAD-1990:

2: STUDY OBJECTIVES:

I. To investigate the suitability of sesame intervention in the cropping pattern of the project area.

II. To investigate the input and out put accounts of the sesame crop for its economic appraisal.

III. To suggest recommendation for increasing the crop production and cultivation in the project area.

3. SURVEY AND INVESTIGATION METHOD:

The Farming System Research activities were started in the year, 1988. In the beginning, the work was only confined to chak No.10 R/B Thoithean, about 20 kilometers from Shahkot on Safadar abad road, District Sheikhupura. Later the research activities were spreaded in the surrounding 10 villages which are now called theFSR, Project area. Following the diagnostic survey, variousintervention were suggested to improve the farmer's income. The experiments on the sesame cultivation in the area were started in the year, 1988. The crop cultivation was shorply adopted by the surrounding farmers. For the Economic appraisal of the sesame cultivation in the FSR project area, about 46 adopters/ farmers belonging to 6 project villages were interviewed. The study survey was carried out during the month of December, 1991. The input, output and other related information were noted on the prescribed interviewe schedule. These interviewedfarmers were further categorised into Farm Size I and II groupinorder to investigate the effect of farm size on the cultivation and management of the sesame crop. The following thus constitute the study sample.

Table 1: **RESPONDENT NUMBERS BY FARM SIZE IN FSR, PROJECT AREA**

S.no.	Farm Size	No.	Percent.
1.	Farm Size -I	25	54
2.	Farm Size - II	21	46
	Total:	46	100

Out of the 46 interviewed farmers 25 belongs to Farm size I group having land ownership of 0.1 to 7 acres. While, 21 farmers belongs to Farm size II group having land range of 7.1 acre and above.

The data thus collected has been analysed using simple statistical technique for the preparation of the technical report on sesame cultivation in the project area.

RESULTS AND DISSUCTION

4. FARMERS EDUCATION STATUS:

The surveyed farmers education level is also an indicator of the quality of information gathered and the skill used in the management of their farming business. The information on the education level of the surveyed respondents were also noted. The analysis of the data indicated that about 67 percent sampled farmers of the project area were uneducated, while, 33% having education of different level. About 9% have obtained primary level education, 17% middle, 5% matric and only 2% have got college level education. It was also intersting to note that illetracy ratio of the two different farm sizes under study were the same, while, the farm size-ii group farmers have higher education level compared with the farm size-i. This might be due to more income and resources owned by the large farmers compared with smaller ones. The detail have been given in table No.2

Table: 2 **LITIRACY STATUS OF THE SURVEYED FARMERS IN THE FSR, PROJECT AREA:**

S.no.	Education	Farm Size-i		Farm Size-ii		Total	
		No.	%age	No.	%age	No.	%age
1.	Un-educated	17	68	14	67	31	67
2.	Primary	4	16	-	-	4	9
3.	Middle	4	16	4	19	8	17
4.	Matric	-	-	2	9	2	5
5.	Above matric	-	-	1	5	1	2
	Total:-	25	100	21	100	46	100

5. FARMERS AGE CLASSIFICATION:

The interviewed farmers were classified into different age groups. The matured aged respondent informations are sound basis for the technicalstudies. The analysis of the data shows that about 43 percent of th interviewed sample farmers were below 40 while, 57 percent were of above 40 years of age. None of the respondent's interviewed was below 15 years. This shows that the data has been collected from the matured farmers. The surveyed farmers belonging to different farm categories were also of the similar ages. The detail have been given in table No.3

Table : 3 **AGE CLASSIFICATION OF THE SURVEYED FARMERS OF THE FSR, PROJECT AREA, SHAHKOT:**

S.no.	Age Groups (years)	Farm size-i		Farm size-ii		Total	
		No.	%age	No.	%age	No.	%age
1.	15 - 30	5	20	3	14	8	17
2.	31 - 40	6	24	6	29	12	26
3.	41 - 50	9	36	8	38	17	37
4.	51 -above	5	20	4	19	9	20
	Total:-	25	100	21	100	46	100

6. THE CROPPING PATTERN:

The cropping pattern of any area suggests the sequence of the crops raised during Kharif and Rabi seasons in a particular year. The wheat, sugarcane, Fodder (K+R) and Rice are the main crops of the area that occupied about 38.50, 11.95, 17.75 and 7 percent of the cropped area respectively. The sesame also contributed to the extent to 18.75 percent toward the cropped area. Due to this intervention of sesame cultivation the cropping intensity of the farmers has increased. The maize and cotton crop have share to the extent of 3 percent and 1.20 percent in the cropping pattern of the project area. The kharif and Rabi vegetables occupied about 1.50 percent of the cropped area of the surveyed farmers. The detail of the cropped area and its contribution has been given in table 4.

Table 4: **CROPPING PATTERN OF THE SURVEYED FARMERS OF THE PROJECT AREA, SHAHKOT.**

S.no.	Crops	Cropped area (acre)	Percent
1.	Wheat	4.48	38.50
2.	Sugarcane	1.38	11.75
3.	Rice	0.82	7.00
4.	Cotton	0.14	1.25
5.	Maize	0.35	3.00
6.	K.Fodder	1.09	9.50
7.	R.Fodder	0.96	8.25
8.	Vegetables	0.18	1.50
9.	Sesame	2.18	18.75
10.	Others	0.08	0.50
	Total:	11.66	100

7. FARM SIZE AND CROPPING INTENSITIES:

The Farm size-I average holding came to 4.99 acres and Farm size-II having average land size of 13.50 acres. The average farm size of the surveyed farmers thus came to 8.88 acres. The reported cropped area of the Farm size-I came to 7.19 acre having about 144 percent cropping intensity on their farms. The Farm size-II group have 16.97 acre cropped area having cropping intensity about 126 percent on their farms. The higher cropping intensity on smaller farms shows their relative efficiency over the large farm operators in the project area. On an average about 131 percent cropping intensity was existing on the farmsof the surveyed respondents. The details has been given in table 5.

Table: 5 **FARM SIZE, CROPPED AREA AND CROPPING INTENSITIES OF THE SURVEYED FARMERS OF THE FSR, PROJECT AREA:**
(Area = Acres)

S.no.	Farm Category	Average farm size	Cropped area	Cropping intensity(%)
1.	Farm size-I (0.1 - 7.00 acres)	4.99	7.19	144
2.	Farm size-II (7.1 and above)	13.50	16.97	126
3.	Average:	8.88	11.66	131

8 LAND PREPARATION AND CROP SOWING

The land preparation, planking and cropsowing practices were noted. The ploughing number and practices for crop sowing were almost similar irrespected of their farm size. This also shows that the crop need minimum tillage for cultivation. On an average Rs.210 per acre were spent on land preparation, planking and sowing of the crop in the project area. The detail of the account has been given in table No.6 and Annexure 2.

Table: 6 **LAND PREPARATION AND SOWING COST OF SESAME CROP IN THE PROJECT AREA:** (Rs. /Acre)

S.no.	Farm Category	Land prep.	Planking	Sowing	Total
1.	Farm size-i	125.98	28.67	54.86	209.51
2.	Farm size-ii	122.40	34.15	55.37	211.92
3.	Average	123.95	31.36	55.26	210.57

9. SOWING METHOD, VARIETY AND SEED RATE FOR SESAME CULTIVATION:

All the farmers interviewed used broad cast technique for sesame cultivation in the area. The most common prevelent variety under use was white tilli. Very few adopted black tilli as it fetch lower price in the market. The crop cultivation was completed almost in the month of August. About 1.09kg. of seed rate was usedagainst the departmental recommendation of 1.50 to 2 kg. per acre. The large farm operator used crop seed at a higher rate. The seed was available in the village market at the rate of Rs.20/- kg. About Rs.22/- were spent on seed cost for sesame cultivation in the area. The detail has been given in table: 7

Table : 7 **SOWING METHOD, VARIETY AND SEED RATE FOR SESAME CULTIVATION IN THE PROJECT AREA:**

S.no.	Particular	Farm size-i	Farm size-ii	Average:
1.	Sowing method	Broad cast	Broad cast	Broad cast
2.	Variety	white tilli	white tilli	white tilli
3.	Sowing time	August	August	August
4.	Seed Rate (kg.)/ Acre.	1.05	1.14	1.09
5.	Price Rs./kg	20.00	20.00	20.00
6.	Amount (Rs.)	21.00	22.80	21.80

10. FERTILIZER USE FOR SESAME CROP:

Normallythe crop does not require any additional use of fertilizer. The crop is alsofit for cultivation on poor andmarginal land. However, the Agriculture Department recommended 24- 24 each of N and P for this crop. The survey investigation with respect to fertilizer application indicated that about 76 percent of the crop adopter did not apply any fertilizer. Only 24 percent of the grower used 1.70 bag of fertilizer that amounted to Rs.315.45 per acre in the survey area. The large farm size operators use some what higher dose. The detail has been given in table 8.

Table: 8. **FERTILIZER APPLICATION PRACTICES OF THE SESAME GROWERS IN THE PROJECT AREA:**

Sr. No.	Farm Category	Fertilizer user Yes	Fertilizer user No	Total	Quality bags/Acre	Amount (Rs. Acre)
1.	Farm size-i	6	19	25	1.65	305.83
		(24)	(76)	(100)		
2.	Farm size-ii	5	16	21	1.72	327.00
		(24)	(76)	(100)		
3.	Average:	11	35	46	1.70	315.45
		(24)	(76)	(100)		

11. PESTICIDE APPLICATION FOR SESAME CULTIVATION:

The sesame plants are much delicate, tender and are subject to attack by many kinds of insect pests and diseases. The crop much depends upon the prevention from these insect pests attack and use of insecticide. The early and late sowing crops are affected the most. The leaf roller and white ants attack was the most common as reported by the interviewed farmers. About 78 percent of the crop cultivators used different kind of pesticide/insecticide for the crop while 22 percent did not apply any kind of pesticide. Normaly the farmers spent Rs.137.83 per acre on the use of pesticide. The large farm operator spent more amount than the smaller ones. The detail has been given in table No.9.

Table: 9. **PESTICIDE APPLICATION FOR SESAME CULTIVATION IN THE PROJECT AREA:**

S.no.	Farm Category	Pesticide users Yes	Pesticide users No	Cost Rs./Acre.
1.	Farm size-i	18 (72)	7 (28)	114.60
2.	Farm size-ii	18 (86)	3 (14)	165.48
3.	Total Average:	36 (78)	10 (22)	137.83

12. IRRIGATION SOURCES OF THE SESAME GROWERS IN THE PROJECT AREA:

The crop expert reports that if the rain showers are timely distributed, the crop does not need any irrigation. They also recommended one or two irrigations depending upon the crop situation. More number of irrigation and rain lowerthe crop yield. The irrigation sources of thecrop adopter were also assessed in order to appraise the area situation and crop response. About 48 percent of the farmers used canal irrigation, 6 percent tubewell and 46 percent used canal supplemented by tubewell as irrigation sourcesfor this crop. The large farm operator used tubewell while the small one did not use but hire tubewellwater to suppliment their canalturn. The detail has been given in table No.10

Table: 10 IRRIGATION SOURCES OF THE SESAME GROWERS IN THE PROJECT AREA:

S.no.	Farm Category	Canal	Tubewell	Canal+Tubewell	Total
1.	Farm size-i	15 (60)	- -	10 (40)	25 (100)
2.	Farm size-ii	7 (33)	3 (14)	11 (53)	21 (100)
3.	Average/Total:	22 (48)	3 (6)	21 (46)	46 (100)

: Figure in parenthesis are the percentages.

13. SESAME CROP IRRIGATION:

Itis stated by the crop agronomist that ifthe normal moonsoon rains occur, the crop doesnot need any irrigation. Due tosome changes in the rain schedules during the season, thefarmers irrigated their field for once or twice. On an average3.50 tubewell hours/acre were used forcrop irrigation.The average per hour tubewellrate were Rs.30/- in the area. Tgus about Rs.110/- were spent for crop irrigation. The large farmers spent Rs.135/- and the small farmers Rs.90/- per acre for crop irrigation. The detail has been given in table No.11.

Table: 11 **IRRIGATION WATER APPLIED TO SESAME CROP IN FSR:**

S.no.	Farm Size	No. of irrigation.	No. of Hours/ Acre.	Total no. of hours.	Rate/	T.cost of irrigation water.
1.	Farm size-i	1.20	2.50	3.00	30.00	90.00
2.	Farm size-ii	1.67	2.50	4.49	30.00	134.73
3.	Total/Avg.	1.41	2.50	3.53	30.00	105.90

14. SESAME HARVESTING AND LABOUR USE:

The sesame is ready for harvesting with in 120 days. The reported harvesting time of the sesame cultivators is the month of November in the Project area. The early or late harvesting were not observed, The delay in the harvesting of crop results in the shettering losses that decreases its yield to some extent. Regarding the harvestingtechnique, the majority i.e., 90 percent used their family labour. The simple sickle is used for crop harvesting. As reported by the farmers 3-4 men can harvest one acre of crop in a day. The large farmers hired the labour(i.e 14%) for crop harvesting at a wage rate of Rs.50/- per day the farmers spent about Rs.170/-for crop harvesting. The detail has been given in table No.12.

Table: 12 **HARVESTING TIME AND LABOUR USE FOR SESAME CULTIVATION IN THE PROJECT AREA:**

S.no.	Farm Size Category	Harvest-ing Time	Labour Family	Use Hired	Labour day/ acre	Wage rate/ Rs.dy.	Harves-ting Exp. Rs./acre.
1.	Farm size-i	November	24 (96)	1 (4)	3.40	50.00	170.00
2.	Farm size-ii	-do-	18 (86)	3 (14)	3.43	50.00	171.50
3.	Average:-	November	42 (91)	4 (9)	3.41	50.00	170.50

15. YIELD POTENTIAL OF THE SESAME CROP:

The reported yield record for the year 1990 and 1991 crop of the interviewed farmers were noted. During the year 1990 the sesame was cultivated on an area of 0.81 acre per farm and fetches a yield potential of about5.00 maund per acres in the project area. During the year, 1991 the per farm area increasedto 2.18 acres and the yieldlevel remained the same i.e., 5 maound peracre. Thus on an average there was 37 percent increase inthe area for the adoption of sesame crop. It was also intresting to note that during the year 1990, the small farmers obtained the higher yield potential i.e 6.28 maund per acre, while during the year 1991, the large farmers were at the top. This is attributed with the facts that due to change in the usual rains the large farm operators tend to manage their crop is a better way. During the crop year 1991 changes in rains and climatic pattern/conditions were pointed out by the farmers that effected the crop response. The detail has been given in table No.13.

Table:-13 **AREA AND YIELD POTENTIAL OF SESAME CULTIVATION IN THE PROJECT AREA:**

S.no.	Farm Category	1990 Area/Farm	yield/ Acre	1991 Area/Farm	yield/ Acre.
1.	Farm size-i	0.58	6.28	1.42	4.47
2.	Farm size-ii	1.10	4.27	3.07	5.62
	Average:	0.81	5.02	2.18	4.99

16. SESAME INTERVENTION ADOPTION IN THE SURVEY AREA:

The adoption of any intervention much depends upon its simplicity, suitability and economic return fro its investment. The experimental trial on sesame cultivation were introduced in the year 1988. The data regarding the adoption rate of this intervention was recorded for the subsequent year, 1989, 1990 and for 1991. The analysis of the data revealed that from amongest the 46 farmers interviewed, about 15% adopted during the year, 1989, some 48% cultivated in the year, 1990. This intervention was suggested due to its suitability to marginal land, and area availability as if much of the land after wheat harvesting remained unsown in the area due to less water availability. The special merits of the sesame crop cultivation are as it needs very low inputs use and add fertility to the soil. The adoption rate for crop cultivation was higherwith respect to the small farmoperators in the project area. The detail has been given in table No.14.

Table:-14 **SESAME CULTIVATION ADOPTION AMONG THE INTERVIEWED RESPONDENTS IN THE PROJECT AREA:**

S.no.	Farm Category	1989	1990	1991
1.	Farm size-i	2	09	25
2.	Farm size-ii	5	13	21
	Total:	7	22	46
	Percent:	15	48	100

17. ECONOMIC BENEFIT FOR SESAME CULTIVATION IN THE PROJECT AREA:

The input and output account for the sesame cultivation were estimated in order to appraise the economic benefit from this intervention in the project area. On an average, Rs.722 per acre were spent by the farmers for crop cultivation. The land preparation, fertilizer and seed cost amounted to Rs.210.57, 77.40 and Rs.22.00 respectively. While, the plant protection and irrigation charges were to the extent of Rs.138 and Rs.106 per acre. The harvesting charge amounted to Rs.170.50 per acre. Itis also pointed out that majorityi.e 91 percent used family labour forcrop harvesting. Thus in general, the land preporation fertilizer, seed, plant protection, irrigation and harvesting charges came to 29.16 percent, 10.44 percent, 3.05 percent, 19.09 percent, 4.68 percent and 23.61 percent respectively in the project area. The sesame crop yield income came to Rs.2639.71per acre during the period. Thus about Rs.1917.68 per acre net benefit were estimated due to cultivation of this additional crop in the project area. The analysis of the data also shows that large farm operators spent more money onplant protection and irrigation chargesand obtained higher field income than the small farmers of the area. It is thus concluded that with better management the yield potential could be increased. The detail of the account has been given in table 15. The economic benefit account on per farm basis were also calculated and have been presented in annexure 4. The data analysis indicated that on an average the small farmers earned Rs.3373/- and the large one Rs.9077.70 per farm while adding this crop on their farms.The economic

benefit is much more than the presented as if majority of the farmers used family labour for crop harvesting. It could also be said that the farmers input cost inccured is much lower compare with the other cash and foodcrop sown in the area and thus net return are much higher. The estimated cost benefit return came to 301.21 percent.

18: STUDY RECOMMENDATIONS:

1.The crop received a little attention of the Research and Extension Scientists. A crop with minimum input use level and with resonable return couldgain a prominent position in theOil Crop. It is therefore, recommended that more resources and efforts should be devoted for its research and extension.

2.Ithas been observed that the sesame cultivation is equally suitable for all type of soil in the project area. The heavy type of soil with better management yielded double than the average. The crop Agronomy should be developed recommending its cultivation for all kind of soils and areas.

3.Sometimes,the marketing problemsexist that effects its cultivation. It is therefore, recommended that somesupport price policy should also be proposed/ recommended for the minor crops.

Table: 15 **ECONOMIC BENEFIT OF SESAME CULTIVATION IN FSR, AREA, SHAHKOT:**

(Per Acre)

Farm size	Land pre-para-tion.	Ferti-lizer	Seed	plant prot-ect-ion.	irri-gat-ion.	Hoew-ing.	Harv-est-ing.	Total cost	yield income	Econ[illegible] bene[illegible] (Acre
F.size-i (0.1-7.00)	209.51	73.40	21.00	114.60	90.00	-	170.00	678.51	2375.36	1696.8[illegible]
F.size-ii (7.1-above)	211.9	277.86	22.80	165.48	134.73	-	171.50	784.29	2956.91	2172.6[illegible]
Total/Av.	210.5	775.43	21.80	137.83	105.90	-	170.50	722.03	2639.71	1917.6[illegible]

ANNEXURE-I

CROPPING PATTERN OF THE SURVEYED FARMERS OF THE F.S.R, PROJECT AREA, SHAHKOT:

S.No.	Crops	Farm size-i		Farm size-ii		Average	
		Area	Percent	Area	Percent	Area	Percent
1.	Sugarcane	0.80	11.13	2.05	12.08	1.38	11.84
2.	Rice	0.34	4.73	1.39	8.19	0.82	7.03
3.	Cotton	0.09	1.25	0.19	1.12	0.14	1.20
4.	Maize	0.30	4.17	0.42	2.48	0.35	3.00
5.	K.vegetable	0.04	0.56	0.17	1.00	0.09	0.77
6.	K.fodder	0.77	10.71	1.46	8.60	1.09	9.35
7.	Pulses	–	–	0.01	0.06	–	–
8.	Sesame	1 42	19.75	3.07	18.09	2.18	18.70
9.	Wheat	2.67					
	Total kharif	3.76	52.29	8.76	51.62	6.05	51.89
9.	Wheat	2.67	37.14	6.65	39.19	4.48	38.43
10.	Pulses	0.04	0.56	–	–	0.02	0.17
11.	R. Fodder	0.64	8.90	1.36	8.01	0.96	8.23
12.	R.vegetable	0.06	0.83	0.15	0.88	0.09	0.77
13.	Others	0.02	0.28	0.05	0.30	0.06	0.51
	R.Total:	3.43	47.71	8.21	48.38	5.61	48.11
	G.Total:	7.19	100	16.97	100	11.66	100

Annexure:II **LAND PREPRATION AND SOWING PRACTICES OF SESAME CROP IN THE PROJECT AREA, SHAHKOT.**

Farm Catagory	Land prepration			Planking			Sowing			Total
	No.	Rate	Amount	No.	Rate	Amount	No.	Rate	Amount	Expend.
Farm Size-I	2.48	50.80	125.98	1.12	25.60	28.67	1.08	50.80	54.86	209.51
Farm Size-II	2.52	48.57	122.40	1.42	24.05	34.15	1.14	48.57	55.37	211.92
Average	2.49	49.78	123.95	1.26	24.89	31.36	1.11	49.78	55.26	210.57

Annexure:III **ECONOMIC BENIFIT OF SESAME CULTIVATION IN FSR, PROJECT AREA.**
(PER FARM BASIS)

Sr.no.	Particular	Farm Size-I	Farm Size II	Total/Average
1-	Crop area	1.42	3.0[illegible]	2.18
2-	Land preparation	297.50	650.29	459.04
3-	Fertilizer	104.22	239.03	70.00
4-	Seed	29.82	70.00	47.52
5-	Plant protection	162.73	508.02	300.47
6-	Irrigation	127.80	413.62	230.86
7-	Hoeing	-	-	-
8-	Harvesting	241.40	526.51	371.69
9-	Total cost	973.47	2407.47	1574.02
10-	Total income	3373.01	9077.71	5754.57
11-	Econonmic benifit	2409.54	6670.24	4180.55

ANNEXURE - IV **PRODUCTION AND GROSS RETURN FROM SESAME CULTIVATION IN THE PROJECT AREA:**

S.No.	Farm Category	Area/Farm (acre)	Yield/Acre (md.)	Rate/md	G.return/ Farm.	G.retur Farm.
1.	Farm size-I	1.42	4.47	531.40	2375.36	3373.00
2.	Farm size-II	3.07	5.62	526.14	2956.91	9977.70
3.	Average.	2.18	4.99	529.00	2639.71	5754.57

ANNEXURE -V

AREA OF SESAME IN THE PUNJAB BY DIVISION AND DISTRICT FOR THE YEAR, 1986-87 to 1988-89:

District/ Division	1986-87			1987-88			1988-89		
	Irri.	Un.Irri.	Total	Irri.	Un.Irri.	Total	Irri.	Un.Irri.	Total
R.Pindi division.	80	860	940	50	540	590	172	1795	1967
Attock.	–	540	540	–	130	130	119	1341	1460
R.pindi	10	30	40	10	40	50	–	70	70
Islamabad.	–	–	–	–	10	10	–	3	3
Jehlum.	70	220	290	30	250	280	50	259	309
Chakwal	–	70	70	10	110	120	3	122	125
Sargodha division.	480	150	630	400	110	510	666	75	741
Sargodha	240	10	250	290	10	300	557	17	574
Khushab	20	30	50	20	10	30	13	30	43
Mianwali	50	20	70	30	–	30	10	7	17
Bhakkar	170	90	260	60	90	150	86	21	107
Faisalabad Division	1130	10	1140	840	–	840	1159	3	1162
Faisalabad	670	–	670	440	–	440	589	–	589
T.T.singh	310	–	310	280	–	280	396	–	396
Jhang.	150	10	160	120	–	120	174	–	174
Gujranwala division.	2880	4970	7850	3330	5370	8700	4179	5861	10040
Gujrat	890	800	1690	950	1000	1950	1082	922	2004
Sialkot	630	3260	3890	450	3050	3500	650	2688	3338
Gujranwala	1360	910	2270	1930	1320	3250	2447	2251	4698
Lahore division.	1700	460	2160	1080	130	1210	2277	640	2917
Sh.pura	330	260	590	290	90	380	537	399	936
Lahore district.	40	40	80	10	10	20	47	25	72
Kasur.	1240	160	1400	700	30	730	1534	216	1750
Okara.	90	–	90	80	–	80	159	–	159
Multan division.	480	10	490	460	10	470	753	3	756
Sahiwal	250	–	250	230	10	240	394	1	395
Multan	80	10	90	80	–	80	79	2	81
Khanewal	50	–	50	40	–	40	702	–	102
Vehari	100	–	100	110	–	110	178	–	178
D.G.Khan division.	3110	500	3610	1920	290	2210	2093	20	2113
M.Garh	1980	20	2000	1220	20	1240	1416	2	1418
Leiah	1080	480	1560	670	250	920	646	17	663
D.G.Khan	10	–	10	10	20	30	12	1	13
Rajanpur	40	–	40	20	=	20	19	–	19

Bahawalpur Division	900	-	900	620	-	620	1471	1	1472
Bahawalpur	310	-	310	160	-	160	305	-	305
R.yar khan	110	-	110	80	-	80	162	1	163
Bahl.nagar	480	-	480	380	-	380	1004	-	1004
Punjab:	10760	6960	17720	8700	6450	15150	12770	8398	21168

ANNEXURE -VI **PRODUCTION OF SESAME IN THE PUNJAB BY DIVISION AND DISTRICT FOR THE YEAR, 1986-87 to 1988-89:**

District/ Division	1986-87			1987-88			1988-89		
	Irri.	Un.Irri.	Total	Irri.	Un.Irri.	Total	Irri.	Un.Irri.	Total
R.pindi division.	30	320	350	20	200	220	86	651	737
Attock	–	200	200	–	5	50	60	494	554
R.pindi	–	10	10	–	20	20	–	25	25
Islamabad	–	–	–	–	–	–	–	1	1
Jhelum	30	80	110	20	90	110	25	89	114
Chakwal	–	30	30	–	40	40	1	42	43
Sargodha division.	230	50	280	200	30	230	331	25	356
Sargodha	120	–	120	150	–	150	282	6	288
Khushab	10	10	20	10	–	10	6	10	16
Mianwali	20	10	30	10	–	10	4	2	6
Bhakkar	80	30	110	30	30	60	39	7	46
Faisalabad. Division.	540	–	540	410	–	410	560	1	561
Faisalabad.	320	–	320	210	–	210	285	1	286
T.T.Singh	150	–	150	140	–	140	191	–	191
Jhang.	70	–	70	60	–	60	84	–	84
Gujranwala division.	1380	1410	2790	1570	1480	3050	1965	1620	3585
Gujrat	430	240	670	460	280	740	523	255	778
Sialkot	320	900	1220	220	840	1060	314	743	1057
Gujranwala	630	270	900	890	360	1250	1128	622	1750
Lahore Division	940	140	1080	590	40	630	1258	190	1448
Sh.pura	180	80	260	160	30	190	296	119	415
Lahore	20	10	30	–	–	–	25	7	32
Kasur.	690	50	740	390	10	400	849	64	913
Okara.	50	–	50	40	–	40	88	–	88
Multan Division	260	–	260	250	–	250	414	1	415
Sahiwal	140	–	140	130	–	130	217	–	217
Multan	50	–	50	40	–	40	43	1	44
Khanewal	20	–	20	20	–	20	56	–	56
Vehari	50	–	50	60	–	60	98	–	98
D.G.Khan division.	1570	160	1730	930	100	1020	1011	6	1017
M.Garh.	1000	10	1010	590	10	600	685	1	686
Leiah.	550	150	700	320	80	400	312	5	317
D.G.Khan	–	–	–	–	10	10	5	–	5
Rajanpur	20	–	20	10	–	10	9	–	9

Bahawalpur division.	360	-	360	260	-	260	470	-	470
Bahawalpur	130	-	130	70	-	70	126	-	126
R.yar khan	180	-	180	160	-	160	67	-	67
Bahl.nagar	50	-	50	30	-	30	277	-	277
Punjab:	5310	2080	7390	4220	1850	6070	6095	2494	8589

Annexure VII **Area, Production and yield of oilseed crops in Punjab.**

A R E A (000 HECTARES)

Years/Crops	Rapes & Musterd	Ground nuts	Sunflower	Sesame	Linseed	Soyabean	Coster
1982-83	221.30	61.20	4.32	14.70	6.72	-	0.42
1983-84	150.60	62.60	4.50	13.00	6.16	-	0.43
1984-85	185.60	50.45	4.91	20.37	6.39	N.A.	0.24
1985-86	206.80	46.70	13.80	25.50	7.20	N.A.	0.40
1986-87	158.18	52.68	26.27	17.72	6.46	3.02	0.19
1987-88	136.30	55.12	33.12	15.15	5.80	0.68	0.13
1988-89	177.40	57.37	22.59	21.17	5.49	0.36	0.11
1989-90	157.70	67.60	-	35.30	4.90	-	0.20

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PRODUCTION (000 TONNES)

1982-83	153.70	70.40	2.92	6.10	4.30	-	0.43
1983-84	127.80	71.30	3.20	5.40	4.04	-	0.45
1984-85	149.30	54.48	3.57	8.78	4.08	-	0.26
1985-86	171.70	49.30	8.70	10.70	4.40	-	0.40
1986-87	135.02	57.69	32.05	7.39	4.10	2.80	0.22
1987-88	132.20	34.11	35.87	6.07	3.52	0.75	0.14
1988-89	162.10	60.20	29.37	8.59	3.43	3.43	0.12
1989-90	146.60	61.30	-	13.40	3.10	-	0.20

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Y I E L D (Kg./Hectare)

1982-83	690	1150	670	410	630	-	1020
1983-84	849	1138	723	416	657	-	1037
1984-85	804	1080	770	431	638	-	1087
1985-86	830	1056	817	420	616	-	1087
1986-87	854	1095	1220	417	634	926	1123
1987-88	970	619	1083	401	607	110	1077
1988-89	914	1049	1300	406	625	119	1091
1989-90	930	907	-	380	614	-	1000

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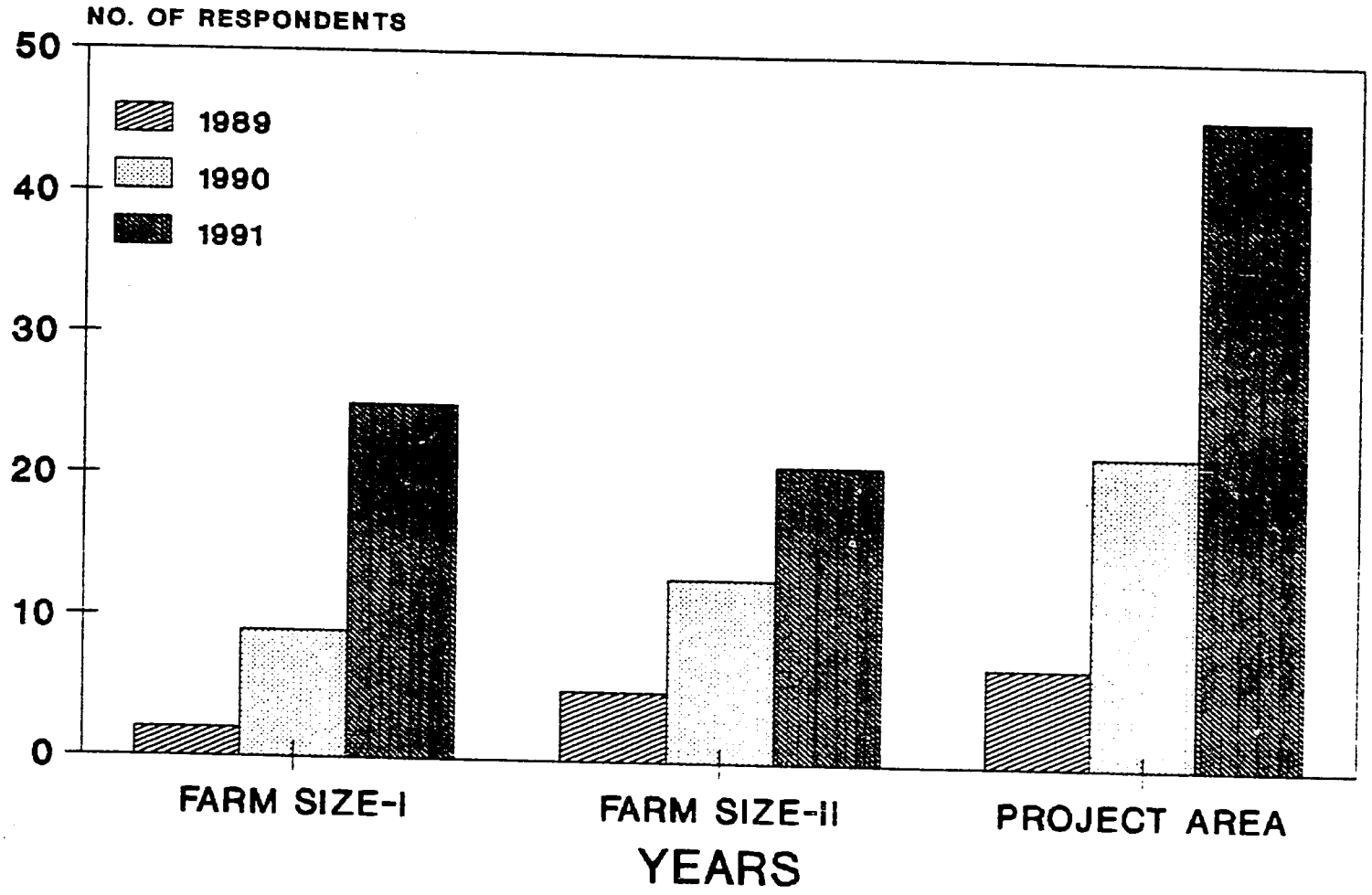
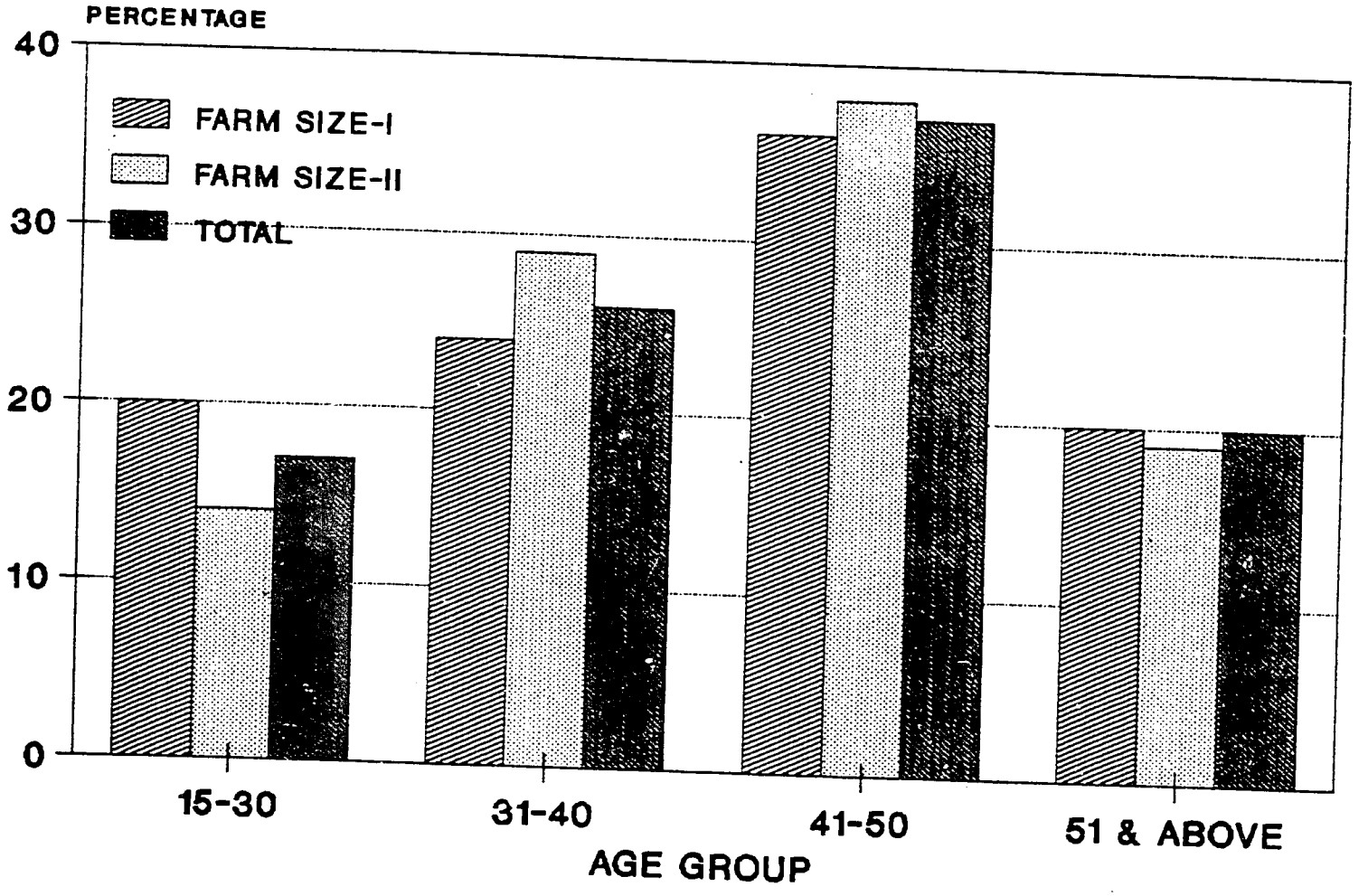
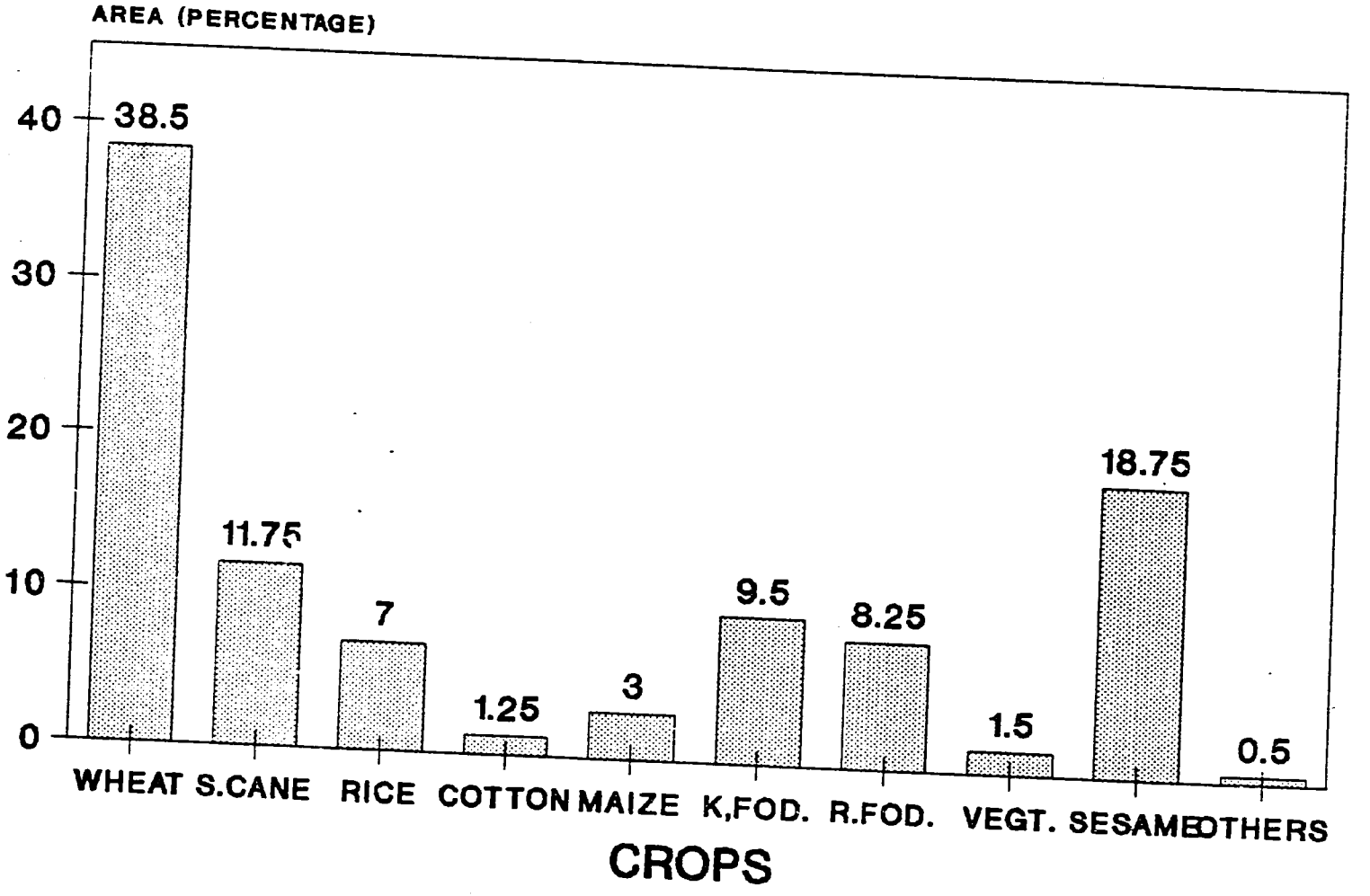
SESAME ADOPTION BY THE FARMERS IN FSR PROJECT AREA, SHAHKOT.



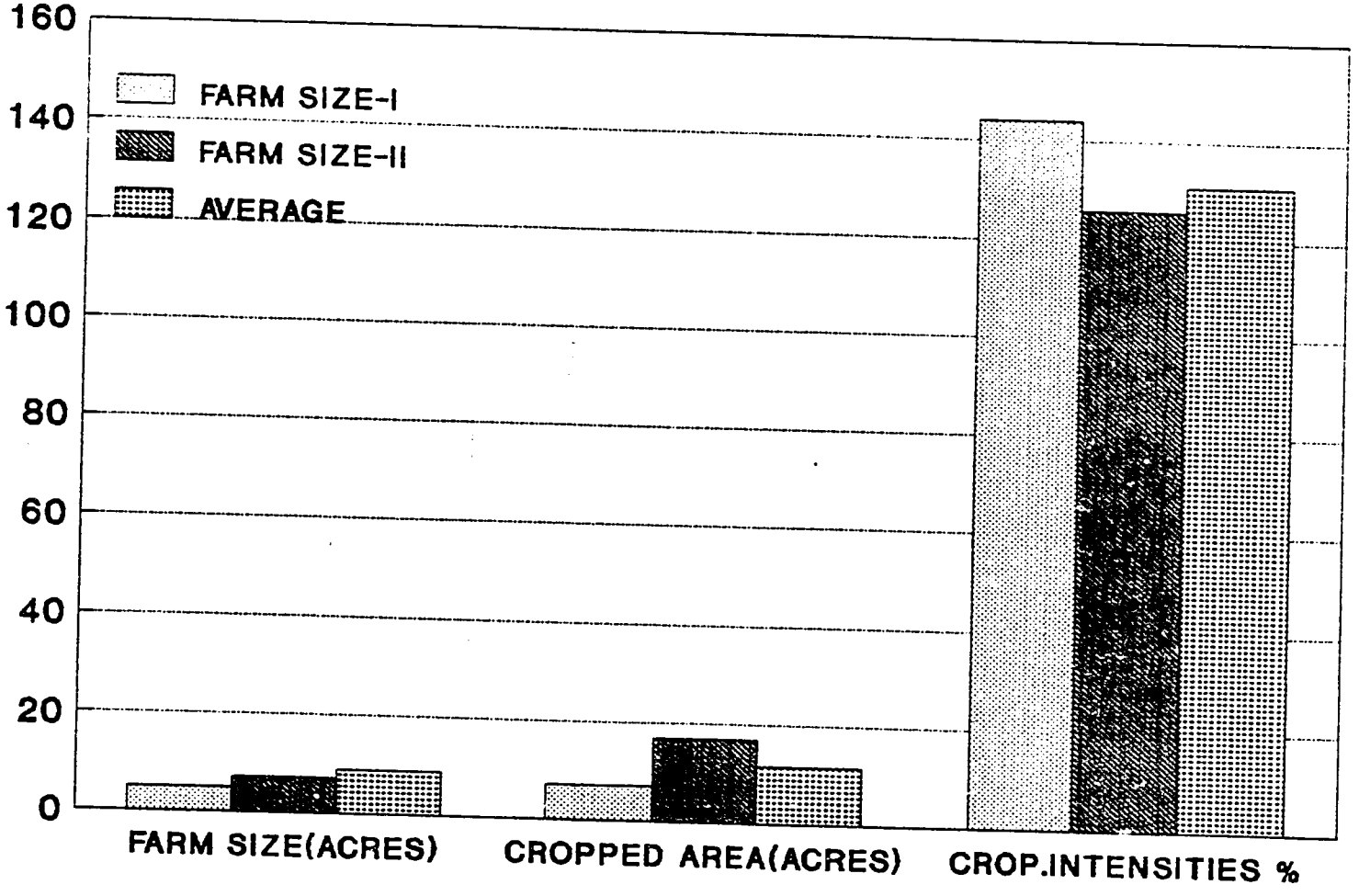
AGE CLASSIFICATION OF THE FARMERS IN FSR, PROJECT AREA, SHAHKOT.



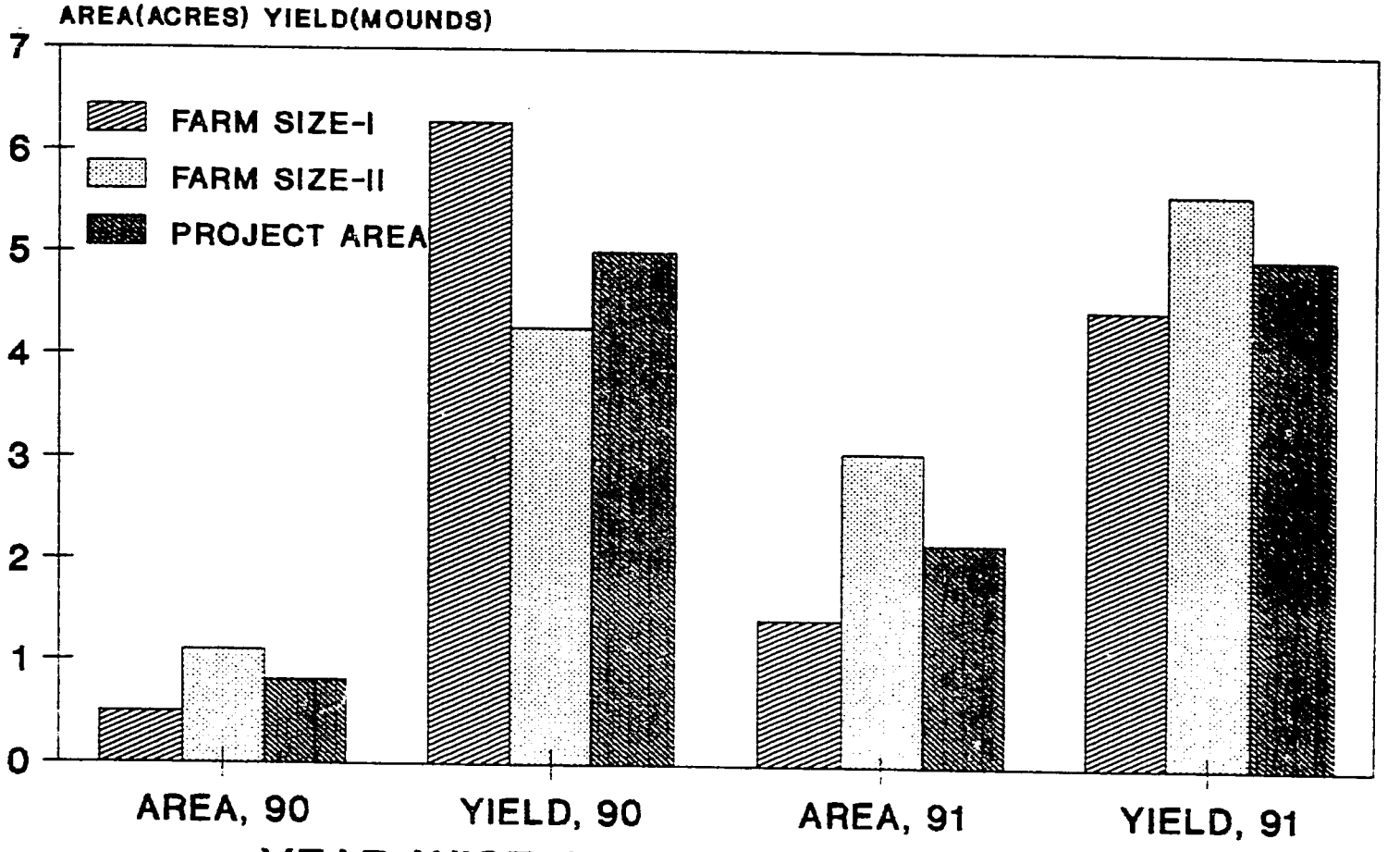
CROPPING PATTERN OF THE FARMERS IN FSR, PROJECT AREA, SHAHKOT.

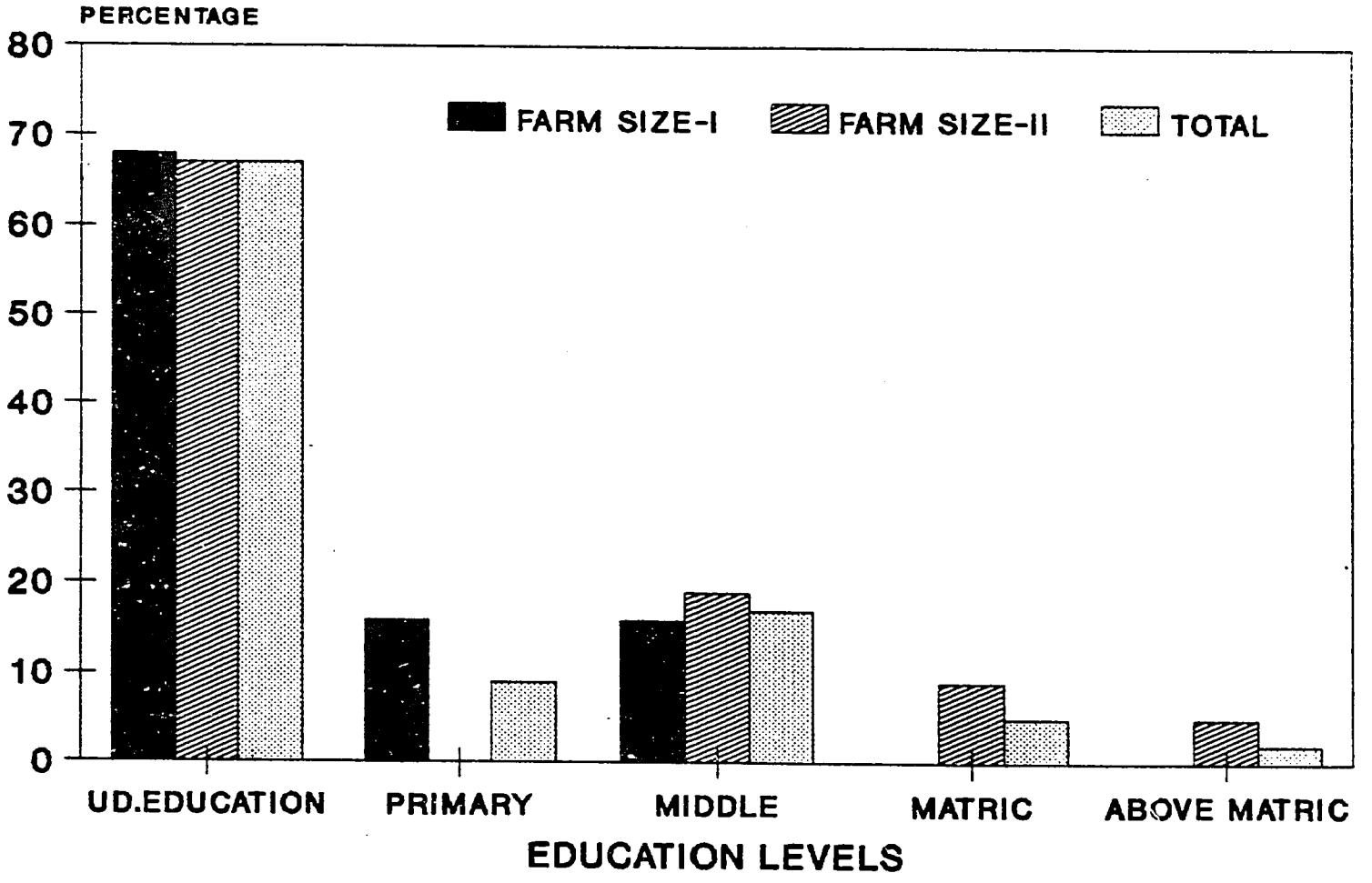


FARM SIZE, CROPPED AREA & CROPPING INTENSITIES OF THE FARMERS IN FSR.



AREA AND YIELD POTENTIAL OF SESAME CULTIVATION IN FSR, PROJECT AREA.



YEAR WISE AREA & YIELD PER ACRE

LITERACY STATUS OF THE FARMERS IN FSR, PROJECT AREA, SHAHKOT.