Research Article

Study the profile and knowledge of the sericulturists about sericulture production technologies

■ **S.B. TODMAL, P.G. KHALACHE, J.H. GAIKWAD AND R.M. JADHAV**

SUMMARY : India has witnessed manifold increase in the area and production of mulberry silk due to introduction of improved varieties of mulberry and improved breeds of silkworm. There has been increase in the silk production from 900 MT to 16000 MT in last five decades due to introduction of improved sericulture practices but still there exists a gap between what has been achieved and what could have been achieved. In the present study, an ex-post facto research design was followed. This study was carried out in Ahmednagar district of Maharashtra. In all, 65 villages from 13 tahsils with maximum area under sericulture and production were selected for the study purpose and sample of 160 respondents was selected. It is observed that majority of the respondent sericulturists were middle age, educated upto high school to Junior college *i.e.* 8th to 12th, had medium size of 6 to 10 members and in joint family, had medium experience in sericulture of 5 to 6 lots. Having medium annual income between Rs. 23,529 to Rs. 1,65,052 and income from sericulture between Rs. 19,158 to Rs. 1,45,556 and received upto 2 number of trainings, having small land holding *i.e.* 1.01 to 2.00 hectares and area under mulberry plantation was 0.41 to 0.80 ha and majority respondent sericulturists possessed rearing trays, rearing stands and leaf cutting knives, had tube well as a irrigation source and majority respondent sericulturists possessed separate rearing house, had medium cosmopoliteness, used medium sources of information, had medium social participation and had medium level of managerial skills.

BACKGROUND AND OBJECTIVES

The word 'Sericulture' is derived from the Greek word *i.e.* 'Sericos' which means 'silk' and the English word *i.e.* 'culture' which means 'rearing'. It is a multidisciplinary programme. It involves the cultivation of mulberry to produce leaf, rearing of silkworm to convert leaf to cocoon, reeling of the cocoon to obtain silk yarn and waving to convert yarn to fabrics. Silk is a natural fibre where two independent fibroins called brins are completely covered with sericin. Since the independence, India has witnessed manifold increase in the area and production of mulberry silk due to introduction of improved varieties of mulberry and improved breeds of silkworm. There has been increase in the silk production from 900 MT to 16000 MT in last five decades due to introduction of improved sericulture practices but still there exists a gap between what has been

achieved and what could have been achieved. This gap might be due to limitations in the dissemination of improved practices by the extension workers and non-adoption of recommended package of sericulture practices by the sericulturists. Silk occupies a supreme position in the field of natural fibers since it has high export value and used for manufacturing of many luxurious products like Saree, Silk carpets, Kurta, Salwar, interior decoration materials etc. Export earnings from silk during the year 2009-10 were 3178.19 Crores and it provides employment to over 63 lakh persons in India.

Objectives:
– To study the profile of the sericulturist.
– To study the knowledge level of the sericulturist regarding recommended sericulture production technologies.

Author for correspondence :

J.H. GAIKWAD
Department of Extension Education, Mahatma Phule Krishi Vidyapeeth, Rahuri, AHMEDNAGAR (M.S.) INDIA

See end of the article for authors' affiliations

S.B. TODMAL, P.G. KHALACHE, **J.H. GAIKWAD** AND R.M. JADHAV

RESOURCES AND METHODS

In Ahmednagar district 1319 villages of the district, 65 sericulture villages were selected where the sericulture farming is exercised. This study was carried out in Ahmednagar district of Maharashtra. All fourteen tahsil were purposively selected. From these one tahsil *i.e.* Kopergaon was not included because more irrigated area, since the farmers from this tahsil has not adopted the sericulture production technology. In all, 65 villages from 13 tahsils with maximum area under sericulture and production were selected for the study purpose and sample of 160 respondents was selected from the selected sixty five villages of Ahmednagar district for studying impact of sericulture production technology on the socio-biography of the sericulturists.

OBSERVATIONS AND ANALYSIS

From Table 1 and 2 it is observed that majority of the respondent sericulturists were middle age, educated upto high school to Junior college *i.e.* 8th to 12th, had medium size of 6 to 10 members and in joint family, had medium experience in sericulture of 5 to 6 lots. Having medium annual income between Rs. 23,529 to Rs. 1,65,052 and income from sericulture between Rs. 19,158 to Rs. 1,45,556 and received upto 2 number of trainings, having small land holding *i.e.* 1.01 to 2.00 hectares and area under mulberry plantation was 0.41 to 0.80 ha and majority respondent sericulturists possessed rearing trays, rearing stands and leaf cutting knives, had tube well as a irrigation source and majority respondent sericulturists possessed separate rearing house, had medium cosmopoliteness, used medium sources of information, had medium social participation and had medium level of managerial skills.

It is observed that from Table 3 and 4 and that majority (98.12 %) of the respondent were using cutting of mulberry variety *viz.,* V-1. They were aware of silkworm littre used in compost making, biogas production and also used as cattle and poultry feed (96.87 %). They were aware that, the organic manures (FYM) are applied @ 10 and 20 to 30 tonnes/ha/year as the basal dose for rainfed and irrigated crops (95.00 %) whereas, silk used for manufacturing of many luxurious products like saree, silk carpets, kurta, salwar and interior decoration material (90.62 %). Further, they were also aware about the, wet gunny bag/ leaf chambers' are used for leaf preservation (88.75 %). Bottom pruning, middle pruning and whole shoot pruning are the methods of pruning (85.00 %) and mulberry, Indian Tassar, Chinese and Japanese, Eri, Fishline are the major species of silkworm (84.37 %). The respondent sericulturists were aware that major diseases of mulberry plants are powdery mildew, leaf-spot, leaf-rust, leaf blight, stem- rot, root-rots (82.50 %) and chlorophyll paste, proteins and plastic material can be prepared from silkworm

Table 1 : Distribution of the respondent sericulturists by their profile (n=160)

Sr. No.		Respondents	
		Frequency	Percentage
Age			
1.	Young (upto 35 years)	45	28.12
2.	Middle (36 to 55 years)	84	52.50
3.	Old (56 and above years)	31	19.38
Education level			
1.	Illiterate	42	26.25
2.	Primary school (1st to 4th)	23	14.37
3.	Middle school (5th to 7th)	23	14.37
4.	High school and Jr. College (8th and 12th)	62	38.75
5.	Degree and higher education	10	06.26
Type of family			
1.	Joint family	96	60.00
2.	Nuclear family	64	40.00
Size of family			
1.	Small (upto 5 members)	33	20.62
2.	Medium (6 to 10 members)	94	58.76
3.	Large (11 and above members)	33	20.62
Experience in sericulture			
1.	Low (3 to 4 lots)	70	43.75
2.	Medium (5 to 6 lots)	86	53.75
3.	High (7 and above lots)	4	02.50
Experience in farming			
1.	Low (upto 10 years)	45	28.12
2.	Medium (11 to 35 years)	84	52.50
3.	High (36 and above years)	31	19.38
Annual income (Rs.)			
1.	Low (Upto Rs. 23528)	13	08.13
2.	Medium (Rs. 23529 to 1,65,052)	95	59.37
3.	High (Rs. 1,65,053 and above)	52	32.50
Income from sericulture			
1.	Low (Upto Rs. 19,157)	14	08.75
2.	Medium (Rs. 19,158 to 1,45,556)	130	81.25
3.	High (Rs. 1,45,557 and above)	16	10.00
No. of training received			
1.	Nil	33	20.63
2.	Only one training	45	28.12
3.	2 trainings	74	46.25
4.	3 and above trainings	08	05.00
Size of land holding (ha)			
1.	Marginal (Upto 1.00 hectare)	66	41.25
2.	Small (1.01 to 2.00 hectares)	81	50.62
3.	Big (2.01 hectares and above)	13	08.13
Area under mulberry (ha)			
1.	Upto 0.40 hectare	66	41.25
2.	0.41 to 0.80 hectare	69	43.13
3.	0.81 hectare and above	25	15.63

Table 2 : Distribution of the respondent sericulturists by their profile

Sr. No.		Respondents (n=160)	
		Frequency	Percentage
Cosmopoliteness (Scores)			
1.	Low (Upto 7 scores)	38	23.75
2.	Medium (8 to 10 scores)	83	51.87
3.	High (11 and above scores)	39	24.38
Level of information sources use (Scores)			
1.	Low (Upto 21 scores)	45	28.12
2.	Medium (21 to 32 scores)	84	52.50
3.	High (32 and above scores)	31	19.38
Social participation (Scores)			
1.	Low (Upto 2 scores)	24	15.00
2.	Medium (3 to 4 scores)	118	73.75
3.	High (5 and above scores)	18	11.25
Managerial skills (Scores)			
1.	Low (Upto 50 scores)	44	27.50
2.	Medium (51 to 77 scores)	88	55.00
3.	High (78 and above scores)	28	17.50

Table 3 : Distribution of the respondent sericulturists by their practicewise knowledge of selected mulberry cultivation technology

Sr. No.	Practice selected	Recommendations	Frequency and percentage (n=160)		
			Full knowledge	Partial knowledge	No knowledge
1.	Soil type	Well drained loamy to clayey (pH 6.2-6.8)	160 (100.00)	00 (00.00)	00 (00.00)
2.	Land preparation	Deep ploughing @ depth of 30-35 cm	160 (100.00)	00 (00.00)	00 (00.00)
3.	Mulberry variety	V-1, Kanva-2, S-34, S-13	160 (100.00)	00 (00.00)	00 (00.00)
4.	Time of planting	Onset of monsoon	160 (100.00)	00 (00.00)	00 (00.00)
5.	Spacing	Paired row (90+160) x 60 cm OR 90 x 90 cm	155 (96.87)	05 (03.13)	00 (00.00)
6.	Chemical fertilizers	300:120:120	02 (01.25)	135 (84.37)	23 (14.38)
7.	FYM	10 tonnes/ha	155 (96.87)	03 (01.88)	02 (01.25)
8.	Bio-fertilizer	Azatobacter (4 kg/crop)	05 (03.12)	02 (01.25)	153 (95.63)
9.	VAM	1000 kg/ha (Only once)	02 (01.25)	03 (01.88)	155 (96.87)
10.	Irrigation schedule (n=28)	10-14 days interval @ 1.5-2 inch acre	05 (03.12)	132 (82.50)	23 (14.38)
11.	Intercultivation	After each harvest followed by hand weeding	160 (100.00)	00 (00.00)	00 (00.00)
12.	Time of harvesting the leaves	During morning hour	142 (88.75)	16 (10.00)	02 (01.25)
13.	Leaf preservation	Wet gunny bag method/leaf preservation chamber	06 (03.75)	143 (89.37)	11 (06.88)
14.	Pruning time	Onset of monsoon	147 (91.87)	10 (06.25)	03 (01.88)
15.	Pruning height	25-30 cm	12 (07.50)	141 (88.12)	07 (04.38)
16.	Leaf spot	Captan @ 2.5 ml/l	03 (01.88)	142 (88.75)	15 (09.37)
17.	Rust	Mancozeb 75 % @ 2.5-3 ml /l	09 (05.62)	139 (86.88)	12 (07.50)
18.	Tukra	Cypermethrin WP	08 (05.00)	139 (86.88)	13 (08.12)
19.	Bihar hairy caterpillar	Chloropyriphos	04 (02.50)	142 (88.75)	14 (08.75)
20.	Leaf webber disease	Cypermethrin WP	05 (03.13)	151 (94.37)	04 (02.50)

Figures in parenthesis indicates the percentage.

litter (75.00 %). Further, they were aware that, the mulberry fruit juice can be used for curing sore throat fever and diseases like dyspepsia, melancholia (73.75 %). Mulberry tea is reported to reduce blood pressure (70.62 %) and mulberry root has anti diabetic properties (70.00 %). Mulberry leaves are used for protein supplementary diet (65.00 %) and leaves are rich in glucose, fructose, sucrose, dextrin, galantine and crude fibers (56.25 %).

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Table 4 : Practicewise knowledge of selected silkworm rearing production technology

Sr. No.		Recommendations	Frequency and percentage (N=160)		
			Full knowledge	Partial knowledge	No knowledge
Practice selected					
1.	Silkworm breed	CSR2 x CSR4	05 (03.13)	151 (94.37)	04 (02.50)
2.	DFLs	1500 numbers/ha	142 (88.75)	18 (11.25)	00 (00.00)
3.	Rearing type	Shoot rearing	160 (100.00)	00 (00.00)	00 (00.00)
4.	Transportation time of DFLs	Cooler hours of the day during moult time	142 (88.75)	16 (10.00)	02 (01.25)
Disinfection of rearing house					
5.	Before stating rearing of new worms	Sanitech	151 (94.37)	07 (04.38)	02 (01.25)
6.	After harvesting of cocoons	Bleaching powder	14 (08.75)	132 (82.50)	14 (08.75)
7.	Concentration of the rearing house disinfectant	2.5 % Sanitech (5 % bleaching powder)	01 (00.63)	125 (78.12)	34 (21.25)
8.	Temperate and humidity	26-28 ^{0}C and 85-90 % R.H.	09 (05.62)	146 (91.25)	05 (03.13)
9.	Time of black boxing	Head pigmentation stage	26 (16.25)	131 (81.87)	03 (01.88)
10.	Application of lime powder	2 kg/100 DFLs	151 (94.37)	06 (03.75)	03 (01.88)
11.	Chemical used for bed disinfection	Vijetha powder	155 (96.87)	02 (01.25)	03 (01.88)
12.	Concentration of bed disinfectant	3.5 g/sq.ft. (depending on age of worms)	02 (01.25)	123 (76.87)	35 (21.88)
13.	Schedule of bed cleaning	In III, IV and V instar	145 (90.62)	12 (07.50)	03 (01.88)
14.	Spacing of worms	Increasing order of spacing with increase in age of the worms	24 (15.00)	133 (83.12)	03 (01.88)
Control of diseases					
15.	Uzifly control	Sanitation, use of physical barriers	09 (05.62)	145 (90.62)	06 (03.75)
16.	Grasserie	Keep the trays clean and dry	14 (08.75)	129 (80.62)	17 (10.63)
17.	Flacherie	Proper bed cleaning and use of mild fungicide	07 (04.37)	122 (76.25)	31 (19.38)
18.	Pebrie	Use of good quality DFLs and sanitation	07 (04.37)	151 (94.38)	02 (01.25)
19.	Muscardine	Proper bed cleaning	07 (04.37)	144 (90.00)	09 (05.63)
20.	Time of harvesting cocoon	Approximately on 9th day of mounting	134 (83.75)	14 (08.75)	12 (07.50)
21.	Grading of cocoons	Based on the quality of cocoon	07 (04.37)	147 (91.88)	06 (03.75)
22.	Time of transportation of cocoons	During Cooler hours of the day	151 (94.37)	06 (03.75)	03 (01.88)
23.	Cocoon yield/ha	850 kg/ha	18 (11.25)	133 (83.12)	09 (05.63)

Figures in parenthesis indicates the percentage.

Conclusion:

The study concluded that, the majority of the respondent sericulturists were middle age, educated upto high school to Junior college *i.e.* 8th to 12th, had medium size of 6 to 10 members and in joint family, had medium experience in sericulture of 5 to 6 lots. Having medium annual income between Rs. 23,529 to Rs. 1,65,052 and income from sericulture between Rs. 19,158 to Rs. 1,45,556 and received upto 2 number of trainings, having small land holding *i.e.* 1.01 to 2.00 hectares and area under mulberry plantation was 0.41 to 0.80 ha and majority respondent sericulturists possessed rearing trays, rearing stands and leaf cutting knives, had tube well as a irrigation source and majority respondent sericulturists possessed separate rearing house, had medium cosmopoliteness, used medium sources of information, had medium social participation

and had medium level of managerial skills. Majority (55.00 %) of the respondent sericulturists had medium level knowledge regarding selected sericulture production technologies. Majority (56.25 %) of the respondent sericulturists had adopted the selected sericulture production technologies upto medium extent. More than half (78.13 %) of the respondent sericulturists were under the medium impact group. Majority of the sericulturist annual income was increased due to adoption of sericulture technology, using organic manure, using disease free seeds, sericulturist should grow large number of crops to avoiding greater risk, preparation of calendar of operations in mulberry, use the cutting of mulberry variety *viz.,* V-1 and proper packing of cocoons for avoid transport losses and damage.

Agric. Update, **8**(1&2) Feb. & May, 2013 : 278-282
Hind Agricultural Research and Training Institute

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Authors' affiliations :

S.B. TODMAL AND P.G. KHALACHE, Department of Extension Education, Mahatma Phule Krishi Vidyapeeth, Rahuri, AHMEDNAGAR (M.S.) INDIA

R.M. JADHAV, College of Biotechnology, LONI (M.S.) INDIA

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