Special Swarnjayantri Gramin Swarojgari Yojana For Development of Sericulture in Kumaun Region of Uttarakhand

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Abstract - **Self employment has become important considering un-employment situation in the rural areas. Government of India has been encouraging regular income and employment oriented farming occupation like sericulture. Sericulture, being an agro-forest based cottage industry, has become the most important rural industry playing a dominant role in rural development in various states and controls migration of rural poor to urban places. In recent years, Central Silk Board in association with respective DoS has launched various programmes for development and improvement of socio-economic conditions of poor sericulturists but these schemes/programmes did not gave the desired impact on developmental activities leading to insufficient livelihood generation due to many reasons. The role of NGOs in sericulture extension becomes very important and crucial for overall development of the silk industry. Keeping in view, SSGSY was implemented through NGO and DoS, Uttarakhand in U.S.Nagar and Nainital respectively in coordination with Central Silk Board. It is observed from the study that sericulture activity is being practiced by economically backward sections of the society viz., 66.25 and 80.66% beneficiaries belong to below poverty line (BPL) in Nainital and U.S.Nagar district respectively. Data revealed that numbers of farmers have increased over the years and silkworm seed intake has also increased during the study. This inferred that farmers have taken interest in this activity and the same may flourishing in the coming years.**

keywords - **Self-employment, Sericulture, SSGSY, Mulberry, Silkworm**

INTRODUCTION

Rural Industries have an important role in the economic development of our country. A vibrant rural on farm sector generates self-employment resulting in higher income. Reducing poverty check, the rural migration to urban areas and bringing about the balanced regional development. The rural development focuses least advantaged people in the area to achieve reasonable living conditions and livelihood opportunities, allowing them to fully develop their personality and productive capacity. The programmes modelled on participatory approach have shown better impacts in various countries including India. The concept of group economic activities has showed that huge resources can be mobilized from even among the poor people and managed by the people themselves quite efficiently. People who are homogenous in respect to social background, heritage, caste or traditional occupations come together from a common cause to rise and mange resources for the benefit of group members. Self help groups (SHGs) are voluntary association of people which are formed for taking up a collective development activity, practising thrift and credit and availing government and non government facilities. With the introduction of the concept of group economic activities and self help groups, even small and marginal farmers are organising themselves into groups to receive the facilities of modern technology and inputs.

Considering the dimension of the employment situation in the rural areas, there is an important need to diversify agriculture into high yielding economic activities which would generate employment, ensure greater rate of return to the farmers and promote self reliance. Further, in order to control migration of rural poor to urban places, Government of India has been encouraging regular income and employment oriented farming occupation, one such potential farming is sericulture. Sericulture, an agro-forest based cottage (Silk) industry, is accepted as an employment generating socio-economic development sector since ancient time. Sericulture has become the most important rural industry playing a dominant role in rural development in various states. A large chunk of labour is employed in all the sericulture activities and the industry is a boon to the labour surplus countries like India. Sericulture industry supported millions of rural people in our country by way of providing employment. The majority of them belong to the economically backward sections of the society as well as scheduled castes and scheduled tribes (Yadav, 2008; Aslam, et al. 2019). Sericulture in India has turned out to be a highly remunerative enterprise with minimum capital base and yielding reasonably well returns vi-a-vis other enterprises. Sericulture effectively transfers urban wealth to rural producers, provides return within a short period of time and also assures potential family employment opportunities. About 57 per cent of the gross value of silk fabrics flows back to the cocoon growers.

Mulberry sericulture has transformed from a subsistence type to a modern scientific enterprise in most of the traditional as well non traditional states. Although sericulture has been a very important household based productive activity in recent years and Central Silk Board in association with respective Directorate of Sericulture (DoS) has launched various programmes for development and improvement of socio-economic conditions of poor sericulturists but these schemes/programmes did not gave the desired impact on developmental activities leading to insufficient livelihood generation. The role of Non – Governmental

Organisations (NGO) in sericulture extension becomes very important and crucial for harnessing the local natural resources for overall development of the silk industry. Since the NGOs have flexibility and people centred extension style and work in gross root level, they can offset some of the weakness of public extension system by having partnership with Government agencies like technology adoption, narrowing the gap between lab to land, acts as facilitator at the field level. In view of the above, one project had been formulated and submitted to Ministry of Rural Development (MORD), Govt. of India for necessary approval to generate employment to local peoples at their door and named as Special Swarnjayantri Gramin Swarojgari Yojana (SSGSY). Two district of Uttarakhand viz. Nainital and Udham Singh Nagar (U.S.Nagar) were taken to implement the said project. The project has been approved by Ministry of Rural Development (MORD), Govt of India. Keeping in view, it was decided to implement the cutting edge technologies through one of the reputed NGO i.e., Gramin Evam Krishi Vikas Samity (GEKVS) in U.S.Nagar and through DoS in Nainital district in coordination with Central Silk Board.

MATERIAL AND METHODS

Three blocks viz.Bazpur,Gadrpur and Kashipur were identified in U.S. Nagar whereas two blocks viz Ramnagar and Kotabagh in Nainital district for implementation of this programme. All said blocks were dominated by BPL families.

It had been observed that financial involvement of beneficiaries on successful implementation of any programme is very important. So, at the time of formulation of the project and its implementation, beneficiaries' direct sharing involvement has been kept. Though, swarojgari (beneficiary) share was only 4.9% but the financial assistance from the bank was extended only after depositing their share in bank account. Financial sharing pattern in the project was as detailed in table-01.

Table-01: Sharing pattern

Partner	Amount (Rs. In lack)
Credit from financial Institution or Implementing agency	76.205 (8.3%)
Swarojgari's contribution	44.991 (4.9%)
Ministry of Rural Development (MORD)	417.009 (45.43%)
Central Silk Board	299.383 (37.62%)
DoS, Uttarakhand	80.253 (8.74%)

Financial assistance had been provided for establishment of vermin-compost shed, raising & maintenance of high yielding mulberry plantation, construction of separate rearing houses at farmer's level, supply of rearing appliances to the farmers, establishment of chawki rearing centres, training and exposure visit to the implementing agencies. Funding agencies were Ministry of Rural Development (MORD), Govt. of India, Central Silk Board and DOS-Uttarakhand.

One year old mulberry saplings of improved variety (S-146) were supplied to the identified beneficiaries to raise the plantation. Silkworm seed of bivoltine hybrids were obtained from NSSO, Bangalore through DoS, Uttarakhand. Chawki rearing was conducted as per the recommended package of practices (Dandin and Giridhar, 2014 and Jolly, M.S., 1987) at respective chawki rearing centres. Chawki reared silkworms were distributed to the identified beneficiaries to conduct late age silkworm rearing during both seasons i.e. spring and autumn throughout the project period.

RESULTS AND DISCUSSIONS

***Selection of the farmers*:** Due to involvement of banks credit only non defaulter's beneficiaries were selected. The identified beneficiaries were analyzed category wise as well as block wise. It is apparent from the table - 02 that 265 (66.25%) beneficiaries out of 400 and 484 (80.66%) beneficiaries out of 600 belong to below poverty line (BPL) in Nainital and U.S. Nagar districts respectively. This indicates that sericulture activity is being practiced by economically backward sections of the society in these districts is in accordance with the report of Karnataka and Pachwadoon area of Doon Valley by Yadav, 2008 and Aslam et al.,2019 respectively. Further, male beneficiaries were more than the females (Fig.-01).

Table – 02: Profile of SSGSY farmers categories wise-district & Block wise

Block	SC		ST		OBC		General		Total		Total	APL	BPL
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female			
District-Udham Singh Nagar													
Bazpur	7	2	98	11	43	9	35	2	183	24	207	38	169
Gadrpur	5	4	62	3	78	10	88	17	233	34	267	35	232
Kashipur	51	12	31	7	4	1	19	1	105	21	126	43	83
Total	**63**	**18**	**191**	**21**	**125**	**20**	**142**	**20**	**521**	**79**	**600**	**116**	**484**
District-Nainital													
Ramnagar	12	0	0	0	0	0	51	2	63	2	65	5	60
Kotabagh	65	6	0	0	3	0	248	13	316	19	335	130	205
Total	**77**	**6**	**0**	**0**	**3**	**0**	**299**	**15**	**379**	**21**	**400**	**135**	**265**

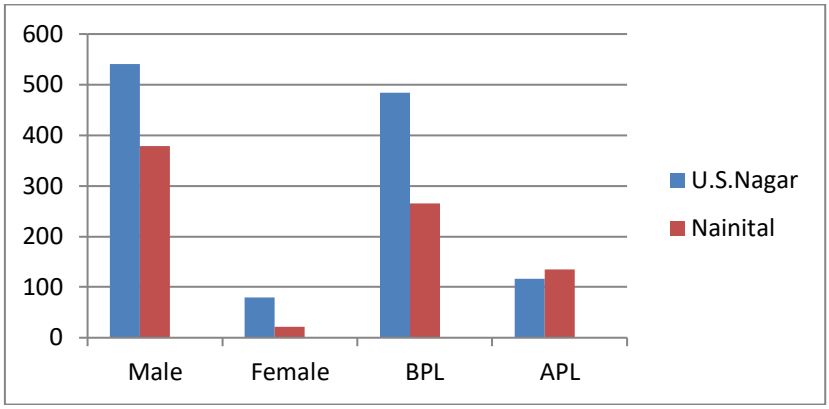

Fig.-01: Sex ratio and social status of the farmer

***Mulberry plantation*:** It is reported under sub tropical conditions of North India that the mulberry cultivation is more economical as bush over trees plantation recording more than double leaf production per unit area (Fotadar et al, 1995; Dhar et al, 1996). However, sericulture industry in Northern states of the country sustains mostly on mulberry trees existing road side, ward side, river banks and boundary plantation thereby forming a major source of foliage (Dhar et al,1996 ; Dhar and Bindroo. 1997; Khan, 2006). Further, sericulture farmers are not ready to raise mulberry plantation on their prime land due to the less land holding capacity. In view of the earlier findings and less land holding by the farmers, it had been decided in the present project to raise the mulberry plantation on bunds of the agricultural fields so that the mulberry wealth could be maintained on minimum expenditure and sericulture activity may sustain for long time. Considering the above facts, 973 farmers have raised mulberry plantation @ 300 saplings / unit (Fig.-02) whereas 27 farmers have raised bush plantation @ 2000/ unit out of 1000 beneficiaries under this programme. Assistance for construction of rearing houses and rearing appliances was extended to only those farmers who have maintained mulberry plantations as per the project documents. Verification of existing plantation followed by gap filling was carried out regularly.

Fig.-02: Boarder row mulberry plantation on bunds of agriculture field

Establishment of CRCs: Chawki rearing is a crucial and delicate stage for success of silkworm crop. Chawki rearing is being conducted by the department at their chawki rearing centers (CRCs). Nine CRCs have been established under this programme. 08 Chawki rearing centers have their own mulberry garden attached to CRC buildings. One CRC is purchasing mulberry leaves from the farmers due to non availability of land with the centre to raise the garden. All CRCs are functional.

Construction of rearing houses and supply of rearing equipments: It had been observed that silkworm rearing is being conducted in rearing cum dwelling houses in this part of the country which leads to the poor quality of cocoons and sometimes partial crop loss due to disease incidence. Further, floor or shelve type of silkworm rearing was conducted and local mounting materials were being used for preparation of cocoon by silkworms. In view of the above, financial assistance was provided to the beneficiaries for construction of separate rearing houses through respective Banks. Rearing appliances were procured by DoS, Uttarakhand and supplied to the beneficiaries. It is revealed from the table - 3 that 400 rearing houses in Nainital and 600 in U.S. Nagar were constructed at farmer's level. Rearing appliances were also supplied to those beneficiaries who had constructed rearing houses.

Table-03: Details of Construction of rearing houses and supply of rearing equipments

#	Particulars	Name of the district	No. of application submitted	No. of applications sanctioned	Construction completed
1	Rearing house	Nainital	400	400	400
		U.S.Nagar	1000	600	600
2	Rearing appliances		Supplied through DoS		
		Nainital	400		
		U.S.Nagar	600		

Host plant Management: The Uttarakhand has been declared as organic state by the Government, hence it had been decided to develop vermin compost culture among the farmers for host plant (mulberry) management. In this direction, 50 vermi-compost pits were constructed by the farmers and *Eisenia foetida* earthworms were supplied to them for vermi-composting. All units are functional (Fig.-03 and 03 A). In the present study the produced vermi-compost was utilized by the farmers for maintenance of mulberry gardens thereby improving the leaf quality. It had been reported that the quality of mulberry leaves is one of the most important factors governing the production of good cocoon crop (Shankar et al., 1992). Further, the growth and developmental of the silkworm larvae and the economic characters of cocoons are known to be influenced by the nutritional content of mulberry leaves (Krishnaswami et. al, 1993).

Fig.-03: Vermi-compost pit

Fig.-03A: Vermi-compost pit

Silkworm rearing: Uttarakhand state is generally referred as 'Bowl of Bivoltine silk of India'. In view of the above, silkworm rearing of only bivoltine hybrids was conducted during spring and autumn seasons from 2009 to 2013. Chawki reared silkworm seed was distributed among the beneficiaries. It is apparent from the Fig-04 that seed intake is increasing over the years. The rearing performance for last five years is depicted in Table-04. It is clear from the table that numbers of silkworm rearers are increasing crop to crop. Similarly, crop performance has also improved over the years. This provides the employment opportunities in the rural areas of Nainital and U.S.Nagar to the silkworm rearers.

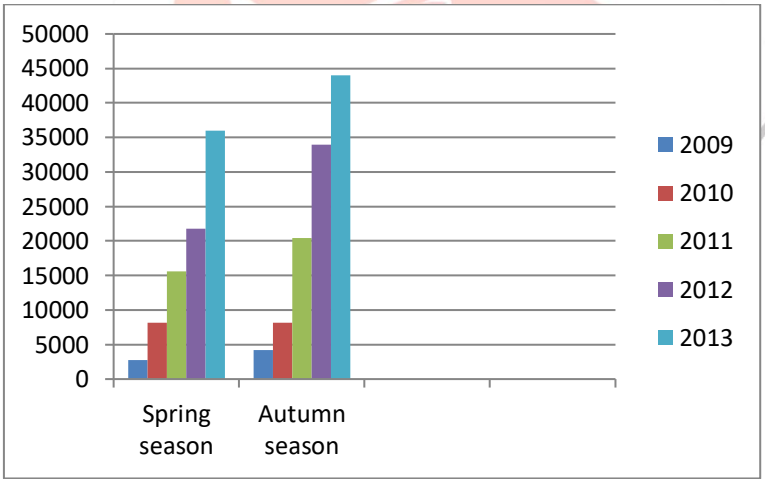

Fig. - 04: Chawki reared silkworm seed distribution details

Table-04: Silkworm rearing performance

Particulars	Year/Season									
	2009		2010		2011		2012		2013	
	Spri.	Autu.	Spri.	Autu.	Spri.	Autu.	Spri.	Autu.	Spri.	Autu.
Qty. Of DFLs	2800	4250	5700	8150	15625	20450	21825	34000	36000	44000
Hybrid	CSR hybrid	$NB4D_2$ x SH_6	CSR hybrid	SH_6 x NB_4D_2	CSR hybrid	SH_6 x NB_4D_2 & FC1xFC2	CSR hybrid	SH_6 x NB_4D_2	CSR hybrid	APS4xAPS5 & FC1XFC2
Nos. of farmer	109	138	135	175	386	516	544	914	1018	1094
Seed intake / farmer	25.68	30.80	42.22	46.57	40.48	39.63	40.12	37.20	35.36	40.22
Yield Kg/ 100 DFLs	26.02	31.27	29.01	27.30	31.76	31.15	36.58	33.39	32.56	22.94

The raw silk production is directly proportional to the cocoon production. Seed intake and number of rearers have increased in autumn crop than spring in the same year (Fig.-04 and Table – 04). Hence, raw silk production in any crop depends on cocoon production during the crop (Fi.-05).

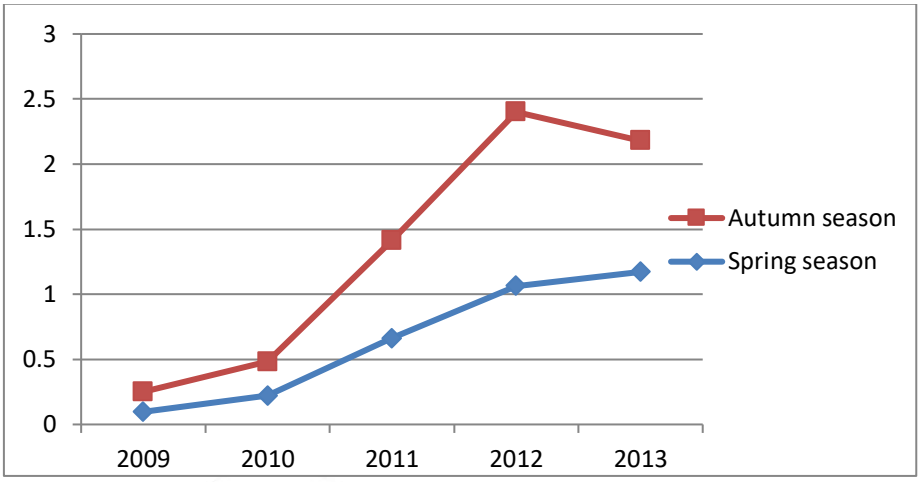

Fig.- 05: Raw silk production

It is reported that the optimum temperature and humidity required for successful silkworm rearing ranges from 22-28^{O}C and from 70-85% respectively resulting in quality cocoons production (Datta, 1992; Krishanswami, et al., 1993). The variations in the environmental conditions day to day, season to season and year to year within the same season also effect on the productivity emphasize the need of temperature and relative humidity for sustainable cocoon production as observed in the present study is in accordance with the earlier findings (Rahmatullah, 2012). In general, the early instar larvae (chawkie reared worms) are resistant to high temperature which also help in improving survival rate and cocoon characters (Thiagarajan et al., 1993; and Ramesh et al., 2009). The seasonal differences in the environmental components such as temperature, relative humidity, light and nutrition considerably affect the genotypic expression in the form of phenotypic output of the silkworm crop such as cocoon weight, shell weight and ultimately cocoon shell ratio (Rahmatullah, 2012). Further, the actual productivity depends on meticulous effort in transfer of technology and the extent of acceptance of recommended technologies by farmers (Choudhary et.al, 2000; Gunashekhar et.al, 2003; Negi et.al, 2007; Aslam et.al, 2007; Jaishankar and Dandin, 2004; Verma et.al, 2007).

CONCLUSION

Sericulture is unique in its advantages and suitability to rural set up. It had been established that generally one hectare of mulberry land generates employment for 1700 to1900 mandays under rainfed conditions and 37, 00 to 39, 00 mandays under irrigated conditions from soil to the end product process. Present study revealed that numbers of farmers have increased over the years and silkworm seed intake has also increased. This inferred that farmers are taking interest in this activity and more farmers are getting employment by adopting sericulture. This indicates considerable scope for increasing employment and income in rural areas through sericulture. It will help to control migration of rural poor to urban places and the same may flourishing in the coming years.

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