IMPROVED TECHNOLOGIES AND THEIR IMPACT ON MULBERRY LEAF AND COCOON PRODUCTION IN TIRUNELVELI DISTRICT OF TAMIL NADU, INDIA

[1]SUNDARA RAJ J, [2] S. AKHIL KUMAR, [3] Dr. W. KERENHAP EVANGELIN
[1]Research Scholar, [2] Research Scholar, [3] Assistant Professor
[1,3]Department of Zoology, St. Johns College
[2]Department of Animal Science, M.S. University, Abhishekapatti, Tirunelveli, India-627012

Abstract: New technology development and its proper dissemination play a vital role for the development and success of any agriculture/farm based activity. The recent technological breakthrough has made sericulture more sustainable and cost saving. The field study was conducted in six sericulture villages Alangulam, Pavoorchatram, Kadayanallur, Kadayam, Vasudevanallur and Sivagiri of Tirunelveli District, Tamil Nadu during 2014-2015, 2015-2016 to investigate the impact of new technologies on the production and productivity of sericulture. Sixty sericulturalists, ten from each village mentioned above, who are interested to follow and adopt the new technologies as advocated by the researcher were identified in consultation with the concerned officials of State Sericulture Department were selected for the present study. The highest improvement percentage of mulberry yield between before and after adoption was 21.27% whereas in cocoon yield the higher improvement percentage between before and after adoption was 32.16%. The analysis clearly depicts that the new technologies increases the production and productivity.

IndexTerms: Sericulture, Improved Technologies, Cocoon, Adoption.

I.INTRODUCTION

Raising agricultural output persists an important challenge for agricultural policy makers in India. As land supply dwindles, the focus of agricultural policy has stifled from land extension to transforming farming from traditional, low input technologies to modern systems based on improved cultivation and increases fertilization (Day,1992). Rural households are the centre of this agricultural transformation. Sound agricultural policies are needed to the new farming methods. Sericulture is an agro based industry providing lively hood to about seven million of rural people in India. As sericulture activities encompasses of both on farm and nonfarm activities it provides immense employment potential for both men and women alike. The women participation in sericulture ranges between 55%-60% (Meenal,2008).

Considering the socio-economic and ecological back drop of the Tamil Nadu State sericulture is conceived to be excellent economic support to the farmers especially those having marginal and medium level land holdings providing gainful employment and periodical income besides bringing significant change both in social and economic spheres of the rural and semi urban areas and avoiding the migration of rural force to urban areas.

The progress achieved in different areas in the past few years in sericulture is not merely due to horizontal expansion of the silk industry but also a vertical improvement in productivity. New technologies, improved practices, high yielding mulberry strains and silkworm breeds/hybrids, crop protection measures, improved institutional facilities such as seed production centres, market service centres and many other factors have contributed in achieving the above progress.

At present not much information is available on cocoon production and its economics in Tirunelveli District of Tamil Nadu. There is an urgent need to study the performance of improved mulberry verities and silk worm hybrids and its spread.

In the present study an attempt has been made to investigate the impact of new technologies on the production and productivity of sericulture. In this regard the present investigation focuses on the impact of new technologies on mulberry leaf yield, cocoon yield and the impact of new technologies on inputs used and outputs produced.

II.MATERIALS AND METHODS

Six villages namely Alangulam, Pavoorchatram, Kadayanallur, Kadayam, Vasuvadevanallur and sivagiri were selected for the study of impact of new sericultural technologies on the mulberry leaf and cocoon yield in Tirunelveli District of Tamil Nadu.

a. Benchmark survey

Data on the mulberry and cocoon yield pertaining to the year 2014-15 were collected before the initiation of the adoption of new technologies. The investigation on the adoption of new technologies were initiated and conducted during 2015-16.

b. Instrument used for the data collection

The identified sericulturists were interviewed personally by using an interview schedule prepared for the purpose. Before using the interview schedule, necessary precautions were taken through pre-testing to ensure that questions in the schedule were unambiguous, clear, complete and comprehensive. After pre-testing, necessary changes were incorporated in the formation of question in the sequence.

c. Collection of data

The sericulturists identified for the purpose were personally trained by the researcher on the adoption of new moriculture and silkworm rearing technologies. An interview schedule was prepared and explained to the respondents. Every effort was made at the time of interviews to convince the respondents that the study was undertaken purely for the research purpose and the information provided would not be used for any other purpose.

A. Following were the new technologies used in the study for mulberry cultivation.

1. New mulberry variety V1 and MR2.
2. Spacing.
3. Farm yard manure.
4. Chemical fertilizers.
5. Drip irrigation.
6. IPM of Tukra.

B. Following were the proposed technologies in silkworm rearing.

1. Separate rearing house.
2. Disinfection and hygiene.
3. Chawki rearing.
4. Shoot rearing.
5. Bed spacing.
6. IPM of Uzi.

d. Statistical analysis of the data.

The statistical tests used for analysis of data are mean, percentage, frequency, standard deviation, 't' test and ANOVA

III.RESULT AND DISCUSSION

The mulberry leaf yield of the selected farmers from the 6 villages before and after adoption of the new technologies is presented in the table no 1. The improvement percentage between before and after adoption ranges from 13.93 to 21.27%. The highest mulberry yield before adoption was recorded in Pavoorchatram (17238 kg/ac/annum). The lowest yield was in Vasuvadevanallur (15,123 kg/ac/annum). After adoption, the highest yield was achieved in Pavoorchatram (20070.50 kg/ac/annum) which was 16.43 percent improvement than before adoption. The lowest yield after adoption was in Kadayam (18207.67 kg/ac/annum) which was 13.93 percent improvement than before adoption. For all the six villages the P value is 0.00 (which is less than 0.01). Hence it can be proved that there is a significant difference in the leaf yield between before and after adoption of new technologies.

Table1. Impact of new moriculture technologies on mulberry yield in the study area.

Name of the village	Cumulative mulberry yield (kg/ac/annum)			T value	Sig.
	Before adoption	After adoption	Improvement Percentage		
Alangulam	16108.77	19238.00	19.42	-69.622	.000
Pavoorchatram	17238.00	20070.50	16.43	-63.010	.000
Kadayanallur	16386.50	19020.70	16.07	-58.604	.000
Kadayam	15980.62	18207.67	13.93	-49.549	.000
Vasuvadevanallur	15123.00	18340.78	21.27	-71.576	.000
Sivagiri	15679.00	18586.50	18.54	-64.678	.000

The cocoon yield profile in the selected six villages before and after adoption of new technologies was presented in the table no 2. The result showed that there is a significant increase in yield after the adoption of new technologies. Among the six villages selected, Sivagiri recorded the highest cocoon yield (51.27kg/100dfls) before the adoption of new technologies and the lowest

was in Alangulam (46.18 kg/100dfls). After adoption of new technology the same Sivagiri obtained the maximum cocoon yield (63.89kg/100dfls).Almost all the six villages have got increased yield after the adoption of new technologies.

Improvement percentage of cocoon yield after adoption of technology ranges from 24.61 (in Sivagiri) to 32.18 (Vasuvadevanallur). For all the six villages the p value is 0.00 (which is less than 0.01). Hence it can be proved that there is a significance difference in the cocoon yield between before and after adoption of new technologies.

Table2. Impact of new silkworm rearing technologies on cocoon yield in the study area.

Name of the village	Average cocoon yield (kg/100dfls)			T value	Sig.
	Before adoption	After adoption	Improvement Percentage		
Alangulam	46.18	60.50	31.00	-5.798	.000
Pavoorchatram	47.23	61.79	30.82	-5.895	.000
Kadayanallur	47.54	60.92	28.14	-5.417	.000
Kadayam	47.86	62.59	30.77	-5.964	.000
Vasuvadevanallur	46.32	61.23	32.18	-6.037	.000
Sivagiri	51.27	63.89	24.61	-5.110	.000

Table3. Impact of new technologies on the inputs used and outputs produced (overall for 60 farmers).

Components	Before adoption	After adoption	% change in input use/output
Inputs used			
Farm yard manure (Rs/acre/annum)	5970.15	3895.50	53.25
Chemical fertilizer (Rs/ac/annum)	4830.75	3298.00	46.5
Labour (Mandays/ac/yr)	438.73	390.00	12.5
Disinfectants and materials	3500.70	2980.20	17.5
Outputs produced			
No.of dfls (per ac/year)	1365.58	1518.20	11.28
Cocoon produced (kg/100dfls)	51.27	63.89	24.61

The table no 3 depicts the impact of new technologies on the inputs used by the farmers and output produced before and after the adoption. The results clearly show that the farmers used fewer inputs and the outputs produced were higher after the adoption of new technologies. The input parameters such as farmyard manure, chemical fertilizer, labours, Disinfectants used has been reduced after adoption. The percentage change is 53.25% for farmyard manure, 46.5% for chemical fertilizer, 12.5% for labours and 17.5% for Disinfectants and materials. The increased output parameters after adoption are the number of dfls and cocoon produced. The increase is 11.2% for number of dfls and 24.61% for cocoon production.

Figure1. Impact of new moriculture technologies on mulberry yield in the study area.

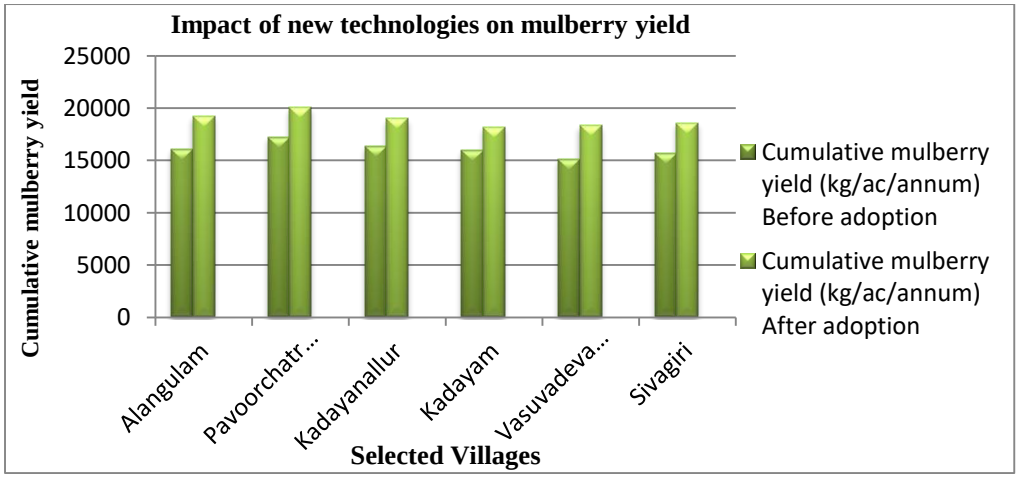
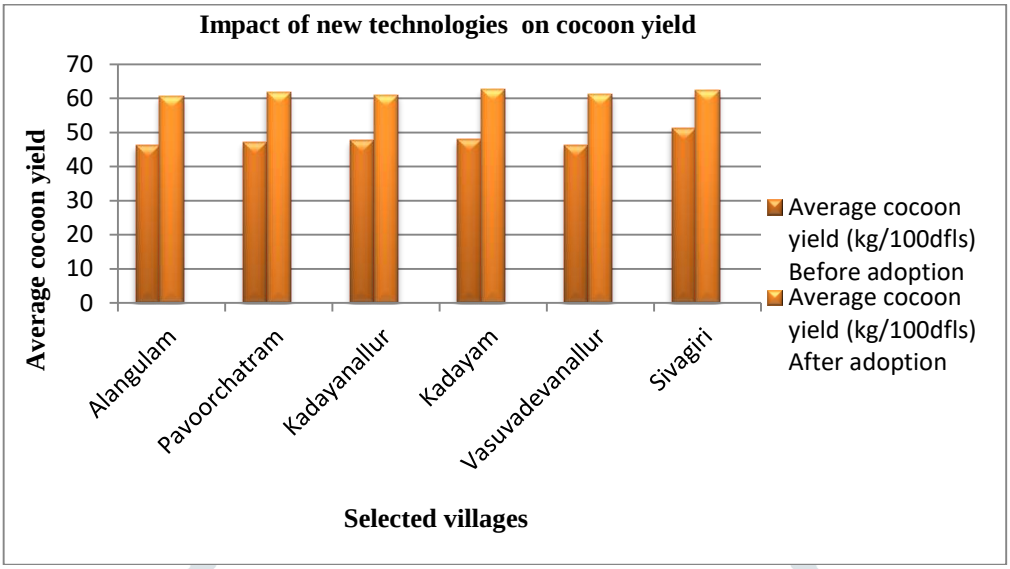


Figure 2. Impact of new silkworm rearing technologies on cocoon yield in the study area.



IV.CONCLUSION

It is concluded from the overall analysis that, the new technologies greatly influences the output production which is very much profitable for the sericulture farmers in rural areas of Tirunelveli district. Consequently the state sericulture department, the district Assistant director and the Technical service centres in Tirunelveli District should encourage and generalize the advantages and profits of the new technologies to the farmers through mass media, pamphlets, workshops, field trips etc.

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