



Research Article

Scale to measure the impact of sericulture production technology on the socio-biography of the beneficiaries

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SUMMARY : Due to non-availability of proper scale to measure impact of sericulture production technology management on the socio-biography of the beneficiaries, it was thought necessary to construct a scale for the purpose. Keeping this in view, an attempt has been made to develop a scale for measuring the impact of sericulture production technologies on the socio-biography of the sericulturists. Criteria suggested by Edward (1957) was used in this study for scale construction.

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KEY WORDS :

Sericulture production technology, Socio-biography, Beneficiaries

BACKGROUND AND OBJECTIVES

In the present study, impact refers to the overall change or profound effect on the profile of the respondent sericulturists. This aspects was studied in terms of impact of sericulture production technologies on social and economic dimensions, Agronomic management practices for mulberry cultivation, silkworm rearing practices, risk orientation, motivation, knowledge and marketing. The construction and preparation of the scale was described as below.

of MPKV, Rahuri and personal observations in the villages and informal interviews with the sericulturist from the sampled area. A battery of 150 items was drafted.

Editing and pre-selection of items:

Following the informal criteria suggested by Edwards (1957), these 150 items were edited, keeping in view that an item should be suitable observable, easily scorable, clear and capable of indicating the impact. The repetition of the items was also avoided and lastly 88 items were retained.

RESOURCES AND METHODS

The steps followed for construction and standardization of impact scale were as follows.

Item collection:

The first step in construction of the scale on impact of sericulture production technology was the collection of large number of items, specifying points related to social and economic dimensions, agronomical management practices, silkworm rearing practices, risk orientation, motivation, knowledge and marketing. The items were collected by referring relevant literature, contacting experts from the various departments

Classification of items:

These 88 statements were grouped as social and economic dimensions, agronomic management practices for mulberry cultivation, silkworm rearing practices, risk orientation, motivation, knowledge and marketing.

Item selection:

A schedule of items was prepared and listed in a sequence under each head and were sent to 110 judges, who were considered as an expert in this field. These judges were scientists and experts of State Agricultural Universities of Maharashtra and also from the Department of Sericulture.

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They were requested to check each item carefully, its being indicative of impact on the selected aspects of social and economic dimensions, agronomical management practices, silkworm rearing practices, risk orientation, motivation, knowledge and marketing and rate each item on a four point continuum of most relevant, relevant, some what relevant and not relevant with the score of 3, 2, 1 and 0, respectively for the positive statement and reverse for negative statement. However, in all 60 judges returned the rated list of items completed in all respects.

Item analysis:

As stated earlier, the rated schedules received from the judges were considered for the tabulation. Initially, the frequencies and scores of each item were worked out. Based on the scores, means were calculated. The mean relevancy scores of the items were considered as weightings of the respective items. Finally, from the schedule only 88 items with high mean relevancy score equal to or more than 0.80 were considered for the inclusion in the final interview schedule for data collection. It is to mention that apart from the criterion of the importance of a particular item, its feasibility; simplicity and easy scorability were also considered for its final selection. The relevancy score value of each item was worked out by adopting the following formulas.

Maximum obtainable score = No. of Judges x Max. score for each item

$$(e.g. 60 \times 3 = 180)$$

$$\text{Relevancy score} = \frac{\text{Total score value of each item}}{\text{Maximum obtained score}}$$

(e.g. $166 \div 180 = 0.92$)

$$\text{Mean relevancy score} = \frac{\text{Total of relevancy scores of all items}}{\text{Total no. of statements}}$$

(e.g. $121.66 \div 150 = 0.80$)

Reliability of the scale:

Reliability refers to the consistency of scores or measurement, which is reflected in the reproducibility of the scores. In its simplest sense, reliability refers to the precision or accuracy of the measurement or score. According to Anastasi (1968), reliability refers to the consistency of scores obtained by the same individuals when re-examined with test on different occasions, or with different sets of equivalent items, or under variable examining conditions. A scale is reliable when it will consistently produce similar results when applied to the same sample. Stability is quite important in the scale.

In the present study the commonly used methods of testing reliability; test-retest method (Goode and Hatt, 1952) was used. In this method, a single form of the test was administered twice on the same population with a reasonable time gap and the results were compared. Sample of 35

respondent sericulturists selected randomly out of the total sample of 160 respondent sericulturists and these re-interviewed for this purpose after a period of one month from the first test. The co-efficient of correlations between the first and second observations (Test-retest) are presented in the following Table 1.

It is observed from the Table- 1 that all the 35 respondent sericulturists gave more or less same response in the first and second tests in respect of the selected seven aspects of development included in the study indicating perfect correlations. The correlations for the most of the aspects were also quite high. The average r-value of the three aspects was 0.87. Therefore, reliability of the measuring instrument is said to be quite high and appropriate.

Validity of the scale:

The term 'validity' means truthfulness. Lindquist (1951) defined validity of a test as the accuracy with which it measures that, which is intended to measure. Validity is not a fixed property of the test. A test developed for a particular group of people may be used in similar situations for a reasonable period because changes taking place in the society. Validity like reliability is a matter of degree. Validity, therefore, refers to the degree to which a test measures what it claims to measure.

Content validity:

According to Anastasi (1968), content validity involves essentially the systematic examination of the test content to determine, whether it covers representative sample of the behaviour domain to be measured. In fact, content validity is the degree to which a test measures an intended content area. Content validity requires both item validity and sampling validity.

The content validity of the present scale is nothing but the all efforts and exhaustive steps used for collection of the items. The universe of the concept of impact of sericulture production technology on the socio-biography of sericulturists were covered widely and sampled through the perusal of related research studies. The expert judges, who had wide experience in this field, rated the items of impact. The scale was exposed twice to the sericulturists and once to the experts. This helped in changing, shifting and rearranging some of the items in the schedule. Due to these efforts, the high degree of validity of the scale was obtained. All this explains that the scale has high content validity.

Logical validity:

A high correlation coefficient would provide an index for the content validity (Singh, 1997). As the correlation coefficient value (0.87) of the scale is very high, it indicates the scale has high reliability and validity.

Table A : Classification of items		
Sr. No.	Impact aspects	Score assigned by the judges
Social and economic dimensions		
1.	The annual income of sericulturist was increased due to adoption of sericulture technology.	5
2.	The sericulturists are able to increase the landholding due to adoption of sericulture business.	5
3.	Increase in standard of living of sericulturist due to adoption of sericulture.	4
4.	Employment available through out year of sericulturist due to adoption of sericulture.	5
5.	The small and big, poor and rich all the sericulturist alike derive benefits from the sericulture business.	4
6.	The educational standard of children improved due to adoption of sericulture.	5
7.	Sericulture business has helped to sericulturist to purchase the modern farm implements.	4
8.	The participation of sericulturist in socio-political programmes were increased.	4
9.	The migration of sericulturist from village to cities have reduced due to adoption of sericulture business.	3
10.	The sericulturist are able to develop the infrastructure of their house due to sericulture.	5
11.	Sericulture business is beneficial to joint as well as nuclear family.	4
Agronomical management practices for mulberry cultivation		
1.	Installation of drip irrigation system for mulberry plantation.	5
2.	For reducing the intensity of weed, closer planting (2x 2) to be avoided.	5
3.	The land with 6.5 to 7.0 pH should be preferred for mulberry plantation.	4
4.	Using organic manure.	5
5.	Adopted soil testing.	5
6.	Planting of the cutting may be carried out in the beginning of the monsoon.	5
7.	For preventing pest attach on mulberry plants, the recommended planting method may be followed.	4
8.	Using bio-fertilizer culture.	5
9.	Mulberry plants being perennial hence land should be prepared accordingly.	3
10.	For harvest more yields of leaf one should maintain high density of plants in the field.	4
11.	Following 10-14 days interval @ 1.5- 2 inch acre irrigation schedule for mulberry plantation.	4
Silkworm rearing practices		
1.	Sericulturist should adopt the hygienic and scientific method in sericulture management.	4
2.	Using disease free seeds.	5
3.	Using appropriate and separate houses for both early and late aged larvae.	4
4.	Using disinfection of the rearing shade appliances.	4
5.	Sericulturist should give more emphasis on the whole shoot feeding	5
6.	The early aged larvae should be reared by using the separate tray.	5
7.	Rearing silkworm under indoor conditions.	4
8.	Paraffin paper should be used to maintain proper humidity within the bed.	5
9.	Taking precaution against common silkworm diseases.	5
10.	Harvesting of cocoons must be undertaken prior to the adult emergence.	4
11.	Providing both qualitative and quantitative leaves for larval feeding.	4
12.	The silkworm rearing shed should be protected from the water logging conditions.	4
13.	During harvesting dead cocoons must be immediately removed from the mountages.	5
14.	Sericulture project raised at the Agril. University for upgrading the information.	5
15.	Adopting preliminary operation for early age larvae.	4
16.	Utilizing maximum skill synchronizing with each stage of larval development.	5
17.	Providing favorable conditions for larval development.	3
18.	The insecticide affected leaves should not be fed to the silkworm.	4
Risk orientation		
1.	The sericulturist should grow large no. of crops to avoiding greater risk.	4
2.	Such sericulturists are successful who look up to other sericulturists taking more risk.	5
3.	The sericulturist should rather take more of change in making big profits than to be content with smaller, but less risky.	5
4.	Only when there is a possibility of better success for the sericulturist, do they take maximum risk.	5

Contd... Table

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5.	It is better for a sericulturist not try new methods unless most of others have used them with success.	4
6.	A sericulturist who is willing to take greater risk than the average sericulture is usually financially sound.	5
7.	It is good for a sericulturist to take risks when he knew his chance of success is fairly high.	5
8.	Trying entirely new method in sericulture involves risks but it is worth.	5
Motivation		
1.	Preparation of calendar of operations in mulberry production.	5
2.	Aim of the sericulturist should be to obtain more profits out of less expenditure.	5
3.	Techniques which give high profit leads to motivate the sericulturist for its adoption.	4
4.	Sericulture business gives more profit in short duration.	4
5.	Locating different sources of availability of credit.	5
6.	Farmer should go for subsidiary business like sericulture to obtain more income for his household.	5
7.	Locating different source of availability of disease free laying (DFLs) well in advance to the rearing of larvae.	5
8.	Involvement of more labour is not requirement for sericulturist business.	3
9.	Sericulture farmer should have pre-estimation of inputs expenditure required for mulberry production in the success of his business.	4
10.	Sericulture does not require a great skill.	5
11.	One should have forecasting about different operations in the management of silkworm rearing business.	4
12.	New methods of sericulture feeding management give better result than old methods.	5
13.	One should have an ability to estimate in advance the labours required for rearing of silkworm business.	4
Knowledge		
1.	Mulberry leaves are used for protein supplementary diet.	5
2.	Silkworm litter used in compost making, biogas production and used as cattle, poultry feed.	5
3.	Wet gunny bag/ leaf chambers' are used for leaf preservation.	5
4.	Mulberry, Indian Tassar, Chinese and Japanese, Eri, Fishline are the major species of silkworm.	4
5.	Silk used for manufacturing of many luxurious products like saree, silk carpets, kurta, salwar, interior decoration material.	4
6.	Major diseases of mulberry plants are powdery mildew, leaf-spot, leaf-rust, leaf blight, stem- rot, root-rots.	4
7.	Mulberry root has anti diabetic properties.	5
8.	Mulberry fruit, juices can be used for curing sore throat fever and diseases like dyspepsia, melancholia.	5
9.	Bottom pruning, middle pruning and whole shoot pruning are the methods of pruning.	5
10.	Chlorophyll paste, proteins and plastic material can be prepared from silkworm litter.	5
11.	Mulberry tea is reported to reduce blood pressure.	4
12.	Use the cutting of mulberry variety viz., V-1.	5
13.	Leaves are rich in glucose, fructose, sucrose, dextrin, galantine and crude fibres.	4
14.	The organic manures (FYM) are applied @ 10 and 20 to 30 tonnes/ha/year as the basal dose for rainfed and irrigated crops.	5
Marketing		
1.	Proper packing of cocoons for avoid transport losses and damage.	5
2.	Following proper grading methods for the sale of cocoons in the market.	5
3.	Deciding market place where competitive price for the produce is more.	5
4.	The state Govt. agencies are now purchasing the cocoons in Maharashtra state on the basis of renditta and shell- ratio of 100 g sampled cocoons.	3
5.	Collecting timely information about price rate for cocoons at various markets.	4
6.	Gathering information about various market channels available to sell the cocoons.	4
7.	Proper arrangement has to be made for transporting of cocoons to nearby markets.	3
8.	Delayed selling result into getting low returns due to loss in total weight.	4
9.	White coloured cocoons fetches more price in market.	4
10.	The cocoons may be sold in the mid- pupal period to get optimum returns.	3
11.	For avoiding the moth emergence on cocoons, it should be marketed as early as possible.	4
12.	Prior to marketing, the commercial rearer should know the criteria which are considered by the purchaser.	5
13.	Entire cocoons are marketed only after the shell is used for reeling the silk.	4

Administration and scoring:

The final scale consisting of 88 items indicating impact of sericulture production technology on the socio-biography of sericulturists. The responses were obtained on a four point continuum *viz.*, not relevant, somewhat relevant, relevant and most relevant with weightage of 0, 1, 2 and 3 for negative statement and reverse score for positive statement, respectively. Based on the total score obtained by the respondents, following categories were made by using the formula maximum and minimum.

Final selected items for impact scale according to mean relevancy score and showing their weightings for measurement of overall impact of selected aspects of sericulture production technologies on the socio-biography of the beneficiaries.

OBSERVATIONS AND ANALYSIS

To measure the impact of sericulture production technologies on the socio-biography of the beneficiaries, scale developed by research worker himself was applied. The data regarding impact are presented in Table 1.

The 35 respondent sericulturists gave more or less same response in the first and second tests in respect of the selected seven aspects of development included in the study indicating perfect correlations. The correlations for the most of the aspects were also quite high. The average r-value of the three aspects was 0.87. Therefore, reliability of the measuring instrument is said to be quite high and appropriate.

Table 1 : Co-efficient of correlations between the first and second observations (Test-retest)

Sr. No.	Aspects	Reliability co-efficient
1.	Social and economic dimensions	0.88
2.	Agronomical management practices for mulberry cultivation	0.87
3.	Silkworm rearing practices	0.88
4.	Risk orientation	0.87
5.	Motivation	0.86
6.	Knowledge	0.83
7.	Marketing	0.85
	Average	0.87

Conclusion:

It can be concluded that, the correlation coefficient value (0.87) of the scale is very high, it indicates the scale has high reliability and validity.

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REFERENCES

Edward, A.L. (1957). *Techniques of attitude constructin*, Vakils, Feffer and Simons Pvt. Ltd., Bombay-1.

Kerlinger, F.N. (1956). *Foundation of behavior research*, Halt Rinehart and Winston, Inc., New Delhi.