Development of a Scale to Measure the Attitude of Farmers Towards Kangayam Cattle Rearing

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ABSTRACT: Attitudes are constructs which are crucial in enhancing our understanding of the motives behind decisions of people as well as the reasons behind the way in which they behave. Attitude towards conservation was more easily defined theoretically than observed in reality because it included a wide variety of dimensions such as the evaluations people hold of themselves either as careful custodians or rightful owners of their natural resources; or to other people or officials involved in conservation; and issues such as resource use, conservation projects and environmental problems. Hence the present study was undertaken to construct a scale to measure the attitude of farmers towards Kangayam cattle rearing. In the present study, attitude was conceptualized as positive or negative feeling of farmers towards Kangayam cattle rearing and an important determinant of the respondent's behavior in conserving the Kangayam cattle. A scale to measure the attitude of respondents towards Kangayam cattle rearing was developed using Likert's summated rating method. The final scale consists of 18 statements, consists of equal numbers of positive and negative statements was administered to the respondents during the interview process. The attitude scale thus developed was exercised to explore the conservation attitude of the Kangayam cattle farmers on a four point continuum and based on the total attitude score obtained by the respondents they were categorized into three categories *viz*., less favourable, moderately favourable and more favourable attitude towards rearing Kangayam cattle using class interval method by finding out the range, minimum and maximum scores. This scale can be used to measure the attitude of respondents towards Kangayam cattle rearing in future studies.

Keywords: Attitude, conservation and Kangayam cattle rearing.

INTRODUCTION

Livestock systems in developing countries are characterized by rapid change. Conservation of genetic diversity is essential for the long term survival of any species, particularly in the light of changing environmental conditions and is essential for management of threatened and endangered species for sustainable use. Every sound effect of conservation has a cost which changes with perspectives on the specific breed, production environment, places and countries so it was essential to allot appropriate fund of conservation budget to the different categories of breeds once the decision had been made (Nyamushamba *et al*., 2017). Indigenous cattle play a crucial role in the livelihood system and well - being of the traditional rural farmers and they are integral contributor of food, agricultural power, agrarian culture and heritage and biodiversity. They have been natives of that particular region and have evolved since ages, possessing characteristics and

features that are in adaptation and accordance with the environmental and ecological conditions of that particular region. Most of the breeds developed in India are either draught type or dual purpose. Despite mechanization of agriculture, draught animal power (DAP) continues to be used on Indian farms due to smallholdings and less availability of recourses. More than 55% of total cultivated area is still being managed by draught animals against about 20% by tractors (Phaniraja and Panchasara, 2009). One such breed is Kangayam cattle breed belong to the southern regions of Tamil Nadu, predominantly in the districts of Dharapuram, Erode, Perundurai, Bhavani, Karur and Coimbatore. The breed is said to have originated from the Kangayam region of Tiruppur District and is said to have ferocious nature and also are used in the Jallikattu sport and for Rekhla races. The animals are mostly grey in colour with a darker shade at the humps, hind areas and forehead. The horns of cattle are apart with a backward curve. These cattle are well known for their

draft purpose and are highly in demand for agricultural related work in the surrounding areas of Karur, Erode and Coimbatore regions (TNAU, 2018).Very few studies have been made in the past to study this elite breed that too on the genetic properties of this privileged breed and their conservation through *in-vitro* methods. Attitude towards conservation is more easily defined theoretically than observed in reality because it includes a wide variety of dimensions (Winter *et al.,* 2005). These could include: the evaluations people hold of themselves either as careful custodians or rightful owners of their natural resources; or to other people or officials involved in conservation; and issues such as resource use, conservation projects and environmental problems. Attitudes towards conservation of specific breeds of cattle or vegetation could then comprise a further suite of attitude dimensions (Winter *et al.,* 2005). Hence the present study was undertaken with the objective of developing a scale to measure the attitude of respondents towards Kangayam cattle rearing.

METHODOLOGY

According to Thurstone, (1946), attitude is the degree of positive and negative affect associated with psychological objects like symbol, phrase, slogan, person, institution. From social psychology point of view, it is preparedness of people to respond in a certain way towards a social object of phenomena.

Attitudes are constructs central to understanding why people make decisions and behave the way they do (Winter *et al.,* 2005). A construct is a theoretical creation based on observations but which cannot be observed directly or indirectly (Babbie and Mouton, 2001).

Attitudes can be measured directly by asking respondents to report their beliefs or evaluations, or indirectly by studying responses believed to be related to attitudes (Bohner and Wanke, 2002). Direct attitude measures may consist of single item numeric response scales (i.e., asking a person a single question about their general evaluation of an attitude object) or multi-item scales such as the frequently employed Likert scale (Likert, 1932).

In the present study, attitude was conceptualized as positive or negative feeling of farmers towards Kangayam cattle rearing and an important determinant of the respondent's behavior in conserving the Kangayam cattle. A scale to measure the attitude of respondents towards Kangayam cattle rearing was developed using Likert's summated rating method as proposed by Likert, (1932) as follows

A. Steps involved in the development of attitude scale
1. Universe of content / Collection of attitude statements. A total of 93 statements were made after thorough review of literature, discussion with the experts and members of Kangayam cattle farmers associations. The statements covered wide range of contents with respect to Kangayam cattle rearing viz., feeding, breeding, housing, health care, marketing, religious sentiments, draught utility, milk quality, socio-cultural roles and conservation aspect. These statements were carefully edited in light of the general guidelines put forth by Edwards and Kilpatrick (1946) and making to 70 statements.

2. Relevancy of statements. The 70 statements selected were sent to more than 150 extension subject matter specialists through e-mail. The experts included were scientists of ICAR institutes, extension faculty of veterinary and agricultural universities. The selected judges were requested to critically evaluate items for their relevancy in measuring the attitude towards Kangayam cattle rearing. The responses were collected on three point continuum, *viz.,* Most Relevant, Relevant, and least Relevant with scores 3, 2 and 1 respectively. The relevancy judgements for selected items along with valuable suggestions were obtained from 62 judges in stipulated time of one month. In order to ensure the field applicability of the statements, relevancy score for the 70 statements was also obtained from 30 field veterinarians working in the selected four districts. The responses obtained from both the group of judges to each statement were pooled together and mean score was calculated, which was found to be 2.17. All statements having a mean value more than or equal to 2.17 were considered for evaluation of 't' – value. This schedule consists of 52 statements.

Table 1: Relevancy score of attitude statements and their selection status for 't' value calculation.

Sr. No.	Attitude statements	Relevancy mean score	Selection status
1.	I believe that Kangayam cattle are the best dual purpose breed for milch and agricultural work.	2.24	Selected
2.	I understand that Kangayam cattle keeping is expensive	2.21	Selected
3.	Kangayam cow is a prospective resource of A2 milk for farmers	2.20	Selected
4.	I think that adoption of Kangayam cattle is a risky venture	2.33	Selected
5.	There is more misinformation about Kangayam cattle farming	2.10	Not selected
6.	I visualize limited scopes of Kangayam cattle as compared to cross breeds	2.26	Selected
7.	I think that wise animal keeper is one, who keeps Kangayam cow	2.17	Selected
8.	The ideology of Kangayam cattle farming is to conserve and hand over these bio resources to the next generation.	2.30	Selected
9.	I feel that raising Kangayam cattle is feasible even to common farmer	2.38	Selected
10.	I think that by adopting Kangayam cattle, farmers can improve their economic condition	2.17	Selected
11.	There is more propaganda about Kangayam cattle but in reality it is not that valuable breed.	2.22	Selected
12.	Scientific practices disturb/spoil our culture, hence, I prefer traditional ways of livestock farming	1.80	Not selected
13.	Conventional animal husbandry practices cannot be substituted	2.17	Selected

14.	Government should do more to promote cross breeding	2.30	Selected
15.	Cross breed animals have difficulty in Indian environment	2.17	Selected
16.	Cross bred animal is a symbol of progressiveness	2.40	Selected
17.	Time has changed so animal husbandry practices will also have to change to new	2.24	Selected
18.	Scientific practices are for rich farmer and not for poor one	2.10	Not selected
19.	There will be no feature for indigenous cattle	2.32	Selected
20.	Conserving native cattle will not improve our standard of living	2.20	Selected
21.	I do not believe that native cattle farming offer any benefits	2.30	Selected
22.	Conserving natural resources can assure a safer world to live	2.17	Selected
23.	When millions require better nutrition it is illogical to rear native cattle	2.21	Selected
24.	I feel that there should be more programmes from the government exclusively for conserving native cattle	2.17	Selected
25.	Native cattle keeping can be taken up as a promising enterprise	2.12	Not selected
26.	Those who conserve native breeds of cattle must be rewarded	2.41	Selected
27.	Breeding facilities exclusively for native cattle must be introduced	2.19	Selected
28.	Government should take more steps in conservation of Kangayam cattle	2.10	Not selected
29.	Slaughter of Kangayam cattle for beef must be discouraged	2.52	Selected
30.	I think Government should start Kangayam cattle farms in its original breeding tract	2.23	Selected
31.	There should be more government initiated awareness programmes to promote conservation of Kangayam cattle	2.40	Selected
32.	It would be good to create a breed society exclusively for Kangayam cattle	2.20	Selected
33.	Keeping Kangayam cattle can be an advantageous subsidiary occupation	2.17	Selected
34.	I believe that Kangayam cattle farming is worth to adopt though it is laborious	1.80	Not selected
35.	I continue Kangayam cattle farming because my ancestors followed them.	2.22	Selected
36.	I believe in the traditional methods because they produce no harm to human health.	2.40	Selected
37.	I feel that there should be policies to promote Kangayam cattle rearing	2.05	Not selected
38.	The native cattle are a valuable part of our heritage	2.28	Selected
39.	I will actively engage in keeping native cattle in order to propagate it	2.17	Selected
40.	I consider native cattle are an indispensible part of my cultural life	2.20	Selected
41.	I feel that the good temperament of native cattle makes it worth keeping	2.05	Not selected
42.	In order to have high esteem in my society, I keep native cattle	2.20	Selected
43.	In my opinion, its more beneficial to rear native cattle as compared to cross bred cattle	1.90	Not selected
44.	I am rearing Kangayam cattle as these animals are cheaper	2.10	Not selected
45.	I will quit keeping Kangayam cattle if given an opportunity to rear crossbred cattle	2.42	Selected
46.	I think it is not worth keeping native cattle	1.98	Not selected
47.	I feel that the government should withdraw the blanket policy of cattle breeding	2.10	Not selected
48.	We must ensure the availability of native cattle for the future generations	2.20	Selected
49.	In my perspective, Keeping Kangayam cattle facilitates organic farming	2.17	Selected
50.	Conservation of Kangayam cattle is necessary to ensure the survival of these breed.	2.20	Selected
51.	Funding through public agencies to conserve native cattle is a waste of resources and should not be encouraged	2.00	Not selected
52.	I feel that local people / community plays more active role in conservation of native cattle	2.32	Selected
53.	I prefer to keep native cattle since it provides milk and milk products sufficient for my family	2.17	Selected
54.	I feel that Government must promote native cattle shows	2.18	Selected
55.	Kangayam cattle are climatically well adapted hence they do not requires special care	2.10	Not selected
56.	Government institutions should initiate more programmes that promote the conservation of native cattle	2.17	Selected
57.	It is not worth keeping native cattle as they produce less milk	2.30	Selected
58.	I do not plan to keep native cattle as it will not be profitable	2.32	Selected
59.	I prefer to expand my farm by adding more number of native cattle	1.90	Not selected
60.	I do not prefer to keep native cattle as banks will not support it financially	1.90	Not selected
61.	I prefer keeping native cattle since their products fetch more price	2.17	Selected
62.	Native cattle is an indispensable part of the cultural life of my community	2.20	Selected
63.	I consider conserving Kangayam cattle as my responsibility	2.17	Selected
64.	In spite of my financial inconveniences I like to keep native cattle	2.10	Not selected
65.	Kangayam cattle keeping is profitable due to increased consumer demand for the products of native cattle	2.17	Selected
66.	I believe native cattle farming is more a way of life rather than a business	2.30	Selected
67.	Conservation of native cattle should be a matter of concern to the local self government bodies	1.80	Selected
68.	Native cattle conservation is a way to preserve traditional values	2.17	Selected
69.	I think that there are many religious rituals associated with Kangayam cattle hence I am keeping it.	2.17	Selected
70.	Good or bad we should to keep native breeds	2.00	Not selected

3. Item analysis. All the 52 statements thus were administered to the judges - a group of 45 cattle farmers who reared Kangayam cattle in the non-sample districts. The group consisted of randomly selected farmers and was altogether different from the respondents chosen for the final study. These cattle keepers were asked to indicate their degree of favourableness or unfavourableness towards each statement on a four point continuum *viz.*, Strongly agree, Agree, Disagree and Strongly disagree with the scores of 4, 3, 2 and 1 respectively for positive statement. The scoring pattern was reversed in the case of negative statements. The attitude score for each judge was obtained by summing up the weightage given for each statement.

4. Determination of 't' values. The score thus obtained were arranged in the descending order. For determining the 't' value, 25 per cent of the respondents with the highest scores and 25 per cent of the respondents with lowest scores were taken for calculating 't' values. These two groups formed the two separate criterion groups designated as high group and low group respectively. The 't' value of each statement was calculated as an indication to discriminate the respondents with high and low attitude by using the formula given below

$$t = \frac{\bar{X}H - \bar{X}L}{\sqrt{\frac{SH^2}{nH} + \frac{SL^2}{nL}}}$$

Where,

$\bar{X}H$ = the mean score on a given statement for the high group.

$\bar{X}L$ = the mean score on the same statement for the low group.

S^2H = Variance of the distribution of the response of high group of the statement

S^2L = Variance of the distribution of the response of low group of the statement

nH = Number of subjects in the high group

nL = Number of subjects in the low group

The 't' value indicated the extent to which a given statement differentiated between the high and low groups. The 't' values of all the 52 statements are given Table 2. The statements having 't' value of 1.75 and above are selected for final attitude scale. Thus, 18 attitude statements, consists of equal numbers of positive and negative statements were included in the final scale avoiding neutral statements purposively as suggested by Edwards and Kilpatrick, (1946).

Table 2: The statements which selected for evaluation of t value (52 statements).

Sr.No.	Attitude statements	't' value
1.	I believe that Kangayam cattle are the best dual purpose breed for milch and agricultural work.	1.18
2.	I understand that Kangayam cattle keeping is expensive	1.25
3.	Kangayam cow is a prospective resource of A2 milk for farmers	1.12
4.	I think that adoption of Kangayam cattle is a risky venture (-)	2.72*
5.	I visualize limited scopes of Kangayam cattle as compared to cross breeds (-)	2.43*
6.	I think that wise animal keeper is one, who keeps Kangayam cow	1.44
7.	The ideology of Kangayam cattle farming is to conserve and hand over these bio resources to the next generation (+)	2.65*
8.	I feel that raising Kangayam cattle is feasible even to common farmer (+)	2.43*
9.	I think that by adopting Kangayam cattle, farmers can improve their economic condition	1.62
10.	There is more propaganda about Kangayam cattle but in reality it is not that valuable breed. (-)	2.22*
11.	Conventional animal husbandry practices cannot be substituted	1.12
12.	Government should do more to promote cross breeding	1.62
13.	Cross breed animals have difficulty in Indian environment	1.02
14.	Cross bred animal is a symbol of progressiveness (-)	2.40*
15.	Time has changed so animal husbandry practices will also have to change to new	1.69
16.	There will be no feature for indigenous cattle (-)	2.20*
17.	Conserving native cattle will not improve our standard of living	1.12
18.	I do not believe that native cattle farming offer any benefits (-)	2.42*
19.	Conserving natural resources can assure a safer world to live	1.67
20.	When millions require better nutrition it is illogical to rear native cattle	1.21
21.	I feel that there should be more programmes from the government exclusively for conserving native cattle	1.25
22.	Those who conserve native breeds of cattle must be rewarded (+)	1.95*
23.	Breeding facilities exclusively for native cattle must be introduced	1.67
24.	Slaughter of Kangayam cattle for beef must be discouraged (+)	1.95*
25.	I think Government should start Kangayam cattle farms in its original breeding tract	1.16
26.	There should be more government initiated awareness programmes to promote conservation of Kangayam cattle (+)	2.65*
27.	It would be good to create a breed society exclusively for Kangayam cattle	1.18
28.	Keeping Kangayam cattle can be an advantageous subsidiary occupation	1.67
29.	I continue Kangayam cattle farming because my ancestors followed them. (+)	3.45*
30.	I believe in the traditional methods because they produce no harm to human health. (+)	4.83*
31.	The native cattle are a valuable part of our heritage	1.54
32.	I will actively engage in keeping native cattle in order to propagate it	1.65
33.	I consider native cattle are an indispensible part of my cultural life (+)	4.13*
34.	In order to have high esteem in my society, I keep native cattle	1.02
35.	I will quit keeping Kangayam cattle if given an opportunity to rear crossbred cattle (-)	5.11*
36.	We must ensure the availability of native cattle for the future generations	1.21
37.	In my perspective, Keeping Kangayam cattle facilitates organic farming	0.88
38.	Conservation of Kangayam cattle is necessary to ensure the survival of these breed.	1.35
39.	I feel that local people / community plays more active role in conservation of native cattle (+)	1.95*
40.	I prefer to keep native cattle since it provides milk and milk products sufficient for my family	1.52
41.	I feel that Government must promote native cattle shows	1.27
42.	Government institutions should initiate more programmes that promote the conservation of native cattle	1.42

43.	It is not worth keeping native cattle as they produce less milk (-)	3.24*
44.	I do not plan to keep native cattle as it will not be profitable (-)	2.68*
45.	I prefer keeping native cattle since their products fetch more price	1.16
46.	Native cattle is an indispensible part of the cultural life of my community	0.98
47.	I consider conserving Kangayam cattle as my responsibility	1.12
48.	Kangayam cattle keeping is profitable due to increased consumer demand for the products of native cattle	1.16
49.	I believe native cattle farming is more a way of life rather than a business	1.25
50.	Conservation of native cattle should be a matter of concern to the local self-government bodies	1.53
51.	Native cattle conservation is a way to preserve traditional values	1.62
52.	I think that there are many religious rituals associated with Kangayam cattle hence I am keeping it.	1.34

* Selected statements   (+) Positive Statements   (-) Negative statements

Validity of the scale. The validity of the scale was ascertained through content validity, which means the representativeness of universe or sampling adequacy of the content of a measuring instrument. This was assumed by extensive literature consultation and discussion with subject matter specialists. The scale was constructed in accordance with the steps described in the summated rating scale and hence it assumed that the scores obtained by administering this scale measured nothing other than the attitude of the respondents towards rearing Kangayam cattle. According to Garrett, (1965) the validation of the content through competent judges was most satisfactory when the sampling of the item was wide and judicious.

Reliability of the scale. Reliability is the precision or accuracy of a measuring instrument. It is the frequency with which a scale produces consistent results with a sample. Reliability in respect of internal consistency of the scale was ensured by using the split-half method. For this, the scale was divided in to two halves on the basis of odd number and even number of statements. Care was taken to ensure that each half of the scale contains equal number of negative statements. These two scales were administered to a total of 30 Kangayam cattle rearers in the non-sampled area and thus two set of responses were obtained. The Pearson rank order correlation analysis was employed to determine the degree of relationship between the two set of score. A reliability coefficient of 0.823 was obtained which indicated high internal consistency of the instrument testifying that it had high reliability.

Reliability coefficient =

$$\frac{2 \text{ (reliability coefficient of the half-test)}}{1 + \text{(reliability coefficient of the half test)}}$$

RESULTS AND DISCUSSION

Thus, the final scale consists of 18 statements, of which equal numbers of positive and negative statements to ascertain the conservation attitude of farmers rearing native cattle had been constructed in this study. This scale can be administered to the respondents to explore the conservation attitude of the Kangayam cattle farmers on a four point continuum and based on the total attitude score obtained by the respondents they can be categorized into three categories *viz.*, less favourable, moderately favourable and more favourable attitude towards rearing Kangayam cattle using class

interval method by finding out the range, minimum and maximum scores.

CONCLUSION

The scale developed would facilitate measurement of attitude of farmers towards Kangayam cattle rearing. The present study will help the researchers in designing extension strategies and programmes that are realistic and effective.

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