

CONSTRUCTION OF ATTITUDE SCALE TO MEASURE ATTITUDE OF FARMERS TOWARDS SCIENTIFIC DAIRY PRACTICES

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ABSTRACT

Dairying sector involves millions of resource-poor farmers, for whom animal ownership ensures critical livelihood, sustainable farming and economic stability. The demand for milk is increasing at a rapid pace and can be met by application of scientific practices at the farmer level. However, the adoption level of the scientific dairy practices is poor and can be attributed to variety of factors including the attitude of the farmers towards such practices. The present article summarizes the development of a scale to measure the attitude of farmers towards scientific dairy practices. The scale was developed using Likert's summated ratings method. The study describes the development of scale in a stepwise manner including collection of statements, editing, screening, determining rating points, pre-testing and final selection. Finally reliability was computed to the tune of 0.92. It is contended that the scale would prove useful in measuring the attitude of farmers towards scientific dairy practices in future studies.

Key words: Attitude scale, economics, scientific dairy practices

Dairy sector provides nutrition, draft animal power, organic manure, supplementary employment, cash income and a 'cushion' for 'drought proofing' in India (Patel, 1993). This sector involves millions of resource-poor farmers, for whom animal ownership ensures critical livelihood, sustainable farming, and economic stability. Its growing importance can be appreciated from the fact that the crop farming is now beset with stagnating growth and low absorption of unskilled agricultural labourers. Contribution of livestock sector to GDP in India in 2011-12 is 3.92% (Anonymous, 2013). Despite significant increase in livestock production, per capita consumption of milk (69 kg) and meat (3.7 kg) in 2007 has been much lower against corresponding world averages of 85 and 40 kg (Anonymous, 2014a). Estimated demand for milk for India for the year 2021-22 is 172 million tonnes (Radhakrishna and Reddy, 2004). This demand can be met by application of scientific practices at the farmer level.

Lack of adoption of scientific practices is cited as a major stumbling block in achieving a faster growth rate in milk production (Patil *et al.*, 2009). The poor adoption level of the scientific dairy practices can be attributed to variety of factors including the attitude of the farmers towards such practices. Rao *et al.* (1990) have reported that the attitude towards the dairy production technologies and their level of adoption are significantly correlated. In

fact, the farmer is one of the main actors in the adoption or rejection of technology. Yet the instruments to measure attitude of farmers towards scientific dairy farming are scarce. We developed a scale to measure the attitude of farmers towards scientific dairy practices.

MATERIALS AND METHODS

The scale was developed using Summated Ratings method (Likert, 1932). Following procedural steps were followed for the development of scale.

Collection of Statements: The statements were collected from a variety of sources which included field veterinarians of State Animal Husbandry Department, scientists of the university, literature, progressive farmers etc. The total number of statements collected from different sources was 74. The statements were then subjected to close scrutiny in keeping with the informal criterion suggested by many scientists (Thurstone and Clave, 1929; Likert, 1932; Wang, 1932; Bird, 1940; Edwards and Kilpatrick, 1948). Some statements were overlapping, double negative, unclear, etc. Such statements were rejected and 67 statements out of a total of 74 were retained (Table 1). An effort was made to select an equal number of positively and negatively worded statements in the scale.

Screening of Statements: The statements were then submitted to 30 judges majority of whom were animal scientists. They were requested to judge these statements on three rating points i.e. favourable, unfavourable and

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Table 1
Agreement score of the judges

S. No.	Statement No.	Agreement score (%)	Selected/Rejected
1.	Modernity pays	57.14	Rejected
2.	Scientific practices are profitable	64.28	Rejected
3.	Scientific practices are impractical	64.28	Rejected
4.	Scientific dairy practices have an edge over traditional ones.	64.28	Rejected
5.	Scientific practices are cumbersome.	57.14	Rejected
6.	Scientific dairy practices are good for farmers to follow.	71.43	Rejected
7.	Animals rearing when done scientific yield more	64.28	Rejected
8.	Traditional/conventional practices of animal rearing are time tested.	92.8	Selected
9.	Scientific practices have yet to prove their potential.	85.7	Selected
10.	Scientific practices disturb/spoil our system culture.	57.14	Rejected
11.	Conventional A.H. practices cannot be substituted.	85.7	Selected
12.	To fulfill our demands only way is scientific dairy practices.	71.43	Rejected
13.	Milk of cross bred/exotic animals is just like water.	57.14	Rejected
14.	Americanism will not stand for long.	57.14	Rejected
15.	Only conventional practices are suited for local breeds of animals.	57.14	Rejected
16.	Scientific practices are good for exotic animals only.	71.43	Rejected
17.	Better economic return is not always desired.	64.28	Rejected
18.	Government should do more to promote scientific dairy practices.	64.28	Rejected
19.	Vaccination of animals is futile exercise.	57.14	Rejected
20.	Exotic animals have difficulty in Indian Environment.	57.14	Rejected
21.	Traditionalism is a hindrance to our progress.	64.28	Rejected
22.	Scientific dairy practices are good for English animals only.	57.64	Rejected
23.	A.I. yields a weak calf.	64.28	Rejected
24.	Exotic cattle means more milk and higher economic returns.	64.28	Rejected
25.	Cross bred animal is a symbol of progressiveness.	85.7	Selected
26.	English /Exotic animals are good for nothing.	57.14	Rejected
27.	Scientific practices are for rich people and not foe poor.	64.28	Rejected
28.	With time we have to shift to new.	57.14	Rejected
29.	Scientific dairy practices are the demand of time.	71.43	Rejected
30.	Naya no din purana so din.	57.14	Rejected
31.	Time has changed so A.H. practices will also have to change to new.	64.28	Rejected
32.	Scientific practices fit into our requirements.	64.28	Rejected
33.	Only way out of our problems is to shift to scientific practices.	71.43	Rejected
34.	Those having cross bred animals have higher status.	57.14	Rejected
35.	Change is law of nature and dairy practices are not an exception.	64.28	Rejected
36.	Science has proved himself many a times.	64.28	Rejected
37.	Scientific dairy do not have an alternative.	71.43	Rejected
38.	I look forward to adoption to scientific dairy practices/dairy innovations.	92.8	Selected
39.	Conventional practices were good for earlier times only.	57.14	Rejected
40.	Comforts of today are results of scientific discoveries.	57.14	Rejected
41.	Scientific dairy practices must be given a chance.	92.8	Selected
42.	Only fools are eager to adopt scientific dairy practices.	92.8	Selected
43.	Things change to better over time.	57.14	Rejected
44.	Those not moving to scientific dairy practices will not be able to complete.	57.14	Rejected
45.	I am always for scientific dairy practices.	71.43	Rejected
46.	Govt. should organize training for scientific dairy practices.	85.7	Selected
47.	With scientific dairy practices we can meet our demands for milk.	57.14	Rejected
48.	Scientific dairy practices are for large farms only.	57.14	Rejected
49.	Scientific dairy practices fit in well with our requirements/system.	57.14	Rejected
50.	Scientific dairy practices are a bane rather than a boon.	92.8	Selected
51.	We stand for scientific dairy practices only.	64.28	Rejected
52.	We have to shed the impression that only traditional things are good for us.	71.43	Rejected
53.	Scientific dairy practices can be ignored if do not wish to increase milk production.	64.28	Rejected
54.	Profitability today is synonymous with scientific dairy practices.	85.7	Selected

55.	Had SDP not been there thing would have become difficult.	64.28	Rejected
56.	In my view people will not come forward for scientific dairy practices in a big way.	92.8	Selected
57.	Whether scientific practices are good or bad depend on individual farmer's status.	57.14	Rejected
58.	It's unfortunate we are moving to scientific dairy practices.	92.8	Selected
59.	I don't think scientific dairy practices offer anything interesting /practical.	85.7	Selected
60.	The reason to choose scientific dairy practices is that we have to be self sufficient.	71.4	Rejected
61.	Not choosing /adopting scientific dairy practices will only make matter worse.	92.8	Selected
62.	We should give scientific dairy practices a try.	71.4	Rejected
63.	It's unfortunate but we don' have substitute for traditional dairy practices.	92.8	Selected
64.	I believe scientific dairy practices are good but something should be done to make them more compatible.	71.4	Rejected
65.	Good or bad we have to adopt scientific dairy practices.	85.7	Selected
66.	Scientific dairy practices are not a panacea of today's dairy problems.	71.43	Rejected
67.	Scientific dairy practices may not be very good but other options are worse.	85.7	Selected

ambiguous. The judges were requested to rate them as: i). The statements showing favourable attitude of an individual towards scientific dairy practices should be rated 'favourable'; ii). The statements showing unfavourable attitude of an individual towards scientific dairy practices should be rated 'unfavourable' and iii). The statements showing neither favourable nor unfavourable attitude of an individual towards scientific dairy farming practices should be rated as 'ambiguous'.

Determining the Rating Points to be Used in the Scale: It was decided to use three point continuum given the fact that the scale is intended to be used for measuring farmers attitude towards scientific dairy practices. It will facilitate comprehension and clarity of response. The three rating points used were: 'Agree', 'Disagree' and 'Undecided'.

Pre-testing and Final Selection of the Statements: The seventeen statements formed the part of schedule for pre-testing. The statements were provided to the farmers in non-study area. The data from 60 respondents was collected and scoring was done. A weightage of 3, 2 and 1 was given to the favourable, undecided and unfavourable response, respectively in case of a positive statement. The values were reversed for negative statements. The total score of each respondent was obtained by summing up the scores of all the statements.

The item analysis was performed by the method of Murphy and Likert (1937). The first quartile on the basis of total score formed the High group and last quartile was taken as Low group. The difference in the mean response scores to each statement was calculated (Table 2). The statements were then arranged on an array on the basis of mean differences. Thereafter, only those statements were retained where the mean difference was greater than one (Table 2). Six statements were rejected at this stage leaving only eleven statements for the final scale (Table 2).

Reliability of the Attitude Scale: A scale is reliable when it produces the same results when applied to the same sample. The split half method of reliability to test internal consistency of scale was employed. The test was conducted on 100 respondents. The 11 item scale was split into two halves using odd– even method. Score of one hundred respondents for each item of the two halves was calculated. Each of the two sets of the item was treated as a separate scale and then these two sub scales were correlated. The coefficient of reliability was calculated by Rulon's formula as $R_{tt} = 1 - S^2d / S^2t$ where, d = Difference between two half scores of a respondent; S^2d = Variance of those differences and S^2t = Variance of total scores.

Validity of a Scale: It is the property that ensures that the obtained score measure the variable they are supposed to measure. The main criterion of content validity is how well the contents sample the information, which is important for variable under study. The content validity of the present scale was borne out by the method of collecting and screening items. The universe of object under study was widely covered and sampled through personal interviews. The statements were then screened by judges.

RESULTS AND DISCUSSION

Attitude is usually considered as consisting of three basic components- thinking, feeding and reacting. The poor adoption level of the scientific dairy practices can be attributed to variety of factors including the attitude of the farmers towards such practices. Rao *et al.* (1990) reported that the attitude towards the dairy production technologies and their level of adoption were significantly correlated. In this study the scale to measure attitude towards scientific dairy practice was developed which contained 11 statements (Table 2). The scale was developed in eight successive steps. The coefficient of

Table 2
Arithmetic mean scores of low and high group of respondents against items

S. No.	Statements	Low group mean	High group mean
1.	Traditional/conventional practices of animal rearing are time tested*.	1.25	2.7
2.	Scientific practices have yet to prove their potential*.	1.26	2.83
3.	Conventional A.H. practices cannot be substituted*.	1.22	2.6
4.	Cross bred animal is a symbol of progressiveness*.	1.48	2.73
5.	I look forward to adoption to scientific dairy practices/dairy innovations*.	1.48	2.53
6.	Scientific dairy practices must be given a chance.	1.81	2.5
7.	Only fools are eager to adopt scientific dairy practices*.	1.407	2.5
8.	Govt. should organize training for scientific dairy practices*.	1.56	2.63
9.	Scientific dairy practices are a bane rather than a boon.	1.56	2.2
10.	Profitability today is synonymous with scientific dairy practices.	1.74	2.17
11.	In my view people will not come forward for scientific dairy practices in a big way.	1.407	2.26
12.	It's unfortunate we are moving to scientific dairy practices*.	1.37	2.4
13.	I don't think scientific dairy practices offer anything interesting /practical*.	1.407	2.63
14.	Not choosing /adopting scientific dairy practices will only make matter worse.	1.852	2.46
15.	It's unfortunate but we don' have substitute for traditional dairy practices	1.593	2.4
16.	Good or bad we have to adopt scientific dairy practices*.	1.556	2.7
17.	Scientific dairy practices may not be very good but other options are worse*.	1.556	2.733

*Indicates finally selected statement

reliability was found to be 0.92 which was fairly high. In this scale every selected statement was an expression of unfavourable or favourable attitude towards scientific dairy practices, as agreed by more than 80% of the judges.

The future success of dairy farming will depend on the ability of the farmers to respond to complex production problems with knowledge intensive solutions. A favourable attitude towards scientific dairy farming would facilitate a dairy farmer to acquire, process and use increasingly complex solutions. A negative attitude, on the other hand will be a hindrance in the process. The scale developed would facilitate measurement of attitude of farmers towards scientific dairy farming practices. This in turn will go a long way in designing extension strategies and programmes that are realistic and effective.

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