

## **A SCALE TO MEASURE KNOWLEDGE OF DAIRY FARMERS REGARDING IMPROVED ANIMAL HUSBANDRY PRACTICES**

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### **ABSTRACT**

*The present study was taken up in the year 2005-2006 to develop a scale which can scientifically measure the knowledge of dairy farmers towards improved animal husbandry practices. From 91 statements, 49 statements were selected in the final format of the scale to measure knowledge of the dairy farmers. The reliability co-efficient is 0.96, which is highly significant.*

### **INTRODUCTION**

In rural areas of Anand district, the farmers along with agriculture also maintain one or two milch animals under two-tier production system and maintain them on the by-products of the agricultural produces. Because of limited resources available with the farming community, expected improvement in the milk production per animal is yet to be achieved. However, the availability of latest scientific knowledge of dairy farming, based on four pillars namely, innovative breeding, balanced feeding, excellent management and well supervised health control of cattle and buffaloes, is the key issue for maximization of milk production. With this in view, an attempt was made to develop a scale which can scientifically measure knowledge of dairy farmers towards improved animal husbandry practices

### **METHODOLOGY**

Knowledge is a body of understood information possessed by an individual. For the purpose of this study, knowledge was operationalised as the information and understanding of the dairy farmer regarding improved practices of animal husbandry. For measuring the knowledge level, a knowledge test was constructed and standardized.

#### **I Item selection**

In initial stage of developing the scale, a large

number of statements about improved animal husbandry practices were collected from relevant literature, subject matter specialists and experts. Care was taken to ensure that no crucial practice is left out. Finally, 91 items covering all aspects of improved animal husbandry practices were selected to form initial test battery. To control bias if any, these items were framed in the objective form of questions.

#### **II Item analysis**

The item analysis used by Jha and Singh (1970) was carried out with three kinds of indices viz., "index of item difficulty", "index of item discrimination" and "index of item validity". For this purpose, the items were administered to 48 respondents of Anand district selected at random. Each item was given the score of 1 or 0 for the dichotomized response of 'correct' or 'incorrect' and for 'yes' or 'no' answer respectively. Thus, maximum score an individual could obtain was 91 and minimum was 0.

The scores obtained by 48 respondents individually were arranged in descending order and the respondents were divided into six equal groups (of eight respondents) viz., G1, G2, G3, G4, G5 and G6 arranged in descending order of total score obtained by them. For item analysis, the middle two groups namely G3 and G4 were eliminated retaining only the four terminal groups with high scores (G1 and G2) and with low scores (G5 and

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G6). Scores of these groups ranged as follows:

Group	Score out of 91
G1	74 - 57
G2	57 - 49
G5	41 - 36
G6	36 - 25

The data pertaining to the correct responses for all the items in respect of these four groups were tabulated for calculating item discrimination and item validity indices.

### III Item selection

The selection of the items for knowledge test about improved practices of animal husbandry was made on the following criteria.

#### (a) Item difficulty index (P)

The index of difficulty (P) was worked out as the percentage of the respondents answering an item correctly. The assumption in this item index of difficulty was that the difficulty is linearly related to the level of respondents' knowledge about improved practices of animal husbandry. When a respondent answered an item, it was assured that the item was less difficult than his ability to cope with it.

The index of the item difficulty indicates the extent to which an item is difficult. An item should neither be so easy that all persons can pass it nor should it be so difficult that none can pass it.

The items with difficulty P values ranging from 20 to 80 were considered for final selection of the knowledge test battery. It was calculated by following formula:

$$P = \frac{\text{No. of respondents answered correctly}}{\text{Total number of respondents}} \times 100$$

#### (b) Discrimination index (E 1/3)

The second criterion for item selection was the discrimination index indicated by E 1/3 value for an item. The function of item discrimination index is to find out whether an item

really discriminates a well-informed respondent from poorly informed respondent. In the present study, the items with E 1/3 values ranging from 0.15 to 0.85 percent were considered for the final selection in the knowledge test.

Discrimination index E1/3 was worked out by using following formula.

$$E \frac{1}{3} = \frac{(S_1 + S_2) - (S_5 + S_6)}{N/3}$$

Where,  $S_1, S_2, S_5$  and  $S_6$  are the frequencies of correct answer in the group  $G_1, G_2, G_5$  and  $G_6$ , respectively.

N = Total number of respondents in the item analysis (48).

#### (c) Biserial correlation

Biserial correlation is used for the test item validation, when the criterion of validity is regarded as internal consistency i.e, the relationship of total score to a dichotomized response to any given item. Keeping this in view, the Biserial correlation of each of the items was calculated, and the significance of the Biserial correlation coefficient was tested with the help of formula used by Guilford (1965). The items which were found significant at 5 per cent level of significance were retained in the final format of the knowledge test battery.

$$\text{Biserial Correlation } (r_{bis}) = \frac{M_p - M_q}{\sigma_t} \times \frac{pq}{z}$$

Where,

$M_p$  = Mean of x values for higher group in dichotomized variable

$M_q$  = Mean of x values for lower group in dichotomized variable

p = Proportion of cases in higher group

q = Proportion of cases in lower group

z = Ordinate of the unit normal distribution curve with surface equal to 1.0 at the point of division between segments containing p and q proportion of the cases.

$$s_t = \frac{\sum (X_i - \bar{x})^2}{(n - 1)} = \text{standard déviation}$$

**Testing the significance of r bis**

The co-efficient of Biserial correlation was tested for significance by using the following formula as given by Guilford (1965).

**(d) Representative items of the test**

Though the aforesaid criteria were the main considerations for the final selection of the knowledge items, care was taken not to eliminate the important aspect, if any.

Finally, 49 items were selected, which formed the actual (final) format of the knowledge test. The items are presented in Appendix-I.

**(e) Reliability and validity of the knowledge test**

The reliability of the test was examined by employing test-retest method. The values of

correlation coefficient (r= 0.96) was found to be highly significant indicating that the test was reliable. The reliability coefficient was calculated with the help of Rulon's formula used by Guilford (1965).

The validity of the test items was tested by the method of Biserial correlation coefficient. The items with highly significant Biserial correlation coefficient at 0.01 and 0.05 levels of probability indicated the validity of the items in relation to the knowledge test designed to measure the knowledge of farmers regarding improved practices of animal husbandry.

**(f) Method of scoring knowledge**

The test consisted of 49 items concerning improved practices of animal husbandry. The respondents can be asked to give correct or incorrect, yes or no or a specific answer to some direct questions. The total knowledge score may then be calculated by summing up score of correct answers. The range of score obtained by the respondents can vary from 0 to 49. The final format of the scale is presented in Appendix -I

**Appendix -I**

Sr. No.	Items	Yes/ No
<b>A</b>	<b>Improved breeds</b>	
	Which are the important exotic breeds of cattle?	
1	Kankrej	
2	Jersey	
3	HF	
4	What are the possible ways by which animals can be bred? A----- B----- C -----	
<b>B</b>	<b>Management at calving and Calf rearing</b>	
5	Is bedding of paddy fodder necessary during calving time?	
6	At what time the naval cord should be removed?	
7	When should colostrums be given to a calf after birth? Within 45 minutes/ 2 hours/ after placental exposure	
8	If mother does not produce colostrums, what should be given to new born calf? Egg yolk/ others animal colostrums	
9	Can a "milk replacer" be used for a calf?	

Sr. No.	Items	Yes/ No
10	After how many days of birth, should we practice for dehorning a calf? After 3 / 7 / 15 days	
	Which vaccines are given to calf?	
11	FMD	
12	HS	
13	BQ	
14	Is deworming necessary?	
15	Up to what stage of pregnancy, one should milk an animal?	
<b>C</b>	<b>Feeding practices/Nutrition</b>	
16	How should the dry and green fodder be given? Chopped / without chopped	
17	How much green fodder should be given to a milch animal during a day ? -----kg/day	
18	How much dry fodder should be given to a milch animal during a day ? -----kg/day	
19	What amount of water a does milking animal require per day? 10/ 20/30 liter	
20	How much concentrate should be given to milch animal producing ? 5 liters milk/day/ 1.5kg+40% of milk or 3kg+40% of milk	
21	How much salt is added in concentrate? (A) 5-7gm (B) 15-20gm	
22	How much mineral mixture should be given to milking/pregnant animal everyday? (A) 5-10gm (B) 20-30gm	
<b>D</b>	<b>Breeding practices/Reproduction</b>	
23	After how many days the buffalo/cow normally repeats its heat cycle? (1)20-21 days (2) 40-45 days	
24	What are the symptoms of a buffalo/cow being in heat/estrus? A ----- B ----- C-----	
25	What is the correct time for breeding after coming in heat?	
26	When should the buffalo/cow be bred after calving? A.30day B. 45days	
27	What is the average period of gestation in buffalo/cow?	
<b>E</b>	<b>Diseases control/Health care</b>	
	What are the contagious diseases commonly found in this region?	
28	Pneumonia	
29	Diarrhoea	
30	Viral	
	Give name of normal diseases that occur in animal.	
31	FMD	
32	HS	
33	Gastric	
	Give vaccination time for following diseases	
34	FMD ----- month	

Sr. No.	Items	Yes/ No
35	HS -----month	
36	BQ -----month	
37	Give the name of ecto-parasites which are harmful to animals? ....., ....., .....	
	Can human gets infection of following diseases from animals?	
38	T.B.	
39	Anthrax	
40	Brucellosis	
<b>F</b>	<b>Management and milking practices</b>	
41	Which is the ideal roof material for animal shed?	
42	Should the milking process be done by only one person?	
43	With what do you clean the udder before milking?	
44	If an animal gives daily more than 15 liters of milk, how often should it be milked? Twice a day /Thrice a day	
45	In how many minutes the milking procedure should be completed? 3 / 5 / 9 minutes	
46	Is it advisable to milk with one rear and one front teat?	
47	What is good in milking to keep thumb in stripping or art of stripping?	
<b>G</b>	<b>Marketing</b>	
48	Should the animals be purchased after clinical check up?	
49	Will a normal performing animal fetch better price or better looking animal will fetch better price?	

C = Correct      IC = Incorrect

**REFERENCES**

Jha, P. N. and Singh, K. N. (1970). A test measure farmer's knowledge about high yielding variety programme. *Interdiscipline*, 7 (1): 65-67.

Guilford, J. P. (1965). *Psychometric methods*. TNH. Ed., Tata- Mc- Grow Hill Books Co. Ltd., New Delhi.

<b>SELF IMAGE</b>		
<i>S</i>	:	<i>Sociable</i>
<i>E</i>	:	<i>Efficient</i>
<i>L</i>	:	<i>Long Sighted</i>
<i>F</i>	:	<i>Fellowship</i>
<i>I</i>	:	<i>Industrious</i>
<i>M</i>	:	<i>Madure</i>
<i>A</i>	:	<i>Actual</i>
<i>G</i>	:	<i>Good will</i>
<i>E</i>	:	<i>Entrepreneur</i>