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Scale to measure knowledge of rural women about the agro-based enterprises

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Abstract

Women today are central to the selection, breeding, cultivation, preparation & harvest of food crops. Mainly rural women are engaged in agricultural activities in the three different ways depending on the socio-economic status of their family and regional factors. They work as labourers, cultivators doing labour on their own land, as manager of certain aspects of agricultural production by way of labour supervision and participation in postharvest operation. Rural women engaged in many agro-based activities including various forms of food processing and in particular, the preservation of fruits and vegetables, making of pickles, badi and papad, and some variations of kitchen gardening for horticultural products since time immemorial, dairy is one of the activity in which women are engaged. Hence the understanding of knowledge level of rural women about agro-based enterprises viz. Dairying, Vermicomposting, Food processing/Value addition and Beekeeping, a scale was developed to measure knowledge of rural women about the agro-based enterprises. Different steps viz. Item collection and selection, Item analysis, Calculation of difficulty index (Pi), Calculation of discrimination index (E^{13}), Calculation of biserial correlation, Selection of items, Reliability and validity of the test were utilized for construction of scale on knowledge of rural women about agro-based enterprises. 76 statements were sent to 60 judges for its relevancy by assigning the score for each item in five continuums. Based on the scale value (S) and quartile value (Q), total 44 statements were finally selected to constitute the scale to measure knowledge of rural women about the agro-based enterprises. Reliability of the scale found to be 0.9665.

Keywords: Knowledge, agro-based enterprises, rural women, dairying, vermi-composting, food processing, beekeeping

Introduction

Women play a pivotal role in all economic and crop production activities in the India. Women farmers are the veritable backbone of subsistence agriculture. Women's role in agricultural operations, animal husbandry and other economically productive activities is very significant. Since childhood, rural women play a significant role by taking care of siblings, in cooking, domestic chores, preparation of fodder for domestic animals in their parents' house. They married off at a very early age. Indian women are condemned to a life of serfdom, anonymity or facelessness. They have prime responsibility for agricultural production, besides domestic and childcare. This shows the insensitivity towards women of society. Involvement of women in working force as well as in personal and social decision-making process becomes a vital issue in present arena. Considering the Agro Based Industry (ABI) is an enterprise that processes agricultural raw material and it facilitate effective and efficient utilization of raw material. This includes dairying, Vermi-composting, Value addition/Food processing, and Beekeeping. Knowledge of rural women about agro-based enterprises play significant role in empowering process of women in rural areas. So with this context, an attempt was carried out to construct scale to measure Knowledge of rural women about agro-based enterprises.

Material and Methods

According to Webster's Dictionary, knowledge is the fact or condition of knowing something with familiarity gained through experience or association. It has been measured by an index developed for the purpose. The steps followed in the construction of scale on knowledge of rural women about the agro-based enterprises are discussed below:

Item collection and selection

The content of a knowledge test is composed of questions called items. Items collected for the

test from different sources, literature, field extension personnel, relevant specialists and the researchers own experience. It was in context to knowledge of rural women about agro-based enterprises viz., dairying, vermi-composting, value-addition/food processing, and beekeeping. Total 76 items were selected for developing knowledge test after carefully editing and by subjecting them to expert scrutiny.

Item analysis

The item analysis was carried out so as to yield three kinds of information, viz., "Index of item difficulty", "Index of item discrimination" and "Biserial correlation". The index of the item difficulty reveals how difficult an item is, whereas discrimination index indicates the extent to which an item discriminates the well-informed individual from the poorly informed. The point biserial correlation provides information on how well an item measures or discriminates with the rest of the test items. The collected items were numbered from 1 to 76 and administered to 60 respondents for item analysis. The respondents for administering the items were randomly selected and were not included in the sample for final study. Each one of the respondents, to whom the test was administered, were given a score 1 or 0 for each item, according to whether the answer be right or wrong. Thus, total

number of correct answers given by respondent out of 76 items was the knowledge score of the individual. After calculating the score obtained by each of the 60 respondents on 76 items, the scores were arranged from highest to lowest in order of magnitude. These 60 respondents were then divided into 6 equal groups, arranged in descending order of total scores obtained by them. These groups labelled as G1, G2, G3, G4, G5 and G6 respectively with 10 respondents in each group. For the item analysis, the middle groups G3 and G4 were eliminated keeping only four extreme groups with high and low scores (Bloom *et al.*, 1955) [1].

Selection of item as final statement

The index of item difficulty for each of 76 items was worked out as the percentage of the respondents answering on items correctly. The assumption in this item index of difficulty was that the difficulty is linearly related to the level of respondents' knowledge about agro-based enterprises. When a respondent answered an item, it was assured that the item was less difficult than her ability to cope with it. In this study with this assumption, the items with P (Difficulty Index) values ranging from 25 to 85 were considered for final selection of knowledge battery.

Table 1: Selected Knowledge statements for Present study

Sr.	
A. Dairying	
1	Do you know that the colostrum should be fed to new born calf within an hour after birth? Yes/No
2	Do you know about balanced feeding for healthy dairy animals? Yes/No
3	Do you know about treatment for improving the quality of roughages? Yes/No
4	Do you know how much mineral mixture to be feed a dairy animal? Yes/No
5	Do you know why chaffing fodder should be feed to dairy animal? Yes/No
6	Do you know about the importance of pre and post milking teat dip? Yes/No
7	Do you know why orientation of cattle should be in east-west direction? Yes/No
8	Are you knowing that cross ventilation is essential in cattle shed? Yes/No
9	Are you knowing that Concrete floor is better than kachcha floor in cattle shed? Yes/No
10	Are you knowing that why vaccinating the dairy animals? (a) Preventing or reducing disease (b) Higher milk production (c) Other reasons
11	Do you know why deworming among dairy animals? Yes/No
12	Is raw milk safe to be consumed as such? Yes/No
13	Do you know which agency set price of milk in Gujarat? (a) Amul (b) National Dairy Development Board (c)Gujarat Cooperative Milk Marketing Fedderation
14	Is selling of milk directly to the consumers is more economically beneficial? Yes/No
15	Are you knowing that fresh and cool drinking water throughout the day is essential for animals? Yes/No
B. Vermicomposting	
1	Do you know the species of earthworms which are utilize for vermicomposting in South Gujarat? (a) Red wigglers[Eiseniafetida] (b)European night crawlers[Eiseniahortensis] (c) Red worms [Lumbricusrubellus]
2	Are you knowing the Vermi-worms can survive during natural climate? Yes/No
3	Are you utilize mixture of decomposing vegetable or food waste, bedding materials for preparing vermicompost? Yes/No
4	Are you knowing that the site of vermicomposting attract flies and mosquitoes? Yes/No
5	Do you know that the earthworms are safe to handle with hands? Yes/No
6	Do you know about the recommended size of vermibed? Yes/No
7	How much earthworms required for 15m×4m size vermibed? (a) 1-2 kg (b) 2-3 kg (c) 4-5 kg (d) 10 kg
8	Do you know the price of 1 kg earthworms used for vermicomposting? Yes/No
9	Do you know the sources from where one can buy earthworms? (a) Private agency (b) Agro-business Center (c) Agricultural University (d) others
10	Do you know the estimated cost for preparing vermicompost from 15m × 4m size vermibed? (a) 1000 Rs. to 1500 Rs. (b) 1500 Rs. to 2000 Rs. (c)2000 Rs. to 2500 Rs. (d) Above 2500 Rs.
11	Do you know the average selling price of 50kg vermicompost? (a) 100 Rs. to 200 Rs. (b) 200 Rs. to 300 Rs. (c) 300 Rs. to 400 Rs. (d) Above 400 Rs.
12	Do you know the online marketing platform is available for selling of Vermicompost? Yes/No
Value addition/Food processing	
1	How many products of mango fruits prepared by processing? (a)1 to 2 products (b) 2-3 products (c) 3-5 products (d) More than 5 products
2	Do you know packaging of food is economically beneficial? Yes/No

3	Do you know about products are prepare from pulses by food processing? (a) Papad and vadi, (b) soyabean balls (c) protein rich flour
4	Do you know about marketing facilities available for different food processing products in South Gujarat? (a) Hat Bazaars (b) Grocery stores (c) Commercial Online Websites (d) Craft Markets
5	Do you know the value addition give more benefits? Yes/No
Beekeeping	
1	Do you know <i>Apis mellifera</i> species of honeybee which is domesticated in South Gujarat? Yes/No
2	Honeybee activities higher in winter as compare to summer, is it true or false?
3	Do all honeybees are make honey? Yes/No
4	Do you know the honey ever go "bad" or "spoil"? Yes/No
5	Do you know the reason for honey solidification? Yes/No
6	Do You know the places where one can buy hives for beekeeping? (a)Private agencies (b)NGOs (c) Progressive beekeepers (d) Navsari Agricultural University
7	How many beehives require for 1 hector cucumber farm? (a) 2-3 beehives/ha (b) 3-5 beehives/ha (c) 5-7 beehives/ha (d) Above 7/ha
8	Do you know the four frames beehive and 10 frames beehive are available for beekeeping? Yes/No
9	How much honey produce from one four frames beehive? (a) 0.5 kg to 1 kg (b) 1 kg to 2 kg (c) 3 kg to 5 kg (d) More than 5 kg
10	Which safety measures for harvesting the honey from beehives? (a) Do the inspection during nice weather (b) Wear protect Gear (c) Keep the hive tidy
11	How one can know the purity of honey? (a) Thumb test (b) Water test (c)Flame test (d) Use vinegar (e) Heat test

Results

On the basis of significant values of the biserial 'r bis', difficulty index and discrimination values, total 43 items out of 76 items were selected to measure the knowledge of rural women about agro-based enterprises.

Reliability of the scale

A scale is reliable when it gives consistently same results when it applied to same sample. In the present study split-half method was used to find out the reliability of the knowledge test. It was administered to 30 respondents separately who were not included in the final sample. Having obtained the two sets of scores for each of the 30 respondents, reliability coefficient between the two sets of scores was calculated by Rulon's formula used by Guilford (1954) [2], which was found to be 0.9667 at 1 per cent level. The reliability coefficient thus obtained indicated that internal consistency of the knowledge test developed for the study was very high.

Validity of the Scale

Validity is the accuracy with which it measures that which is intended to measure or as the degree to which it approaches infallibility in measuring, what it intended to measure. The biserial correlation (r bis) was consider as a measure of test items validity. Highly significant biserial correlation coefficient (r bis) values proved the construct validity of the items included in knowledge test battery. Thus, knowledge test was ready for administering to the actual respondents.

Administrating the scale

The selected 43 statements for final format of the knowledge scale were randomly arrange to avoid the response biases, which might contribute to low reliability and detract from validity of scale. Out of 43 selected statements, 15 statements were indicator for Dairying enterprise, 12 statements were indicator for Vermicomposting enterprise, 5 statements for Food processing/Value addition and 11 statements for Beekeeping enterprises. The final knowledge test battery was administered on the sample of rural women engaged in agro-based enterprises. They were asked to express their answer to the multiple choices and yes/no type questions. The correct answers were tick-marked. The summation of scores for the correct answers over all the items for a particular respondent indicated her level of knowledge about agro-based enterprises. The categories of knowledge of rural women in

agro-based enterprises was considered as low, medium and high on the basis of mean and SD.

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