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MEASUREMENT OF KNOWLEDGE OF FARMWOMEN ON POST-HARVEST TECHNOLOGIES

In India, women play a crucial role in post-harvest operations. Post-harvest losses occur from farm to ultimate consumption. Traditional storage methods and practices followed by most households do not give desired and adequate protection against various storage insects, rodents, moisture etc., which are responsible for storage losses. Rural women are still unaware of the scientific post-harvest practices. The extent of losses could be minimized to a greater extent if the post-harvest technologies could be disseminated among them. The objective of this study is to construct and standardize a knowledge test related to post-harvest technologies and to measure the knowledge level of farmwomen on post-harvest technologies (PHTs).

A standardized knowledge test on PHTs was constructed based on the methodology given by Singh (1982). List of women population from three villages (Cittampatti, Kattankudi and Pulliampatti) of Kamarajar district in Tamil Nadu was collected and a sample size of two per cent of the total farmwomen in each village was fixed. The respondents were selected by adopting simple random sampling method. Thus a sample of 108 farmwomen constituted the sample size of the study.

To measure the knowledge level of farmwomen on PHTs, the standardized knowledge test that is developed for the purpose was suitably translated in local language and administered to the selected respondents. The results were interpreted by correct or incorrect answer given by the respondents with the scoring of '1' and '0' respectively. Total score of the respondents were calculated and the respondents were classified based on the knowledge level by using mean and standard deviation.

The content of the knowledge test is composed of questions called items. A large number of items with respect to post-harvest technologies were collected in consultation with the scientists working in post-harvest technology, extension scientists as well as referring to the publications of save grain campaign of the Food and Agricultural Organization. Altogether 28 items were thus selected on the basis of: (a) it should promote thinking than memorization, (b) it should differentiate the well-informed farmers from the poorly informed farmers and (c) it should have same difficulty value.

The collected 28 items were administered to 30 farmwomen (in the non-sample area) scores of '0' and '1' were given to incorrect and correct answers respectively. The total score for each respondent was calculated. Afterwards, the total scores of the respondents were arranged in descending order. As suggested by Singh (1982), 27 per cent of top group were constituted as high group and 27 per cent of the bottom group as low group. The scores of these two groups were considered for calculating item difficulty and item discrimination indices. The item difficulty index was computed by averaging the proportion of correct answers in high group and the proportion of correct answers in low group. The formula for determining the index on the basis of the extreme groups is as under:

$$P = (R_U + R_L) / (N_U + N_L)$$

Where P = index of difficulty, Ru = number of respondents answering correctly in the upper groups, R_L = number of respondents answering correctly in the low group, Nu = number of respondents in upper group, N_L = number of respondents in lower group

Discrimination index referred to the extent to which an item discriminates well-informed individuals from the poorly informed ones. It was calculated, as suggested by Marshall and Hales (1972). They called this index as "Net D" index of discrimination and "Net D" was defined as an unbiased index of absolute difference in the number of discriminations made between the upper group and the lower group i.e., the difference between the proportion of correct answers of the high group of 27 per cent and the low group of 27 per cent respondents.

$$V = \frac{R_U}{N_U} - \frac{R_L}{N_L}$$

Table 1. Final items selected for knowledge test

Sl.No.	Questions	Answers
1	What plant material may be used as a pest repellent for storing grain?	Agathi / moringa / neem
2	The oil used during grain storage is	Eucalyptus oil / olive oil / vegetable oil
3	What material from the following has more controlling effect on storage pests?	Clay / sand / activated clay
4	Which gas is presently used to have fumigation effect on the stored product?	Biogas / oxygen / cooking gas
5	What material is used to plug the micro perforation of the earthen pot for storing grains?	Cow dung slurry / red earth / paint
6	Which method of storage is more susceptible to pest damage?	Storage in metal bins / gunny bag storage / storage in impregnated gunny bags
7	Which structure is newly recommended for safe storage of grain?	Polythene lined double walled wooden bin / kuthir / bamboo bin
8	What is the recommended chemical to control house rats?	Malathion / zinc phopsphide / magnesium phosphide
9	Grain aeration is done to	Remove excess moisture from grain / change the colour of grain / reduce the humidity of storage
10	Name the equipment recently introduced to remove the husk and corn from the maize cobs	Husker sheller for maize / maize sheller / burr mill
11	The period of grain fumigation should be	Four days / seven days / ten days
12	Why storage structure should be made airtight during fumigation?	Diffusion of poisonous gas is prevented and thereby protecting the environment / the moisture content of grains can be reduced to optimum level / the rats present in the structure will be killed
13	Why polyethylene sheet is placed under gunny bags during storage?	To prevent damage caused by rats / to prevent entry of moisture from the floor / to prevent entry of birds.
14	Which method is recently advocated for drying grains?	Shade drying / open yard drying / solar drying.
15	Which method is not recommended for grain storage?	a) Keeping old and new grain separately. b) Avoiding contact of water with materials. c) Mixing old and new grains while storing.
16	What is the recommended dosage of aluminium phosphate per pit for rodent control?	One tablet / two tablets / three tablets
17	What is the important precaution to be taken in poison baiting?	Always mix the bait by hand / use stick for mixing and not hands / no need for precaution.
18	Milling loss of pulses may be reduced by	Using stone mortar / using dhal mill / using hand pounding.

Where Ru = number of the respondents giving correct answer in the high group, RL.= number of the respondents giving correct answers in the low group, Nu = number of respondents in the high group, NL = number of respondents in the low group and V = the discriminatory power or validity.

The power of an item and its consistency with total score in the test was gauged by correlation of the item score and whole test score. Since the items were scored by assigning '1' for correct answer and '0' for incorrect answer, point, biserial correlation coefficient was calculated to measure the validity of the item. The point biserial correlation coefficient was calculated as follows:

$$rp\,bis = \frac{Mp - Mq}{a}\sqrt{Pq}$$

Where rp bis = point biserial correlation, Mp = the mean of the total score of respondents who gave correct answers to the item, Mq = the

Table 2. Knowledge level of farmwomen on (n=108) PHTs

Sl. No.	Categories	Number	Percentage
1	Low	18	16.67
2	Medium	63	58.33
3	High	21	25.00

mean of the total score of the respondents who gave incorrect answers to the item, a = standard deviation of the entire sample, p = proportion of farmers giving correct answer to the item and q = proportion of farmers giving incorrect answer to the item.

Significance of the point biserial correlation coefficient 'r' was tested using statistical table. The significance of the point biserial 'r' was tested by using the formula

$$t = \frac{rp\,bis\sqrt{N - 2}}{\sqrt{1 - r^2 p\,bis}}$$

Where t = test of significance, rp bis = point biserial correlation of the item and N = total size of the sample. If the calculated value was greater than table value, then it was considered as significant.

The difficulty index and discrimination index were the criteria for selection of items for the test to start with. The items having difficulty index of 0.4 to 0.6 and discrimination index of above 0.4 were selected by adopting the methodology of Singh (1982). The point biserial correlation coefficient formula was applied to test the item validity. Thus 18 items, which were significant when exposed to 't' test, were selected for the final study. The final format of the knowledge test developed in this study is presented in Table 1.

Knowledge level of farmwomen on PHTs was measured by using the standardized knowledge test developed for the purpose.

The standardised knowledge test developed for assessing the knowledge level of farmwomen on PHTs was administered and the results are presented in Table 2.

Results revealed that more than half of the farmwomen (58.33%) possessed medium level of knowledge on post-harvest technologies. About one-fourth of the respondents had high level and less than one-fourth had low level of knowledge on PHTs.

In the behavioural sciences the often-repeated and very frequently measured variable is the knowledge component of either a personality system or a group or a community. This study will provide methodological guidelines to the social scientists who intend to develop knowledge test. Besides, this knowledge test developed in this study will serve as a tool in the hands of researchers, who need to measure the knowledge level of farmers on PHTs.

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