DEVELOPMENT OF PRINTED MATERIAL ON GRAIN STORAGE TECHNOLOGY FOR RURAL YOUNG GIRLS

Kunwarjeet Pannu and Ajit Randhawa

AICRP on Home Science-Extension, Department of Extension Education, Punjab Agricultural University, Ludhiana - 141 004, India

ABSTRACT

The printed material on grain storage technology was developed to impart knowledge to the young girls. Two Nehru Yuval Kendras were selected at village Moranwali and village Matta of 2 blocks of Faridkot district. Fifty girls of two Nehru Yuval Kendra were exposed to the message on grain storage through the developed educational material i.e. booklet and pamphlet. This material was standardized before its exposure to the respondents. The booklet was standardized in terms of its appropriateness, tryout phase and evaluation phase. The pamphlet was standardized in terms of its reading ease score. The study employed the pre test, post test (I and II). The respondents were exposed to two treatments booklet and pamphlet. The knowledge of the respondents was tested. The findings revealed that the girls were able to gain as well as retain significant knowledge with the help of developed educational material.

INTRODUCTION

Rural women play a crucial role in most of the agricultural pursuit particularly in grain storage. Usually 75-80 per cent of the grains are stored in rural households. About 70 per cent of the grains are retained by farm families for feed, food, seed or barter. Insect pests cause enormous losses to human beings, domesticated animals as well as food grains. It is imperative to manage these nefarious pests to save ourselves from their attack and minimize losses caused to food grains. Storage losses caused by insect pest is 7 per cent i.e. 12.7 million tones of grains per year. (Arora and Dhaliwal, 1998). It has been observed that post harvest losses to food grains are very high reducing the availability of food grains produced and causing great economic loss. In India the estimated loss is 10 per cent which is a colossal loss to the nation and the farmers (Prasad and Ram, 1990).

Although scientific methods of grain storage are well established but the same are not practised by rural house holds mainly due to ignorance. These traditional farm level processing of food grains need to be modified with scientific grain storage practices to minimize the post harvest losses.

Effective communication is the basis of success for imparting knowledge in any field. The effectiveness of communication depends to a great extent on the choice and use of appropriate teaching methods and aids. Singh (1987) pointed out that the use of print media as compared to other media is more advantageous because it is reliable and scientific information is given in a simple language on a specific topic and can reach large number of learners quickly, easily and simultaneously. Printed material such as newspaper, books, booklets, pamphlets, leaflets are effective tools for technology transfer. Printed material in regional language is more effective. Printed material help to inform, entertain and influence the readers. Once new knowledge related to agriculture has been created, it needs to be put into practise. It will achieve its ultimate goal of usefulness only if the people who need it practise it. It is must to bridge the gap between the technology available and adoption by farm women. It is in this context that direct extension methods related to reading material are made available for farm women which can be referred by them from time to time. They can further respond through sharing information with their group
and other members of the social system. Recognizing the role the farm women play in grain storage and importance of printed material the present study has been planned with the following objectives:

- Development of standardized educational material i.e. booklet and pamphlet on grain storage technology;
- To assess the relative effectiveness of educational material i.e. booklet and pamphlet.

MATERIAL AND METHOL
Selection of respondents
The study was purposively conducted in Faridkot district as there was a recommendation for a study on grain storage to be conducted in this district. The list of active Nehru Yuvak Kendras was taken and out of these only those Kendras which were situated at least 10 kms away from one another were considered so as to avoid impact of treatment on each other. Further out of these Kendras, one Kendra was selected randomly from each block. It was Kendra at village Moranwali of Faridkot block and at Matta of Kotkapura block. A list of members of Nehru Yuvak Kendras was obtained and from this list only those 25 who met the set criteria of age, family occupation, educational status, caste and mass media exposure were selected as respondents.

Criteria for selection of the respondents:
- a) Respondents in the age group of 16-20 years;
- b) Respondents with family occupation as agriculture;
- c) Respondents with education up to primary;
- d) Respondents whose mass media exposure was limited to TV only.

Development of booklet and pamphlet
The contents were selected after consulting the available literature and subject experts from the department of Entomology, Punjab Agricultural University, Ludhiana and Indian Grain Storage Institute, Govt. of India, Ludhiana. The format was finalized after incorporating necessary changes as suggested by the experts. The content were developed in the form of story in case of booklet and a brief and specific information was given in case of pamphlet. Following criteria set by Aggarwal (1993) were taken into consideration for preparation of the booklet.

- Topic was need based;
- Accuracy of contents was ensured;
- Booklet was focused on single idea;
- Content was developed keeping in view the local language;
- One sentence included 12-16 words;
- Thirty per cent of space was kept for illustrations;
- Text and colourful illustrations were arranged smoothly;
- Booklet was presented in story form.

The pamphlet was developed considering following elements
- It can vary in size;
- The number of the pages should be between 5-10;
- It should be stitched or stapled at the centre;
- It contained brief and specific information.

Measurement of appropriateness of the booklet and pamphlet
In order to measure the appropriateness of the developed booklet and pamphlet, development index was administered to the panel of 12 judges from the department of Home Science Extension Education, Extension Education and Entomology, Punjab Agricultural University, Ludhiana. They rated their responses regarding the developed booklet with respect to various attributes considered for measuring their appropriateness for imparting information. Scores were awarded to the various responses on three point scale as- most appropriate, some what appropriate and not appropriate. These responses were assigned arbitrary
weightage of three, two and one respectively. These scores were counted and mean was worked out.

**Standardization of booklet**

For standardization of the booklet, tryout phase and evaluation phase was carried out on a non sampled group. Tryout was carried in two stages i.e., individual tryout and group try out. In individual try out five girls were selected with a view to know the reactions in respect of language, illustrations and adequacy of explanations used in the booklet. Each respondent was requested to read the booklet carefully. The reactions of the respondents were noted and the requirements were made in the booklet. After modifying the booklet on the basis of individual tryout, it was further tried on a small group of 10 girls. During this phase, each of them was given a copy of booklet. After they had read the booklet, it was made sure that each one of them had understood the booklet. The girls discussed among themselves in a group. The reactions were taken into consideration and the improvements were made.

**Evaluation phase:** After tryout phase the booklet was put in evaluation phase which was carried out in terms of Error ratio and Gain ratio.

**Error ratio:** The error ratio was calculated on the basis of responses obtained on each page of the booklet. For this, questions were framed and answers were sorted from the questions. If on a particular page the respondents were not able to answer the question in accordance with the stipulation of the investigator, it was called an error. The errors made by respondents were counted. The total number of errors divided by product of total no. of respondents handling the booklet and multiplying this by 100 gave the error ratio. Following formula was used to calculating the errors.

\[
\text{Error rate} = \frac{\text{Total no. of errors}}{\text{Total no. of responses} \times \text{Total no. of respondents handling the booklet}}
\]

**Gain ratio:** Booklets effectiveness was measured through gain ratio. A pre test and post test was prepared and administered on a group of three girls. The gain ratio was calculated by using formula given below:

\[
\text{Gain ratio} = \frac{\text{Mean of (post test score - pre test scores)}}{\text{Mean of (total scores-pretest scores)}}
\]

**Standardization of pamphlet**

For standardization of pamphlet its readability was measured. According to Flesch (1951) readability means 'easy or interesting to read'. The reading ease of the developed pamphlet was determined by taking into consideration the following steps and formula as suggested by Flesch (1951) which is reproduced as under.

- If piece of writing is short, apply the readability test to all the material
- Determine the no. of syllables per 100 words (WL)
- Determine the average no. of words per sentence (SL)
- Reading ease Score (RES)
  \[\text{RES} = 206.835 - 0.846 \times \text{WL} + 1.015 \times \text{SL}\]

**Effectiveness of educational material**

The selected educational material i.e. booklet and pamphlet were considered as
treatment in the experimental investigation. The gain in knowledge and its retention were the measures used for determining the relative effectiveness of the educational material. The gain was worked out by administering knowledge test before (pretest) and immediately after the treatment (post test I). The retention of gain in knowledge was measured through knowledge test administered 7 days after the post test I and was called retention test. The treatment I and II were randomly assigned to experimental groups I and II. Thus a pre test, post test I and post test II described in Table 1 were used.

Mean gain and retention score

The gain in knowledge and retention of the two groups were measured by determining the difference between the post knowledge test score (I and II) and pre knowledge test scores. The knowledge scores were quantified by giving one score to each correct answer and zero to each incorrect or no answer. The mean gain and retention score of data “x” are equal to sum of the individual measures divided by the total number of respondents. The mean gain scores for each group were worked out.

Test of significance of difference between means

In order to know the amount of knowledge gained by respondents after the treatment, the difference between post test and pre test scores for each respondent was worked out. In order to know the amount retained, the difference between retention test and pretest scores was worked out. The data were analyzed by the paired - ‘t’ test which was applied to find out the significant gain in knowledge and retention of gained knowledge of the two experimental groups of the respondents.

RESULTS AND DISCUSSION

Standardization of booklet

The error rate for the booklet was found to be 3.6 which was less than 5 and gain ratio was 82.58%. Further the calculated ‘t’ value was found to be greater than the tabulated value which was the indication of significant gain in knowledge (Table 2 and 3).

Standardization of pamphlet

Table 4 shows that the F calculated value between attributes of pamphlet was found to be 3.6. The critical difference was found to be significant between attributes of pamphlet. The attributes varied in imparting the knowledge. The attributes such as language, size of letters, style of presentation and topic were found to be most effective followed by colour combination content and cover page. Further the pamphlet was tested for its reading ease score. The reading ease score was calculated by determining the number of syllables per 100 words and by determining the average number of words per sentence. The Table 5 shows that the reading ease score for pamphlet was found to be 67.99 and the same falls in the category of 60-70 which was regarded as standard (Flesch, 1951).

Relative effectiveness of selected printed material

It is evident from the Table 6 that the majority of the respondents had fallen in low category (84%) followed by medium (16%) in group I and majority of the respondents had fallen in low category (88%) followed by medium category (12%) in group II. None of the respondent in either group had given high level of knowledge regarding grain storage. It can be observed from the total of both the groups that majority of the respondents (86%) had low level of knowledge while the rest (14%) had medium level of knowledge.

After pre knowledge test the respondents were exposed to developed educational material i.e. booklet and pamphlet on grain storage. Respondents were then subjected to a post exposure test regarding grain storage.
Table 1. Research design

<table>
<thead>
<tr>
<th>Steps</th>
<th>Research design</th>
<th>Experimental group I</th>
<th>Experimental group II</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Pre test (immediately before imparting knowledge)</td>
<td>Pre test</td>
<td>Pre test</td>
</tr>
<tr>
<td>II</td>
<td>Imparting knowledge with developed treatments</td>
<td>Imparting knowledge with booklet</td>
<td>Imparting knowledge with pamphlet</td>
</tr>
<tr>
<td>III</td>
<td>Post test (immediately after imparting knowledge)</td>
<td>Post test I</td>
<td>Post test I</td>
</tr>
<tr>
<td>IV</td>
<td>Post test II (after 1 week of imparting knowledge)</td>
<td>Post test II</td>
<td>Post test II</td>
</tr>
</tbody>
</table>

Table 2. Error rate for the booklet

<table>
<thead>
<tr>
<th>Total no. of respondents</th>
<th>Total no. of errors</th>
<th>Total no. of responses</th>
<th>Error rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>9</td>
<td>10</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Table 3. Gain ratio for booklet

<table>
<thead>
<tr>
<th>Total no. respondents</th>
<th>Pre test Mean scores</th>
<th>Post test Mean scores</th>
<th>Total Mean scores</th>
<th>Gain ratio</th>
<th>Calculated 't' value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>2.2</td>
<td>16.9</td>
<td>20</td>
<td>82.58</td>
<td>4.26*</td>
</tr>
</tbody>
</table>

* Significant at 5 % level.

Table 4. Analysis of variance for the judgment of attributes of pamphlet

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>Mean sum of square</th>
<th>f-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attributes of booklet</td>
<td>7</td>
<td>0.457</td>
<td>3.6</td>
</tr>
<tr>
<td>Error</td>
<td>77</td>
<td>0.13</td>
<td></td>
</tr>
</tbody>
</table>

Table 5. Reading ease score for pamphlet

<table>
<thead>
<tr>
<th>No. of syllables per 100 words</th>
<th>Sentence length</th>
<th>Reading ease score</th>
</tr>
</thead>
<tbody>
<tr>
<td>152</td>
<td>11</td>
<td>67.99</td>
</tr>
</tbody>
</table>

Table 6. Distribution of respondents according to their pre exposure level of knowledge regarding grain storage

<table>
<thead>
<tr>
<th>Knowledge cores</th>
<th>Group I (n=25)</th>
<th>Group II (n=25)</th>
<th>Total (n=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (upto 6)</td>
<td>21 F</td>
<td>84 %</td>
<td>22 F</td>
</tr>
<tr>
<td>Medium (7-13)</td>
<td>04 F</td>
<td>16 %</td>
<td>03 F</td>
</tr>
<tr>
<td>High (14-20)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7 shows that there had been a remarkable improvement in knowledge of respondents after the exposure to educational material on grain storage. Majority of the respondents in Group I had acquired high level of knowledge (72%) followed by medium level (28%). Same was true in Group II where majority of respondents had gained high level of knowledge (84%) followed by medium level of knowledge (16%). None of the respondents in either group remained in low category of knowledge level after exposure to educational material on grain storage.
Table 7. Distribution of respondents according to their post exposure level of knowledge regarding grain storage

<table>
<thead>
<tr>
<th>Knowledge cores</th>
<th>Group I (n=25)</th>
<th>Group II (n=25)</th>
<th>Total (n=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>%</td>
<td>F</td>
</tr>
<tr>
<td>Low (upto 6)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Medium (7-13)</td>
<td>07</td>
<td>28</td>
<td>01</td>
</tr>
<tr>
<td>High (14-20)</td>
<td>18</td>
<td>72</td>
<td>21</td>
</tr>
</tbody>
</table>

CONCLUSION

It is clear from above results that the developed educational material i.e. booklet and pamphlet were appropriate and standardized for imparting knowledge. The members of Nehru Yuvak Kendra were able to gain significant knowledge with the help of booklet and pamphlet. The members of experimental group I where pamphlet was used as a treatment were able to gain more knowledge than the members of experimental group II where booklet was used as a treatment. This can be concluded that pamphlet was found to be more effective as compared to booklet in imparting knowledge.

REFERENCES