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CONSTRUCTION AND STANDARDIZATION OF ATTITUDE SCALE TO MEASURE THE ATTITUDE OF TRIBAL FARMERS TOWARDS SEED BANKING

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ABSTRACT

Seed Banks are places of storage where indigenous seed varieties are conserved and managed by farmers. These are not evaluated with respect to their relevance to tribal farmer's needs and preferences. In order to measure the tribal farmer's attitude towards seed bank, it is necessary to construct a scale for this purpose. Method of Equal-Appearing Intervals was used to construct the attitude scale. Total 53 attitude statements about seed banking expressing varied degree of favorableness were collected, edited on the basis of the Edward's criteria. These statements were subjected to scrutiny by an expert panel. Based on subjects response a standardized scale has been developed with 25 statements. The reliability and validity of the scale indicates its precision and consistency of the results.

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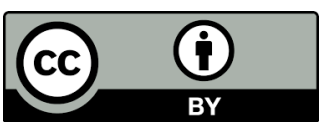

1 Introduction

With the modernization of agriculture and agricultural practices, cropping patterns have changed and genetic diversity started getting lost. As a result, the genetic base of traditional seed varieties reduced considerably and several traditional seed varieties are now facing extinction. The main reason for this is lack of seed banks. Seed banks usually store seed from a wide range of individuals, informal groups and NGOs who share seed among themselves (Lewis & Mulvany, 1997). Promoting the local seed varieties through informal seed distribution systems such as community seed banks/seed banks is the need of the hour in tribal areas (Khadka et al., 2012; Maharjan et al., 2012; Shrestha et al., 2012; Malik et al., 2013; Singh et al., 2013; Vernooy et al., 2017).In order to promote seed banks in tribal areas, it is necessary to know the attitude of the farmers towards seed banking. In the present study, the various psychological objects such as the seed accessibility, seed production, seed storage, use and seed distribution to others has been symbolized. For this purpose, the study was designed with the objective to develop a scale to measure attitude towards seed banking.

2 Materials and Methods

The attitude scale was constructed by using the equal appearing interval scale developed by Thurstone & chave (1927). Initially, A set of items and statements which elicits the farmers attitude towards seed banking was developed under supervision and consultation of experts, these statements were based on various possible sources viz., literature, discussion with experts, experience of investigator and scientists who work in tribal areas (Chandra & Kumar 2007; Kumar & Ratnakar, 2011). A tentative list of 100 statements expressing varied degree of favorableness was drafted keeping in view of the applicability of statements suited to the area of study. The collected statements were edited based on Edwards 14's criteria (Edwards,1969) and 47 statements were eliminated.

For the universe of content (statements related to seed banking prior to testing for scalability) fifty three statements were selected. The selected statements were sent to 80 subjects for evaluation and decision. The subjects selected for the study comprised experts in the field of extension, plant breeding, seed technology, Scientists working in tribal areas. Each subject was asked for their rating on 7 point (seven intervals) continuum in terms of the degree of favorableness or unfavorableness feeling expressed by each statement. Finally, out of 80 subjects only 50 subjects are replied.

2.1 Calculations of Scale and Q values

The data obtained from 50 subjects for each statement are arranged in table as frequency and proportions in the first and second row respectively. The proportions are obtained by dividing each frequency by the total number of subjects.

The 'S' and 'Q' values given in scale were judged on the basis of 50 respondents opinion and equal appearing interval which were computed by calculating the median value (S) and their inter quartile range (Q) (Kumar, 2009). The objective was to have small number of statements evenly placed on the continuum. The median value is considered as scale value and it was calculated by using following formula. (Thurstone & chave, 1927)

$$S = l + \left[\frac{0.50 - \sum Pb}{Pw}\right] i$$

Where S = the median or scale value; l = the lower limit of the interval in which the scale value falls; Pb = the sum of the proportion below the interval in which the scale value falls; Pw = the proportion within the interval in which the scale value falls; l = the width of the interval and it is assumed to be equal to 1.00

Q= C_{75}-C_{25}

Q = inter quartile range; C_{75} = 75th centile; C_{25} = 25th Centile

$$25\text{th centile} = C25 = l + \left[\frac{0.25 - \sum \text{Pb}}{\text{Pw}}\right] \text{i}$$

$$75\text{th centile} = C75 = \text{l} + \left[\frac{0.50 - \sum \text{Pb}}{\text{Pw}}\right] \text{i}$$

When there is good agreement among the subjects in judging the degree of favorableness of a statement, Q value will be small. A large Q value indicates disagreement among the judges as to the degree of attribute possessed by a statement and it is, therefore, taken as an indication that there is some ambiguity in the statement. Thurstone & Chave (1929) regard large Q values primarily as an indication that a statement is ambiguous. It is also may be due to the fact that statement is interpreted in more than one way by the subjects.

3 Results

Out of 53 statements 25 statements were selected based on scale 'S' and interquartile range (Q) values. The selected statements scale values equally spaced on the psychological continuum and the Q values are relatively small (Table 1).

3.1 Standardization of the scale:

A scale is said to be standard only when it has validity and reliability. Validity means the extent to which a test measures what it is supposed to measure. Reliability is consistency of measurement (Bollen, 1989), or stability of measurement over a variety of conditions in which basically the same results should be obtained (Nunnally, 1978).

3.1.1 Reliability

The reliability of scale was worked out by using test-retest method. The final selected 25 statements were given to the group of 30 farmers and these respondents were asked to give their response on three point continuum. After a period of fortnight the scale was again given to the same respondents and asked to give their response. Thus two sets of scores were obtained for the same statements. The correlation coefficient (r) for both the tests was calculated and it was 0.79 at 0.01 level of probability. This indicates the attitude scale was highly reliable.

3.1.2 Validity of the scale

The validity of the scale is based on content validation method. In the present scale the content was thoroughly covered all the aspects related to seed banking behavior. Based on this, it was assumed that present scale satisfied the content validity. Thus the attitude scale is said to be valid. The constructed scale is proved its validity and reliability. Now, this scale can be used as an instrument for measuring attitude of tribal farmers towards seed banking.

4 Discussion and Conclusion

The preference of farmers in procuring the seed specifically local seed varieties needs to be ascertained. There are limited study and tools for measuring farmer's attitude pertaining to seed banking. This scale has been developed to measure the farmer's attitude towards seed banking. Further, the scale can be used to measure farmer's attitude beyond the study area with suitable modifications (Subrahmayeswari & Chander, 2008; Patel, 2015; Sivaraj et al., 2016). Results of present study are in agreement with the findings of previous researchers (Khadka et al., 2012; Maharjan et al., 2012; Shrestha et al., 2012; Malik et al., 2013; Singh et al., 2013; Vernooy et al., 2017).

Table 1 Statement wise distribution of sorting by judges under each category along with 'S' and 'Q' values

S. No	STATEMENTS	S Value	Q Values	Selected/ Rejected
1*.	In my view seed is the most crucial capital invested in farming, so I do not want share/exchange it with other members of community.	1.7	1.8	Selected
2.	Seed from government agencies will not give higher yield	2.3	2.1	Rejected
3*.	I feel there is no requirement of community seed bank in my village as I never found shortage of seed	2.4	1.3	Selected
4*.	I will not prefer to take seed from community members even when I needed them	2.5	1.5	Selected
5*.	High yielding varieties are good when compared to own stored seed	2.6	1.4	Selected
6*.	I strongly feel that, indigenous seed varieties will not give higher yield	2.8	1.4	Selected
7.	Saved seed is more prone to pest and diseases	2.8	1.8	Rejected
8.	I recommend saving of seed at community level rather at individual level	2.9	2	Rejected
9*.	I always prefer to get seed from input dealers	3.3	1.3	Selected
10*.	I feel, unless there is an intervention of organization like NGO or KVKs, the community seed banking is not successful in tribal areas	3.4	1.8	Selected
11.	Informal way of seed distribution will give higher yield.	3.3	2.8	Rejected
12.	The modern seed varieties will require more inputs when compare to traditional varieties	3.3	2.6	Rejected
13*.	Community seed banking remained a charity work of NGOs rather than a peoples/farmers initiative	3.5	1.5	Selected
14.	The stored seed may not give good price in next season	3.5	2.2	Rejected
15.	Seed from input dealers do not germinate at all	3.5	2.2	Rejected

S. No	STATEMENTS	S Value	Q Values	Selected/ Rejected
16.	Lack of favourable government policies prohibit/prevent many from embracing the concept of community seed bank	3.6	2.6	Rejected
17.	Stored seed will not give higher yield	3.6	2.5	Rejected
18*.	Lot of care is required for community seed bank maintenance	3.7	1.7	Selected
19.	Formal institutions are the only source that supply seeds to the tribal farmers	3.9	3	Rejected
20*.	The seed exchanged from community seed banks is of poor quality	3.9	1.6	Selected
21.	Community seed bank is popular concept in tribal areas	3.9	2.6	Rejected
22.	In my view seed storage requires lot of skills by the farmers	4	3.1	Rejected
23.	Farmers skills will be improved through seed saving activity	4	2.7	Rejected
24.	I will not sell my seed in the market	4	2.8	Rejectd
25*.	It is costly to construct storage structures needed for community seed banks	4	1.5	Selected
26.	Storage of seeds will require storage facilities which will occupy a lot of place in my home	4.1	2	Rejected
27.	Community seed banks will not be successful unless they are networked for constant exchange of seed material	4.1	2.3	Rejected
28.	Community seed banking is more appropriate when modern high yielding varieties are adopted but not for traditional indigenous varieties	4.2	2.7	Rejected
29.	I use to share my seed to other members	4.3	2.2	Rejected
30.	I strongly feel that, only the indigenous seed will give higher yield	4.3	3	Rejected
31*.	My preference is to sell my seed in the seed fairs	4.4	1.3	Selected
32.	Absence of proper organizational and operational mechanism for establishment and running of seed banks is hindering the popularization of concept of community seed banking	4.4	2.9	Rejected
33.	My source of seed is through community seed exchange/individual seed exchange	4.6	2.6	Rejected
34*.	I can exchange seed with other farmers which i stored in last season	4.6	1.5	Selected
35*.	In my view, seed from outside agencies require more quantity of other inputs	4.7	1.4	Selected
36.	My preference is to get seed from seed fairs	4.8	3.1	Rejected
37.	I can get more price for my seed if I store it and sell in future.	4.8	2.6	Rejected
38.	I can use my own stored seed in situation when seed is unavailable to the other farmers	4.8	3.3	Rejected
39*.	My preference is to exchange the seed with in the village	4.8	1.2	Selected
40.	Store seed will give higher yield	4.9	3.1	Rejected
41*.	Community seed bank provide better opportunity for protecting from the dire consequences of using the seed of input dealers /private seed business men	5	1	Selected
42.	In my view, seed saving will save the genetic material of the plant	5.1	1.4	Rejected
43*.	I feel that, seed storage is a lively hood source for the farmers	5.1	1.2	Selected
44*.	I strongly feel that establishment of community seed banks is need for the hour to protect biodiversity and for regular supply of quality seed	5.4	1.4	Selected
45.	I feel that, In situ conservation is the best source for seed production	5.5	3.2	Rejected

S. No	STATEMENTS	S Value	Q Values	Selected/ Rejected
46*.	Community seed banks are the best source for seed supply	5.6	1.8	Selected
47*.	I strongly feel that, stored seed will definitely come for use in village when supply from other sources fails	5.7	1.5	Selected
48*.	I always use produce of my own field as seed	5.8	1.7	Selected
49*.	Seed storage will reduce the dependence on high yielding varieties	5.9	1.1	Selected
50*.	Local seed varieties storage will give patents to the farmers	6.1	1.2	Selected
51*.	One can find a solution for seed and sorrow if all villagers join hands for community seed bank	6.2	1.1	Selected
52*.	In my view, with the practice of seed storage local farmers can establish their own seed networks	6.5	1.2	Selected
53*.	I strongly feel that quality seed of important crops should be pooled/ saved as seed bank by collecting from other farmers for future use	6.7	1.1	Selected

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this research paper.

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