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A Test to Measure the Knowledge of Farmers about Rapeseed Mustard Cultivation.

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ABSTRACT

A study was conducted to develop a test for measuring the knowledge of the farmers about different production recommendations of the rapeseed mustard crop as it is one of the important oilseed crops grown in the country. Production and productivity of rapeseed mustard is low at national level as well as in the state of J&K.Lack of proper knowledge about production recommendation may be one of the main reasons and in this direction an attempt was made to develop a test. The test consists of twenty items with reliability coefficient .93.

Key words: Rapeseed mustard, knowledge, production recommendations, item analysis,

INTRODUCTION

Among the nine edible oilseed crops in India, rapeseed mustard possesses a significant position. Rapeseed mustard group mainly consists of toria (brassica rapa), raya (brassica juncea) and gobhi sarson (brassica napus). In India, it contributes nearly 80% of the total rabi oilseed production. Area under rapeseed mustard is 6.3 million ha with a production of 7.4 metric tonnes and productivity of 11.76 q/ha. (Directorate of Rapeseed Mustard Research, 2013). In terms of rapeseed mustard productivity, global ranking of India is 28th (Bhardwaj, 2013). There is variation in the production and productivity of rapeseed mustard in different states. In Jammu & Kashmir (J&K) state, rapeseed mustard production scenario is not very encouraging despite its paramount importance for human beings and animals. The productivity of rapeseed mustard in J&K is 6.98 q/ha. (Anonymous, 2013), which is far less than the national average.Adequate knowledge about different production recommendations of rapeseed mustard crop is must on the part of farmers to increase its productivity so that existing scenario of total oilseed production may be changed satisfactorily in general and rapeseed mustard in particular.Evidentaly this knowledge assessment requires an appropriate measurement tool such as a cognitive scale. (Raj kamal, 2001).Therefore a cognitive test to measure the knowledge of farmers about different production recommendations of rapeseed mustard crop was developed.

METHODOLOGY

In the present study knowledge level of farmers refers to the level ofknowledge possessed by an individual farmer about the different practices of rapeseed mustard cultivation. Forthat purpose a test was developed. A test is a set ofquestions, each of which has a correct answer, to whichthe people respond (Roy and Mondal, 1999).The test was developed by following the procedure of item collection, item analysis, selection of test items, testing the validity and reliability.

Item collection

Initially after reviewing literatures 40items were collected. Items were selected on the basis of their

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apparent lack of ambiguity, simplicity and representativeness. Initial items were chosen after carefully going through the concerned literature, discussion with extension specialists of the division and experts from the division of agronomy, plant breeding, entomology and plant pathology. The questions were designed to measure the knowledge level of farmers about different production and protection practices involved in rapeseed mustard cultivation. The items were collected in relation to knowledge of farmers about time ofsowing, types of different rapeseed mustard varieties, seedtreatment, manures and fertilizers to be used, pesticides including weedicides, insecticides, and fungicides to be used. The selection of items was done on the basis of following criteria. It should promote thinking rather than memorization. It should differentiate the well informed respondents from the poorly informed ones.

On the basis of above two criteria a total of items were initially constructed for item selection. A schedule was prepared with these items for administering to the respondents for item analysis and further screening out further items. All the items collected for construction of the knowledge test were in objective form.

2. Item analysis

The item analysis of a test usually yields two kinds of information *i.e* item difficulty and item discrimination. The index of item difficulty reveals how difficult an item is whereas index of discrimination reveals the extent to which an item discriminates the well informed individuals from the poorly informed ones. The initially prepared 40 items were administered on 30 rapeseed mustard growers including toria, Indianmustard, andGobhisarson. Each one of the respondents to whom the initial items of knowledge tests were administered gave the score 1 & 0 for each item according to whether the answer was right or wrong. The total number of correct answers given by a respondent to all the items in a particular knowledge test was the knowledge score obtained by him. The range of the obtainable score was from 0-40.The total score for each respondent was calculated. Afterwards, the total scores of all the respondents were arranged in ascendingorder. Thirtyrespondents to whom a particular item pool of practices was administered were divided into 6 equal groups each having fiverespondents. These groups were named as G1, G2, G3, G4, G5& G6 respectively. For item analysis middle two group G3 and G4 were eliminated. Only four extreme groups with high and low scores were considered for computation of item difficulty and item discrimination.

3. Calculation of Difficulty index.

The difficulty index of an item was defined as the proportion of respondents giving correct answer to that particular item. This was calculated by the formula

$$Pi = ni/Ni \times 100$$

Where pi= Difficulty index in percentage of ith item.
ni= Number of respondents giving correct answer.
Ni= Total number of respondents to whom ith item is administered.

The difficulty index of all the items included for item analysis was calculated.

4. Calculation of Discrimination index.

The method suggested by the Mehta (1958) was adopted for calculation of discrimination index. The formula by which item discrimination was calculated is given as below:-

$$E_{1/3} = \frac{(G1+G2)-(G5+G6)}{N/3}$$

Where

$E_{1/3}$ is the discrimination index
G1, G2, G5& G6 indicated the frequencies of correct answers given for the respective sub-groups of respondents for an item in the test.
N=Total number of respondents to whom the item was applied.

5. Selection of items for final format of knowledge test

After calculating index of difficulty and index of discrimination finally 22 items were selected for the final format of the knowledge test. The underlying assumption in the statistics of item difficulty was that the difficulty was linearly related to the level of individual's knowledge about the subject. Whena respondent answered an item correctly, it was assumed as Coombs (1950) that item was less difficult than his ability to cope with it.The item with index of difficulty ranges from 0.25 to 0.85 and index of discrimination was 0.2 and above were selected for the knowledge test.Thus on the basis of difficulty and discrimination index 20 items were selected for final knowledge test.

Validity of the scale: Validity of the test in terms ofcontent validity was judged. Content validity is the representativeness or sampling adequacy of the content the substance, the matter, the topics of a measuring

instrument (Kerlinger, 2004).Content validity of the test was found satisfactory since it was based on various literatures and subjected to different expertsjudgements. It was assumed that the test measure what it was intended to measure and hence valid.

Reliability of the scale: Reliability is the accuracy or precision of a measuring instrument (Kerlinger, 2004).A test is reliable only when it gives consistently the same results when applied to the same sample. There are various methods to determine the reliability of the test but here split-half method was used for this purpose. The final test was administered to 20 respondents and was divided into two halves based on odd and even numbers of statements. The total score obtained for odd and even numbered items were subjected for the calculation of correlation coefficient (r). The resulting value of r =0.88 is considered as split half reliability. To adjust the reliability into full test reliability, spearman Browns prophecy formula (Kerlinger, 1973) was used .The full test reliability was found to be 0.93 thus, thetest was considered to be reliable.

Table 1: List of items retained for final format of knowledge test.

Items
Seed rate and spacing
What is the recommended seed rate of rapeseed mustard crop?
What is the recommended spacing between line to linesown rapeseed mustard crops?
Seed treatment
Name at least one chemical used for seed treatment
What is the recommended dose of seed treatment
Inter-cropping
Name at least one crop that can be grown as inter-crop with rapeseed mustard.
Weed management
How weeds can be controlled in rapeseed mustard crop? i)Manually ii) Chemically iii) Both iv) None
Name at least one weed of rapeseed mustard crop.
Irrigation
How much irrigations should be given to rapeseed mustard crop for better crop production?
When the first irrigation should be given to rapeseed mustard crop?
Thining
What is thining in rapeseed mustard?
At which stage thining should be practiced in rapeseed mustard crop?
What should be spacing after thining in rapeseed mustard crop?
Manures &Fertilizer management
What is the recommended dose of urea to be applied in rapeseed mustard crop?
What is the recommended dose of DAP to be applied in rapeseed mustard crop?
In how many splits urea is applied?
Insect and disease management
Name at least one insect that damage the rapeseed mustard crop?
Name the insecticides used in rapeseed mustard crop?
What is the recommended dose of insecticide for controlling insect pests in rapeseed mustard crops?
Name at least one disease observed in rapeseed mustard crop.
Name the chemical used in controlling disease attack in rapeseed mustard crop.

CONCLUSION

Production and productivity of rapeseed mustard is low at national level as well as in the state of J&K.Lack of proper knowledge about production recommendation may be one of the main reasons and in this direction an attempt was made to develop a test.

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