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Research on estimation of knowledge gained by farmers on soil sampling in the Kharar district (SAS Nagar) Punjab

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Abstract

Soil is one of the elements required for farming as it provides nutrients to the plant. Healthy soil contains all the elements for growth and development of crop. Therefore, Soil sampling is one of the most important aspect in the determination of the properties of the soil. As far as agriculture production is concerned, soil health play vital role in ensuring sustainable production with optimizing the utilization of fertilizer and reducing its waste. Soil sampling involves the analysis of a soil sample (From the area which is landscaped) to determine the nutrient content, composition of the soil. It allows the farmer to determine accurately which crop would yield the best growth in that particular soil. In this, the survey of 100 respondents was taken and is selected randomly from all the three villages for the research and questionnaire was framed having the questions regarding the soil sampling and data was collected through the interview schedule or interaction of the respondents. Then the data has been tabulated and analyzed with the objective to assess the knowledge gain by the respondents and research shows that there is 67.3% more gain in the knowledge of the farmers regarding the soil sampling which leads a way in retaining the fertility of the soil. Hence, Soil sampling is considered as beneficial for sustaining soil health, lowering the input cost and improving the farm production. As there is an increase in awareness in the farmers regarding the soil sampling by showing them the awareness video; then animated videos, advertisement can play a major role in influencing the farmer regarding the need of soil sampling.

Keywords: Agriculture, soil sampling, fertility, respondents, sustainability

Introduction

Soil is one of the element required for farming as it provides nutrients to the plant. Healthy soil contain all the elements for growth and development of crop or the soil deprived from one or more nutrient either reduce the production or degraded quality of crops. Therefore, proportion and quantity of macro and micro nutrients altogether refer to the soil health. As far as agriculture production is concerned, soil health play vital role in ensuring sustainable production with optimizing the utilization of fertilizer and reducing its waste. Most of the farmers are using continuously larger quantities of chemical fertilizers to increase production without knowing the fertility status of the soil of their fields (Srivastava and Pandey, 1999) [6]. Soil testing is well recognized as a sound scientific tool to assess inherent power of soil to supply plant nutrients. The benefits of soil testing have been established through scientific research, extensive field demonstrations and on the basis of actual fertilizer use by the farmers on soil test based fertilizer use recommendations. Neufeld and Davison (2000) stated that soil testing is the only necessary and available tool for determining the amount of soil nutrients. Hence, to avoid deterioration of soil in long run and visualizing the importance of balance nutrients in crop production, government of Gujarat commence Soil.

Health Card. Soil sampling is one of the most important aspect in the determination of the properties of the soil. Soil sampling involves the analysis of a soil sample (from the area which is landscaped) to give a clear information on the soil. It is the process of taking the soil sample of the soil, which is then sent to the laboratories to determine the nutrient content, composition etc. The soil can be tested for the chemical, physical and biological properties, which are critical to the plant nutrition. Basic plant nutrients requires the presence of nutrients such as nitrogen, phosphorus and potassium- soil sampling also helps us to determine the other characteristics like pH level of the soils alongside the humus content, available lime, complete sulphur content. The analysis of the soil is carried out by taking the samples of the soil and performing the laboratory tests, which is then followed by the interpretation of the results.

It helps in the evaluation of the fertility status of the soil, estimation of the available nutrients status, acidity, salinity and alkalinity of the soil. Soil sampling allows the farmer to determine accurately which crop would yield the best growth in that particular soil. Nowadays, precision agriculture relies on practice soil sampling, which allows producer to sample separate areas of the field and also to determine the factors such as topography, soil type.

There are different methods of sampling the soil like random composite sampling, point sampling, grid soil sampling, zone sampling methods.

Methodology

The study was conducted in the three villages namely Hasanpur, Kalewal and Singhpura of the SAS Nagar district (Mohali) of the Punjab. Purposive as well as the random

sampling procedure were followed in providing the knowledge regarding the soil sampling. The survey of 100 respondents was taken and are selected randomly from all the three villages for the research and questionnaire was framed having the questions regarding the soil sampling and data was collected through the interview or interaction of the respondents. An animated video regarding the soil sampling has been shown to the farmers and thereafter before and after results have been recorded (refer table 1). Then the data has been tabulated and analyzed by finding out their mean, mean percentage and percent change with the objective to assess the knowledge gain by the respondents by converting them into the percentage for advance farming.

Results and Discussion

Table 1: The results and discussions regarding the gain in knowledge were presented below

Questions	Pre Testing	Post Testing
1. What do you came to know after the soil sampling?(Application of fertilizer)	54(54%)	79(79%)
2. Which time period should be suitable for soil sampling?(Before sowing)	43(43%)	89(89%)
3. Which type of pit should be dig for soil sample?(v shape)	31(31%)	89(89%)
4. Which kind of sample should be taken for soil testing?only soil	85(85%)	100(100%)
5. Which kind of information of the field should be taken with the soil sample? (farmer field information)	39(39%)	75(75%)
6. Soil sample should be collected from?(vacant)	100(100%)	100(100%)
7. How deep the soil should be taken for shallow rooted crop?(15cm)	40(40%)	92(92%)
8. How deep the soil should be taken for deep rooted crop?(30cm)	52(52%)	89(89%)
9. How deep the soil should be taken for tree? (1m)	85(85%)	100(100%)
10. Excess use of pesticide lead to affect environment? (harmful effect) e	100(100%)	100(100%)
11. How much quantity of soil sample should be need for testing?(500g)	25(25%)	98(98%)
Mean	3.6	6.7
Mean percentage	59.4%	91.9%
Percentage change		67.3%

From the above table, we can conclude that, there is significant gain in knowledge by 67.3% more in respondents and it is calculated by formula (percentage change=percent after video- percent before video/percent before video) after watching the video film and it was found that the mean score was 3.6 before watching the video and 6.7 was after watching the video. Thereafter, mean percentage before watching the video was 59.4% and after watching the video was 91.9%. Hence, the soil sampling leads a way in retaining the fertility of the soil as farmer will be more aware of the deficient nutrients that are present in the soil and can apply only those nutrients in the field which helps in improving the economic status of the farmer. Furthermore, the analysis of the soil is carried out by taking the samples of the soil and performing the laboratory tests, which is then followed by the interpretation of the results. It helps in the evaluation of the fertility status of the soil, estimation of the available nutrient's status, acidity, salinity and alkalinity of the soil. Soil sampling allows the farmer to determine accurately which crop would yield the best growth in that particular soil.

Conclusion

From the findings, it can be concluded that there is 67.3% more gain in knowledge regarding the soil sampling by the respondents. As there is an increase in awareness in the farmers regarding the soil sampling by showing them the awareness video, then videos, advertisement can play a major role in influencing the farmer regarding the need of soil sampling. Educational awareness and soil testing laboratory in

nearby locations found to be the most influential factor in adoption of the technology. If farmer ensures the testing of soil regularly by maintaining the SHC (Soil Health Card), deficiencies can be found out and only those fertilizers will be applied to the crop and it will also help us to protect the environment as use of fertilizers will be minimized and adoption of organic farming will also finds a way as healthy soil contain all the elements for growth and development of crop. Hence, to avoid deterioration of soil in long run and visualizing the importance of balance nutrients in crop production regular testing of soil must be done and each and every respondent must have their own Soil Health Card.

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