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The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; 12(1): 1425-1428

www.thepharmajournal.com
Received: 11-10-2022
Accepted: 23-11-2022

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The power of video to trigger the gain in knowledge of the farmers regarding soil sampling in the SAS Nagar district of north-eastern, Punjab

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Abstract
RAWE is one of the best means to produce well-trained agricultural graduates with broad-based knowledge and techniques to meet emerging challenges (Kapri *et al.*). An experiential learning approach towards problem-solving and improving interaction with the world outside has been followed. The learning process essentially provides a direction to the students to think and act and eventually creates self-confidence. It helps the students to develop their competence, capability, capacity building, skills, and expertise, in short, a holistic development (Sajeev *et al.*). For this study, the interview scheduled method was adopted. The study was conducted in the SAS Nagar district of North-Eastern Punjab. Three villages Hasanpur, Kalewal, and Singhpurawere selected was this purpose. A total of 140 farmers were interviewed from the three villages. Basics questions were asked of the farmers, and the data was recorded. Then an animated video was shown to the farmers regarding soil sampling, questions were asked again after the video, and data was recorded. A gain in knowledge was seen in farmers. An improved response was received after seeing the video clip. The mean percentage was calculated for data before and after the showing of the video. Afterward, a percentage change was calculated and 0.948 was the result observed.

Keywords: Rural, RAWE, mean percentage, interview, soil sampling

Introduction
RAWE is one of the best means to produce well-trained agricultural graduates with broad-based knowledge and techniques to meet emerging challenges (Kapri *et al.*) [1]. An experiential learning approach towards problem-solving and improving interaction with the world outside has been followed. The learning process essentially provides a direction to the students to think and act and eventually creates self-confidence. It helps the students to develop their competence, capability, capacity building, skills, and expertise, in short, holistic development (Sajeev *et al.*) [3]. The experiential learning process is portrayed as an idealized learning cycle where the learner "touches all the bases" experiencing, reflecting, thinking, and acting in a recursive process that is responsive to the learning situation and what is being learned. Mahadik *et al*. Soil sampling and soil testing is an essential part of planning the next crop and other important agricultural practices like the amount of fertilizer to be applied etc.
The villages assigned to the students of the 4th year of Chandigarh University for the RAWE Programme are Hasanpur, Kalewal, and Singhpura. They have located around 6-8 km from the location of University. We interacted with the farmers, farm women, and rural youth and shared our gained knowledge with them to blend our theoretical knowledge with their practical life to have real experiences in the concerned field.

Village 1: Hasanpur

Fig 1: Map of Hasanpur

Hasanpur village is located in Kharar tehsil of Sahibzada Ajit Singh Nagar district in Punjab, India. It is situated 16km away from the sub-district headquarters Kharar (tehsildar office) and 12km away from district headquarters Sahibzada Ajit Singh Nagar. Hasanpur is the gram panchayat of Hasanpur village. The total geographical area of the village is 172 hectares. Hasanpur has a total population of 961 people, out of which the male population is 518 while the female population is 443. The literacy rate of HasanPur village is 79.71% out of which 82.43% of males and 76.52% of females are literate. There are about 175 houses in HasanPur village. The Pincode of the Hasan Pur village locality is 140103. Kurali is the nearest town to hasanpur village for all major economic activities.

Table 1: Population data of Hasanpur

Particulars	Total	Male	Female
Total	961	518	443
Literate population	766	427	339
Illiterate population	195	91	104

Village 2: Kalewal

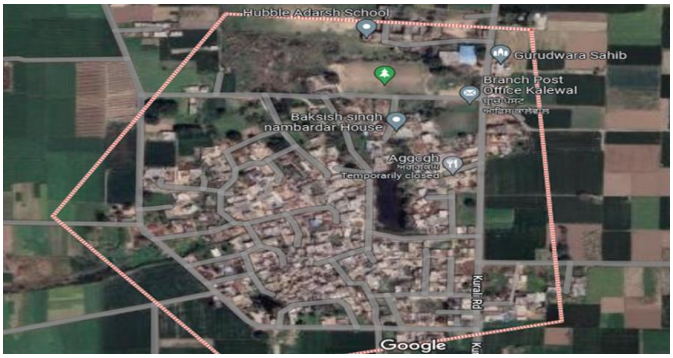

Fig 2: Map of Kalewal

The location code or village code of Kalewal village is 039037. Kalewal village is located in Kharar tehsil of Sahibzada Ajit Singh Nagar district in Punjab, India. It is situated 10km away from the sub-district headquarters Kharar (tehsildar office) and 16km away from district headquarters Sahibzada Ajit Singh Nagar. As per 2009 stats, Kalewal village is also a gram panchayat. The total geographical area of the village is 174 hectares. Kalewal has a total population of 1,116 people, out of which the male population is 601 while the female population is 515. The literacy rate of kalewal village is 78.67% out of which 81.70% of males and 75.15% of females are literate. There are about 220 houses in Kalewal village. The Pincode of Kalewal village locality is 140103. Kurali is the nearest town to Kalewal village for all major economic activities.

Table 2: Population data of Kalewal

Particulars	Total	Male	Female
Total population	1116	601	515
Literate population	878	491	387
Illiterate population	238	110	128

Village 3: Singhpura

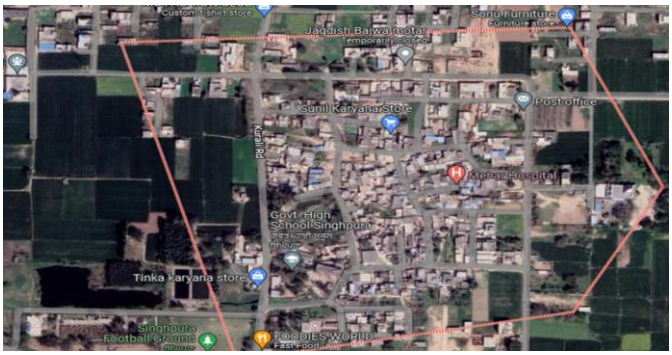

Fig 3: Map of Singhpura

The location code or village code of Singhpura village is 039035. Singhpura village is located in Kharar tehsil of Sahibzada Ajit Singh Nagar district in Punjab, India. It is situated 16km away from the sub-district headquarters Kharar (tehsildar office) and 23km away from district headquarters Sahibzada Ajit Singh Nagar. As per 2009 stats, Singhpura village is also a gram panchayat. The total geographical area of the village is 135.84 hectares. Singhpura has a total population of 1,067 people, out of which the male population is 571 while the female population is 496. The literacy rate of Singhpura village is 71.51% out of which 77.58% of males and 64.52% of females are literate. There are about 233 houses in Singhpura village. The Pincode of Singhpura village locality is 140103. Kurali is the nearest town to Singhpura village for all major economic activities.

Table 3: Population data of Singhpura

Particulars	Total	Male	Female
Total population	1067	571	496
Literate population	763	443	320
Illiterate population	304	128	176

Objectives

1. To find out the Socio -profile of the farmers.
2. To find out the agronomic practices of the farmers.
3. To find out about livestock and poultry.
4. To find out the knowledge about soil sampling.

Method of Material

For the village survey, three villages in the Punjabi district of SAS Nagar (Mohali) were chosen. The distance between these communities and Chandigarh University was only ten kilometers. The interview schedule method was used.

The method of survey of our RAWE program is an interview-typesurvey.

Soil Sampling-Gain in Knowledge

To analyze the knowledge of the respondents a knowledge-based test was conducted on the topic of soil testing. A questionnaire was prepared which consist of basic-questions regarding the soil sampling. 2 question papers were filled after asking questions from the farmers. One before showing the video clip to the farmer regarding the soil sampling and one after showing the clip. An evaluation was done by comparing the answers from both questioners before and after showing the video clip The Question wise Data elevated before and after the video is as given below -

1. What do you come to know after testing the soil? In this question, 30% of farmers were right before watching the video and 70% of farmers gives the correct answer after watching the video here 40% of farmers gain the knowledge.
2. Which period is suitable for soil sampling? In the question, 40% of farmers were right before watching the video and 60% of farmers give the correct answer after watching the video here 20% of farmers gain the knowledge.
3. Which type of pit should be dug for collecting the samples? In the question, 50% of farmers were right before watching the video and 80% of farmers give the correct answer after watching the video here 300% of farmers gain the knowledge.
4. Which type of sample should be taken for soil testing? In the question, 30% of farmers were right before watching the video and 70% of farmers give the correct answer after watching the video here 40% of farmers gain the knowledge.
5. Which kind of information about the field should be taken with the soil sample? In the question, 20% of farmers were right before watching the video and 60% of farmers give the correct answer after watching the video here 40% of farmers gain the knowledge.
6. Soil sample should be collected? In the question, 40% of farmers were right before watching the video and 50% of farmers give the correct answer after watching the video here 10% of farmers gain the knowledge.
7. From which part of the field sample should be collected? In the question, 30% of farmers were right before watching the video and 70% of farmers give the correct answer after watching the video here 40% of farmers gain the knowledge.
8. How deep soil sample should be taken for shallow-rooted crops?? In the question, 20% of farmers were right before watching the video and 60% of farmers give the correct answer after watching the video here 40% of farmers gain the knowledge.
9. How deep soil samples should be taken for deep-rooted crops? In the question, 40% of farmers were right before watching the video and 50% of farmers give the correct answer after watching the video here 10% of farmers gain the knowledge.
10. How deep soil samples should be taken for tree crops? In the question, 20% of farmers were right before watching the video and 60% of farmers give the correct answer after watching the video here 40% of farmers gain the knowledge.
11. How much quantity of soil sample should be taken for testing? In the question, 40% of farmers were right before watching the video and 60% of farmers give the correct answer after watching the video here 20% of farmers gain the knowledge.
12. What should be the time of collection of soil samples regarding the last fertilizer application? In the question, 30% of farmers were right before watching the video and 70% of farmers give the correct answer after watching the video here 40% of farmers gain the knowledge.

According to this data, respondents had less knowledge regarding soil sampling but after showing the video clip directly increment of 4 values (mean value) was seen. This shows that the farmers have a good ability to retain the things in mind and also are very curious about new techniques and innovations in the field of agriculture.10% of the respondents give 100% correct answers after watching the clip. But most of the respondents who are more than 65 years above in age were not able to give the answers correctly even after watching the video clip.

S. No.	Questions	Before showing the video (%)	After showing the video (%)
1	What did you come to know after testing the soil?	30	70
2	Which period is suitable for soil sampling?	40	60
3	Which type of pit should be dug for collecting the samples?	50	80
4	Which type of sample should be taken for soil testing?	30	70
5	Which kind of information about the field should be taken with the soil sample?	20	60
6	A soil sample should be collected from?	40	50
7	From which part of the field sample should be collected?	30	70
8	How deep soil samples should be taken for shallow-rooted crops?	20	60
9	How deep soil samples should be taken for deep-rooted crops?	40	50
10	How deep soil samples should be taken for tree crops?	20	60
11	How much quantity of soil sample should be taken for testing?	40	60
12	What should be the time of collection of soil samples regarding the last fertilizer application?	30	70
	Mean %	32.5	63.33

Let the mean % of before showing the video be A and the mean % of after showing the video be B.

$$\text{Percentage change} = \frac{\text{Percentage Mean B} - \text{Percentage Mean A}}{\text{Percentage Mean A}}$$

= 63.33 – 32.5
32.5

= 30.83
32.5

=0.948, is the percentage change.

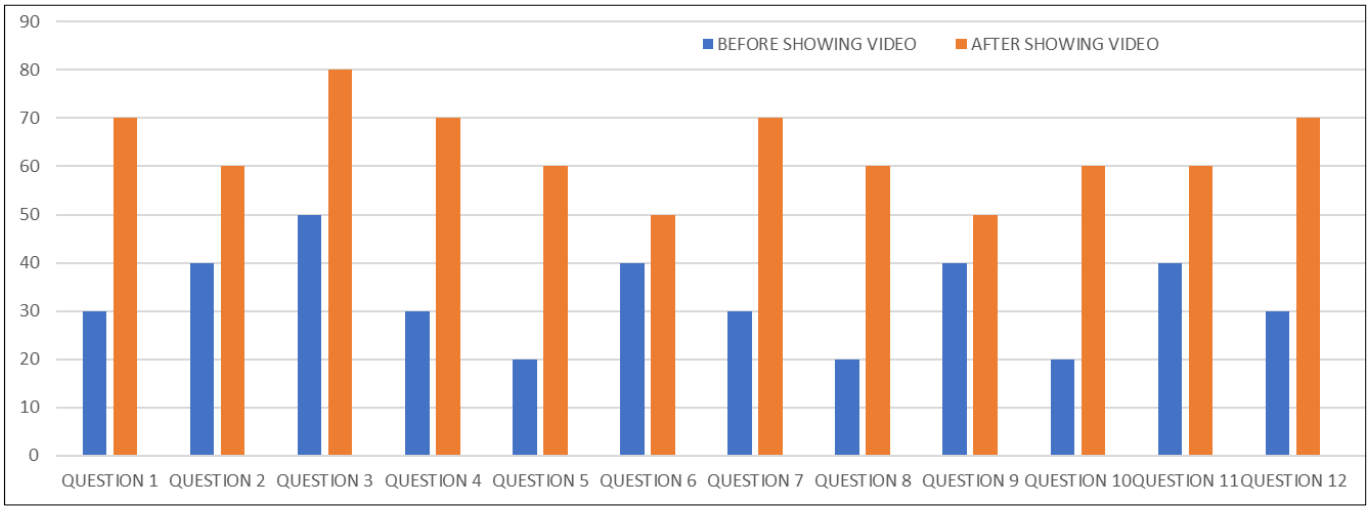

Fig 4: Gain in knowledge

Conclusion

Based on the findings and the data collected it is concluded that the Rural Agricultural work experience (RAWE) program plays a very crucial role in the life of agricultural students. Agriculture is completely based on experience and experiments which we cannot understand only by theoretical part. There are a lot of aspects that can only be understood by meeting the people who are engaged in this sector for many years. There are a lot of things that we understand with the help of the RAWE program. The above data shows that the farmers have a good ability to retain the things in mind and also are very curious about new techniques and innovations in the field of agriculture. Most of the farmers knew about soil sampling but didn't have the proper or exact know-how to perform the soil testing. Information was shared regarding soil sampling and a video clip was shown. Data was recorded of the responses of the farmers before and after showing the video. After analysis of the data, it is found that the mean percentage before showing the video was 32.5% while the mean percentage after showing the video was 63.33%. Further, a change in the percentage was also calculated and it was 0.948%.

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