



## Evaluation report of 11<sup>th</sup> professional training under watershed project at Fatehjang, Punjab-Pakistan

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### Abstract

*This paper aimed to assess the effectiveness of training on professionals' knowledge and skills and to provide suggestions to improve the effectiveness of future training programs. An 11th professional training on "Watershed Rehabilitation & Irrigation Technology Improvement" was organized by Climate, Energy & Water Research Institute (CEWRI), National Agricultural Research Centre, Islamabad at tehsil Fatehjang, Punjab with the financial support of ICARDA and USDA. The training covered four major irrigation technologies; drip, sprinkler, solar pumping, and irrigation water scheduling. Thirty-seven professionals participated from different government and non-government organizations across the country. Based on the pre and post-training findings, the participants' interest and fondness in the training were exceptionally great. The most positive thing of the training was the engagement of young professionals as half of the participants belonged to the age group of (20-30) years. The majority of the respondents were satisfied with the instructors' teaching methods, presentation skills, subject knowledge, ability to answer the questions, and respondents' engagement during training. Similarly, the respondents were mostly satisfied with overall training as 47 percent and 29 percent agreed and strongly agreed respectively regarding training relevancy, facilities, subject information, supporting material, sufficient time, and the overall quality of the training workshop. The results indicated that the majority of training respondents rated the training course positive and an enormous change reported in respondents' knowledge and awareness about the technologies. However, some respondents had shown neutral responses and few disagreed which indicates the possibility for improvement. Furthermore, the training participants showed great attention and emphasize that such training programs could generate a positive impact on professionals' capacity building about new irrigation technologies and for future technologies dissemination to the farming community. Thus, the present short-term evaluation results indicate that this training course was highly relevant and useful for the professionals.*

**Keywords:** Training, professionals, awareness, water-saving, technologies.

### Introduction

Training emphasizes doing activities today to develop employees physically, socially, and mentally for their current jobs. Trainings are very essential to enhance employees' productivity and preparing them for future roles and responsibilities. It is a process of transferring information and knowledge and ensure that employees can efficiently perform their jobs and gains competitive advantage<sup>1,2</sup>. There is a significant impact of training on organizational performance<sup>3</sup>. Training is an organized activity of shifting the professionals' attitude and behavior in a factual direction to improve organizational aims and development<sup>4</sup>. Some scientists had different opinion about the positive impact of trainings on organizational performance and they suggested some more studies and analysis to prove this progressive relationship<sup>5</sup>.

Agriculture is fundamental for food security and economic growth particularly in developing countries because it provides the primary source of subsistence for the world's needy and poor people<sup>6</sup>. Agriculture is the major water user comprised of more than 70% of total fresh water withdrawals on average.

In some developing countries; this share can arrive at more than 90%<sup>7</sup>. Globally, 2,664 billion cubic meter of freshwater is withdrawn for irrigation from rivers and aquifers annually<sup>8</sup>. As agriculture is the primary and basic source of subsistence for many developing countries but productivity of agriculture is still low. However, increase in agricultural productivity is vital for enhancing economic growth as well as for development growth<sup>9</sup>. Moreover, the surface water resources are unevenly scattered inward and across the countries that causing inadequate supply of water in most parts of the world. In contrast to an increasing variations in water supply due to the expected global warming<sup>10</sup>. The demand for global water resources has increasing quickly in recent periods due to increase in population, dietary changes, urbanization, increase in irrigation and industrial development<sup>11</sup>.

The modern irrigation technologies like drip and sprinkler are represented as water-saving. These technologies are demanding less labor; out-turns damages of less crops and minimized risks regarding farmer health<sup>12</sup>.

Adoption of new and modern irrigation technologies is usually mentioned as fundamental for increasing the efficiency of water in agriculture and minimizing the usage of deficient inputs as well as sustaining the constant levels of production<sup>13</sup>. Technologies operated on small-scale such as sprinkler, drip, and motorized pumps; has many benefits. The major benefits are improved production security, more agricultural income, employment, crop diversity and minimizing the reliance on rainfall<sup>14</sup>. The adoption of efficient water saving technologies like micro and sprinkler irrigation, lead to a significant water savings. These technologies also decreases priceless return flows and limits aquifer recharge<sup>15</sup>. Profitable strengthening of technologies is essential to get prime water saving calls for combined venture of irrigation officials, policy makers and farmers<sup>16</sup>. In developing countries, availability and affordability of technologies and the farmer expectations that adoption will remain profitable in future are considered the major indicators of successful technology. There are multiple circumstances which oblige the above assumptions like availability and land size, family labour, cost and productivity of agricultural enterprise<sup>17,18</sup>.

Water is already a restricting element for agricultural production and climate change is further worsening the water scarcity situation. Today, 2.8 billion people live in water-scarce areas and by 2030 about half of the world’s population will live in water stressed areas. Hence, the water will be not enough to produce the food required to feed the world in 2050. It is therefore crucial to encourage the technologies of water saving in irrigated and especially in rain-fed agriculture on large-scale. The objectives of the study are to evaluate the training program through trainee feedback and on behalf of that, recommendations were provided for the improvement of such professional trainings in future.

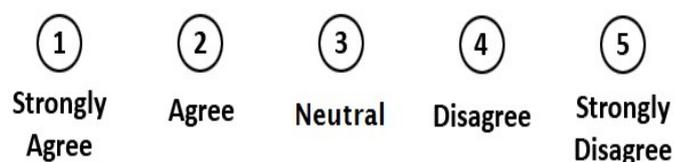
### Methodology

**Description of the study area:** Fatehjang is a town and tehsil headquarter of Attock district at Punjab province of Pakistan with an area of 866 square miles. The tehsil is lying between 33°10’ and 33°45’ North, and 72°23’ and 73°1’ East and administratively subdivided into 14 Union Councils. It’s located at distance of 40 kilometers southwest of Islamabad. Cadet College FatehJang is the leading educational institute while Fatehjang railway-station is one of the important railway station in Attock.

**Data Collection:** The research study was carried out with primary data from the training professionals at Fatehjang field station of NARC at village of Thatti Gujran from 12<sup>th</sup> to 14<sup>th</sup> May, 2015. To determine the effectiveness of the training, a self-evaluation questionnaire were distributed to each participant immediately prior to and after training to evaluate the course from their own perspective and give comment honestly regarding the training.

The evaluation strategy consisted of socio-economic status of training respondents, their observations about trainers and overall training contents.

**Data Analysis:** To assess the pre and post-knowledge status of training respondents, all of them were asked to rate their level of competence through 5-likert scale ranging from “Strongly Agree” on one end to “Strongly Disagree” on the other. A Likert scale is a summated rating scale used for measuring attitudes and it’s a non-comparative and uni-dimensional scaling technique developed by Rensis Likert in 1932. It is one of the most basic and constantly used psychometric tools in educational and social sciences research. The training respondents were asked to agree or disagree with each statement and the overall satisfaction ratings were transformed into score in the following way;



### Results and discussion

The first section illustrated the socioeconomic characteristics of the training respondents including age, education and farming experience while 2<sup>nd</sup> section described the respondents’ observation about instructors, overall training activities and pre and post-knowledge status of training respondents.

**Age group of training respondents:** Table-1 indicated that majority (51%) of training respondents were belong to age group of (20-30 years) followed by 22 percent to age group of (41-50 years), 19 percent to age group of (31-40 years) and 8 percent were (above 50 years) respectively. Hence it is concluded from the results that majority of training respondents were middle aged persons of the society having more interest and passion in awareness about technologies and its adoption.

**Table-1:** Age group of training respondents.

Age group (years)	Number	Percent
20-30	19	51
31-40	07	19
41-50	08	22
Above 50	03	08
Total	37	100

**Educational levels of training respondents:** The education is playing a key role in getting and sharing of knowledge and help us to build opinions and develop a perspective on things in life. Table-2 indicated that majority of training respondents (19%) were M. Phil followed by (15%) were bachelor and (12%) were master level education respectively. The results revealed that majority of training respondents were highly educated.

**Table-2:** Educational levels of training respondents

Education	Number	Percent
Bachelor	05	15
Master	17	12
M. Phil	15	19
Total	37	100

**Professional experience of training respondents:** Professional work experience gives skills and knowledge for guidance and helping towards the sector you would like to work in. Table-3 indicated that 46 percent of training respondent had (below 5 years) of experience followed by 27 percent were (5-10 years), 14 percent were (11-15 years), 8 percent were (16-20 years) and 5 percent were (above 50 years) of professional experience respectively. These results indicated that the training respondents were mostly young or middle aged persons having reasonably good professional experience.

**Table-3:** Professional experience of training respondents.

Experience	Number	Percent
Below 5	17	46
5-10	10	27
11-15	05	14
16-20	03	08
Above 20	02	05
Total	37	100

**Training respondents' observations about instructors:** The respondents' satisfaction level about instructors was presented

in Figure-1. The majority of training respondents respond with "Agree" or "Strongly Agree" when asked whether presentation quality of instructors were good and whether subject matter knowledge of instructors were sufficient. Also, the majority of professionals reply with "Agree" or "Strongly Agree" when asked whether the instructors were able to answer the questions and also whether the instructors keep your attention during training.

The average feedback of training respondents' about the instructors were positive as 28 percent were strongly agreed, 40 percent were simply agreed, 23 percent were neutral while only 9 percent were disagreed with instructors teaching methods and knowledge and skills about the specific technologies.

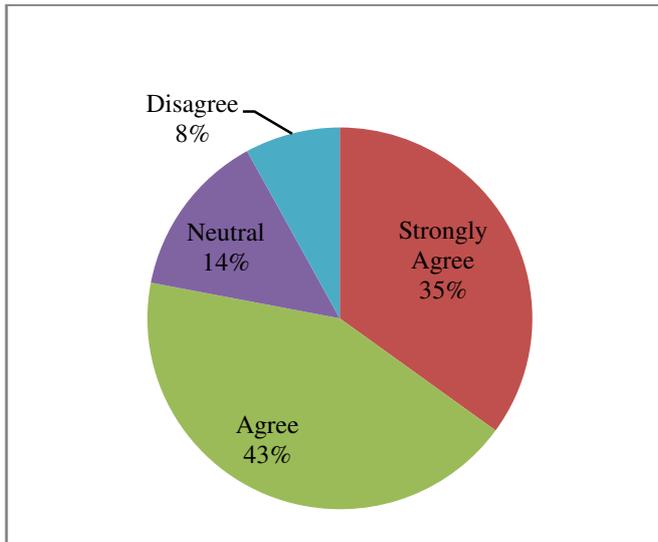
**Training respondents' observations about overall training program:** The training respondents' observations about overall training activities are presented in Figure-2.

The majority of training respondents respond with "Agree" or "Strongly Agree" when asked whether the training was relevant to your needs and whether the training facilities were good and whether the information was easy to understand. Similarly, most of training respondents selected "Agree" or "Strongly Agree" when asked whether the handouts/supporting material were useful and whether enough time was given to practical and whether the overall quality of the training workshop was good. However some training respondents showed neutral and negative responses about training activities. Overall average feedback of training respondents indicated that this training event were very successful as 29 percent were strongly agreed, 47 percent were simply agreed, and 16 percent were neutral while 8 percent were disagreed with the training motives and field activities.

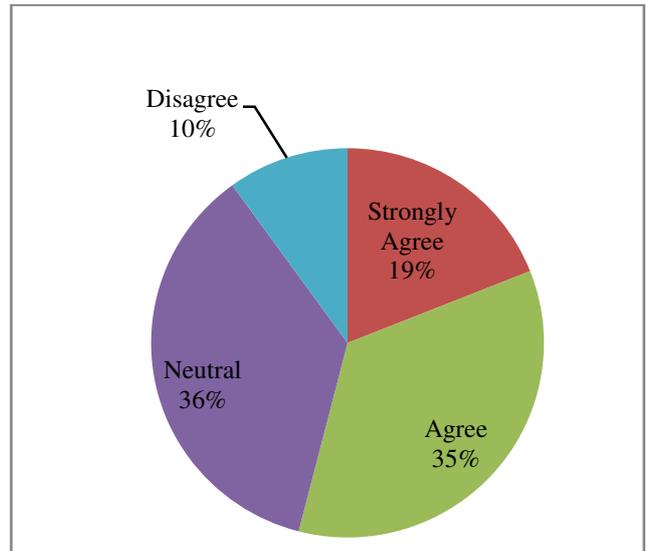
**Pre and post-training evaluation of respondents' knowledge:**

The knowledge and skills evaluation of training respondents gained through the training was carried out on the basis of pre and post analysis. To determine whether respondents had increased their knowledge related to the training topics, majority had showed a positive responses (Figure-3).

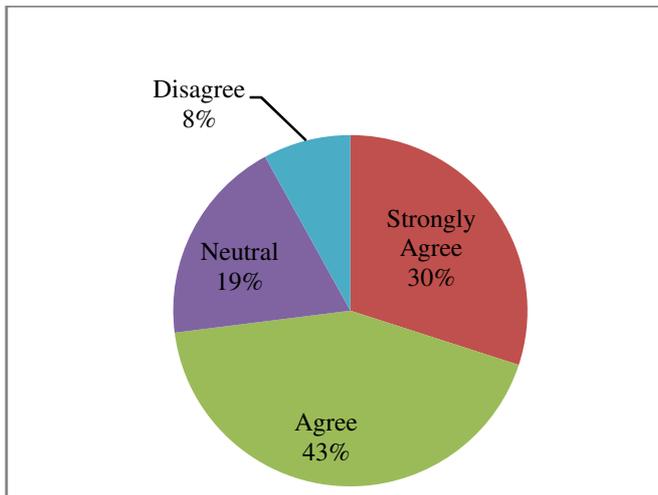
Training respondents were asked before and immediately after receiving training to rate their knowledge level related to each of the specific course objectives on a 5-point Likert scale ranging from 1=Strongly Agree to 5=Strongly Disagree. The pre-test results indicated that 41 percent of training respondents had low, 52 percent had medium and 7 percent had high knowledge of the specific technologies while post-test results had 9 percent (low), 18 percent (medium) and 73 percent (high) respectively. The compared results of pre-test and post-test shows 32 percent improvement in low knowledge, 34 percent in medium and 66 percent in high knowledge of training respondents. Hence, the post-results clearly pointed that the respondents' knowledge of particular technologies were improved as compared to the pre-test results.



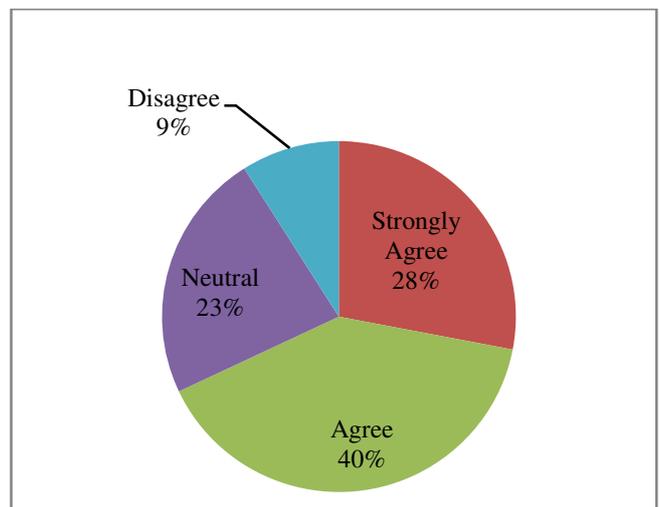
(a) Presentation quality of instructors.



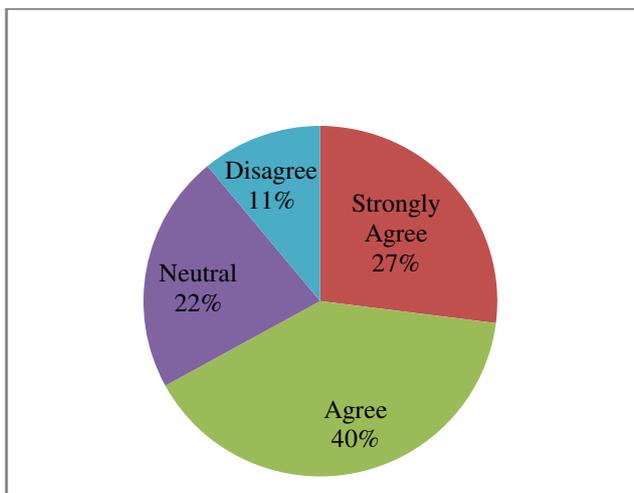
(d) Did the instructors keep your attention.



(b) Subject matter knowledge of instruct.



(e) Overall average satisfaction level of respondents about instructors.



(c) Instructors were able to answer the questions.

**Figure-1:** (a-e): Training respondents' observations about instructors.

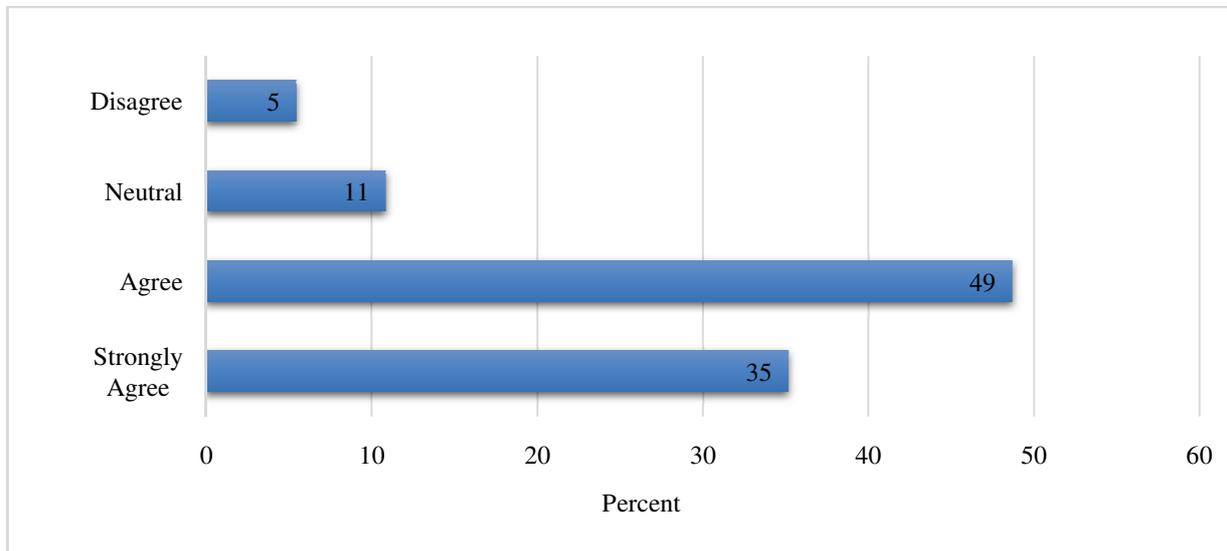
### Conclusion

Effective training makes an employee more competent and productive because it enhances the capabilities, knowledge, and skills of the professionals. Evaluation is a continual and systematic process of assessing the worth of a training program. The training worth lies in what it achieves therefore, an effective evaluation of training is important to examine the relevance, intensity of gained knowledge, and usefulness. It also assists in clarifying the learning outcomes more smartly, eliminate non-essential training contents and ensure that the training method meets up the training needs of respondents.

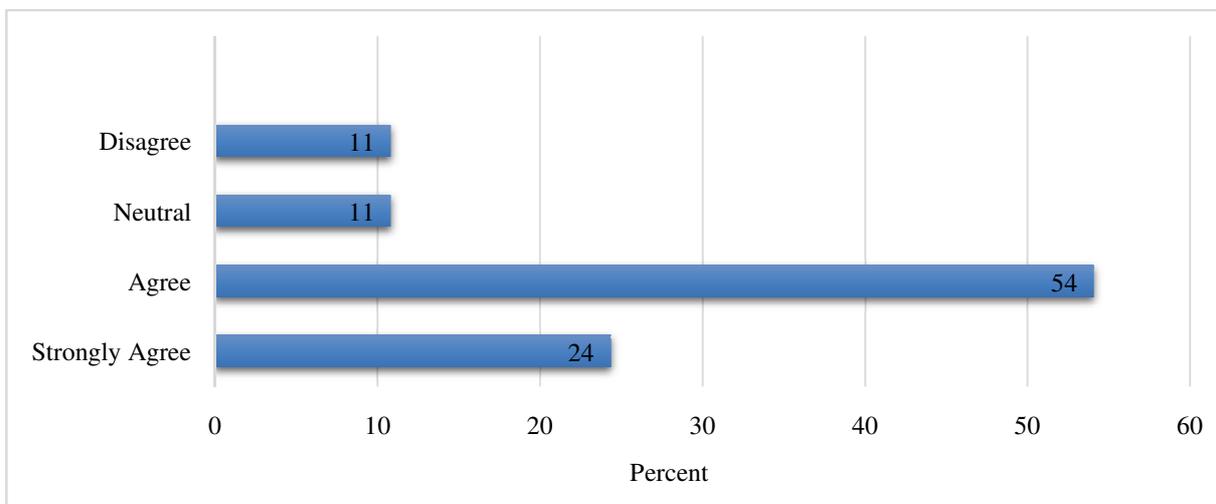
The findings showed that the majority of the training respondents actively participated in the training course and improved their knowledge in specified technologies. The training activity was very positive and the majority of respondents indicated “agree” and “strongly agree” about the instructors and course contents. In general, they all were agreed regarding training relevancy, the purpose of attending, training motivation, supporting materials, etc. However, some respondents disagreed and some had shown no opinion. Overall, they appreciated this learning opportunity, and positive changes were recorded in the respondents’ knowledge about technologies after training. The results showed that this training had put a positive impact to improve the awareness of respondents about the technologies. Similarly, the training program and field activities were well appreciated by respondents.

Their interest in training was exceptionally great and reactions towards the practical field visits were extraordinary. The majority were motivated and willing to adopt the particular technologies and was ready to recommend such training to colleagues and friends.

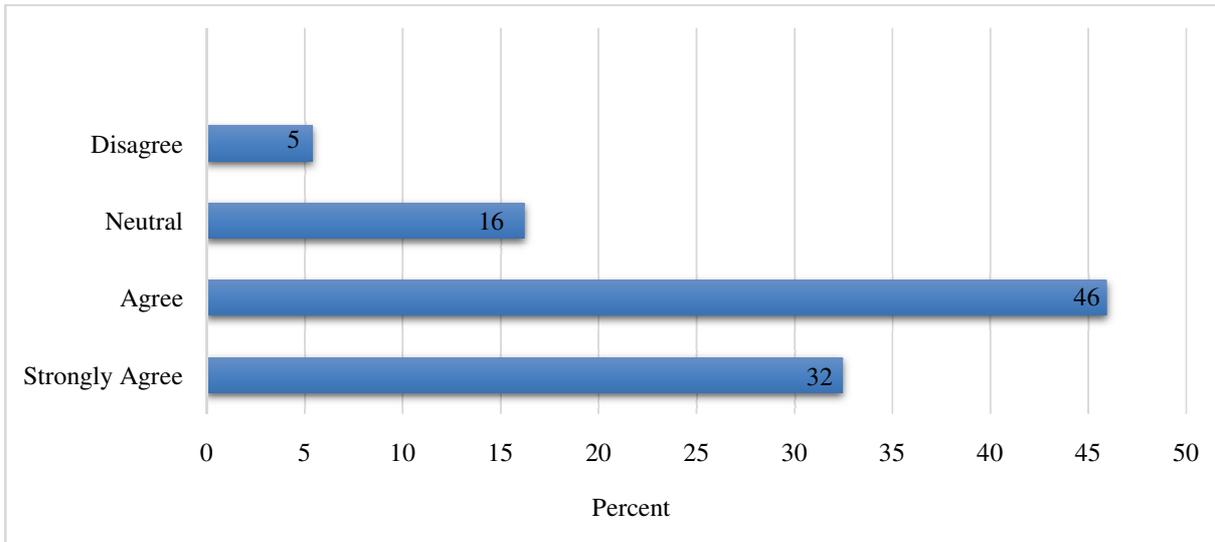
Based on the participant’s observations; the following suggestions are made to ensure the effectiveness of future training programs: i. The training material of some resource persons did not fulfill the participant’s requirements and need some improvement; ii. In the future, relevant and willing participants should be invited to the training course; iii. The sitting arrangements need upgrading and drinking water should be available inside the training hall; iv. The lectures should be short and practical work (field activities) should be more focused to get better results.



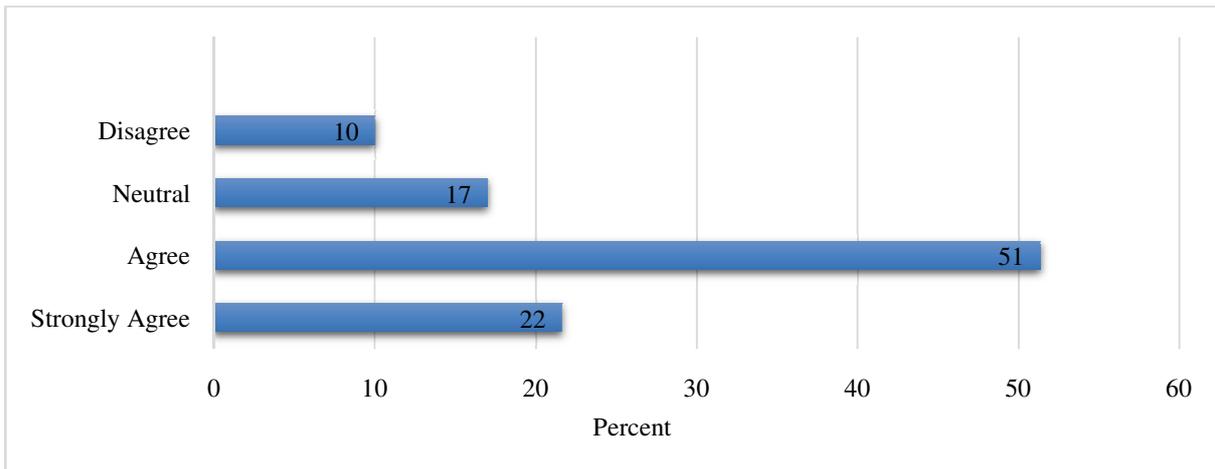
(a) The training was relevant to your needs.



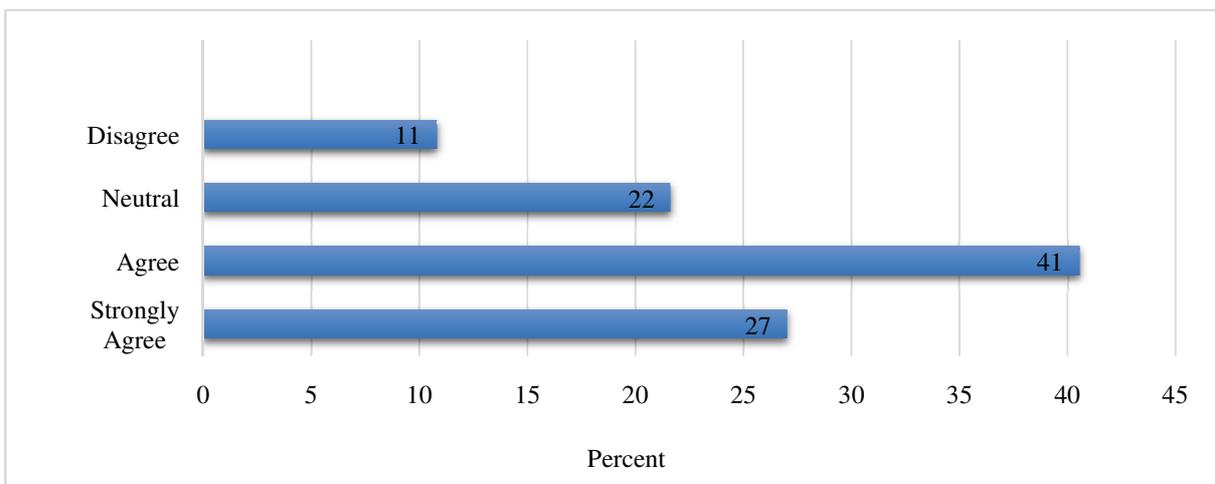
(b) The training facilities were good.



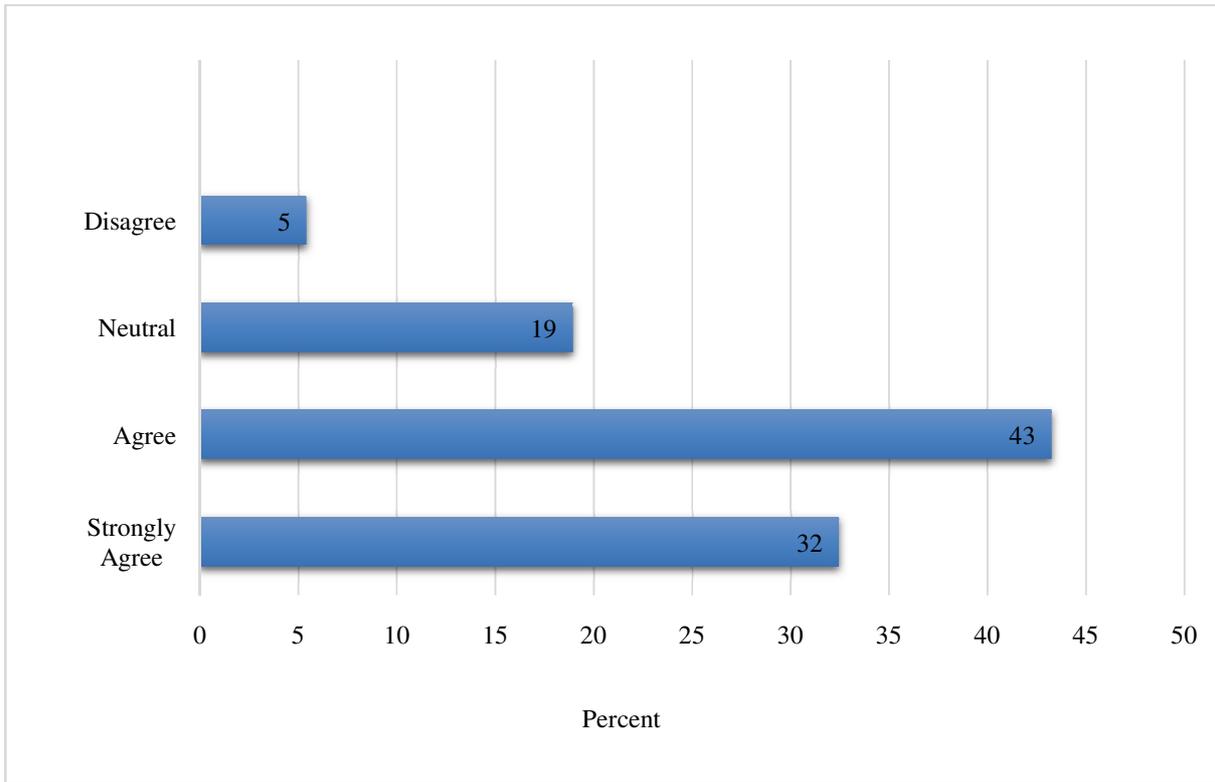
(c) The information was easy to understand.



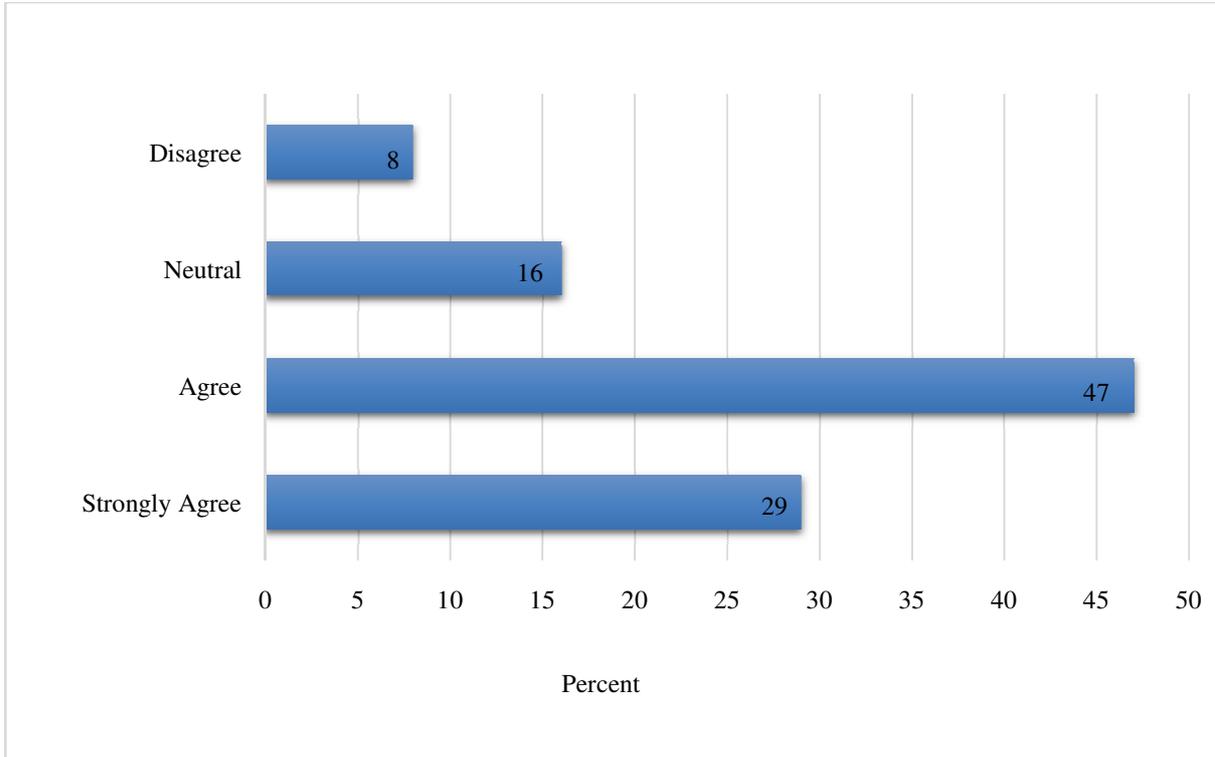
(d) The handouts/supporting material were useful.



(e) Enough time was given to practical.

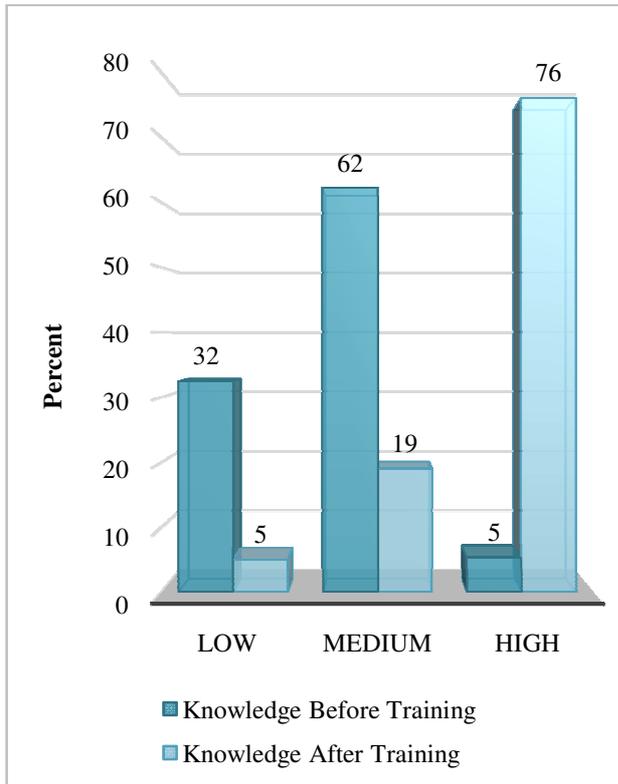


(f) The overall quality of training workshop.

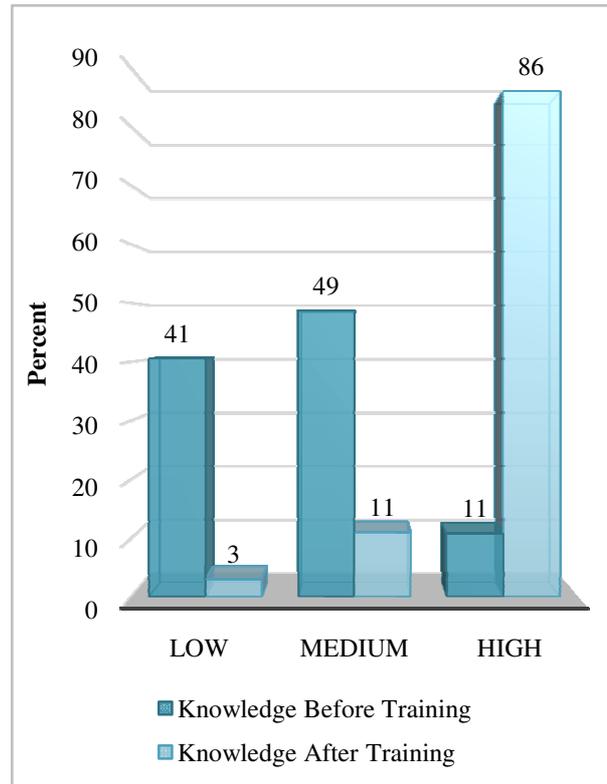


(g) Overall average satisfaction level of professionals about training program.

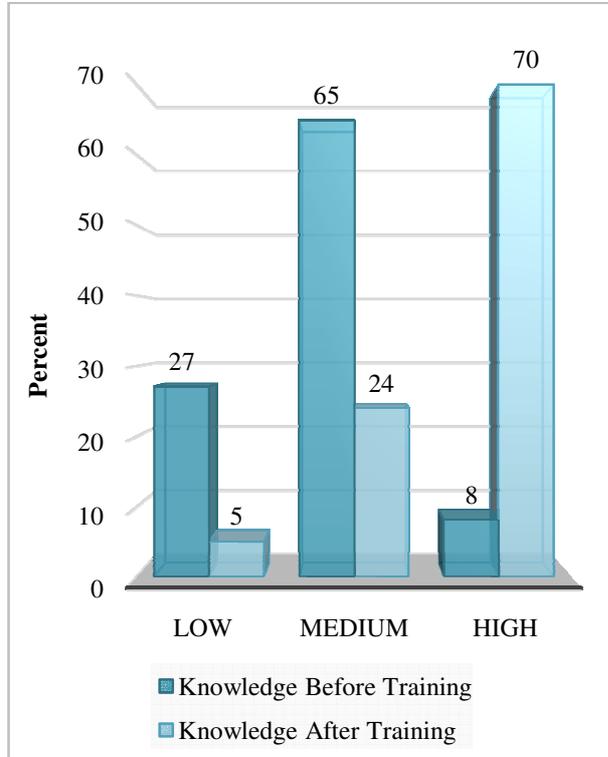
**Figure-2 (a-g):** Training respondents' observations about overall training.



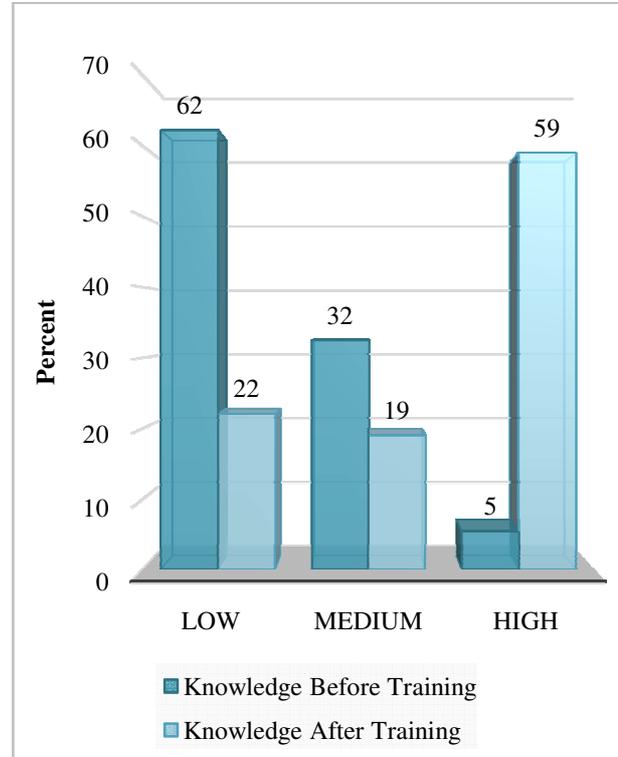
(a) Pre and Post-knowledge of Drip Irrigation.



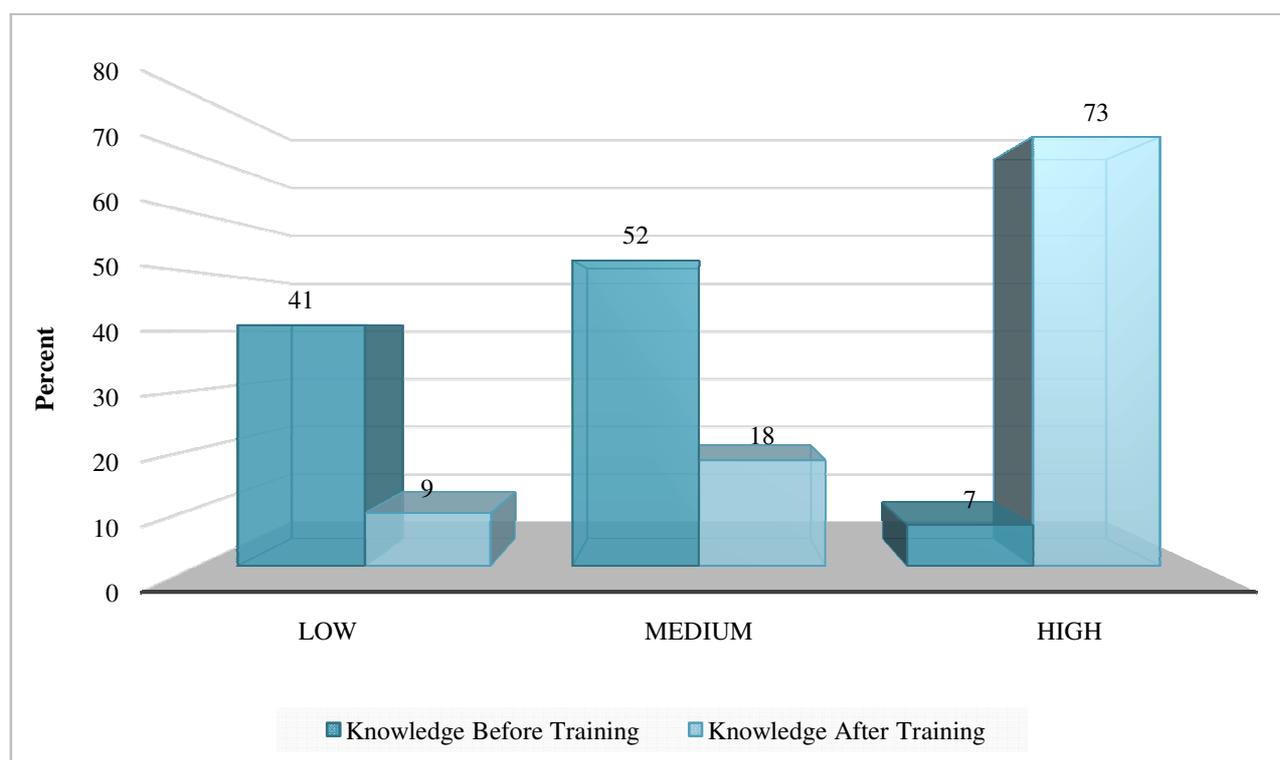
(b) Pre and Post-knowledge of Sprinkler Irrigation.



(c) Pre and Post-knowledge status of Solar Powered Irrigation.



(d) Pre and Post-knowledge status of Irrigation Scheduling.



**Figure-3 (a-e):** Pre and post-training evaluation of respondents' knowledge.

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