

## **Empowering rural women with improvement in knowledge level through training programmes**

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(Received: July, 2016 ; Accepted: December, 2016)

**Abstract:** Training helps to provide an opportunity and broad structure for the development of human resources and technical skills. Training is one of the extension method used to disseminate technologies to rural community, which in turn updates and improves the knowledge among the rural people. With this background the study was conducted in Dharwad district. Total 300 rural women [150 rural women trained by District Agricultural Training Centre (DATC) and 150 untrained] were selected and the data was collected with the help of pre tested interview schedule. Analysis of the study revealed that majority of the trained rural women had medium level of knowledge about integrated pest management (56.70 %), integrated farming system (73.40%), dairy management (63.30%) and seed treatment (73.30%). Whereas, 43.30 per cent of rural women had high level of knowledge about organic farming. While, untrained rural women showed low level of knowledge with respect to different agricultural and allied technologies except dairy management. Training programmes conducted by DATC had a positive impact on knowledge gain of agricultural and allied technologies of rural women. Such trainings should be conducted to empower rural women technically and economically.

**Key words:** Agriculture, Empowerment, Knowledge, Training

### **Introduction**

The empowerment of women means for them to have the necessary ability to undertake a number of tasks either individually or in groups, so that they have further access to and control of society resources. Empowerment is recognized as an essential strategy to strengthen the well-being of individuals, families and communities, government and non government agencies. To deliberate on the need for empowerment of rural women different training programmes were conducted to improve the knowledge of women for better standard of living and to empower them for undertaking income generating projects so that they can contribute towards family income and improve the financial status of their families (Anon, 2007).

District Agricultural Training Centre (DATC) is one of the training institute, which provides training to framers, farm women and extension workers of the department. Application of agricultural and allied technologies demand for training at various levels to farmers and farm women. The need of the hour is to reach the unreached. Agricultural extension at present is focused on commodity oriented macro level technologies while the need is micro farming situation based in location specific, problem oriented interventions. It is in this context that the farmers- expert's interaction brings in high degree of confidence among the farmers and farm women. In order to reinforce and strengthen this mode of working Karnataka State Department of Agriculture (KSDA) during 2001 established 23 District Agricultural Training Centres (DATCs) to provide trainings to farmers, farm women and extension workers of the department.

The objective of DATCs are to impart training to farmers and farm women on improved agricultural technologies and to update the knowledge and skills of the staff of department in

advanced agricultural technologies. Whereas now more importance is given for Human Resource Development (HRD) activities. Hence, in order to know the improvement of knowledge level among the rural women through trainings conducted by DATC the present study was taken up.

### **Material and methods**

The study was conducted in Dharwad district of Karnataka state during 2014-15. A list of trainees was obtained from District Agricultural Training Centre (DATC) Dharwad, who had undergone training on agricultural and allied technologies. Out of five taluks of Dharwad district, highest numbers of trainees were observed in Hubli, Dharwad, Kalaghatagi and Kundgol taluks. From each taluk number of villages were listed and final selection of villages were made based on availability of women trained from DATC. Total three hundred rural women were selected. Out of the total sample, equal numbers of trained and untrained rural women were considered for each selected technology from the different villages *i.e.*, one hundred and fifty trained rural women who have undergone training in DATC and one hundred and fifty untrained rural women from the same village were randomly selected for the study.

To assess the effect of trainings on rural women knowledge about agricultural and allied technologies like Integrated Pest Management (IPM), Integrated Farming System (IFS), dairy management, seed treatment and organic farming were selected for the study. The data was collected from trained and untrained women with the help of pre tested schedule by personal interview technique in an informal atmosphere. For each of the topic in each statement the total knowledge index for individual respondents was calculated. Interval method was adopted for classification of respondents into various categories. Suitable

statistical tools were used to analyze the collected data and presented in the form of results.

## Results and discussion

### Knowledge of rural women about Integrated Pest Management (IPM)

A close perusal of Table 1 indicated that, the trained women had high knowledge about control of loose smut by seed treatment (80.00%) followed by dependency on IPM practices, use of Melathion insecticide in vegetables (73.33% each), intercrop pigeon pea with sorghum for the effective control of wilt and leaf curl disease of tomato (70.00% each). Whereas, they had moderate knowledge about plant origin pesticide NSKE and pink boll worm-a serious pest of cotton (66.66% each), restricted use of pesticide in India and causes for black heart disease of potato (46.66% each). But, trained rural women had less knowledge about serious pest of wheat (36.66%).

It was also seen that, the untrained rural women had high knowledge about control of loose smut by seed treatment (66.66%). They had medium knowledge about leaf curl disease of tomato and pink boll worm-a serious pest of cotton (43.33% each) followed by causes of black heart of potato (26.66%). Untrained rural women had less knowledge about dependency on IPM practices, intercrop pigeon pea with sorghum for the effective control of wilt and plant origin pesticide NSKE (23.33% each). They had very less knowledge about restricted use of pesticide in India (16.66%) followed by serious pest of wheat (13.33%) and use of Melathion insecticide in vegetables (3.33%). These findings are in consistent with results of Borua and Brahma (2012).

Table 1. Knowledge of rural women about Integrated Pest Management (IPM) n=60

| Sl. No. | Statements  | Knowledge Index (KI)         |                                |
|---------|---|------------------------------|--------------------------------|
|         |   | Trained (n <sub>1</sub> =30) | Untrained (n <sub>2</sub> =30) |
| 1       | IPM relies heavily on economic threshold level                      | 73.33                        | 23.33                          |
| 2       | Pink boll worm a serious pest of cotton                             | 63.33                        | 43.33                          |
| 3       | Termite a most serious pest of wheat                                | 36.66                        | 13.33                          |
| 4       | Intercrop pigeon pea with sorghum for the effective control of wilt | 70.00                        | 23.33                          |
| 5       | Causes of black heart of potato                                     | 46.66                        | 26.66                          |
| 6       | NSKE the plant origin pesticide                                     | 66.66                        | 23.33                          |
| 7       | Leaf curl a disease of tomato                                       | 70.00                        | 43.33                          |
| 8       | Control of loose smut by seed treatment                             | 80.00                        | 66.66                          |
| 9       | Use of Melathion insecticide in vegetables                          | 73.33                        | 3.33                           |
| 10      | Total number of pesticides restricted for use in India              | 46.66                        | 16.66                          |
|         | Overall knowledge Index   | 62.67                        | 28.33                          |
|         | Z test  | 9.24**                       |                                |

\*\*Significant at 0.01 level

In case of trained and untrained women the overall knowledge index was found to be 62.67 and 28.33 respectively means that their knowledge about IPM was to the extent of 62.67 and 28.33 per cent respectively. Highly significant difference in knowledge of the trained and untrained women with respect to integrated pest management was exhibited by Z test.

### Knowledge of rural women about Integrated Farming System (IFS)

A close review of Table 2 indicated that trained women had high knowledge about use of green manuring crops to increase soil fertility (83.33%) followed by components of IFS for livelihood security of landless farmers, farm pond water for protective irrigation in dry land agriculture (76.66% each), components of IFS (66.66%) and earning of highest income by horticulture (63.33%). They had medium knowledge about factors to be considered in selecting IFS in rain fed area (40.00%), followed by essentials and advantages of IFS (23.33% each). Trained women had less knowledge about establishment of good integrated farm and enhancement of ecological diversity by basic principle of IFS (16.66% each). The results of the study are in lined with the research conducted by Yadav and Mehta (2014).

Table 2. Knowledge of rural women about Integrated Farming System (IFS) n=60

| Sl. No. | Statements  | Knowledge Index (KI)         |                                |
|---------|---|------------------------------|--------------------------------|
|         |   | Trained (n <sub>1</sub> =30) | Untrained (n <sub>2</sub> =30) |
| 1       | Scarcity in irrigation, low rain fall and monocropping are essentials of IFS  | 23.33                        | 36.67                          |
| 2       | Field and horticulture crops, animal husbandry, vermicompost are the components of IFS                              | 66.66                        | 10.00                          |
| 3       | Points to be consider for selection of IFS in rain fed area   | 40.00                        | 23.33                          |
| 4       | Use of green manuring crops to increase soil fertility  | 83.33                        | 26.67                          |
| 5       | Obtain highest income with inclusion of horticulture crops in IFS   | 63.33                        | 53.33                          |
| 6       | Animal husbandry, Sheep and goat farming are component of IFS for livelihood of landless farm women                 | 76.66                        | 50.00                          |
| 7       | Increased farm income, sustainable soil fertility and productivity and regular employment are the advantages of IFS | 23.33                        | 13.33                          |
| 8       | Enhance the ecological diversity by mixed cropping as basic principle of IFS  | 16.66                        | 3.33                           |
| 9       | Use of farm pond water for protective irrigation in dry land agriculture  | 76.66                        | 26.67                          |
| 10      | IFS takes 3-4 years to establish a good integrated farm   | 16.66                        | 3.33                           |
|         | Overall knowledge Index   | 48.67                        | 24.67                          |
|         | Z test  | 7.26**                       |                                |

\*\*Significant at 0.01 level

In case of untrained women, they had medium knowledge about earning of highest income with horticultural crops (53.33%) followed by components of IFS for livelihood of landless (50.00%) and essentials of IFS (36.67%). They possess less knowledge about use of green manuring crops to increase soil fertility, use of farm pond water for protective irrigation in dry land agriculture (26.67% each) and points to be considered for selection of IFS in rain fed area (23.33%). Whereas, knowledge about advantages of IFS (13.33%), components of IFS (10.00%), enhancement of ecological diversity by basic principle of IFS and establishment of good integrated farm (3.33% each) was found to be less.

The overall knowledge index was found to be 48.67 in case of trained women and 24.67 with regard to untrained women. It indicated that their knowledge about IFS was to the extent of 48.67 and 24.67 per cent. Z test showed highly significant difference between knowledge of trained and untrained women regarding integrated farming system.

#### Knowledge of rural women about dairy management

Information in the Table 3 indicated that, trained women had cent per cent of knowledge about frequency of milking in a day followed by common viral disease of animals (93.33%), construction of shelter to the animals (86.66%), expulsion of placenta within 6-8 hours (76.66%) and silent heat characteristic of buffalo (66.66%). They also had medium knowledge about buffalo breeds (46.66%) and clean milk production (43.33%). But, they lacked in the knowledge of advantage of weaning in cows (20.00%) followed by probable causes for spoilage of milk (16.66%) and age limit of the animal to have insurance (3.33%).

Table 3. Knowledge of rural women about dairy management

| Sl. No. | Statements  | Knowledge Index (KI)         |                                |
|---------|---|------------------------------|--------------------------------|
|         |   | Trained (n <sub>1</sub> =30) | Untrained (n <sub>2</sub> =30) |
| 1       | HF a buffalo breed  | 46.66                        | 26.67                          |
| 2       | Constructing shed outside the living house with shelter and flooring            | 86.66                        | 56.67                          |
| 3       | Silent heat is dominant in Buffalo  | 66.66                        | 53.33                          |
| 4       | Placenta should be exploded within 6-8 hour                                     | 76.66                        | 66.67                          |
| 5       | Clean milk production depends on washing of hands and cows udder before milking | 43.33                        | 3.33                           |
| 6       | Milking is to be done 2 times in a day  | 100                          | 100                            |
| 7       | Foot and Mouth is the most common viral disease of animals                      | 93.33                        | 43.33                          |
| 8       | Major advantage of weaning in cows is to get clean milk                         | 20.00                        | 6.66                           |
| 9       | Probable causes for the spoilage of milk  | 16.66                        | 6.66                           |
| 10      | Age limit of the animal to have insurance is 3-15 years                         | 3.33                         | 13.33                          |
|         | Overall knowledge Index   | 55.33                        | 37.66                          |
|         | Z test  | 0.33NS                       |                                |

NS- Non Significant

With regard to untrained women, they had cent per cent of knowledge about frequency of milking in a day and 66.67 per cent of knowledge about expulsion of placenta within 6-8 hours. Whereas, they had medium knowledge about construction of animal house (56.67%) silent heat followed characteristic of buffalo (53.33%) and common viral disease of animals (43.33%). They had minimum knowledge about breeds of buffalo (26.67%), age limit of the animal to have insurance (13.33%), advantage of weaning in cows (6.66%) and clean milk production (3.33%).

With respect to dairy management trained and untrained rural women possessed 55.33 and 37.66 overall knowledge index respectively. It means knowledge about dairy management was 55.33 and 37.66 per cent. Non significant difference between knowledge of trained and untrained women with regard to dairy management was indicated by Z test.

#### Knowledge of rural women about seed treatment

A close review of Table 4 revealed that trained women had high knowledge about use of neem leaves or powder for storage of bengal gram (90.00%) followed by control of bruchids (86.66%), fumigation method for the control of storage pest in godown (73.33%) and use of seed treatment for the control of seed and soil borne diseases (63.33%). They had medium

Table 4. Knowledge of rural women about seed treatment n=60

| Sl. No. | Statements   | Knowledge Index (KI)         |                                |
|---------|--|------------------------------|--------------------------------|
|         |  | Trained (n <sub>1</sub> =30) | Untrained (n <sub>2</sub> =30) |
| 1       | Seed treatment is used for the control of seed and soil borne diseases   | 63.33                        | 60.00                          |
| 2       | Bruchids in pulses can be controlled by putting neem leaves, fly ash and melathion dust in the storage structure                   | 86.66                        | 76.67                          |
| 3       | Use of thiram seed treatment for oil seeds   | 43.33                        | 3.33                           |
| 4       | Soil borne diseases can be controlled by trichoderma   | 26.66                        | 6.66                           |
| 5       | Sitophilus oryzae pest of sorghum can be better controlled by putting EDB ampules in storage structure                             | 23.33                        | 3.33                           |
| 6       | Use of neem leaves or neem leaf powder in bengal gram for better storage   | 90.00                        | 63.33                          |
| 7       | Drying of seedlings in groundnut can be controlled by thiram and captan  | 6.66                         | 3.33                           |
| 8       | Mostly used practices in store house of seeds  | 33.33                        | 6.66                           |
| 9       | Use of fumigation method for the control of storage pest in godown   | 73.33                        | 23.33                          |
| 10      | Preventing spreading of seed diseases, seed rot, seed blight and protecting seeds in the godown are the benefits of seed treatment | 26.66                        | 13.33                          |
|         | Overall knowledge Index  | 47.33                        | 26.00                          |
|         | Z test   | 6.41**                       |                                |

\*\*Significant at 0.01 level

knowledge about Thiram seed treatment for oil seeds (43.33%) followed by mostly used practices in store house of seeds (33.33%), control of soil borne diseases by Tricoderma, benefits of seed treatment (26.66% each) and control of serious pest of sorghum (23.33%). Whereas, they had less knowledge about use of Thiram and Captan for the control of drying of seedlings in ground nut (6.66%).

It was also observed from the table that the untrained women had high knowledge about control of bruchids (76.67%) followed by use of neem leaves or powder in storage of Bengal gram (63.33%) and use of seed treatment for control of seed and soil borne diseases (60.00%). Whereas, they had minimum knowledge about fumigation method for the control of storage pest in godown (23.33%), benefits of seed treatment (13.33%), control of soil borne disease by Tricoderma, mostly used practices in store house of seeds (6.66% each) and control of pest in sorghum, control drying of seedlings in ground nut (3.33%).

Trained and untrained women exhibited overall knowledge index of 47.33 and 26.00 respectively about seed treatment which indicated that they had 47.33 per cent and 26.00 per cent knowledge about seed treatment practices. It was also found that there was highly significant difference between knowledge of trained and untrained women with respect to seed treatment.

#### Knowledge of rural women about organic farming

It was noticed from the Table 5 that, trained women had high knowledge about increase of organic matter in the soil (86.66%) followed by means of organic farming and storage of vermicompost in polythene bag (83.33% each). Rural women had medium knowledge about harvesting of vermicompost, release of earthworms to pit (56.66% each), use of bio fertilizers and raw materials required for vermicompost production (53.33% each). They lack knowledge about objectives of organic farming (40.00%), use of vermicompost for increase of microbial activity in the soil (36.66%) and use of vermicompost within six months of production (30.00%).

The data in the Table 5 also indicated that, untrained women had high knowledge about use of bio fertilizers (63.33%) and means of organic (60.00%). They had less knowledge about use of vermicompost for improving microbial activity in the soil (33.33%), raw materials required for vermicompost production (30.00%) and storage of vermicompost (20.00%). Whereas, they had 13.33 per cent of knowledge about increase of organic matter in the soil, harvest of vermicompost and introducing earthworms into pit. They had very less knowledge about use of vermicompost within six months of production (10.00%). From the Table 5 it can also be referred that, trained and untrained women had overall knowledge index of 58.00 and 26.3 respectively. An analysis of Z test showed that, there was highly significant difference in knowledge of the trained and untrained women with respect to organic farming.

#### Knowledge of rural women about selected agricultural and allied technologies

Among the five selected technologies the trained women

| Sl. No. | Statements  | Knowledge Index (KI)         |                                |
|---------|---|------------------------------|--------------------------------|
|         |   | Trained (n <sub>1</sub> =30) | Untrained (n <sub>2</sub> =30) |
| 1       | Organic farming means plant and animal origin   | 83.33                        | 60.00                          |
| 2       | Protection of natural resources, getting maximum yield and maintaining biological diversity are the objectives of organic farming | 40.00                        | 6.66                           |
| 3       | Use of organic fertilizers, compost and crop rotation increases the organic matter in the soil                                    | 86.66                        | 13.33                          |
| 4       | Storage of vermicompost in polythene bag  | 83.33                        | 20.00                          |
| 5       | Harvest vermicompost after 3 months   | 56.66                        | 13.33                          |
| 6       | Use of Bio-fertilizers improves soil structure and texture  | 53.33                        | 63.33                          |
| 7       | Use of dry fodder, wet organic waste and dung for production of vermicompost  | 53.33                        | 30.00                          |
| 8       | Introduce earthworms after 15 days of watering  | 56.66                        | 13.33                          |
| 8       | Use of vermicompost improves soil microbial activity  | 36.66                        | 33.33                          |
| 10      | Use vermicompost within 6 months after production   | 30.00                        | 10.00                          |
|         | Overall knowledge Index   | 58.00                        | 26.33                          |
|         | Z test  | 5.93**                       |                                |

\*\*Significant at 0.01 level

possessed highest mean knowledge index in integrated pest management (62.67) followed by organic farming (58.00) and dairy management (55.33). The mean knowledge index was found less in seed treatment (47.33) and integrated farming system (48.67). Whereas, in case of untrained women the mean knowledge index was ranged from 24 to 37 in selected technologies (Fig.1).

#### Knowledge level of rural women about agricultural and allied technologies

It was evident from the Fig. 2 that, majority (56.70%) of the trained rural women belonged to medium knowledge level followed by high (40.00%) and low (3.30%) knowledge level. While, high majority (80.00%) of untrained women had low level of knowledge followed by medium knowledge level (20.00%) about integrated pest management. None of the untrained respondents had high level of knowledge. These findings are in line with results of Borua and Brahma (2012) and Gupta and Verma (2013). They reported that majority of the trained youth (58.75%) had medium level of knowledge while, 23.75 per cent and 17.50 per cent of them had high and low level of knowledge respectively about selected technology. Motivational sources and attitude of rural women towards integrated pest management practices might have influenced the knowledge level. Lack of information and non participation in training may be the reasons for low knowledge level among

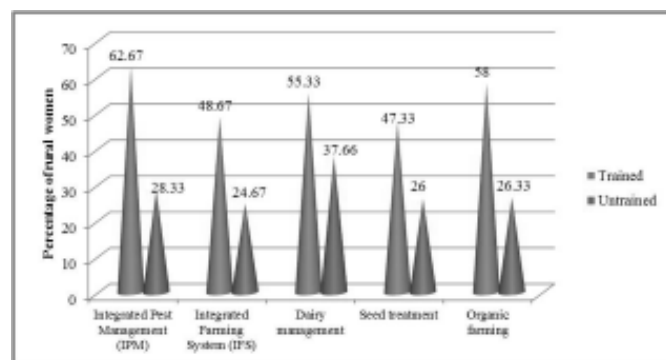


Fig.1. Knowledge of rural women about selected agricultural and allied technologies

untrained rural women.

The data from the Fig.2 indicated that, about integrated farming system majority (73.40%) of the trained rural women possessed medium level of knowledge. Whereas, equal per cent (13.30% each) of them belonged to high and low knowledge level. Majority of untrained women (56.70%) were found in low knowledge category and 43.30 per cent of them were seen in medium knowledge level. However, none of them possessed high level of knowledge about different aspects of IFS. The results of the study are consistent with the findings of Sharma *et al.* (2013) wherein, majority of trained farm women (72.50%) had medium level of knowledge regarding fruit and vegetable preservation, (FVP) followed by those having high (20.00%) and low (7.50%) level of knowledge respectively. Whereas, in case of non-trainee farm women, all of them had low level of knowledge regarding FVP technologies. The reason for good knowledge among trained women might be due to different benefits provided to the rural women under IFS scheme by the government and agricultural university. Another probable reason might be impact of training programme. Low knowledge level of the untrained rural women may be due to their less extension contact, organizational participation and non participation in training programme. Another reason might be lack of awareness and interest.

The data related to knowledge level of rural women about dairy management revealed that 63.30 per cent of trained women had medium level of knowledge. While, 26.70 per cent and 10.00 per cent of them found in high and low knowledge level respectively (Fig.2). In case of untrained women also same per cent (63.30%) of them had medium level of knowledge followed by low (36.70%). No one of them was found in high knowledge category. It was also showed non significant association between knowledge level of trained and untrained rural women with regard to integrated pest management. In rural areas almost all the families owned buffalos and cows and women in the household manages animals. The participation of rural women in such type of dairy activities has created interest and motivated her to get more technical knowledge and practices in management of animals. The findings of the study reported by Aggarwal and Aulkah (2014) and Ajrawat and Kumar (2012) showed that highest percentage of change in knowledge in the

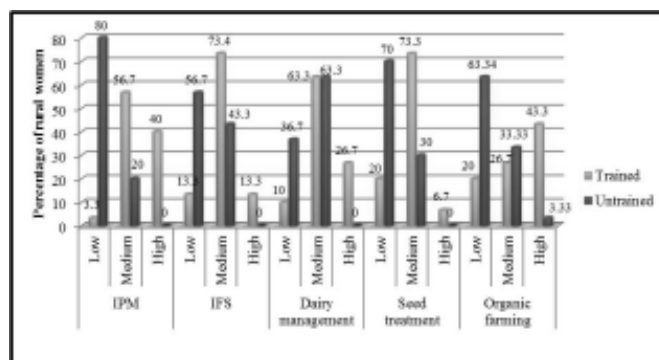


Fig.2. Knowledge level of rural women about selected agricultural and allied technologies

techniques of clean milk production (90.42%) followed by manufacturing of value added milk products (85.14%) and breeding practices (84.25%). The overall gain in knowledge was 75.19 per cent.

With regard to seed treatment, high majority of the trained women (73.30 %) were from medium level of knowledge category followed by low (20.00%) and high (6.70%) knowledge category. But, 70.00 per cent of the untrained women were belonged to low level of knowledge category followed by medium knowledge level (30.00%) (Fig. 2). Medium level of knowledge among trained women could be due to their interest and participation in training programme. Minimum knowledge of untrained women might be the results of non participation in training programme and difficulty in memorizing and retaining scientific words and name of chemicals used in the seed treatment. The findings of the study are in consistent with results of Singh *et al.* (2015) and Malabasari (2015). who reported that majority of trained women had high level of knowledge with respect to home science and agricultural technologies like washing powder and phenyl making (56.67%), maize products (48.57%), mango products (40.00%) bakery products (53.13%) and dairy management (63.33%) and medium level in seed treatment (63.33%), vermicomposting (60.00%) and integrated farming system (43.34%).

It was observed from the Fig.2 that, as high as 43.30 per cent of trained women had high level of knowledge about organic farming practices. While, 36.70 per cent and 20.00 per cent of them found in medium and low level of knowledge category. With regard to knowledge of untrained rural women about organic farming majority of them (63.43%) had low level of knowledge followed by medium and high (33.33% and 3.33%). The findings of the study were in conformity with the findings of Nagnur *et al.* (2012) wherein, majority of women during pre test were present in the medium knowledge category followed by low knowledge category whereas, during post test majority of them belonged to high level of knowledge regarding organic farming. Now a days people are becoming aware of adverse effects of using chemical fertilizers, insecticides and pesticides for the soil and also for the human being. Hence, they preferred more knowledge about the use and advantages of organic fertilizers and insecticides. This created interest in them to

participate in training programme organized on organic farming. This may be the probable reason for increase in their knowledge.

### Conclusion

The study concluded that trainings conducted by DATC play a positive role in the empowerment of rural women.

Majority of the trained rural women belonged to medium level of knowledge whereas majority of untrained were found in low level of knowledge which clearly indicates the effect of trainings in terms of knowledge gain among the rural women. Such trainings should be conducted to empower rural women technically and economically.

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