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Research Article

# Training needs of cotton farmers on organic cotton production technologies in Andhra Pradesh

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**SUMMARY :** In recent years farmers are gradually sensitized and oriented to cultivate the cotton crop on organic mode realizing the adverse effects of conventional farming but the yields of organic is low. The reason of poor performance in yields of organic cotton could be lack of training and skills upgrdation about the technology, looking to these facts, the present study was carried the general objective of this research is to identify the training needs of organic cotton farmers in Karimnagar district. The finding indicated that majority of organic cotton farmers have high (64.00%) training needs. The farmers expressed their training needs on features of conversion and certification requirements, followed by quality parameters, plant protection, sowing, land and soil health management, harvesting and post harvest managemen. Relational analysis revealed that education, farm size, annual income, herd size, organic inputs utilization pattern, training received, decision making behaviour were found positively and significantly correlated with training needs. Whereas, age, farming experience, extension contact were found not significant with training needs of organic cotton farmers.

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**KEY WORDS:**
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## BACKGROUND AND OBJECTIVES

Training is defined as the act of increasing the knowledge and skills of employee in doing a particular job. Training is mostly directed at improving the ability of individual to do his/ her job better. Singh (1989) described training need as the gap between what is going on now and what should go on. It is the gap between the present level of performance and the standard level of performance of job. The training needs of organic farmers are diverse and vary from one crop to another crop (Farinde and Ajay, 2005).

Training is essential to induce motivation, create confidence and inculcate efficiency in an individual. Training is also inevitable for imparting new knowledge and updating the skills of the farmers. Training of farmers had assumed further importance and urgency as fertilizers, herbicides, especially insecticides and fungicides are being used indiscriminately by farmers in cotton crop. In order to make any training meaningful and effective, it is imperative on the part of the training institutions to identify the training needs of the organic cotton farmers based on which a suitable training module can be developed so that the appropriate training is given to the right people, in the right form, at the right time so that higher degree of productivity and profitability can be achieved. Cotton, the white gold occupies an evitable place amongst commercial crop in India. Cotton crop production by using fertilizers and chemicals indiscriminately and injudiciously has resulted in pollution of soil and environment. Further, chemical farming undermined the natural mechanism operating in the ecosystem. On account of environmental concerns and food safety, organic farming has regained momentum in the recent past. The methods, organic cotton production technology restricts the use of fertilizers and chemicals. It avoids, use of synthetic fertilizers and pesticides and relies on maximum use of legumes, green manures, crop residues, animal manure, vermicompost, bio-fertilizers etc. To refill the potential of soils, proper education and training about qualitative parameters of cotton

like staple length, micronaire value, moisture content, fibre strength give more remuneration to farmers. One of the major problems with organic cotton growers is pest incidence due to use of local varieties. With the aim of reduce loss, farmer has to use organic inputs judiciously with respect to dosage, time and method of application with the twin objectives of maximizing cost benefit ratio and minimizing environmental pollution. By using the so many techniques deply heartened to say organic cotton yields are very low compared with Bt cotton. Due to this, so many farmers again reverting to conventional farming. The reason of poor performance in yields of organic cotton could be lack of knowledge and skills and training about the technology. Looking to these facts, the present study was carried out with the following objectives to ascertain the farmers training needs on organic cotton production technology and to find out the relationship of selected characteristics of organic cotton growers with their level of training needs.

## RESOURCES AND METHODS

The present study was conducted in Karimnagar district of Andhra Pradesh state. Karimnagar district was selected purposively for study because highest number of farmers were cultivating organic cotton production for exporting to European countries with the help of Chaitanya Organic Cooperative Farmers Association since 2007. Ex-post facto research design was followed in the present study. This district consists of 57 Mandals from which Bejjanki and Illanthakunta Mandals were selected purposively, as they cover more area under organic cotton crop. From these two Mandals, 6 villages were selected for the study. In each village, 20 organic cotton farmers were selected randomly to serve as sample respondents. Thus, 120 farmers constituted the sample for the study. A list of five major areas of training needs in relation to improved package of practices of cotton cultivation was prepared. Training needs of farmers in organic cotton cultivation was worked out with the help of a Training Need Quotient (TNQ). The formula for calculating Training Needs Quotient is:

$$TNQ = \frac{OTig}{MTS} \times 100$$

where, OTig = Sum of the observed training scores of the items of the ith respondent, MTS = Sum of maximum scores attributed to the items rated by the ith respondents. Based on the TNQ scores obtained, the respondents were categorized into three groups *viz.,* high, medium and low levels using class interval method. The Training Importance Score (TIS) of each item was calculated with the help of the formula as suggested by Tantry (1989) as :

$$TIS = \frac{\text{Comulative training importance score over all respondents}}{\text{Total number of respondents}}$$

The training areas were ranked based on Training Importance Score values. In the present study, training importance score of each area was measured on three-point continuum as Most essential, Essential and Not essential by giving scores of 3, 2 and 1, respectively. The primary data were collected using a pre-tested structured interview schedule by conducting personal interview. Data so obtained were tabulated, classifieds and analysed by percentage, mean, correlation and presented in the Table A.

**Table A : Distribution of organic cotton respondents according to their training needs (n=120)**

| Sr. No. | Training level | Frequency | Percentage |
|---|---|---|---|
| 1. | Low | 20 | 16.00 |
| 2. | Medium | 24 | 20.00 |
| 3. | High | 76 | 64.00 |

## OBSERVATIONS AND ANALYSIS

Training needs data regarding distribution of respondents according to their training needs were collected and classified in three groups. The data in this regards are presented in Table A. The study on training needs revealed that 64.00 per cent of the cotton respondents were under high training needs category, 20.00 per cent had medium training need whereas rest of 16.00 per cent has low training need.

Majority of the organic cotton farmers had high level of training needs followed by medium level of training needs. It indicates that, the farmers were not aware about the training programmes conducted by various agencies and their importance. The farmers should be inculcated the spirit of attending the training programmes for their benefit. Special training programmes may be designed to suit to the needs and interests of cotton farmers. The same result was generated by Suneetha (2003), Madhusekhar (2009) and Gangadhar (2009).

**Important training need areas identified with respect to organic cotton cultivation practices:**

Data regarding distribution of respondents according to their training needs in different subject matters are presented in Table 1.

Table 1 reveals that training needs of the farmers based on overall mean score obtained was found most essential in the area of conversion and certification requirements having mean score of 2.5 and ranked I, followed by subject matter relating to quality parameters with mean score of 2.2 having rank II. Training was found as essential in the areas of subject relating to plant protection with mean score of 2.07 having rank III followed by sowing, land and soil health management

**Table 1 : Training needs of organic cotton farmers in different subject matter areas**

| Sr. No. | Items | Mean score | Rank |
|---|---|---|---|
| 1. | Conversion and certification requirements | 2.5 | I |
| 2. | Sowing, land and soil health management | 1.67 | IV |
| 3. | Plant protection | 2.07 | III |
| 4. | Harvesting and post harvest management | 1.42 | V |
| 5. | Quality parameters | 2.2 | II |

**Table 2: Item wise analysis of training needs of organic cotton farmers in different subject matter areas**

| Sr. No. | Areas of training needed | Mean score | Item wise rank | Overall mean score | Overal rank |
|---|---|---|---|---|---|
| **Conversion and certification requirements** | | | | | |
| 1. | Time for conversion and certification | 2.97 | 1 | 2.5 | I |
| 2. | Preparation of conversion plan details | 2.47 | 4 | | |
| 3. | Maintenance of buffer zone between organic and conventional block | 2.75 | 2 | | |
| 4. | Handling and storage of farm implements | 2.68 | 3 | | |
| 5. | Eco-friendly and biodegradable packaging materials | 2.35 | 5 | | |
| 6. | Child labour laws | 2.13 | 7 | | |
| 7. | Organic field dairy maintenance | 2.15 | 6 | | |
| **Land preparation and bio mass development** | | | | 2.1 | III |
| 1. | Deep summer ploughing | 1.75 | 4 | | |
| 2. | FYM and Neem or castor cake application | 2.50 | 1 | | |
| 3. | Selection of varieties | 1.1 | 7 | | |
| 4. | Biological seed treatment | 1.5 | 5 | | |
| 5. | Seed inoculation of *Azatobactor* or *Azospirillum* | 1.8 | 3 | | |
| 6. | Weed management | 1.25 | 6 | | |
| 7. | Manures and fertilisers | 1.81 | 2 | | |
| **Plant protection** | | | | | |
| 1. | Avoid late /staggered sowing | 2.65 | 3 | 2.078 | III |
| 2. | Long crop rotation | 2.95 | 1 | | |
| 3. | Removal and destruction of weeds and disease affected plants | 2.82 | 2 | | |
| 4. | Intercropping of short duration pulses - cotton : pulses (1:2) | 2.45 | 4 | | |
| 5. | Border crops and trap and pheromone crops | 1.85 | 6 | | |
| 6. | Placement of bird perches | 2.15 | 5 | | |
| 7. | Hand picking /killing and destruction of insect pests or larval stages | 1.75 | 7 | | |
| 8. | Clipping of terminal bud with eggs and detopping | 1.27 | 9 | | |
| 9. | Release of *Chrysoperla* sp. and Trichogramma spp eggs | 1.67 | 8 | | |
| 10. | Spraying of H-NPV and NSKE | 1.25 | 10 | | |
| 11. | Chilli or garlic extract or Panchagavya or Jivamrutam usage | 1.05 | 11 | | |
| **Harvesting and post harvest management** | | | | | |
| 1. | Picking time | 2.10 | 1 | 1.42 | VI |
| 2. | Separation of infected and rottened bolls | 1.46 | 2 | | |
| 3. | Drying of Kapas and moisture control | 1.13 | 4 | | |
| 4. | Use of cotton bags for filling of cotton | 1.26 | 3 | | |
| **Quality parameters** | | | | | |
| 1. | Fibre strength | 1.85 | 3 | 2.2 | II |
| 2. | Moisture content | 2.8 | 1 | | |
| 3. | Staple length | 2.3 | 2 | | |
| 4. | Micronaire value | 1.65 | 4 | | |

with mean score of 1.67 having rank IV. The least essential training need area was identified as harvesting and post harvest management having mean score of 1.42 and was ranked at V position with respect to other training need areas.

This means that the organic cotton farmers gave highest emphasis on these subject matters, as this information can help them to a great extent while adopting organic cotton to their fields. The reasons for ranking these items on top by the respondents may probably be organic cotton needs certain European standards to exporting quality and certification for fetch higher price to their crop. Quality parameters like staple length, strength of fibre, micronaire value, moisture percentage ultimate affect on price of Kapas. For these, they need adequate knowledge of manures and fertilizers, land preparation and bio mass development.

Further, the respondents perceived the training needs in plant protection measures due to significant damage reported by the attack of pests like sucking pests, spodoptera and mealybugs and diseases like root rot, wilting and bacterial blight. These factors may be motivated them to assign the top rank to above items. Cotton farmers expressed their training needs about various requirement for certification land and biomass development, quality parameters, manures and fertilizers. Most of the farmers found lack of knowledge about harvesting and storage of cotton. Hence, they require training about this subject matter. They also require training in descending order on organic cotton seeds and sowing, harvesting storage, plant protection, manures and fertilizers (Table 2).

**Correlation between personal traits and their training needs:**

To examine this relationship, correlation coefficient (r) value was computed, the results of which are presented in Table 3.

The data depicted in Table 3 show that among ten characteristics studied, farm size and decision making behaviour were found positively and significantly correlated with training needs at 0.01 level of probability. Whereas, education, annual income, herd size, organic inputs, acquisition pattern and training received were correlated positively and significantly at 0.05 level of probability. Further, it was noticed that age, farming experience and extension contact, did not show any relationship with training needs.

**Table 3 : Correlation between selected characteristics of organic cotton farmers with their training needs (n=120)**

| Sr. No. | Variables | Correlation coefficient 'r' values |
|---|---|---|
| 1. | Age | 1.251NS |
| 2. | Education | 0.273* |
| 3. | Farming experience | 0.023NS |
| 4. | Farm size | 0.421** |
| 5. | Annual income | 0.181* |
| 6. | Herd size | 0.176* |
| 7. | Organic inputs acquisition pattern | 0.257* |
| 8. | Training received | 0.212* |
| 9. | Decision making behaviour | 0.286** |
| 10. | Extension contact | 0.139NS |

* and ** indicate significance of values at P=0.05 and 0.01, respectively

The formal schooling possessed by the farmers and the training needs of farmers on organic cotton cultivation definitely enhances the training needs of organic cotton farmers on organic cotton practices because the education acts as the bed rock and facilitates to synthesise comprehensively the external information into the given situation. Training needs identification and providing training according to needs of a farmer sharpens the hidden skills and acts as a medium to imbibe any new knowledge or skill in a given profession. Hence, these variables were positively and significantly related to the training needs of organic cotton farmers. The variable, annual income has direct bearing on training needs. The enhanced income levels of a farmer act as a driving force to search for new information for application in the field. This finding is in line with the results of Sudhakar (2002), Obaiah (2004) and Dinesh *et al.* (2010). The cattle population possessed by a farmer is one of the basic prerequisites to take up organic farming as a profession. This might be the reason for a positive and significant relationship with training needs. This finding is accordance with the results of Savitha (2009) and Umesh (2009). The positive and significant relationship was observed between the variable organic inputs utilisation pattern and training needs of organic cotton farmers on organic cotton practices. This can be justified based on the fact that if a farmer is interested to apply organic inputs frequently at various crop growth stages then normally he is inclined to acquire more information on these inputs. The decision making behaviour of farmers depends on the ability to forming clear opinion and acting on them. The degree of forming clarity on such opinions depends on the training needs he is acquiring from various sources. This could be the reason of positive and significant relationship with training needs of organic cotton farmers on organic cotton farming and decision making behaviour.

**Conclusion:**

It is concluded from the investigation that majority of the organic cotton farmers expressed their need on organic cotton production technology. The analysis of selected characteristics like education, farm size, annual income, herd size, organic inputs acquisition pattern, training received, decision making behaviour were found positively and significantly correlated with their training needs.

It is also concluded that majority of cotton growers gave highest emphasis of training needs on features of conversion

period and certification requirement, as this information can help them to great extent while adopting in their fields. They are also required training on conversion and certificate requirements, qualitative parameters, plant protection, sowing, land and soil health management, harvesting and post harvest management. So while preparing farmers training progrmames/ modules for the area of training required by the organic cotton farmers should be given importance to support them to take decision regarding adoption of organic cotton technology.

The extension personnel and policy makers and scientists shall keep the results of this study in view while taking decisions as regards to what contents of the technological information regarding organic cotton technology should be taken to which type of the farmers. Further, they should concentrate on major areas, identified by this study for deciding the content of the message to be prepared for the organic cotton farmers.

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