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Farmers' Readiness for Organic Farming: A Study of Aligarh District in Uttar Pradesh

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ABSTRACT

The study was conducted in the purposively selected Aligarh district of Uttar Pradesh to assess the readiness of farmers for organic farming. The readiness of the farmers for organic farming was perceived in terms of conducive agricultural profile, a favorable attitude, sufficient knowledge and availability of required manpower and inputs for organic farming. The sample size of the study was 240 farmers spreading in twelve villages over six blocks of the district. Animal husbandry with agriculture, growing of pulses, millets, sesbania (for green manuring) and having *neem* trees (*Azadirachta indica*) were found already existing farm practices building supporting ground for the organic farming. Overall farmers were having favourable attitude towards organic farming. But, attitude towards the implementation aspect of organic farming was not as strong as towards impact on the environment and soil health, and economic benefits of organic farming. Farmers knew cultural practices related aspects of organic farming but lacking in knowledge regarding trap crops and bio-agents. There is a need to provide institutional support in creating awareness in technological advancement of organic farming, diversification of cereal based cropping system with the inclusion of leguminous crops and in increasing accessibility of off-farm organic inputs.

INTRODUCTION

India has registered phenomenal growth in the agriculture sector after nineteen sixties. The country's production of cereals is next only to China and USA. Globally, among the important cereals, India is the second largest producer of rice and wheat and the top producer of pulses. India is the largest producer of milk and the second largest producer of groundnut, vegetables, fruits, sugarcane and cotton (FAO, 2022). All of it happened due to technologies developed and policy support during the green revolution era. In fact, increment in agricultural production after post-green revolution is primarily attributed to technological development vis-à-vis policy support. However, prolonged and injudicious application of synthetic fertilizers and pesticides in farming resulted in degradation of agriculture ecosystem. Additionally, it also escalated the cost of cultivation, stagnation in productivity, deterioration in soil health as well as degradation in the quality of human food (John & Babu, 2021). Therefore, as a corrective measure of ill effect of modern day agriculture, recently policy makers and scientists has started discussing on alternative method of farming, especially organic farming.

In India, modern organic farming movement initiated in the 2001 with the launch of 'National Programme on Organic Production (NPOP)' by Ministry of Commerce, Government of India, which defined the National Standard for Organic Production (NSOP) and procedure for accreditation and certification. Later on,

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Ministry of Agriculture has also launched a farmer group-centric organic guarantee system under the PGS-India programme. To address the research needs, in 2004, ICAR launched a Network Project on Organic Farming (NPOF-ICAR), currently operational from 20 collaborative centres across the country. Further, to fulfil the technological needs in Horticulture, ICAR initiated a Network Project on Organic Horticulture. Subsequently, in 2015-16, to give domestic organic agriculture a push, the Ministry of Agriculture has launched a new scheme under National Mission for Sustainable Agriculture (NMSA) entitled *Parampragat Krishi Vikash Yogna* (PKVY) (APEDA 2018). Three state agricultural universities, namely University of Agricultural Sciences at Dharwad and Bangalore in Karnataka and CSK Himachal Pradesh Agricultural University, Palampur in Himachal Pradesh have set up the 'Centre of Excellence on Organic Farming Research' (Yadav, 2017).

Many state Governments have also put their efforts for the promotion of organic farming. At present organic farming is being promoted as a way of balancing nature with human needs, predominantly for conserving natural resources and avoiding the negative effects of indiscriminate use of inputs in agriculture. For policymakers and managers, organic farming is about making better earth for the sustained living, for the consumer it is about health and wellness while for farmers sustaining the family and maximising farm income are the primary concerns. In this situation, assessing the farmers' readiness for organic farming becomes essential. Keeping these facts in view present the study was conducted.

METHODOLOGY

The study was conducted in the purposively selected Aligarh district of Uttar Pradesh. For data collection, out of total twelve blocks of the district, six blocks were selected. Further, from each selected block, two villages were selected. From each selected village, twenty farmers were selected. In this way using the multistage sampling method, total sample size of the study was 240 farmers of district Aligarh.

The readiness of the farmers for organic farming was perceived in terms of the agricultural profile of the farmers conducive to organic farming, a favourable attitude towards organic farming, sufficient knowledge about recommended technologies related to organic farming and availability of required manpower and inputs for organic farming. For data collection, a personal interview schedule was used. The interview schedule comprised of three parts, *viz.* Agricultural profile of the farmers, attitude of farmers towards organic farming and knowledge level of farmers regarding recommended technologies related to organic farming.

Agricultural profile related variables were land holding, source of irrigation, crops being grown, availability of required manpower for organic farming, possession of *neem* trees (*Azadirachta indica*) and livestock (especially indigenous cows). For assessing the farmers' attitude towards organic farming a 5-point Likert scale was used**.** After reviewing the previous studies of Tana-Amorn (2006); Assis & Mohd Ismail (2011) & Mondal *et al.*, (2014); twenty statements were finalized, including both positive and negative statements. Each respondent was asked to indicate his/her extent of agreement or disagreement against each statement, along with a 5-point scale ranging from strongly agree to strongly disagree. Score 5 was assigned to response strongly agree, 4 to agree, 3 to undecided, 2 to disagree and 1 to strongly disagree statement for each positive statement. For negative statements score was reversed.

To assess the knowledge level of farmers regarding organic farming, a test was developed based on the package of practices for organic farming. After reviewing the recommendations and discussion with the agricultural scientists, eighteen critical point of intervention were selected from the package of practices. Each selected critical point of intervention was put in question form to obtain the responses from the farmers. The correct answer was given a score of 'one' and the incorrect responses 'zero'. The maximum and minimum obtainable score from each respondent was 18 and 0, respectively. Frequency, percentage and weighted mean score were calculated to analyze the data.

RESULTS AND DISCUSSION

Agricultural profile of the respondents

Landholding of maximum number of the respondents (69.5%) was less than 2.00 hectares. Two to three family members were engaged in farming in maximum numbers of farm families. The source of irrigation for most of the respondents was electricity-operated tube well followed by diesel pump set and canal.

During *the kharif* (rainy) season, major crops being grown by the respondents were pearl millet and rice followed by pigeon pea and maize. Nearly one-fifth of the respondents were growing green gram. Furthermore, only few farmers were also growing black gram (12.92%), sesame (10.42%), vegetables (08.75%), cluster bean (05.00%) and medicinal plants (01.67%). To fulfill the fodder requirement, large numbers (70.83%) of the farmers were growing sorghum. During *the rabi* (winter) season, wheat was the predominant crop grown by all the respondents followed by mustard (61.67%) and potato (40.83%). Only few farmers were growing lentil (15.42%) followed by vegetable pea (07.83%), vegetables (05.83%), chickpea (05.42%) and medicinal plants (01.67%). For fodder, more than four-fifths of the respondents (87.50%) were growing berseem (*Trifolium alexandrinum*). Very few farmers (17.92%) were also growing oat as fodder crop. During *the zaid* season, just over a one-third farmers were growing green gram (33.75%), followed by cucurbits (14.58%), sesbania (for green manuring) (14.17%), pearl millet (12.92%) and black gram (04.58%).

An overwhelming majority of the respondents were having *neem* trees (*Azadirachta indica*) either within the premises of their houses or in the field. Near about four-fifth of the respondents were having two or more than two *neem* trees. Almost all the respondents were also engaged in animal husbandry and were rearing animals, like, cows, buffalo, ox, bulls, etc. A large proportion of respondents (about 90 ninety per cent) were having more than one animal, of which approximately half were having indigenous breed cows. Most importantly, among the respondents having indigenous breed cows, approximately thirty per cent were having more than one cow.

As per the organic farming standard for crop production, maintenance of diverse crop rotation is pre-requisite to manage the

insect, disease and weeds. However, most of the farmers followed rice-wheat irrigated cropping system, which is not sustainable and desirable under organic farming. Inclusion of legumes, either as pulse or fodder crop, is highly recommended under organic farming for restoring soil fertility. In current situation, leguminous crop, like, pigeon pea, green gram, sesbania occupies large area during *kharif* and *zaid* season, however, in the *rabi* season, except *berseem* as fodder crop, large proportion of land pre-dominated by cereals, especially wheat. To further strengthening of organic farming in the district requires adoption of legume based cropping system. Abundance of *neem* tree and indigenous breed based livestock production system highly favour the effective implementation of organic farming programme. Subrahmanyeswari & Chandra (2010) were also in opinion that one of the objectives of the organic farming is to maintain mostly *desi* breeds along with bio-diversity at genetic and species level, wherein, crop-livestock were well integrated.

Nearly 55 per cent of the respondents expressed that additional labourers will be required for organic farming, for rest of the respondents, family members will be sufficient to fulfill the manpower requirement. It is a matter of concern because shortage of required manpower might be a bottle neck in large scale adoption of organic farming.

Attitude of the respondents towards organic farming

Data in Table 1 indicates that farmers were having highly favourable attitude towards beneficial impact of organic farming on environment and soil health. The statements of this content were at the top three positions in rank order of attitude scale with weighted mean scores of 4.48, 4.40 and 4.38, respectively and negative statement on soil health content was at tenth position with weighted mean score 3.76. Jaganathan et al., (2010) also reported that organic farmers had a concern about the health of human beings and the health of the soil. Positive statements regarding the economic benefits of organic farming occupied 5th, 6th and 7th position in rank order as near about half of the respondents were 'strongly agree' and near about one-fourth of the respondent were 'agree' with all the three statements. While negative statements were at 11th, 13th and 15th positions in rank order. These findings are in line with the results of Chiphang et al., (2022), they also concluded that organic farming was found to be more profitable and it can enhance the farmers' income. The findings clearly indicate that farmers have realised the ill effects of the chemical farming on the environment and soil health. Further, positive attitude towards economics and profitability of organic farming can play important role in adoption of organic farming practices.

Furthermore, the statements on practice aspect of organic farming were at 14th, 16th and 17th positions in rank order. It indicates the difficulty of farmers in pest and weed management in organic farming and low availability of off-farm organic inputs. Singh et al., (2021) also reported that at the national level, in general, there is increase in herbicide usage, primarily due to increased labour scarcity in agriculture and wages. The weighted mean score of the statement 'Certification of organic farming is a difficult task' and 'Organic farming will only troublesome the farmers because it needs more attention' was less than 3.00. It indicates that respondents were having an unfavourable attitude toward these two aspects of organic farming. However, this can be minimized by adoption of group farming approach of organic certification, which not only reduce the certification cost, simultaneously made social integrity among the farming community (Gills et al., 2021).

Knowledge level of the respondents regarding organic farming

Data presented in Table 2 indicates that majority of farmers were knowing the 'use of *neem* tree leaves in grain storage

Table 1. Attitude towards of farmers towards organic farming in Aligarh district of Uttar Pradesh

S.No.	Attitude items	Weighted mean score
1.	Now the natural environment is getting worse (+)	4.4792
2.	Now the soil is bad and if we start to do the organic farming then it will saved from being damaged (+)	4.3958
3.	Organic farming is effective in increasing fertility of soil (+)	4.3792
4.	Now we should encourage farmers to do more organic farming (+)	4.3625
5.	Organic farming can increase the income of farmers (+)	4.20416
6.	Organically grown cereals, vegetables and fruits have higher demand than chemically grown produce (+)	4.07916
7.	Organic farming will decrease the production cost by reducing the input purchases (+)	4.000
8.	To increase the crop production we should use more of chemical fertilizer and chemical pesticides (-)	3.975
9.	Overall, organic farming has more disadvantages (-)	3.8375
10.	Putting in the high amount of chemical fertilizer the soil will become better in the future (-)	3.7625
11.	Chemical farming is cheaper than organic farming (-)	3.6625
12.	Continuously following chemical farming will increase pest infestation (+)	3.50
13.	Organic farming will only be benefiting the consumers not the producers (-)	3.4042
14.	Chemical herbicides are more suitable to control weed (-)	3.3542
15.	The price of organic products in the market is not more than the products grown by chemical method (-)	3.3167
16.	Chemical pesticides are more suitable to control pests (-)	3.2417
17.	Organic farming is very difficult to implement due to difficulties in obtaining organic inputs (-)	3.1416
18.	In general, the products from chemical farming have high and better quality than organic farming (-)	3.0830
19.	Certification of organic farming is a difficult task (-)	2.9458
20.	Organic farming will only troublesome the farmers because it needs more attention (-)	2.5417

Table 2. Knowledge level of the respondents regarding organic crop production in Aligarh district of Uttar Pradesh

S.No.	Technology / aspect of organic farming	Percentage
1.	Use of *neem* tree leaves in grain storage	94.17
2.	Crops for green manuring	92.50
3.	Benefits of summer ploughing	85.83
4.	Manures and fertilizers used in organic farming	81.67
5.	Vermi composting	81.67
6.	Role of mulching in weed control	79.58
7.	Pulse crops in crop rotation	71.25
8.	Bio agent used for seed treatment	67.08
9.	Use of Neem Seed Kernel Extract	65.42
10.	NADEP composting	50.42
11.	Use of blue-green algae	47.50
12.	Use of *rhizobium* bio fertilizer/ culture	45.00
13.	Use of Phosphorus Solubilising Bacteria (PSB)	42.08
14.	Use of *Beauveria bassiana*	41.25
15.	Benefits of vermi-wash	40.42
16.	Concept of organic farming	36.25
17.	Trap crops	29.17
18.	Use of NPV (Nuclear Polyhedrosis virus)	23.33

(94.17%)', followed by 'crops for green manuring (92.50%)' and the benefits of summer ploughing (85.83%). Almost four-fifths of the respondents knew 'manures and fertilizers used in organic farming', 'vermicompost preparation' and the 'role of mulching in weed management'. At least seven out of ten respondents (71.25%) were having knowledge about the importance of 'pulse crops in crop rotation' followed by usage of 'bio-agent for seed treatment (67.08%)' and 'Neem Seed Kernel Extract (NSKE) (65.42%)'. Half of the respondents knew 'NADEP composting' followed by the use of blue-green algae and use of *rhizobium* bio-fertilizer. Further, more than four fifths respondents knew the use of 'Phosphorus Solubilising Bacteria (PSB)' and '*Beauveria bassiana*,' and the 'benefits of vermi-wash'. Less than two fifths of respondents (36.25%) having knowledge about 'concept of organic farming', and use of trap crops and Nuclear Ployhedrosis Virus (NPV). Sahu et al., (2010) also reported that wide knowledge gaps are in the areas of organic farming practices like the use of HaNPV, use of trichocards, use of bio-pesticides and use of NADEP compost.

CONCLUSION

On the basis of the study it can be concluded that farmers of the district Aligarh have realization of the ill effects of chemical farming as well as monetary and environmental benefits associated with organic farming. Having *neem* trees and engagement of almost all the farmers in animal husbandry are the already existing supporting ground for organic farming. Further, they have knowledge of many of the critical technical know-how which is pre-requisite for practicing organic farming. However, there is a need to diversify the cereal based mono-cropping and inclusion of leguminous crop in crop rotation. Further, awareness is required in some of the new technological advancement in organic farming, like, use of trap crops and bio-agents. Further, institutional support is essentially required to minimize the procedural complexity and cost of certification, as well as to ensure the availability of off-farm organic inputs.

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