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Original Research Article

Constraints Faced by Mango Growers in Adoption of Mango Production Technology and Suggestions for Suitable Extension Strategies to Overcome the Problem in Bijnor District of UP

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A B S T R A C T

Mango grown in diverse agro climatic condition faces differential biotic and abiotic stress limiting the production and productivity of mango that influenced the economic condition of mango growers. Keeping these facts in mind, the present study was conducted in Bijnor district of UP to find out the constraints faced by mango growers in adoption of mango production technology and suggestions suitable extension strategies to overcome the problems. Two villages from 11 blocks were selected randomly on the basis of Orchard availability. 10 mango Growers was selected from all selected villages. Thus the total sample size was of 220 respondents for the investigation. The mango respondents faced the constraints in adoption of mango production technology. Total constraints mainly divided into to five groups. Among the input constraints, unavailability of quality chemicals like plant growth regulator, water soluble fertilizer and plant protection chemicals at government sale centre got first rank with 78.18 percent respondent followed by unavailability of quality sapling of mango at Government nursery (75.00 percent). Among the technological constraints, lack of knowledge about organic farming of mango got first rank with 93.18 percent respondents followed by lack of knowledge about drip irrigation schedules (91.82 percent). Among the socio- psychological constraints, lack of coordination among the beneficiary and state/district horticulture department got the first rank with 90.00 percent respondents followed by inadequate extension activities were conducted by state/district horticulture department (80.00 percent). Among the marketing constraints, exploitation of mango growers by middle men got first rank with 91.36 percent respondents followed by lack of quality storage facility (88.91 percent). Among the financial constraints lack of government initiative in funding of loan and granting of subsidies got first rank with 94.55 percent followed by high labour charges (91.82 percent).lack of knowledge about organic farming of mango was identified as major constraints in qualitative mango production. It is therefore, suggested the extension workers should organise mango growers in different groups of organic farming. They should plan knowledgeable programmes for the respondents so they can be motivated to what the organic farming of mango and can increase their knowledge about quality mango production practices through extension work like group discussion, training, demonstrations, exhibition etc. The growers therefore are required to be educated to follow up all the recommended production practices for mango, use of timely inputs, nutrients and plant protection management practices which will help in increasing the production and productivity.

Keywords

Mango growers, Production technology, Extension strategies

Introduction

Mango (*Mangifera indica*) is one of the most nutritious and high value fruit crop for the nutritional security. Mango is also known as "king of fruit". It belongs to family Anacardiaceae. Mango is a tropical and subtropical fruit crop grown in India over an area of 2258.13 thousand hectares with production of 21822.32 metric tons. India is the second largest producer of fruit crop after China. A large variety of fruits are grown in India, of which mango, banana, citrus, grapes, pineapple and Apple are the major ones. Apart from these fruits, fruit like papaya, anola, phalsa, jackfruit, ber, pomegranate in tropical and sub-tropical groups and peach, pear, almond, walnut, apricot and strawberry in the temperate group are also grown in sizeable areas (1,2,3). Although fruit is grown throughout of the country, the major fruit growing state are Maharashtra, Tamil Nadu, Karnataka, Andhra Pradesh, Bihar, Gujarat and Uttar Pradesh. Total area under mango cultivation in Uttar Pradesh is 265.62 thousand hectares with 4551.83 metric tons production in 2017-18. In the Bijnor district of the Uttar Pradesh, mango grown 5.91 thousand hectares area with 118.09 metric tons production of mango in 2016-17. It is suitable time to carry the technology developed by the agricultural Universities and research station to the farmer's field and to convert it into the increasing production and productivity of mango (4,5). The main task today it is to narrow this technological gap so that the farmers in general may get the same level of production as is obtained at the research station and can accelerate mango growers socio- economic standard.

Materials and Methods

This study was conducted in Bijnor district of Western Uttar Pradesh. Bijnor district comprise of 11 blocks. Two villages from each block were selected randomly on the basis of orchard availability. Thus the total number of 22 villages was selected for the investigation and 10 mango growers were selected from all selected villages. Thus the total sample size was of 220 respondents. The data were collected through personal interview with the help of pre-structured schedule. Interview schedule was prepared on the basis of objective of the study. The data were analyzed and find out the percentage, frequency and rank.

Percentage

The frequency of a particular cell was divided by the total number of respondents in that particular category and multiplied by hundred.

$$\text{Percentage } (\%) = \frac{\text{Actual no. of respondent}}{\text{Respondents or Score}} \text{ X } 100$$

Mean

It was calculated to the average value of particular score. The formula is given below

$$\text{Mean score} = \frac{\text{Total scores on particular item}}{\text{No of Respondents}}$$

Ranking

The various ranks were given on the basis of highest to the lowest frequency.

Results and Discussion

Constraints in technological gap of the mango Growers despite well expanded extension network an outcome of a number of negative forces operating in the field conditions. These forces affect the attainment of desired objectives. This is evident from farmer's poor knowledge of technologies. Thus, it warranted for Deep probe of such constraints, which affected the attainment of

desired objectives. Keeping in view, the constraints perceived by the mango growers in using advance production technology, which scientist recommend were carefully identified and analyzed. The results of this investigation have been discussed under different practices and management issues. Uses of modern inputs technological gap of technology in horticulture are undoubtedly more important in increasing orchard productivity. In India considerable changes have been brought about in traditional horticulture during recent year through various programmes involving use of modern inputs and new technology for mango cultivation. However, the progress is not yet up to the desired level of satisfaction. The technological gap in the technological gap of recommended technologies by mango growers upon various factors as well as constraints faced by them constraints refer to the item of difficulties in actual technological gap of the mango production technology.

The above constraints table 1, constraints mainly divided into five groups such as input constraints, technological constraints, socio-psychological constraints, marketing constraints and financial constraints.

Among the input constraints table 1-A, unavailability of quality chemicals like plant growth regulators, water soluble fertilizers and plant protection chemicals at Government sale centre got first rank with 78.18 percent respondents in followed by unavailability of quality sapling of mango at Government nursery (75.00 percent), supply of inferior quality sapling by private nursery (64.55percent) and high prices of good quality sapling of mango fertilizer and plant protection chemicals (61.36 percent).

Among the technological constraints table 1-B, lack of knowledge about organic farming of mango got first rank with 93.18 percent respondents followed by lack of knowledge about drip irrigation schedules (91.82 percent), lack of knowledge about plant propagation/ multiplication (85.00 percent), lack of knowledge about training and pruning of mango tree (82.73 percent), poor confidence in adoption of recommended newly released production technological practices (75.45 percent), lack of knowledge about post- harvest management practices (75.45 percent), lack of knowledge about Orchard orientation / orchard layout (74.09 percent), lack of knowledge about recommended plant protection measures (71.82 percent), unawareness about newly developed high yielding varieties of mango (68.18 percent), unavailability of literature in simple and local language on mango production (69.09 percent), lack of knowledge about nutrient management (65.91 percent) and lack of practical and skill oriented training (59.55 percent). Due to the lack of knowledge, unawareness and availability of input, no respondent following the recommended practices for mango, resulting the poor production and quality of mango in study area.

Among social psychological constraints table 1-C, revealed that lack of coordination among the beneficiary and state/district horticulture departments got first rank with 90.00 percent respondents followed by inadequate extension activities were conducted by State/district horticulture department (80.00 percent) and lack of motivation and education regarding orchard/ fruit crops (75.91 percent).

Among marketing constraints table 1-D, indicated that exploitation of mango growers by middle men got first rank with 91.36 percent respondents followed by lack of quality storage facility (88.64 percent), short shelf life of mango (80.91 percent), unawareness about grading and packing facility (78.18 percent), poor transportation facility (67.73 percent) and lack of knowledge about regular market (55.00 percent).

Table.1 Major constraints face by mango growers in adoption of mango production technology

SN	Constraints	Frequency	Percentage	Rank
A	**Input constants as perceived by Mango growers**			
1	Unavailability of quality sapling of mango at Govt. nursery	165	75.00	II
2	Supply of inferior quality sapling by private nursery	142	64.55	III
3	High prices of good quality sapling of mango fertilizer and plant protection chemicals	135	61.36	IV
4	Unavailability of quality chemicals like plant growth regulators, water soluble fertilizers and plant protection chemicals at Government sale centre	172	78.18	I
B	**Technological constraints as perceived by Mango growers**			
1	Lack of knowledge about Orchard orientation / orchard layout	163	74.09	VII
2	Unawareness about newly developed high yielding varieties of mango	150	68.18	X
3	Lack of knowledge about plant propagation/ multiplication	187	85.00	III
4	Lack of knowledge about nutrient management	145	65.91	XI
5	Lack of knowledge about drip irrigation schedules	202	91.82	II
6	Lack of knowledge about training and pruning of mango tree	182	82.73	IV
7	Lack of knowledge about recommended plant protection measures	158	71.82	VIII
8	Lack of knowledge about organic farming of mango	205	93.18	I
9	Poor confidence in adoption of recommended newly released production technological practices	166	75.45	V
10	Lack of practical and skill oriented training	131	59.55	XII
11	Lack of knowledge about post-harvest management practices	166	75.45	VI
12	Unavailability of literature in simple and local language on mango production	152	69.09	IX
C	**Socio-psychological constraints as perceived by Mango growers**			
1	Lack of motivation and education regarding orchard/ fruit crops	167	75.91	III
2	Lack of coordination among the beneficiary and state/ district horticulture departments	198	90.00	I
3	Inadequate extension activities were conducted by State/ district horticulture department	176	80.00	II
D	**Marketing constraints as perceived by Mango growers**			
1	Lack of knowledge about regular market	121	55.00	VI
2	Poor transportation facility	149	67.73	V
3	Unawareness about grading and packing facility	172	78.18	IV
4	Lack of quality storage facility	195	88.64	II
5	Short shelf life of mango	178	80.91	III
6	Exploitation of mango growers by middle men	201	91.36	I
E	**Financial constraints as perceived by Mango growers**			
1	High labour charges	202	91.82	II
2	Untimely availability of electricity	134	60.91	IV
3	Delayed payment from orchard contractors	68	30.91	V
4	Difficulty in borrowing loans	144	65.45	III
5	Lack of government initiative in funding of loan and guaranteeing of subsidies	208	94.55	I

Among the financial constraints table 1-E, revealed that lack of government initiative in funding of loan and guaranteeing of subsidies got first rank with 94.55 percent followed by high labour charges (91.82 percent), difficulty in borrowing loans (65.45 percent), untimely availability of electricity (60.91 percent) and delayed payment from orchard contractors (30.91 percent).

Hence concluded, in the present study, constraints faced by mango growers in adoption of mango production technology and suggestions for suitable extension strategies to overcome the problem them. Constraints divided into five groups. Among the input constraints, it is concluded that unavailability of quality chemicals like plant growth regulator, water soluble fertilizers and plant protection chemicals at Government sale centre got first rank with 78.18 percent followed by bhai followed by unavailability of quality sapling of mango at Government nursery. Among the technological constants, lack of knowledge about organic farming of mango got first rank with 93.18 percent respondents followed by lack of knowledge about drip irrigation schedules (91.82 percent). The highest percentage of respondent (90.00 percent) found by the lack of coordination among the beneficiary and state/district horticulture department followed by inadequate extension activity were conducted by state/district horticulture department (80.00 percent) among the socio-psychological constraints. Among the market constraints, exploitation of mango growers by middleman got first rank with 91.36 percent respondent followed by lack of quality storage facility (88.64 percent). Among the financial constraints, lack of government initiative in funding of loan and granting of subsidies got first rank with 94.55 percent followed by high labour charges (91.82 percent).

Suitable extension strategies for promotion of mango production technology in Bijnor district (U.P.)

On the basis of the result in present investigation following suggestions may be made to increase knowledge and adoption level of mango growers for increasing production and productivity of mango in the study areas. Keeping the observations and analysis of collected data in mind, its becomes the necessary to develop some extension strategies for the promotion of higher production and productivity of mango. In this direction an attempt it was made by the investigator to systematically prepare a schedule of information's which can be given to mango growers through various extension agencies and teaching aids. Lack of knowledge about organic farming of mango was identified as major constraints in qualitative mango production. It is therefore, suggested the extension workers should organize mango growers in different groups of organic farming. They should plan knowledgeable program for the respondents so they can be motivated to what the organic farming of mango and can increase their knowledge about quality mango production practices through extension work like, group discussion, training, demonstration, exhibition etc.

The information and knowledge regarding improved tools and techniques can be provided by the training and demonstration to mango growers. At the time of demonstration respondents should also be encouraged to participate in it. This will make them to understand that the technology is also suitable for them.

On the basis of result of this study, the following suggestions may be made to increase knowledge and adoption level of mango Growers for better production of quality mango in the study area.

Government should provide quality chemicals and good quality of sapling of mango on reasonable price at government centre.

Create knowledge and awareness about improved organic mango production technology, drip irrigation schedules, plant propagation, training and pruning of young mango tree, post harvest management practices, Orchard orientation/layout, recommended plant protection measures, crop regulation, newly develop high yielding varieties, nutrients management and skill oriented training to the organic mango growers through trainings, meetings, demonstrations and media exposure on different aspects of organic mango production in the study area.

To conduct the training and demonstrations on organic farming of mango for motivation and education of mango growers in the study area.

Create coordination and confidence among the mango Growers and state/district horticulture department through conducting meeting, training and demonstration at mango grower's field.

Government should provide transportation, grading and packing, good quality storage facility to mango grower's in the district.

Government should provide insure market and price to mango growers.

Loan should be provided at cheaper rates to the farmers to install their assets and to purchase agriculture inputs and equipments.

Crop insurance against all calamities, incidence of pest and disease etc should be introduced at nominal premium.

Timely provide fertilizer, plant protection chemicals and bio insecticide and pesticide should be made available within easy reach convenient pack and at cheaper prices.

State horticulture department, government zonal research station, State Agriculture University, Krishi Vigyan Kendra and NGO timely conducted training to the mango growers on all the aspects of mango production technology

Conducted training and demonstration programmes for the identification of harmful and beneficial insect pest and disease in the study area of mango growers.

Government should provide sufficient facilities and tools of technology for field study and e-choupal for quick transfer of improved mango production technology for mango growers.

Government should provide regular electricity in rural area for proper storage of plant protection chemicals like bio-agents and bio-fertilizer etc. and for timely irrigation in mango orchards.

Increase the educational facilities in the villages to improve the educational status of farmers.

Increase number of information/training centre/ mango research unit for sufficient quality mango production and quick transfer of mango production technology information in the study area.

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