

Adoption of recommended PAU practices for capsicum cultivation

M. KUMAR, S.K. SAINI AND D.S.DHILLON

ABSTRACT

The investigation was undertaken to study the socio-personal characteristics of capsicum growers and to find out the level of adoption of recommended PAU, practices by them. The results showed that all the respondents visited *Kisan Melas* and attended demonstrations regularly followed by 52.50 per cent who attended field days regularly. Majority of the respondents attended group discussions regularly and 92.50 per cent contacted officials of Punjab State Farmers Commission (PSFC) once in a month and only 7.50 % contacted them once in a season. Progressive farmers were the main source of motivation for all of the respondents followed by the officials of PSFC (97.50%) and friends (80.00%). All the respondents who used non-recommended quantity used less than recommended quantity of FYM and potash fertilizer. All the respondents (100%) used recommended method and recommended time of application of FYM. Majority of respondents applied more than recommended quantity of nitrogenous fertilizer, did not follow the recommended time and method of fertilizer application. Majority of the respondents followed only mechanical method of weed control and 93.75% used recommended weedicides. All the respondents followed recommended time of application of weedicides and irrigated the crop following recommended duration in summer as well as in winter. Majority (90.00%) of respondents did not face any disease problem in cultivation of capsicum crop. All the respondents (100%) started picking fruit at the recommended time and stage.

See end of the article for authors' affiliations

Correspondence to :

D.S. DHILLON

Department of
Extension Education,
Punjab Agricultural
University,
LUDHIANA
(PUNJAB) INDIA

INTRODUCTION

India has achieved self-sufficiency and a good degree of stability in food production but the population is increasing at a very fast rate. Thus, there is an urgent need for providing health security to our population. India is the world's second largest producer of vegetables next to China. However, our per capita vegetable consumption is quite low. An average person needs 284g of vegetables/day as recommended by dieticians, but we are able to provide only 200g of vegetables/day. Hence, there is a need to increase the production and productivity of vegetables to meet the demand of growing population and to ensure better nutrition (Singh, 2000). The total area and production of vegetable cultivation in India is 6.3 million hectares and 99.4 million tones, respectively (Anonymous, 2006a). While in Punjab, this figure accounts to 106380 hectares with a production of 2467 thousand tones. The average vegetable production in Punjab is 15.1 tones per hectare (Anonymous, 2006b). Vegetables are one of the most important components of a balanced diet and play a vital role in maintaining the health as these are rich sources of vitamins and minerals besides having medicinal values (Sidhu, 1998). Consumption of green vegetables helps in easy digestion and proper bowel movement.

Vegetables provide nutritional security for the increasing population of the country and help in reducing the malnutrition being faced by the underfed by providing required nutrients such as carbohydrates, fats, vitamins, minerals and digestive proteins.

The gap between the requirement and supply of proteins as well as fats has to be bridged through some vegetable sources because of religious and social preferences in country. Vegetable cultivation also helps in generating employment avenues to the unemployed masses (Arya, 2002). Vegetables are quick growing and yield immediate and high returns to the growers. The Punjab State Farmers' Commission is playing a vital role in disseminating the technologies recommended by Punjab Agricultural University for the cultivation of vegetables. No systematic study has been conducted yet, to know the contribution of Punjab State Farmers' Commission in agricultural development.

Keeping the above facts in view, the present study was undertaken with the following objectives:

Objectives of the study are as : To study the socio-personal characteristics of capsicum growers and to find out the adoption of recommended PAU practices by the farmers as disseminated by the Punjab State Farmers'

Key words :

Adoption,
Recommended
practices,
Capsicum
growers

Accepted :
September, 2009

Commission for capsicum cultivation.

METHODOLOGY

The study was undertaken in the state of Punjab. List of farmers growing vegetables under the guidance and supervision of Punjab State Farmers' Commission was procured from its office. Out of this list, 40 capsicum growers were selected randomly as a sample for the present study.

An interview schedule was designed and finalized for the collection of data from the selected farmers. The data were collected by interviewing the farmers personally.

RESULTS AND DISCUSSION

The findings of the study as well as the relevant discussion have been presented under following heads;

Socio-personal profile of capsicum growers :

The data pertaining to distribution of the respondents according to their socio-personal characteristics have been presented in Table 1.

The data given in Table 1 indicate that age of the respondents varied from 25 to 65 years. Most of the

respondents (50%) belonged to the age group of 37 to 47 years, 27.50 per cent belonged to the age group of 25 to 37 years and the remaining 22.50 per cent respondents were in the age group of 47 to 65 years.

The figures given in Table 1 reveal that 7.50 and 10.00 per cent of respondents had education up to Primary and Middle level, respectively. While an equal percentage *i.e.* 27.50 per cent of the respondents had education up to Matriculation, Senior Secondary and Graduate level.

The data further indicate that 52.50 per cent of the respondents had "semi-medium" operational land holding followed by 22.5 per cent and 17.50 per cent respondents had "small" and "medium" operational land holdings, respectively. Only 7.50 per cent of the respondents had "large" operational land holdings. Thus, it can be concluded that majority of the respondents were having "semi-medium" operational land holding. The total area under capsicum crop of the sampled farmers was 48.25 acres, out of which only 4.56 acres area was under protected capsicum cultivation.

Participation of the respondents in extension activities:

The data presented in Table 2 indicate that all the respondents visited *kisan melas* and attended demonstrations regularly followed by 92.50 per cent and 52.50 per cent, respectively attended group discussions and field days regularly. However, 15.00 and 32.50 per cent of the respondents attended field days sometimes and never, respectively. The findings further reveal that majority of the respondents (60.00 %) never attended the exhibitions and 37.50 per cent of the respondents attended exhibitions sometimes. Only 2.50 per cent respondents attended exhibitions regularly.

As far as participation in educational tour is concerned, about 1/3rd of the respondents (35.00 %) reported that they went on educational tours regularly. However, 47.50 per cent of the respondents reported that

Table 1: Socio-personal profile of capsicum growers (n=40)

| Sr. No. | Parameters | Frequency | %age |
|--|--------------------|------------|-----------------|
| Age (Years) | | | |
| 1. | 25-37 | 11 | 27.50 |
| 2. | 37-47 | 20 | 50.00 |
| 3. | 47-65 | 9 | 22.50 |
| Educational level | | | |
| 1. | Primary | 3 | 7.50 |
| 2. | Middle | 4 | 10.00 |
| 3. | Matriculation | 11 | 27.50 |
| 4. | Senior secondary | 11 | 27.50 |
| 5. | Graduate | 11 | 27.50 |
| Operational land holding (acres) | | | |
| 1. | Marginal (<2.5) | - | - |
| 2. | Small (2.5-5.0) | 9 | 22.50 |
| 3. | Semi-medium (5-10) | 21 | 52.50 |
| 4. | Medium (10-25) | 7 | 17.50 |
| 5. | Large (>25) | 3 | 7.50 |
| Total area and area under protected capsicum cultivation | | | |
| | Vegetable crops | Total area | Under protected |
| | | (acre) | cultivation |
| | | | (Acre) (%age) |
| | Capsicum | 48.25 | 4.56 9.45 |

Table 2 : Extent of participation of capsicum growers in the extension activities (n=40)

| Sr. No. | Extension activities | Regularly | | Sometimes | | Never | |
|---------|----------------------|-----------|-------|-----------|-------|-------|-------|
| | | F | %age | F | %age | F | %age |
| 1. | <i>Kisan Melas</i> | 40 | 100 | - | - | - | - |
| 2. | Field days | 21 | 52.50 | 6 | 15.00 | 13 | 32.50 |
| 3. | Demonstrations | 40 | 100 | - | - | - | - |
| 4. | Exhibitions | 1 | 2.50 | 15 | 37.50 | 24 | 60.00 |
| 5. | Educational tours | 14 | 35.00 | 7 | 17.50 | 19 | 47.50 |
| 6. | Group discussions | 37 | 92.50 | 2 | 5.00 | 1 | 2.50 |
| 7. | Training camps | 16 | 40.00 | 13 | 32.50 | 11 | 27.50 |

they had never gone on educational tours. The data reveal that 17.50 per cent of respondents went on the educational tour sometimes. Only 5.00 and 2.50 per cent respondents attended the group discussion 'sometimes' and 'never', respectively. The data further indicate that 40.00, 32.50 and 27.50 per cent of respondents attended the training camps 'regularly', 'sometimes' and 'never', respectively.

Extension contacts:

The data presented in Table 3 indicate that majority of the respondents *i.e.* 92.50 per cent contacted officials of PSFC once in a month and 7.50 per cent contacted them once in a season. As far as the contact with Horticulture Development Officers (HDOs) is concerned, 52.50 per cent of the respondents contacted them once in a season followed by 27.50 per cent who made the contact once a year. However, 15.00 per cent of respondents contacted HDOs once in a month. Only 5.00 per cent of them had no contact with HDOs.

As far as KVK specialists are concerned, 37.50, 47.50 and 12.50 per cent of the respondents contacted them once in a month, once in a season and once in a year. Very small percentage of respondents *i.e.* 2.50 per cent never contacted KVK specialists.

Only 5.00 per cent of the respondents contacted Agricultural Development officers (ADOs) once in a month. ADOs were contacted by 27.50 and 55.00 per cent of respondents once in a season and once in a year,

respectively. On the other hand, 12.50 per cent of the respondents never contacted ADOs. Majority of the respondents (97.50%) contacted progressive farmers once in a month and 2.50 per cent contacted them once in a season.

Sources of motivation:

As far as sources of motivation for undertaking cultivation of capsicum crop is concerned, progressive farmers were the main source of motivation for all the respondents followed by the officials of PSFC (97.50%) and friends (80.00%) while 47.50 and 37.50 per cent of respondents were motivated by KVK scientists and neighbours, respectively. Only 2.50 per cent of respondents were motivated by their family members for the cultivation of capsicum crop.

Adoption of recommended cultivation practices by the capsicum growers :

Adoption of practices related to sowing of capsicum crop:

The data presented in Table 5 reveal that 100 per cent of the respondents had sown non-recommended variety of capsicum. However, 90 per cent of respondents used recommended seed rate of the variety. Data given in Table 5 further indicate that 32.50 and 67.50 per cent of the respondents followed recommended and non-recommended time of sowing, respectively. These findings

Table 3: Extent of extension contacts for seeking technical advice(n=40)

| Sr. No. | Extension contacts with | Once in a month | | Once in a season | | Once in a year | | No extension contacts | |
|---------|-------------------------|-----------------|-------|------------------|-------|----------------|-------|-----------------------|-------|
| | | F | %age | F | %age | F | %age | F | %age |
| 1. | Officials of PSFC | 37 | 92.50 | 3 | 7.50 | - | - | - | - |
| 2. | HDOs | 6 | 15.00 | 21 | 52.50 | 11 | 27.50 | 2 | 5.00 |
| 3. | KVK Specialists | 15 | 37.50 | 19 | 47.50 | 5 | 12.50 | 1 | 2.50 |
| 4. | ADOs | 2 | 5.00 | 11 | 27.50 | 22 | 55.00 | 5 | 12.50 |
| 5. | Progressive farmers | 39 | 97.50 | 1 | 2.50 | - | - | - | - |

F=Frequency, PSFC=Punjab State Farmers' Commission, HDO=Horticulture Development Officer, KVK=Krishi Vigyan Kendra, ADO=Agricultural Development Officer.

Table 4 : Distribution of respondents according to their sources of motivation for cultivation of capsicum crop (n=40)

| Sr. No. | Source of motivation | Frequency | %age | Rank |
|---------|----------------------|-----------|--------|------|
| 1. | Friends | 32 | 80.00 | 3 |
| 2. | Neighbours | 15 | 37.50 | 5 |
| 3. | Progressive farmers | 40 | 100.00 | 1 |
| 4. | Officials of PSFC | 39 | 97.50 | 2 |
| 5. | KVK scientists | 19 | 47.50 | 4 |
| 6. | Family members | 1 | 2.50 | 6 |

* Multiple responses

are in agreement with those findings of Singh (1998) who reported that in case of late varieties, only 20 per cent of respondents had sown the varieties timely.

Adoption of practices related to application of farm yard manure (FYM):

The data given in Table 6 indicate that 62.50 per cent and 37.50 per cent of the respondents used farmyard manure and vermicompost, respectively in the capsicum crop.

However, 44.00 per cent respondents used

Table 5 : Adoption of practices related to sowing of capsicum crop

| Sr. No. | Parameters | Frequency | %age |
|---------|---|-----------|-------|
| 1. | Varieties | | |
| | Recommended (Punjab 27) | - | - |
| | Non-recommended (Indra) | 40 | 100 |
| 2. | Seed rate (g/Acre) | | |
| | Recommended (200 g/Acre) | 36 | 90.00 |
| | Non-recommended | 4 | 10.00 |
| 3. | Date of sowing | | |
| | Recommended (End of October) | 13 | 32.50 |
| | Non-recommended | 27 | 67.50 |
| 4. | Spacing (Ridge to ridge and plant to plant in cm) | | |
| | Recommended (60 x 30cm) | 40 | 100 |
| | Non-recommended | - | - |

Table 6 : Adoption of practices related to application of farm yard manure (FYM) in capsicum crop (N=40)

| Sr. No. | Farm yard manure (Tonnes/Acre) | Frequency | %age |
|-----------------|------------------------------------|-----------|-------|
| 1. | FYM | 25 | 62.50 |
| | Vermicompost | 15 | 37.50 |
| Quantity (n=25) | Recommended (20-25 tonnes) | 11 | 44.00 |
| | Non-recommended | 14 | 56.00 |
| | Less than recommended | 14 | 56.00 |
| | More than recommended | - | - |
| 2. | Method of application (n=25) | | |
| | Recommended (Mixed in soil) | 25 | 100 |
| | Non-recommended | - | - |
| 3. | Time of application (n=25) | | |
| | Recommended (At field preparation) | 25 | 100 |
| | Non-recommended | - | - |

recommended quantity of farm yard manure. All the respondents who used non-recommended quantity, used less than recommended quantity of FYM. All the respondents (100%) used recommended method and time of application of FYM in the field of capsicum crop.

Adoption of practices related to application of fertilizers in capsicum crop:

Nitrogenous fertilizer:

The data presented in Table 7 indicate that majority of capsicum growers (62.50%) applied nitrogenous fertilizer while rest of the respondents did not apply it.

Majority of respondents *i.e.* 84.00 per cent applied

Table 7 : Adoption of practices related to application of fertilizers in capsicum crop (n=40)

| Sr. No. | Fertilizer (kg/acre) | Frequency | %age |
|---------|---|-----------|-------|
| 1. | Nitrogenous fertilizer | | |
| | Applied | 25 | 62.50 |
| | Not applied | 15 | 37.50 |
| | Quantity (n=25) | | |
| | Recommended (110 kg urea) | 4 | 16.00 |
| | Non-recommended | 21 | 84.00 |
| | Less than recommended | 1 | 4.76 |
| | More than recommended | 20 | 95.24 |
| | Method of application (n=25) | | |
| | Recommended | 8 | 32.00 |
| | Non-recommended | 17 | 68.00 |
| | Time of application (n=25) | | |
| | Recommended (3 times (At the time of planting, after one and two month of transplanting)) | 8 | 32.00 |
| | Non-recommended | 17 | 68.00 |
| 2. | Phosphorus fertilizer | | |
| | Applied | 25 | 62.50 |
| | Not applied | 15 | 37.50 |
| | Quantity (n=25) | | |
| | Recommended (175 kg super phosphate) | - | - |
| | Non-recommended | 25 | 100 |
| | Less than recommended | 25 | 100 |
| | More than recommended | - | - |
| | Method of application (n=25) | | |
| | Recommended | 25 | 100 |
| | Non-recommended | - | - |
| | Time of application (n=25) | | |
| | Recommended (At the time of transplanting) | 25 | 100 |
| | Non-recommended | - | - |
| 3. | Potash fertilizer | | |
| | Applied | 8 | 20.00 |
| | Not applied | 32 | 80.00 |
| | Quantity (n=8) | | |
| | Recommended (20 kg MOP) | 6 | 75.00 |
| | Non-recommended | 2 | 25.00 |
| | Less than recommended | 2 | 100 |
| | More than recommended | - | - |
| | Method of application (n=8) | | |
| | Recommended | 8 | 100 |
| | Non-recommended | - | - |
| | Time of application (n=8) | | |
| | Recommended (At the time of transplanting) | 8 | 100 |
| | Non-recommended | - | - |

non-recommended quantity of nitrogenous fertilizers. Out of 84.00 per cent, only 4.76 per cent of respondents applied less than recommended quantity and 95.24 per cent of the respondents applied more than recommended quantity. Majority of the respondents (68.00%) did not follow the recommended method and time of fertilizer application. About one third of the respondents *i.e.* 32.00 per cent used recommended method and time of application of nitrogenous fertilizer.

Phosphorus fertilizer:

The data presented in Table 7 further reveal that majority of the capsicum growers *i.e.* 62.50 per cent applied the phosphorus fertilizer, while rest of the respondents did not use this fertilizer. At a glance at the table further shows that hundred per cent of the capsicum growers applied less than recommended quantity of phosphorus fertilizer and used recommended method and time of application of phosphorus fertilizer.

Potash fertilizer:

The data presented in Table 7 indicate that 20.00 and 80.00 per cent of the capsicum growers applied and did not apply the potash fertilizer, respectively. Three fourth of the respondents *i.e.* 75.00 per cent applied recommended quantity While, 25.00 per cent of the respondents applied non-recommended quantity of potash fertilizer. All the respondents who applied non-recommended quantity used less than recommended quantity of potash fertilizer. All the respondents (100%) used recommended method and time of application of potash fertilizers.

Weed control methods:

A perusal of the data given in Table 8 indicates that none of the respondents used only chemical weed control method. Majority of the respondents (60.00%) followed only mechanical method of weed control while, 40.00 per cent of the respondents used both the methods to control the weeds.

Chemical weed control method:

Majority of respondents (60.00%) did not use chemical weed control method and only 40.00 per cent of the respondents used chemical weed control method. These findings are inline with the findings of Sohi *et al.* (1995) who reported that very low percentage of respondents (3.33 %) had complete adoption of chemical weed control.

Majority of the respondents (93.75 per cent) used recommended weedicides and out of them 60.00 per cent

Table 8 : Adoption of practices to control weeds in capsicum crop (n=40)

| Sr. No. | Weed control methods | Frequency | %age |
|---------|--|-----------|-------|
| | Only chemical | 0 | 0.00 |
| | Only mechanical | 24 | 60.00 |
| | Both (Chemical and mechanical) | 16 | 40.00 |
| 1. | Chemical weed control method | | |
| | Used | 16 | 40.00 |
| | Not used | 24 | 60.00 |
| | Weedicide used (n=16) | | |
| | Recommended (Stomp, Basalian) | 15 | 93.75 |
| | Non-recommended | 1 | 6.24 |
| | Dose (ml or lt/acre) (n=15) | | |
| | Recommended (S-750 ml., B-1 lt.) | 9 | 60.00 |
| | Non-recommended | 6 | 40.00 |
| | Time of application (n=15) | | |
| | Recommended (Within 1or 2 days of sowing) | 15 | 100 |
| | Non-recommended | - | - |
| 2. | Mechanical weed control method | | |
| | Used | 40 | 100 |
| | Not used | - | - |
| | No. of hoeing | | |
| | Recommended (1 or 2) | 40 | 100 |
| | Non-recommended | - | - |
| | Stage/Time of hoeing | | |
| | Recommended (after 20-25 and 40-45 days of sowing) | 40 | 100 |
| | Non-recommended | - | - |

of respondents used recommended dose of weedicides. All the respondents (100%) followed recommended time of application of weedicides.

Mechanical weed control method:

All the respondents (100%) used mechanical method to control weeds and used recommended number of hoeings at recommended stage/time for weed control in the capsicum crop.

Adoption of irrigation practices:

A perusal of data presented in Table 9 indicates that all the respondents (100%) irrigated the crop following the recommended duration in summer as well as in winter seasons.

Pest problems in capsicum crop:

The information about the pest problems in capsicum

Table 9 : Adoption of irrigation practices for capsicum crop (N=40)

| Sr. No. | Irrigation (according to seasons) | Frequency | %age |
|---------|-------------------------------------|-----------|------|
| 1. | Summer | | |
| | Recommended (repeat after 4-5 days) | 40 | 100 |
| | Non-recommended | - | - |
| 2. | Winter | | |
| | Recommended (repeat after 7-8 days) | 40 | 100 |
| | Non-recommended | - | - |

crop had been given in Table 10.

The findings reveal that majority (87.50%) of the respondents did not face any pest problem in cultivation of capsicum crop, however out of those who faced pest problems, 40.00 per cent of the respondents used recommended insecticides. All the respondents who used recommended insecticides/pesticides had applied recommended dose.

Table 10 : Adoption of practices to control pests in capsicum crop (N=40)

| Sr. No. | Pest problems | Frequency | %age |
|---------|------------------------------------|-----------|-------|
| 1. | Yes (White fly, Thrips) | 5 | 12.50 |
| | No | 35 | 87.50 |
| 1. | Pesticides/Insecticides used (n=5) | | |
| | Recommended (Malathian) | 2 | 40.00 |
| | Non-recommended | 3 | 60.00 |
| 2. | Dose/Acre (n=2) | | |
| | Recommended (M-400 ml.) | 2 | 100 |
| | Non-recommended | - | - |

Disease problems in capsicum crop:

The data given in Table 11 reveal that majority (90.00%) of the respondents did not face any disease problem in cultivation of capsicum crop whereas only 10 per cent of respondents faced the disease problems *i.e.* leaf curl and mosaic. The data further reveal that three fourth of the respondents (75.00%) used recommended chemicals while 25.00 per cent of capsicum growers did not use recommended chemicals for the control of the diseases. As far as dose of the chemicals is concerned, 66.67 per cent respondents applied recommended dose of the chemicals.

Harvesting of capsicum crop:

All the respondents (100%) started picking fruits at

Table 11 : Adoption of practices to control diseases in capsicum crop (N=40)

| Sr. No. | Pest problems | Frequency | %age |
|---------|--|-----------|-------|
| 1. | Yes (Leaf fly, Mosaic) | 4 | 10.00 |
| | No | 36 | 90.00 |
| 1. | Chemical used (n=4) | | |
| | Recommended (Thiram, Indofil M-45, Blitox) | 3 | 75.00 |
| | Non-recommended | 1 | 25.00 |
| 2. | Dose/Acre (n=3) | | |
| | Recommended (T-2 g/kg seed, I and B-0.25%) | 2 | 66.67 |
| | Non-recommended | 1 | 33.33 |

Table 12 : Adoption of practices related to harvesting of capsicum crop (N=40)

| Sr. No. | Harvesting | Frequency | % |
|---------|--|-----------|-----|
| 1. | Time of picking fruit | | |
| | Recommended (After 3 months) | 40 | 100 |
| | Non-recommended | - | - |
| 2. | Stage of picking the fruit | | |
| | Recommended (Fully developed, still Green) | 40 | 100 |
| | Non-recommended | - | - |

the recommended time and at recommended stage.

Conclusion:

Most of the practices which are disseminated by officials of Punjab State Farmers Commission (PSFC) are followed as recommended by PAU, for the cultivation of capsicum crop. There are some practices which are not followed as per recommendations. These include using less than recommended quantity of FYM, more than recommended quantity of nitrogenous fertilizer and less than recommended quantity of phosphorus fertilizers. Thus, there is still a need to educate the farmers regarding correct doses of fertilizers. The PSFC commission should organize *Kisan Melas* at district level before the onset of each season as hundred per cent of respondents visited *Kisan Melas* for acquiring information. Efforts should also be made to give wide publicity to other extension teaching methods as only 2.50 per cent of the respondents visited exhibitions regularly. The services of progressive farmers for farmer to farmer dissemination of technologies should also be utilized because they were the main source of motivation for hundred per cent of the respondents.

Authors' affiliations

M. KUMAR AND S.K. SAINI, Department of Extension Education, Punjab Agricultural University, LUDHIANA (PUNJAB) INDIA

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