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Communicational characteristics and sources of information of the vegetable farmers of Chhattisgarh plains regarding use of insecticides in vegetables

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Abstract

The study was conducted in Balodabazar-Bhatapara district of Chhattisgarh, during the year 2015-16. Fifteen vegetable growers from four villages were selected randomly from Bhatapara and Simga blocks, each, of Balodabazar-Bhatapara district, thus, a total of 120 farmers (15x 8=120) were selected for the study.

Vegetable cultivation is one of the most important component of agriculture and they share an important place in our everyday diet. Insecticides have become essential part of vegetable cultivation today. No study have been undertaken till today for use and application pattern of insecticides in major vegetable crops. Looking to this aim, the present study was undertaken during the year 2015 – 16

The study revealed that majority of the respondents were middle age group (36 to 55 years), educated up to Primary class (up to 5th class), belonging to other backward classes, had Joint family, with medium size of family (6 to 10 members), having three working members, having up to 10 years of farming experience, were member and office bearer of Gram Panchayat.

Majority had contact with RAEO/ RHEOs, university scientist as most credible source of information and obtained information about vegetable cultivation and application pattern of insecticide from the input dealer and termed radio as most credible source of information.

Keywords: Communication, information sources, vegetable growers, insecticide

Introduction

Horticulture crops cover large varieties of fruits, vegetables, flowers, plantation and spice crops. Among these, vegetable cultivation is the major attraction to farmers as it is comparatively more remunerative than field crops. Vegetables are rich and comparatively cheaper source of carbohydrates, proteins, vitamins and minerals and they play an important role in balanced nutrition.

Globally, the total area under cultivation of vegetable in 2012-13 was 58,971,121 hectares, production of vegetable recorded 1,159,179,443 MT and productivity was recorded as 19.7 MT per ha. The highest production recorded 573,935,000 MT in China during 2012-13 and it ranks first in the world. India ranks second with a record production by 146,554,000 MT (Anonymous, 2014) ^[1].

In Balodabazar-Bhatapara district, the total area under vegetables is 8325 hectares with production of 125853 MT. An area of 2439 ha comes under tomato, brinjal, cauliflower and cabbage with production of 47946 MT.

The problem of contamination of our food commodities; especially fruits and vegetable by pesticide residues constitutes one of the most serious challenges to public health.

The extensive and indiscriminate use of these chemicals on vegetables poses serious residue problems, which are hazardous for human and animal health, natural enemies and for environment. Pests, including insects, mites, pathogens (disease causing organisms), weeds, nematodes, rodents and others significantly contribute to high farm production costs and reduce quality and yields (Henneberry *et al.*, 1991).

Looking to this aim, the present study was undertaken during the year 2015 – 16 with the following Objectives:

1. To study the Socio-economic profile of vegetable growers,
2. To assess the existing management and application pattern followed by the respondent for important insect-pests of major vegetables,

- To assess the use and application knowledge of insecticides by the respondents,
- To study the extend of adoption of IPM practices by the respondents,
- To identify the constraints faced by the respondents in adopting IPM practices and their suggestions to overcome them.

Research Methodology

Sample and sampling procedure

The Chhattisgarh state consists of 27 districts, out of which Balodabazar-Bhatapara district was purposively selected because the district is having a promising prospective for vegetable cultivation.

Balodabazar-Bhatapara district consists of six blocks namely; Balodabazar, Bhatapara, Simga, Palari, Bilaigarh, and Kasdol. Out of the six blocks, Bhatapara and Simga blocks were purposively selected for the study, as the maximum area under vegetable cultivation is under these two blocks only (Anonymous, 2015b) [2].

For the study, a list of those villages was prepared, where vegetable cultivation was more prevalent and were having maximum area under vegetable cultivation in both the blocks, with the help of Departments of Horticulture and Agriculture, Government of Chhattisgarh. Thereafter, a total of eight villages, four villages from each block, were randomly selected for the study. The villages selected from the Bhatapara block were Tikuliya, Dhurbandha, Tarenga and Karhi Bazar whereas Simga, Kachlon, Jaroud, and Marrakona were selected from the Simga block. In this way, a total of eight villages were selected for the study.

A list of the farmers involved in vegetable cultivation from each villages were prepared with the help of RHEOs / RAOs of the Department of Horticulture and Agriculture, in consultation with the prominent progressive farmers of the area. Fifteen vegetable growers from each selected village were selected randomly, out of the prepared list of total vegetable growers of the selected villages. Thus, a total of 120 farmers (15x 8=120) were selected for the study.

The data were collected through personally interviewing the vegetables growers with the help of pre-tested structured interview schedule, in local dialect.

Collected data was tabulated and processed by using appropriate statistical tools and methods.

Result & Discussion

Socio-Personal Characteristics of the Respondents

Socio-personal characteristics of the vegetable growers like age, education, caste, family type, family size, working members, social participation, farming experience in vegetable cultivation were considered as socio-personal characteristics of the respondents. These characteristics were analyzed and are presented in Table -1.

The data reveals that more than half of the respondents (55.00%) belonged to the middle age group (between 36 to 55 years). However, nearly one third of the respondents (31.67%) were of young age group (up to the age of 35 years). Whereas, in the old age group, i.e., above 55 years, the percentage of respondents was only 13.33 per cent. The findings indicated that the majority of the respondents in the study area belonged to the middle age group, followed by young age group and older age group. This reflected that involvement of young and old people was comparatively not much in the vegetable cultivation. Since vegetable cultivation is considered as a risky occupation, demanding young and

experienced, both characteristics in person, hence involvement of middle age ones incorporated both.

Information regarding formal educational status of the respondents was collected, tabulated, analysed and presented. The data reveal that a little less than one third of the respondent (30.83%) had education up to primary level. About 20.00 per cent respondent were illiterate, while 18.33 per cent of the respondent were having education up to middle school, 17.50 per cent of the respondent were high school passed and 8.33 per cent of them were higher secondary school passed. While only five percent of the respondent had gone to college and 4.17 per cent of them had done graduation and only one respondent (0.83%) was post graduate. The findings revealed that more than half of the respondents (50.8%) in the study area were having low education status, were either illiterate or educated up to primary level.

The data on caste category of the respondents indicates that the majority of the respondents (94.17%) belonged to Other Backward Classes, followed by 3.33 per cent of the respondents belonging to Scheduled Tribes and only 2.50 per cent of the respondents belonged to General category, while none of the respondents belonged to Scheduled Castes. This reveals that Other Backward Classes dominated vegetable cultivation, while Scheduled Tribes and General category had very small share and none of the Scheduled Castes was involved in vegetable cultivation.

Table 1: Distribution of respondents according to their Socio-Personal Characteristics (n=120)

| Sl. | Characteristics | Frequency | Percentage |
|---|---|-----------|------------|
| Age category | | | |
| 1 | Young (up to 35 years) | 38 | 31.67 |
| 2 | Middle (36-55 Years) | 66 | 55.00 |
| 3 | Old (Above 55 years) | 16 | 13.33 |
| Education level | | | |
| 1 | Illiterate | 24 | 20.00 |
| 2 | Primary (up to 5 th class) | 37 | 30.83 |
| 3 | Middle (6 th to 8 th class) | 22 | 18.33 |
| 4 | High School (9 th to 10 th class) | 21 | 17.50 |
| 5 | Higher secondary (11 th to 12 th class) | 10 | 08.33 |
| 6 | Graduate | 05 | 04.17 |
| 7 | Post Graduate | 01 | 00.83 |
| Caste category | | | |
| 1. | General | 03 | 02.50 |
| 2. | Other Backward Classes | 113 | 94.17 |
| 3. | Scheduled Castes | 00 | 00.00 |
| 4. | Scheduled Tribes | 04 | 03.33 |
| Total working members | | | |
| 1 | Small (up to 3 members) | 58 | 48.33 |
| 2 | Medium (4-5 members) | 38 | 31.67 |
| 3 | Large (Above 5 members) | 24 | 20.00 |
| Farming experience (in years) | | | |
| 1 | Up to 5 | 24 | 20.00 |
| 2 | 6-10 | 24 | 20.00 |
| 3 | 11-15 | 13 | 10.83 |
| 4 | 16-20 | 26 | 21.67 |
| 5 | 21-25 | 21 | 17.50 |
| 6 | Above 25 | 12 | 10.00 |
| Social Participation in Organisation | | | |
| 1 | Gram Panchayat | 119 | 99.17 |
| 2 | Co-operative society | 118 | 98.33 |
| 3 | Youth club | 03 | 02.50 |
| 4 | Kisan club | 11 | 09.17 |
| 5 | Caste panchayat | 107 | 89.17 |

The data reveals that most of the respondents' families were having three or less male (83.33%), female (89.17%) and

children (59.17%) members in the family. It was followed by the families with four to five male (15.83%), female (9.17%) and children (25.83%) members in the family. At the last were the families with six to ten male (0.83%), female (1.67%) and children (15.00%) members in the family. None of the respondents were having more than ten male, female or children members in the family.

The data regarding total working members in the family indicated that a little less than half (48.33%) of the respondents were having small size of working members (up to 3 members), followed by a little less than one third of respondents (31.67%) having medium size of working members (4 to 5 members) and only 20.00 per cent of the respondents had large size of working members (Above 5 members). While 17.5 per cent of the respondents were having 21 to 25 years of farming experience, 10.83 per cent of them were having 11 to 15 years of farming experience and 10.00 per cent were having above 25 years of farming experience. This reveals that nearly half of the respondents (50.8%) were having up to fifteen years of farming experience.

Social participation is an opportunity to communicate with fellow farmers and getting knowledge regarding farming. The data reveal that 99.17 per cent of the respondents were participating in Gram Panchayat, of which 93.28 per cent participated as member and remaining 6.72 per cent participated as office bearer in the Gram Panchayat. Participation in co-operative society shows that 98.33 per cent were participating, of which 98.31 per cent were members and remaining 1.69 per cent were office bearer in the co-operative society.

Participation in caste panchayat shows that 89.17 per cent of the respondent participated, of which 95.33 per cent were member and remaining 4.67 per cent were office bearer in the caste panchayat. Participation in Kisan club shows that 9.17 per cent of the respondents were involved, of which 54.55 per cent were member and remaining 45.45 per cent participated as office bearer in the Kisan club. Participation in youth club showed that 2.50 per cent of the respondents had active participation in youth club, of which 33.33 per cent as member and 66.67 per cent participated as office bearer.

Communicational characteristics of the respondents

Sources of information

The data regarding utilization of information sources for seeking the information about use of insecticide and application pattern is incorporated in the Fig - 1.

The findings revealed that majority (96.67%) of respondents were getting information regarding use of insecticide and application pattern from input dealer, followed by 70.00 per cent were using progressive farmer, 63.33 per cent from RAEOs/RHEOs, 60.0 per cent respondents collected information from friends, 25.00 per cent from kisan mitra, 23.33 per cent from exhibition, 22.50 per cent from kisan mela, 19.17 per cent from agriculture scientist, 15.83 per cent from relatives, 14.17 per cent from neighbors and training each, 10.00 per cent respondents collected information from Television, 6.67 per cent from kisan call center, 5.00 per cent from kisan mobile salahkar, 4.17 per cent from sarpanch/panch, 3.33 per cent from internet 2.50 per cent from news paper and agriculture magazines, only 0.83 per cent respondents gained information regarding application pattern of insecticide from radio

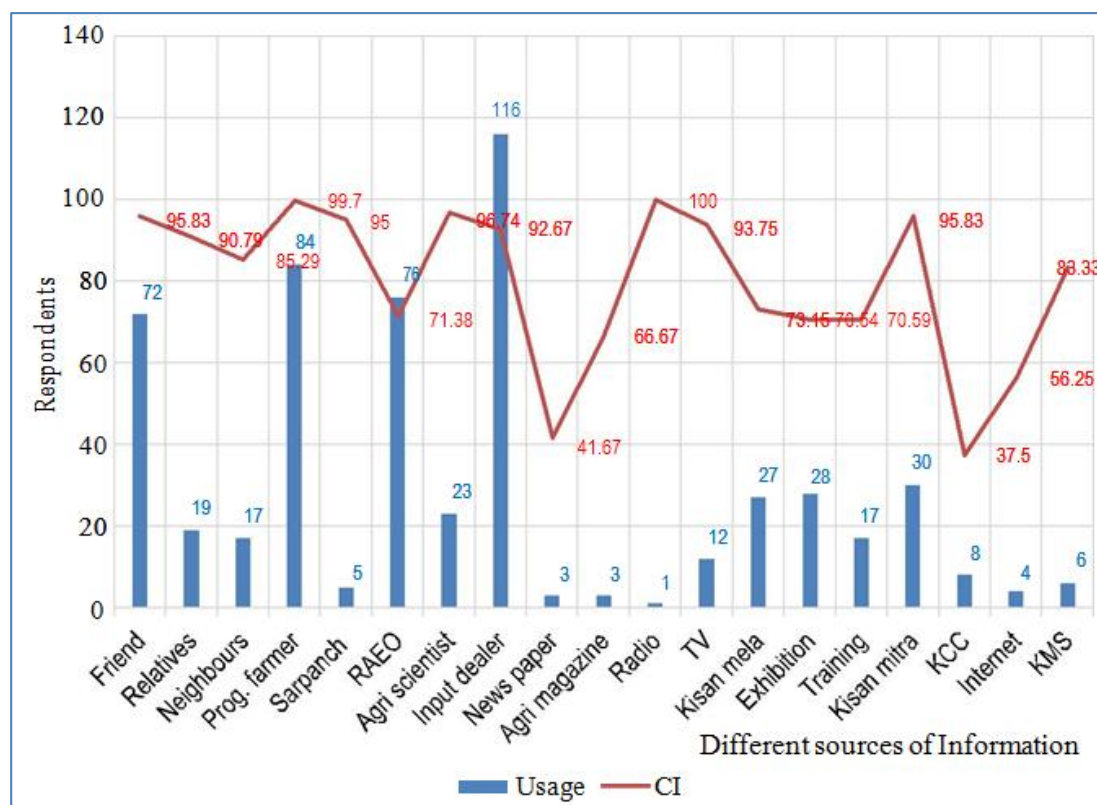


Fig 1: Information source utilized by the respondents and their credibility

Other sources like kisan mobile salahkar (83.33), kisan mela (73.15), RAEOs/RHEOs (71.38), training (70.59), exhibition (70.54), agriculture magazines (66.67) were also having a good credibility among the respondents. The not commonly

used information sources like internet and newspaper got, 56.25 and 41.67 credibility, respectively. While Kisan call center got 37.50 credibility as source for information.

Similar findings were also reported by Dhruw (2014) [3] who reported that majority of the respondents (82.63%) had found information regarding summer rice cultivation from RAEOs. The study also revealed that, 79.16 per cent of the respondents had obtained the information from progressive farmer, followed by 59.72 per cent of respondents had obtained the information from friends.

Contact with extension agents

The data regarding contact with extension agents, presented in Table 2, show that 19.17 per cent of the respondents were in regular contacts with RAEOs/RHEOs, followed by 10.83 per cent respondents having regular contacts with KVK and about 7.50 per cent respondents had regular contacts with university scientists, only 0.83 per cent respondents were in regular contact with NGO.

Table 2: Extent of contact of the respondents with extension agents (n = 120)

| Sl. No. | Extension agents | Extent of contact | | | | | | | |
|---------|-----------------------|-------------------|-------|----------|-------|-------|-------|---------|-------|
| | | Never | | Sometime | | Often | | Regular | |
| | | F | % | F | % | F | % | F | % |
| 1 | RAEO/ RHEOs | 44 | 36.67 | 20 | 16.67 | 33 | 27.50 | 23 | 19.17 |
| 2 | KVK | 99 | 82.50 | 05 | 4.17 | 03 | 02.50 | 13 | 10.83 |
| 3 | University Scientists | 108 | 90.00 | 01 | 0.83 | 02 | 01.67 | 09 | 07.50 |
| 4 | NGO | 119 | 99.17 | 00 | 0.00 | 00 | 0.00 | 01 | 0.83 |

Regarding frequency of contact with extension agents, majority (27.50%) of the respondents had often contacts with RAEOs/RHEOs, followed by 2.50 per cent respondents contacted with KVK and only 1.67 per cent respondents contacted with university scientists while NGO were not contacted often by the respondents.

Regarding some time contact with extension agents, maximum (16.67%) of respondents had contacts with RAEOs/ RHEOs, followed by 4.17 per cent respondents contacted with KVK and only 0.83 per cent respondents contacted with university scientists while NGO were not contacted some time by the respondents.

Regarding never contact with extension agents, maximum (99.17%) of respondents had never contacts with NGO, followed by 90.00 per cent respondents never contacted with

university scientist while 82.50 per cent respondents never contacted with KVK and 36.67 per cent respondents never contacted with RAEOs/ RHEOs.

Similar findings were also reported by Dhruw (2014) [3] who noted that 56.25 per cent of the respondents often contact with RAEOs, followed by 31.94 per cent of the respondents regular contact and 11.18 per cent of the respondents rarely contact with RAEOs.

Narbaria (2013) [5] studied regarding contact with agriculture college/university and found that majority of respondents (90.48%) had never contact, while only 9.52 per cent of them had sometimes contact. Regarding contact with NGO, the majority of respondents (90.41%) had never contact with NGO, while only 1.59 per cent of them had sometime contact.

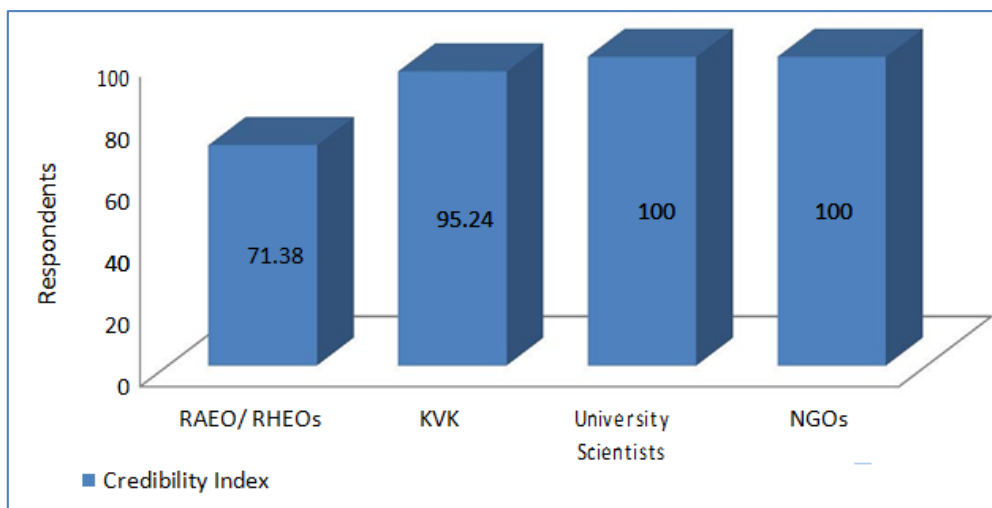


Fig 2: Credibility of different extension agents among respondents

The credibility index of the different extension agencies was also calculated and is depicted in Figure 2. The findings revealed that university scientists and NGOs were having complete credibility, KVK were having credibility of 95.24 while RAEOs/RHEOs were having credibility of 71.38.

Information sources effecting decision of insecticide use

The decision is the selection of the best alternative available among the various options present before a person. The decision of a person depends upon various factors like his past experiences, his psychological conditions and the most important one is the opinions and suggestions of the persons

or sources which are very credible and trustworthy for him. The data regarding the various sources of information which effects his decision were asked by the respondents and are listed in the following Table 3.

The first thing which comes in the insecticide use is that whether there is need of insecticide or not. Respondents were asked for the various sources which he refers to, when he has to decide whether there is any need of insecticide. Majority of the respondents were referring to progressive farmers (63.33%), input dealer (55.83%), RAEOs / RHEOs (32.50%) and friends (19.17%). The other sources referred for deciding for need of insecticide of insect were kisan mitra (18.33%),

university scientists & relatives (9.17% each), training (8.33%), neighbours (7.50%), kisan mobile salahkar & television (4.17% each), sarpanch/panch (3.33%), news paper (2.50%), internet and agriculture magazine (1.67% each) and kisan mela, radio, kisan call centre & exhibition (0.83% each).

After coming to decision that there is a need for use of insecticide in the field, the next question arises of which insecticide to use. For coming to the decision regarding which insecticide to be used in the field, majority of the respondents referred to Input dealers (96.67%), progressive farmers (70.00%), RAO / RHEOs (45.00%) and friends (30.00%). The other sources being referred for coming to the decision

regarding which insecticide to be used in the fields were university scientists (19.17%), relatives (15.83%), neighbours & trainings (14.17% each), Television (10.00%), kisan call centre (6.67%), kisan mobile salahkar (05.00%), sarpanch/panch (4.17%), internet (3.33%), newspaper & agriculture magazines (2.50% each), exhibition (1.67%) and kisan mela & radio (0.83% each).

After coming to the decision which insecticide to be used, next comes the decision regarding what dosage the insecticide be used in the field. Majority of the respondents referred to Input dealer (96.67%), progressive farmers (70.00%), RAOs/RHEOs (45.00%), friends (30.00%) and kisan mitra (25.00%).

Table 3: Various information sources effecting decision of insecticide use*

| Sl. No. | Source of Information | Need of insecticide | | Which insecticide to use | | Dosage of insecticide | | Application frequency | |
|---------|-----------------------|---------------------|-------|--------------------------|-------|-----------------------|-------|-----------------------|-------|
| | | F | % | F | % | F | % | F | % |
| 1 | Friends | 23 | 19.17 | 36 | 30.00 | 36 | 30.00 | 36 | 30.00 |
| 2 | Relatives | 11 | 09.17 | 19 | 15.83 | 19 | 15.83 | 14 | 11.67 |
| 3 | Neighbours | 09 | 07.50 | 17 | 14.17 | 17 | 14.17 | 15 | 12.50 |
| 4 | Progressive farmers | 76 | 63.33 | 84 | 70.00 | 84 | 70.00 | 84 | 70.00 |
| 5 | Sarpanch / Panch | 04 | 03.33 | 05 | 04.17 | 05 | 04.17 | 03 | 02.50 |
| 6 | RAEOs/RHEOs | 39 | 32.50 | 54 | 45.00 | 54 | 45.00 | 49 | 40.83 |
| 7 | University scientists | 11 | 09.17 | 23 | 19.17 | 23 | 19.17 | 20 | 16.67 |
| 8 | Input dealer | 67 | 55.83 | 116 | 96.67 | 116 | 96.67 | 110 | 91.67 |
| 9 | News papers | 03 | 02.50 | 03 | 02.50 | 03 | 02.50 | 02 | 01.67 |
| 10 | Agriculture magazines | 02 | 01.67 | 03 | 02.50 | 03 | 02.50 | 03 | 02.50 |
| 11 | Radio | 01 | 00.83 | 01 | 00.83 | 01 | 00.83 | 01 | 00.83 |
| 12 | Television | 05 | 04.17 | 12 | 10.00 | 10 | 08.33 | 10 | 08.33 |
| 13 | Kisan mela | 01 | 00.83 | 01 | 0.83 | 01 | 0.83 | 01 | 0.83 |
| 14 | Exhibition | 01 | 00.83 | 02 | 1.67 | 02 | 1.67 | 02 | 1.67 |
| 15 | Training | 10 | 08.33 | 17 | 14.17 | 17 | 14.17 | 14 | 11.67 |
| 16 | Kisan mitras | 22 | 18.33 | 30 | 25.00 | 30 | 25.00 | 29 | 24.17 |
| 17 | Kisan call center | 01 | 00.83 | 08 | 06.67 | 08 | 06.67 | 07 | 05.83 |
| 18 | Internet | 02 | 01.67 | 04 | 03.33 | 04 | 03.33 | 04 | 03.33 |
| 19 | KMS | 05 | 04.17 | 06 | 05.00 | 06 | 05.00 | 06 | 05.00 |

*Based on multiple responses

The other sources referred for deciding dosage of insecticides were university scientists (19.17%), relatives (15.83%), neighbours & trainings (14.17% each), television (08.33%), kisan call centre (6.67%), kisan mobile salahkar (5.00%), internet (3.33%), newspapers & agriculture magazines (2.50% each), exhibition (1.67%) and kisan mela & radio (0.83% each).

When the dosage is finalized next comes the frequency of application of the insecticides, for which majority of the respondents referred to input dealers (91.67%), progressive farmers (70.00%), RAOs/RHEOs (40.83%), friends (30.00%) and Kisan mitra (24.17%). The other sources being referred for deciding the frequency of application of the insecticides were university scientists (16.67%), neighbours (12.50%), relatives & trainings (11.67% each), television (08.33%), kisan call centre (05.83%), kisan mobile salahkar (05.00%), internet (3.33%), agricultural magazines & sarpanch / panch (02.50% each), newspapers & exhibition (1.67% each) and radio & kisan mela (0.83% each).

After deciding regarding need, dosage and frequency of insecticides, then comes the question regarding from where to procure the insecticide, i.e., what should be the source of purchase of the insecticide. Majority of the respondents referred to progressive farmers (69.17%), friends (51.67%), kisan mitra (20.83%), RAOs/RHEOs (14.17%) and neighbours (13.33%). The other sources of information utilized for deciding the source of insecticides were relatives

(08.33%), sarpanch / panch (04.17%), exhibition & training (0.83% each).

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