



## Sources of Information Utilised By Farmers and Changes Occurred Due to Bt Cotton Cultivation in the State of Andhra Pradesh, India

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### Abstract

Family members, input dealers and TV were the Personal localite, cosmopolite and mass media sources of information frequently utilised by Bt Cotton farmers respectively. Among these three, personal localite information sources were used by large majority of farmers compared to other sources. Majority of the respondents expressed changes due to Bt cotton cultivation as higher net returns, increase in yields and increased area under cultivation. More than 50 percent of respondents expressed changes due to Bt cotton cultivation as occurrence of new pests and diseases like mealy bugs, tobacco streak virus, cucumber mosaic virus, grey mildew and wilt. Majority of respondents also indicated certain positive changes that there was no change in pest population and there was a decrease in cost of cultivation due to Bt cotton cultivation.

**Keywords:** Bt Cotton, Sources of Information, Changes due to Bt cotton.

### Introduction

Cotton, the 'White Gold' and 'King of Fibres' is an important commercial crop of India and is considered to be an industrial commodity of worldwide importance. Cotton occupies a predominant place among cash crops touching the country's economy at several points by generating direct and indirect employment in the agricultural and industrial sectors.

In cotton, bollworms cause significant yield losses and nearly 54 per cent of the total pesticides are used for the control of pests in cotton alone, out of which about 60 per cent are used for the control of bollworms. Indiscriminate use of pesticides has adversely affected pest control and profit to the farmers. Under these circumstances, Bt cotton has emerged as an attractive option before the cotton farmers<sup>1</sup>.

The important merits focussed in Bt cotton cultivation were reduction in pesticide usage by 50 percent, better quality of cotton fibre, higher yields, lesser pesticide residues etc at the same time severe protests against Bt cotton alarmed on the possible threats of Bt cotton cultivation such as multinational companies monopolising cotton market, harmful effects of Bt cotton seed on entering food chain, forceful disappearance of native varieties, development of resistance to bollworms etc<sup>2,3</sup>. In view of these serious controversies and lack of academic research studies from farmers perspective, an ex post facto study was designed to unearth the changes occurred due to Bt Cotton cultivation. Further Sources of Information utilised by Bt cotton growers were also found out in the study as the majorly utilised sources of information

can be best utilised by extension workers for transfer of needful information to farmers.

### Materials and Methods

Exploratory research design was adopted in the present investigation. Karimnagar district of Telangana region of Andhra Pradesh state was purposively selected for the study as it has highest area under Bt cotton cultivation. The study was conducted in 12 villages selected from 3 mandals of Karimnagar district, which included 10 farmers from each of the selected village, thus a sample of 120 Bt cotton farmers were selected for the study.

**Pretesting of Interview Schedule:** The schedule was pretested by administering it to 30 cotton cultivators of the study area outside the main sample area of study. This helped to eliminate ambiguous questions and a few other questions which did not evoke proper response. Based on the experience gained in pretesting, the interview schedule was modified wherever necessary.

The investigator personally approached all the respondents and developed informal rapport with them by explaining the purpose of the study. The translated version of schedule was administered to the respondents of sample area. Each item was read out to the respondent by the investigator and the responses were recorded.

Analytical surveys are conducted to describe and explain why a situation or a phenomenon exists. Researchers resort to personal interviews because they are a flexible means of

obtaining information. Face-to-face contact permits questioning in greater depth and detail, and allows the interviewer to observe the respondent's non-verbal reactions.

Personal communication is the preferred mode of interacting with others where rapport is essential to establish credibility. Seeing a respondent face-to-face also enhances the response rate because farmers generally find it harder to refuse to participate in the presence of another person. This method also bridges the literacy barrier because some farmers are unable to read a self-administered questionnaire. Farmers were interviewed using a structured questionnaire composed of close- and open-ended items.

The collected data were coded, classified and tabulated in order to process through different statistical tools. The findings were suitably interpreted and necessary inferences were drawn.

**Operationalisation of terms and measurement: Sources of information utilised** was operationalized as the frequency with which the sources are consulted by the farmers in order to seek information regarding farming. The respondents were asked to indicate their response in using the information sources frequently, some times, never from personal localite, personal cosmopolite, and mass media sources as a information sources. The respondents were given with the score of 3,2 and 1 for their response of frequently, some times and never, respectively. The results were expressed in the form of frequencies and percentages.

**Changes occurred due to Bt cotton cultivation** can be operationalised as changes occurred in farmers in terms of their economic status and cultivation aspects due to Bt cotton cultivation. The responses were elicited on the continuum of Increase, decrease and no change. The results were expressed in the form of frequencies and percentages.

## Results and Discussion

**Sources of Information Utilised:** The result shown in the Table -1 and Figure -1 revealed that under personal localite sources majority (85%) of the respondents contacted friends frequently whereas 90.83 per cent of them contacted other farmers sometimes i.e. once in a month or more than that<sup>4</sup>. This may be because as farmers live close to each other, which offers more opportunity for them to communicate. Another reason may be the ubiquity of communication technology like cell phones that makes it easier for farmers to communicate.

Table -2 and Figure -2 indicated that under cosmopolite sources majority (76.67%) of the respondents contacted input dealers, followed by NGO personnel (31.67%). The farmers expressed that input dealers are easily available and more accessible to them as source of information for advice on plant protection chemicals than other sources<sup>5,6</sup>.

Results of Table -3 and Figure -3 revealed that under mass media sources, majority (43.33%) of the respondents got information frequently about Bt cotton cultivation through television, whereas 35.83 per cent of the respondents depended on cell phones for information on Bt cotton and 90 per cent of the respondents never used radio for information followed by Agricultural Magazines. This reflected the importance of television in programmes for effective dissemination of farm information. Farm programmes and advertisements on Bt cotton hybrids and new plant protection chemicals in television, cell phone and news papers could be the main source of information for the farmers.

Interestingly farmers opined that cell phones were also highly utilized by the farming community for getting technical information from the scientists of District Agriculture Advisory and Transfer of Technology Centre (DAATTC), Krishi Vignan Kendras (KVKs) and Agriculture Research Scientist (ARS) of ANGRAU. Farmers also informed that the popular articles, press notes written by ANGRAU scientists in Annadata, vyavasaya panchangams, padipantalu, vyasayam were the major source of information on improved Bt cotton cultivation practices.

It could be concluded from the results that primary localite sources were frequently utilized by majority of the respondents than the cosmopolite source and mass media source. This trend might be due to that majority of the farmers were small and marginal in nature. Generally they depend on their friends, family members and neighbours for getting information related to Bt cotton cultivation.

Earlier adopters in a community would appear to be more exposed to sources of information, such as mass media or change agents (e.g., extension workers), also with higher education level and more income<sup>7,8</sup>.

The listening, viewing and reading habits need to be enhanced further for creating large scale awareness of the technologies. More over information flow through these sources need to be ensured to cater to the needs of the farming community.

Usage of radio and newspapers for Bt cotton information is very low. Neighbors and family members often exchange information about Bt cotton. Very few farmers have friends outside of their village that can provide them more sources of Bt cotton information. Farmers also seek information from seed companies, pesticide/fertilizer companies or dealers, but the frequency is less than neighbors and more than television. Even if many households have a television set and radio, the consumption of these channels for Bt cotton information is well below interpersonal channels.

These findings suggest that mass media have a lot of

potential to be fully used for farmers. Mass media in rural areas are used mainly for entertainment purposes instead of education and information. Communicators and scientists can work on this point to help farmers get more effective information.

**Analysis of Ryan and Gross’s Study and this Study:** In case of information source use as reported in Ryan and Gross’s study, neighbors and salesmen played an important role as first sources of information about hybrid corn seed. Besides neighbors and salesman, in the 1940s Iowa farmers had Farm Journals (magazines), radio advertising, extension services and family members and relatives for information. Mass media were not used much by farmers in either study. Radio had a little bit of importance for Iowa farmers, just as now television does for farmers in this study. Ryan and Gross study found that neighbors played a more important role as time went by, while the importance of salesmen declined. These two studies are separated by more than 70 years. Seventy years ago there was no television. Ryan and Gross classic study is not consistent with later studies of Iowa farmers<sup>9</sup>. Mass media often play a role as a first source of information in the United States<sup>8, 10</sup>.

Vyavasaya panchangam should be made available to every revenue village for large scale adoption of agriculture

practices in general and Bt cotton cultivation practices in particular by the farming community. If the mass media sources are utilized by the majority that would serve for large scale awareness which will in turn help in adoption of Bt cotton cultivation practices<sup>11, 12, 13</sup>.

**Changes occurred due to Bt cotton cultivation:** The result shown in the Table 4 and Figure 4 revealed that, majority of respondents (100%) indicated that there was no change in pest population and there is no change in their status and prestige in the society due to Bt cotton cultivation. 61.67 per cent of respondents opined that there is no change in yields obtained /acre in Bt cotton cultivation. 55 per cent of farmers expressed that due to Bt cotton cultivation there was occurrence of new pests and diseases like mealy bugs, tobacco streak virus, cucumber mosaic virus, grey mildew and wilt. 51.67 per cent of the respondents indicated that they got higher net returns due to cultivation of Bt cotton when compared to non Bt cotton.

More than 50 percent of respondents expressed that there was no change in number of crops cultivated, area under cultivation and cost of cultivation due to Bt cotton cultivation<sup>14</sup>.

**Table 1**  
**Distribution of respondents according to the personal localite sources of information utilised (N=120)**

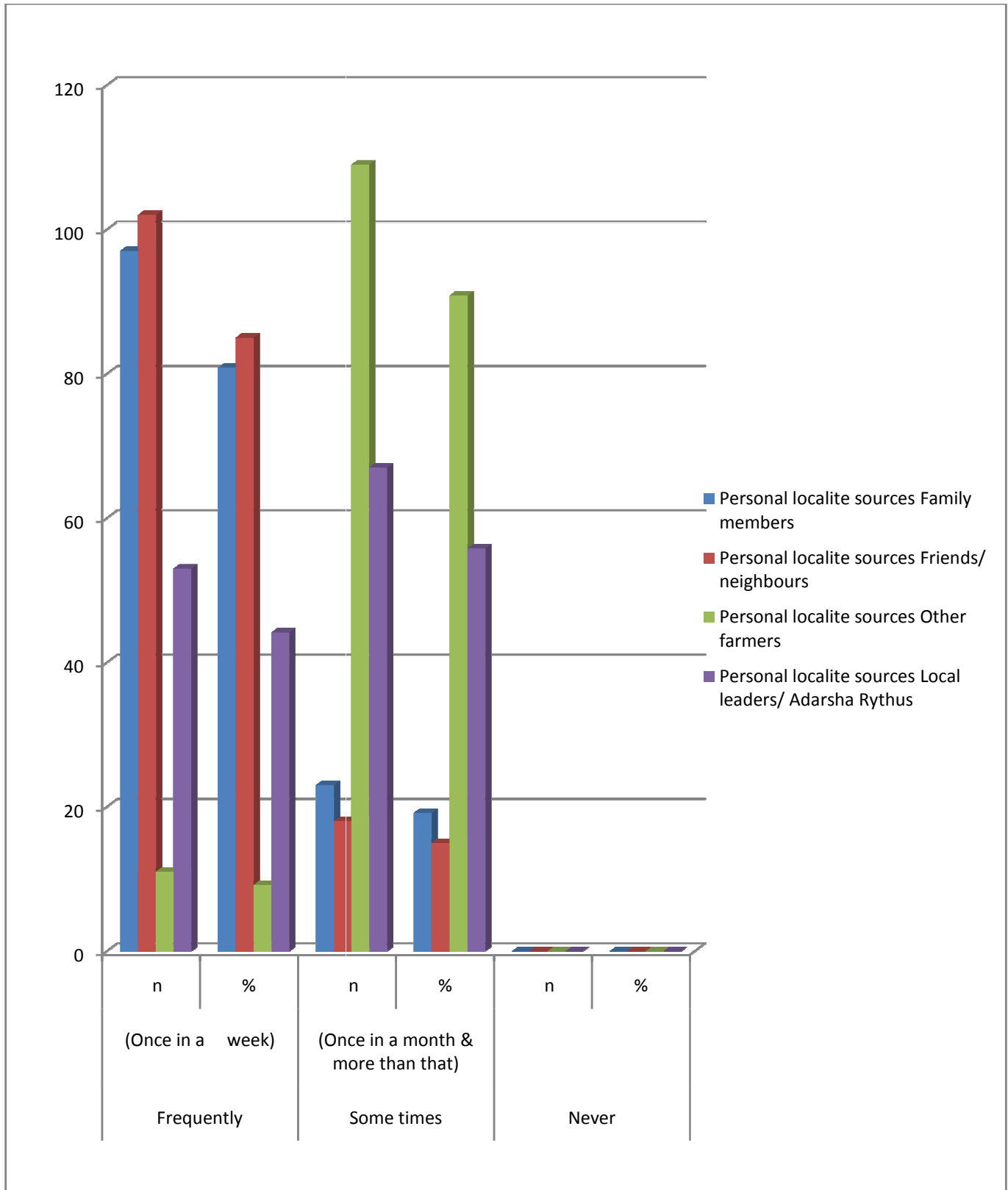
| S. No. | Source of information         | Frequently<br>(Once in a week) |       | Some times<br>(Once in a month and more than that) |       | Never |   |
|--------|-------------------------------|--------------------------------|-------|--|-------|-------|---|
|        |                               | n                              | %     | n  | %     | n     | % |
|        | Personal localite sources     |                                |       |  |       |       |   |
| 1      | Family members                | 97                             | 80.83 | 23   | 19.17 | 0     | 0 |
| 2      | Friends/ neighbours           | 102                            | 85    | 18   | 15    | 0     | 0 |
| 3      | Other farmers                 | 11                             | 9.17  | 109  | 90.83 | 0     | 0 |
| 4      | Local leaders/ Adarsha Rythus | 53                             | 44.17 | 67   | 55.83 | 0     | 0 |

**Table2**  
**Distribution of respondents according to the Cosmopolite sources of information utilised (N=120)**

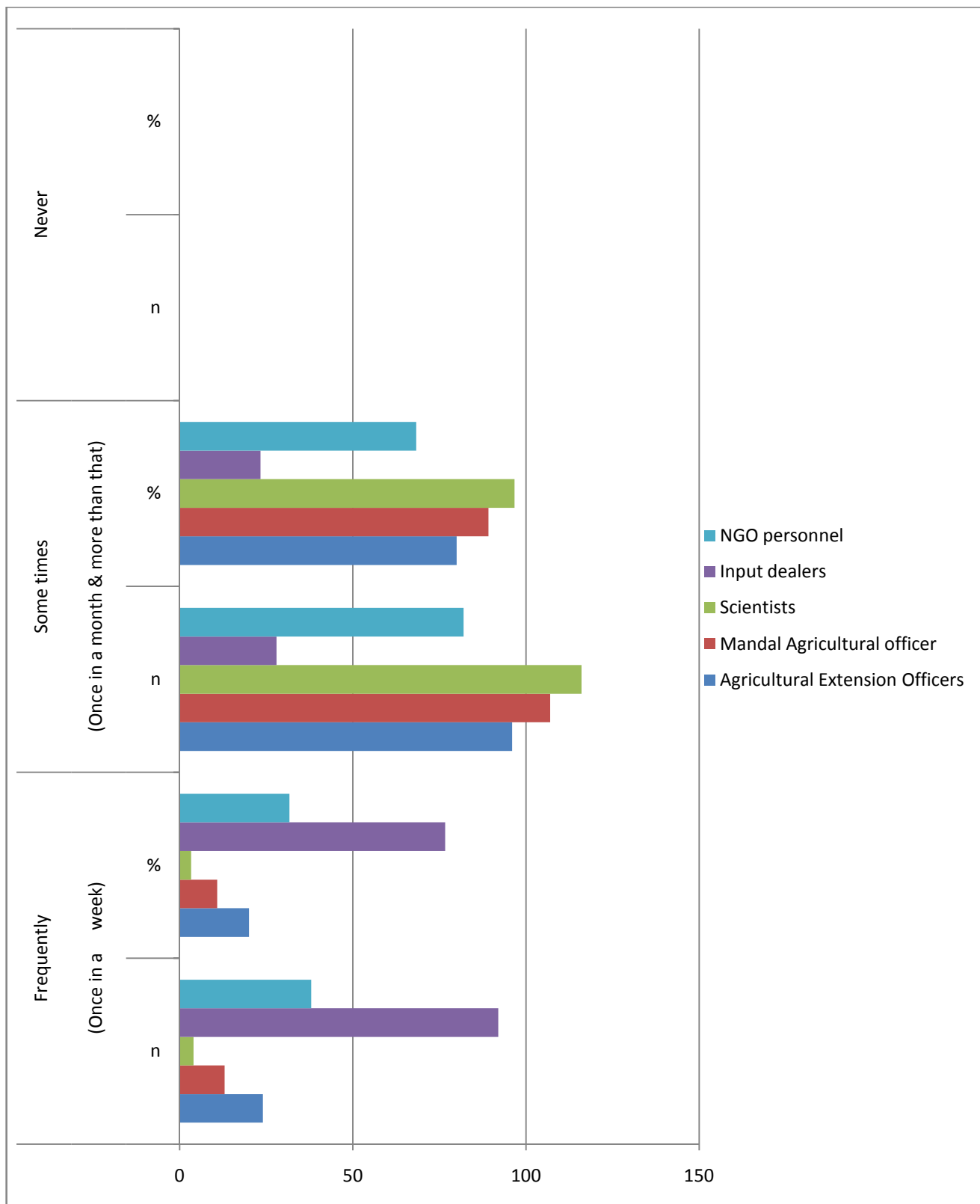
| S. No.              | Source of information           | Frequently<br>(Once in a week) |       | Some times<br>(Once in a month and more than that) |       | Never |   |
|---------------------|---------------------------------|--------------------------------|-------|--|-------|-------|---|
|                     |                                 | n                              | %     | n  | %     | n     | % |
| Cosmopolite sources |                                 | n                              | %     | n  | %     | n     | % |
| 1                   | Agricultural Extension Officers | 24                             | 20    | 96   | 80    | 0     | 0 |
| 2                   | Mandal Agricultural officer     | 13                             | 10.83 | 107  | 89.17 | 0     | 0 |
| 3                   | Scientists                      | 4                              | 3.33  | 116  | 96.67 | 0     | 0 |
| 4                   | Input dealers                   | 92                             | 76.67 | 28   | 23.33 | 0     | 0 |
| 5                   | NGO personnel                   | 38                             | 31.67 | 82   | 68.33 | 0     | 0 |

**Table-3**  
**Distribution of respondents according to the Mass media sources of information utilised (N=120)**

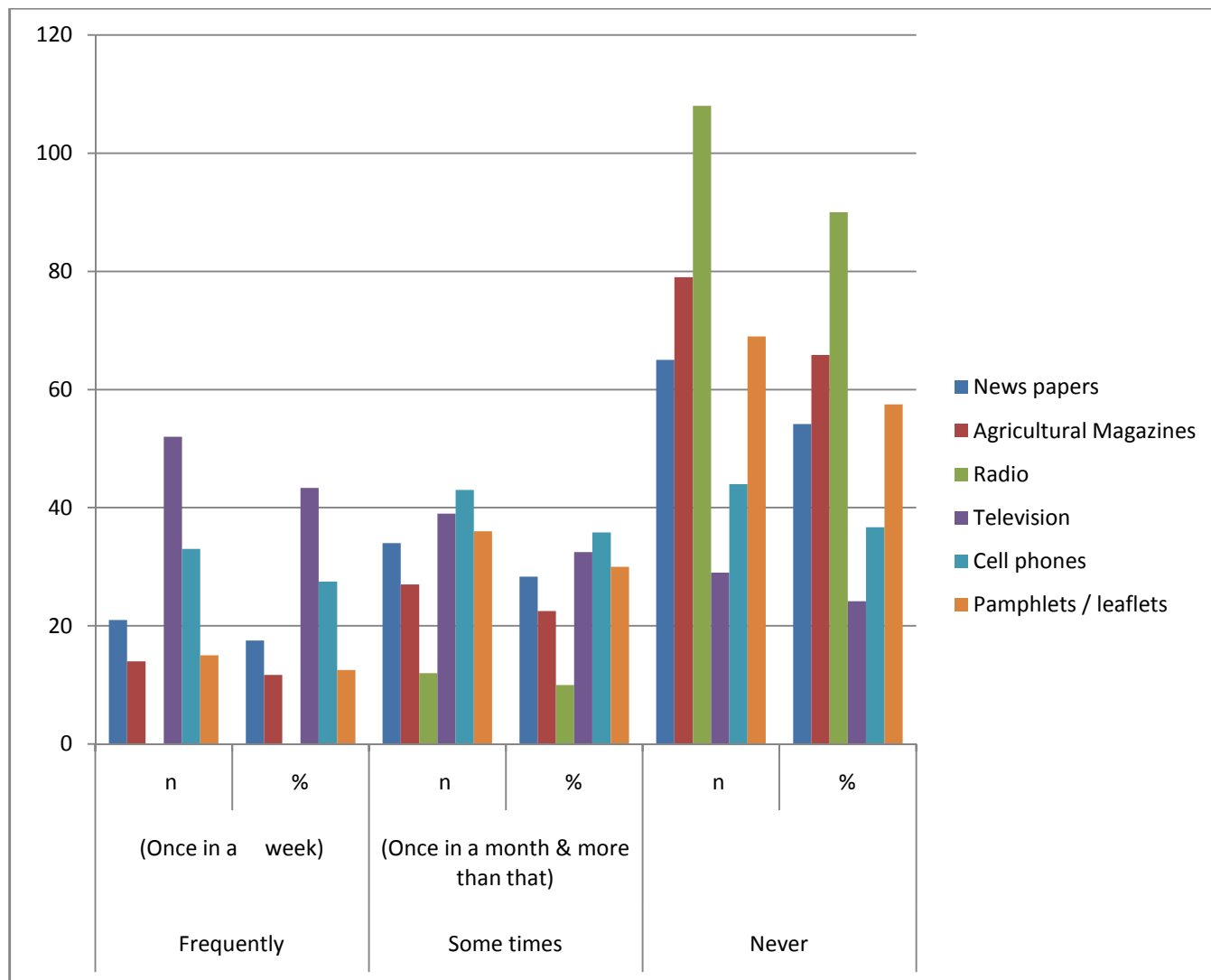
| S. No.             | Source of information  | Frequently<br>(Once in a week) |       | Some times<br>(Once in a month and more than that) |       | Never |       |
|--------------------|------------------------|--------------------------------|-------|--|-------|-------|-------|
|                    |                        | n                              | %     | n  | %     | n     | %     |
| Mass media sources |                        | n                              | %     | n  | %     | n     | %     |
| 1                  | News papers            | 21                             | 17.5  | 34   | 28.33 | 65    | 54.17 |
| 2                  | Agricultural Magazines | 14                             | 11.67 | 27   | 22.5  | 79    | 65.83 |
| 3                  | Radio                  | 0                              | 0     | 12   | 10    | 108   | 90    |
| 4                  | Television             | 52                             | 43.33 | 39   | 32.5  | 29    | 24.17 |
| 5                  | Cell phones            | 33                             | 27.5  | 43   | 35.83 | 44    | 36.67 |
| 6                  | Pamphlets / leaflets   | 15                             | 12.5  | 36   | 30    | 69    | 57.5  |



**Figure-1**  
 Distribution of respondents according to the personal localite sources of information utilized



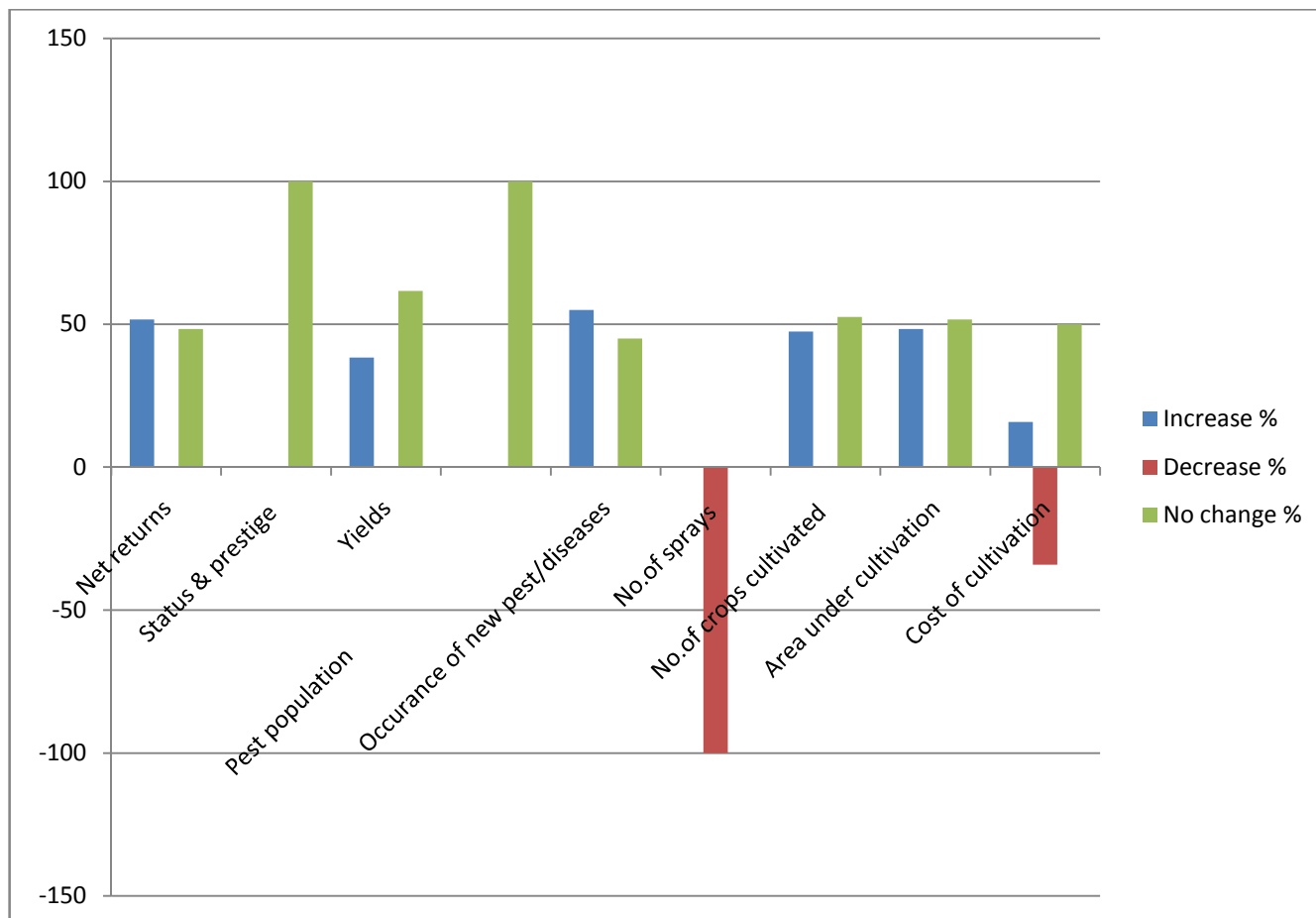
**Figure-2**  
 Distribution of respondents according to the Cosmopolite sources of information utilised



**Figure-3**  
 Distribution of respondents according to the Mass media sources of information utilised.

**Table-4**  
 Distribution of respondents according to changes occurred due to Bt cotton cultivation (N=120)

| S. No. | Item   | Changes occurred |       |          |       |           |       |
|--------|--|------------------|-------|----------|-------|-----------|-------|
|        |  | Increase         |       | Decrease |       | No change |       |
|        |  | n                | %     | n        | %     | n         | %     |
| 1      | Net returns (Rs/acre)  | 62               | 51.67 | 0        | 0     | 58        | 48.33 |
| 2      | Status and prestige in the society   | 0                | 0     | 0        | 0     | 120       | 100   |
| 3      | Yield obtained/acre  | 46               | 38.33 | 0        | 0     | 74        | 61.67 |
| 4      | Pest population (like jassids, aphids, white fly, mites and red cotton bugs)                                 | 0                | 0     | 0        | 0     | 120       | 100   |
| 5      | Occurance of new pest/diseases (Mealy bugs, Tobacco streak virus, cucumber mosaic virus, grey mildew, wilt.) | 66               | 55    | 0        | 0     | 54        | 45    |
| 6      | No. of sprays (3 to 4)   | 0                | 0     | 120      | 100   | 0         | 0     |
| 7      | No. of crops cultivated (2 to 3 crops)   | 57               | 47.5  | 0        | 0     | 63        | 52.5  |
| 8      | Area under cultivation   | 58               | 48.33 | 0        | 0     | 62        | 51.67 |
| 9      | Cost of cultivation  | 19               | 15.83 | 41       | 34.17 | 60        | 50    |



**Figure-4**  
**Distribution of respondents according to changes occurred due to Bt cotton cultivation**

### Conclusions

Friends/ Neighbours and Input dealers were found to be the sources of information utilised by majority of farmers for Bt Cotton cultivation. Thus sources were found to be the cause for bringing certain changes in cotton cultivation such as changes in yields, netreturns, pest incidence, cropping intensity, Cost of cultivation, number of sprayings etc. Hence in order to bring desirable changes from Bt Cotton cultivation Government officials, NGO's, Agricultural Scientists and other stakeholders should initiate change from the most influencing sources of information as unearthed in the study. If these people are trained on recommended practices in Bt Cotton cultivation specifically cultivation of refuge rows, correction of micronutrient deficiencies, management of new crops introduced due to increased cropping intensity, management of new pests and diseases arising out of Bt Cotton cultivation etc, this knowledge would definitely reach a large majority of farmers in short span of time which would be quite impossible for an Extension worker to achieve in less time.

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