

## A STUDY ON IMPACT ANALYSIS OF RECOMMENDED PRODUCTION TECHNOLOGIES ON TOBACCO GROWERS IN GUNTUR DISTRICT OF ANDHRA PRADESH

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### ABSTRACT

The data was collected by administering the pre-tested interview schedule to the selected respondents. The collected data was analyzed using statistical tools. The stratified and need full sampling procedure has been followed in this research study that are explained as under. Their knowledge and levels of adoption regarding the recommended production was studied. The selection of the respondents was done by the sampling through random sampling that include six beneficiaries and six non-beneficiaries were selected from each village, thus a total of 120 respondents were selected from ten villages. The present study was conducted on Knowledge and attitude of beneficiaries and non-beneficiaries towards impact analysis of recommended production technologies on tobacco growers.

**KEYWORDS:** Knowledge, Adoption

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### INTRODUCTION

Tobacco cultivation has a history of about 8000 years. Portuguese traders introduced tobacco in India during 1600 A.D. It became a valuable commodity in barter trade and its use spread rapidly. Tobacco smoking became a popular leisure activity in Europe during the early seventeenth century. Introduced initially in India as a product to be smoked, tobacco gradually began to be used in several other forms.

Tobacco is being used around the globe in different forms. Its rapid spread and widespread acceptance characterize the addiction to the plant *Nicotina tabacum*. Only the mode of delivery has changed. In the 18<sup>th</sup> century as snuff, in the 19<sup>th</sup> century it was cigar, in the 20<sup>th</sup> century as a manufactured cigarette. At the beginning of the 21<sup>st</sup> century, about one third of adults in the world, including increasing number of women used tobacco.

In Indian Agriculture scenario tobacco occupies a unique position, though the area under this crop is relatively small i.e., 0.45 million ha with an annual production of 815 million kg of cured leaf out of which 300 million kg is Flue cured Virginia tobacco.

Tobacco crop provides employment to about 36 million people directly or indirectly including 6 million farmers in the country. India ranks fifth largest exporter of tobacco in the world after Brazil, USA, Malawi and Turkey. The crop fetches annually around Rs. 1,713 crores of foreign exchange through exports and over Rs.9,1000 crores as excise revenue.

India is the third largest producer of tobacco in the world after China and Brazil. Majority of the states in the union territory grow one type or the other to a greater or lesser extent, significantly influencing the economy and prosperity of the farming community

**(Gediya K. M and Panchal J, 2021)**

Tobacco has been a part of the Indian social and religious fabric for the past 400years and is closely intertwined with its multicultural diversity across various economic and social strata. Commercial cultivation of Virginia tobacco in India black soils was commenced in the year 1920 at Guntur, Andhra Pradesh.

Among 70 species of tobacco in India *Nicotiana tabacum* and *Nicotiana rustica*

Are commercially grown, but *Nicotiana tabacum* occupies largest area. It is mostly grown in southern states like Andhra Pradesh and Karnataka whereas *Nicotiana rustica* is grown in cooler climates of Northern and Northern East states like Uttar Pradesh, Bihar, West Bengal and Assam. Different types of tobacco cultivars like Flue Cured Virginia (FCV), bidi, hookah, chewing, cigar filler, cigar wrapper, cheroot, burley, oriental, lanka etc., are widely grown. Tobacco is consumed in the form of cigarettes, cigars, cheroots, bidi, pipe and hookah. It is chewed in the form of Sweti, Zarda, Qiwanquid, Masherri, Kharmsala and also inhaled in the form of snuff (Natarajan Nithya, 2021)

In Andhra Pradesh, Flue Cure Virginia (FCV) tobacco is grown in an area of 1,25,000 ha in East Godavari, West Godavari, Khammam, Krishna, Guntur, Prakasam, Nellore, Karimnagar and Warangal districts, with a total production of 213.93 million kg of leaf. While in Karnataka, FCV tobacco is cultivated in 85000 ha of area with a production of 87 million kg of leaf. It is also grown in smaller area in the states of Maharashtra and Odisha (Teja I. et al., 2016).

Flue Cured Virginia (FCV) tobacco continues to be top grosser in exports, Getting a foreign exchange of Rs. 6,059.31 crores for the financial year 2018-2019. The FCV tobacco exports touched a record of 2,64,384 tonnes. Out of which 2,34,850 tonnes were unmanufactured tobacco.

In India, the soils suitable for FCV tobacco cultivation are heavy black soils Popularly known as black cotton soils. The tobacco growing regions in Andhra Pradesh may further be classified in to Northern Light Soil (NSL), Southern Black Soil (SBS), Northern Black Soil (NBS), Central Black Soil (CBS) and Southern Black Soil (SBS) based on agroclimatic conditions. Similarly, in Karnataka, the FCV tobacco-growing region is called as Karnataka Light Soil (KLS). Nellore and Prakasam districts of Andhra Pradesh are endowed with southern light soils and southern black cotton soils which are most suitable for FCV tobacco cultivation (Sarala K et al., 2005).

**OBJECTIVES OF THE STUDY**

- To determine the level of knowledge of respondents on the recommended production technology of tobacco.
- To assess the extent of adoption of recommended production technology of tobacco by the respondents.

## RESEARCH METHODOLOGY

In this study “Ex-post facto” research design has been used. Ex-post facto Research is systematic empirical inquiry in which the researcher does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulated.

The stratified and need full sampling procedure has been followed in this research study that are explained as under. Focus of the present study was kept mainly around the tobacco farmers present in the study area. Their knowledge and levels of adoption regarding the recommended production practices was studied.

The study was conducted in the Guntur district of Andhra Pradesh state during the year 2021-22. Guntur district has been selected purposively as the crop is being grown at that area and the researcher is familiar with the study area. The researcher is well versed with the conditions of the district, as the researcher belongs to the same district.

The list of farmers growing tobacco from each village was obtained with the help of the Cluster Resource Persons (CRP) that work locally. To maintain the uniformity of the sampling through random sampling twelve farmers that include six beneficiaries and six non-beneficiaries were selected from each village, thus a total of 120 respondents were selected from ten villages.

## RESULTS AND DISCUSSION

**Table 1: The Knowledge of the Respondents on the Recommended Production Technology in Tobacco Crop**

| S.No. | Statement                            | Beneficiaries |       |       | Non-Beneficiaries |       |       |
|-------|--------------------------------------|---------------|-------|-------|-------------------|-------|-------|
|       |                                      | F.C           | P.C   | N.C   | F.C               | P.C   | N.C   |
|       |                                      | F (%)         | F (%) | F (%) | F (%)             | F (%) | F (%) |
| 1     | Improved seed varieties              | 38            | 22    | 0     | 28                | 18    | 14    |
|       |                                      | 63.3          | 36.7  | 0     | 30.1              | 46.7  | 23.2  |
| 2     | Nursery Preparation                  | 19            | 28    | 13    | 15                | 21    | 24    |
|       |                                      | 31.6          | 46.7  | 21.7  | 25.0              | 35.0  | 40.0  |
| 3     | Time of Planting                     | 25            | 35    | 0     | 6                 | 31    | 23    |
|       |                                      | 41.7          | 58.3  | 0     | 10.0              | 51.7  | 38.3  |
| 4     | Spacing                              | 18            | 32    | 10    | 8                 | 17    | 35    |
|       |                                      | 30.0          | 53.4  | 16.6  | 13.4              | 28.3  | 58.3  |
| 5     | Fertilization Method                 | 27            | 29    | 4     | 9                 | 23    | 28    |
|       |                                      | 45.0          | 48.3  | 6.7   | 15.0              | 38.3  | 46.7  |
| 6     | Irrigation Method                    | 12            | 41    | 7     | 16                | 25    | 19    |
|       |                                      | 20.0          | 68.3  | 11.7  | 26.7              | 41.7  | 31.6  |
| 7     | Major diseases and their control     | 27            | 25    | 8     | 7                 | 22    | 31    |
|       |                                      | 45.0          | 41.7  | 13.3  | 11.7              | 36.7  | 51.6  |
| 8     | Insect and pest management practices | 24            | 22    | 14    | 10                | 23    | 27    |
|       |                                      | 40.0          | 36.7  | 23.3  | 16.7              | 38.3  | 45.0  |

**Table 1 Contd.,**

|    |  |            |            |            |            |            |            |
|----|--|------------|------------|------------|------------|------------|------------|
| 9  | Planting Method                        | 13<br>21.7 | 36<br>60.0 | 11<br>18.3 | 9<br>15.0  | 14<br>23.3 | 37<br>61.7 |
| 10 | Method of Fertilization                | 18<br>30.1 | 25<br>41.6 | 17<br>28.3 | 14<br>23.3 | 26<br>43.3 | 20<br>33.4 |
| 11 | Fertilization Dose                     | 21<br>35.0 | 23<br>38.3 | 16<br>26.7 | 17<br>28.3 | 18<br>30.1 | 25<br>41.6 |
| 12 | Intercultural Operations               | 37<br>61.6 | 23<br>38.3 | 0<br>0     | 15<br>25.0 | 29<br>48.3 | 16<br>26.7 |
| 13 | Level of topping                       | 24<br>40.0 | 30<br>50.0 | 6<br>10.0  | 11<br>18.3 | 23<br>38.4 | 26<br>43.3 |
| 14 | Sucker Control Practices               | 22<br>36.6 | 26<br>43.3 | 12<br>20.1 | 5<br>8.3   | 19<br>31.6 | 36<br>60.1 |
| 15 | Pre-Harvesting time                    | 26<br>43.3 | 31<br>61.7 | 3<br>5.0   | 13<br>21.7 | 33<br>55.0 | 14<br>23.3 |
| 16 | Harvesting Procedure                   | 33<br>55.0 | 25<br>41.7 | 2<br>3.3   | 9<br>15.0  | 34<br>56.7 | 17<br>28.3 |
| 17 | Application of Plant Growth Regulators | 19<br>31.6 | 24<br>40.1 | 17<br>28.3 | 8<br>13.3  | 24<br>40.1 | 28<br>46.6 |
| 18 | Storage of produce after harvesting    | 32<br>53.3 | 28<br>46.7 | 0<br>0     | 12<br>20.0 | 17<br>23.3 | 31<br>51.7 |
| 19 | Curing method                          | 25<br>41.7 | 35<br>58.3 | 0<br>0     | 9<br>15.0  | 24<br>40.0 | 27<br>45.0 |
| 20 | Grading                                | 26<br>43.3 | 34<br>56.7 | 0<br>0     | 3<br>5.0   | 31<br>51.7 | 26<br>43.3 |

**N=120****F.C=Fully Correct, P.C=Partially Correct, N.C=Not Correct, F=Frequency, %=Percentage**

From the above table 4.2.1 it can be observed that among the beneficiaries, majority (63.3%) of the respondents have complete knowledge in improved seed varieties, most of the respondents (46.7%) have partial knowledge in nursery preparation, majority (58.3%) of the respondents have partial knowledge regarding the time of planting, majority (53.4%) of the respondents have partial knowledge in spacing, most of the respondents (48.3%) have partial knowledge regarding the fertilization method, majority (68.3%) of the respondents have partial knowledge regarding the irrigation method, most of the respondents (45.0%) have complete knowledge in major diseases and their control, most of the respondents (40.0%) have complete knowledge regarding the insect and pest management practices, majority (60.0%) of the respondents have partial knowledge on planting method, most of the respondents (41.6%) have partial knowledge on the method of fertilization, most of the respondents (38.3%) have partial knowledge on the fertilization dose, majority (61.6%) of the respondents have partial knowledge on the intercultural operations, majority (50.0%) of the respondents have partial knowledge on the level of topping, most of the respondents (43.3%) have partial knowledge on the sucker control practices, majority (61.7%) of the respondents have partial knowledge on the pre-harvesting time, majority (55.0%) of the respondents have complete knowledge on the harvesting procedure, most of the

respondents (40.1%) have partial knowledge regarding the application of plant growth regulators, majority (53.3%) of the respondents have complete knowledge on the storage of produce after harvesting, majority (58.3%) of the respondents have partial knowledge regarding the curing method and majority (56.7%) of the respondents have partial knowledge regarding the grading process.

Among non-beneficiaries, most of the respondents (46.7%) have partial knowledge in improved seed varieties, most of the respondents (40.0%) have low levels of knowledge in nursery preparation, majority (51.7%) of the respondents have partial knowledge regarding the time of planting, majority (58.3%) of the respondents have low levels of knowledge in spacing, most of the respondents (46.7%) have low levels of knowledge regarding the fertilization method, most of the respondents (41.7%) have partial knowledge regarding the irrigation method, majority (51.6%) have low levels of knowledge in major diseases and their control, most of the respondents (45.0%) have low levels of knowledge regarding the insect and pest management practices, majority (61.7%) of the respondents have low levels of knowledge on planting method, most of the respondents (43.3%) have partial knowledge on the method of fertilization, most of the respondents (38.3%) have partial knowledge on the fertilization dose, most of the respondents (48.3%) have partial knowledge on the intercultural operations, most of the respondents (43.3%) have low levels of knowledge on the level of topping, majority (60.1%) of the respondents have low levels of knowledge on the sucker control practices, majority (55.0%) of the respondents have partial knowledge on the pre-harvesting time, majority (56.7%) of the respondents have complete knowledge on the harvesting procedure, most of the respondents (46.6%) have low levels of knowledge regarding the application of plant growth regulators, majority (51.7%) of the respondents have low levels of knowledge on the storage of produce after harvesting, most of the respondents (45.0%) have low levels of knowledge regarding the curing method and majority (51.7%) of the respondents have partial knowledge regarding the grading process.

**Table 2: Distribution of the Respondents Based on their Level of Adoption**

| S.No. | Statement                            | Beneficiaries |            |            | Non-Beneficiaries |            |            |
|-------|--------------------------------------|---------------|------------|------------|-------------------|------------|------------|
|       |                                      | A             | P.A        | U.A        | A                 | P.A        | U.A        |
|       |                                      | F %           | F %        | F %        | F %               | F %        | F %        |
| 1     | Improved seed varieties              | 34<br>56.7    | 12<br>20.0 | 14<br>23.3 | 10<br>16.7        | 18<br>30.0 | 32<br>53.3 |
| 2     | Nursery Preparation                  | 23<br>38.3    | 27<br>45.0 | 10<br>16.7 | 14<br>23.3        | 21<br>35.0 | 25<br>41.7 |
| 3     | Time of Planting                     | 26<br>43.3    | 18<br>30.0 | 16<br>26.7 | 16<br>26.7        | 21<br>35.0 | 23<br>38.3 |
| 4     | Spacing                              | 21<br>35.0    | 25<br>41.7 | 14<br>23.3 | 15<br>25.0        | 18<br>30.0 | 27<br>45.0 |
| 5     | Fertilization Method                 | 28<br>46.7    | 31<br>51.7 | 1<br>1.6   | 17<br>28.3        | 21<br>35.0 | 22<br>36.7 |
| 6     | Irrigation Method                    | 24<br>40.0    | 22<br>36.7 | 14<br>23.3 | 9<br>15.0         | 31<br>51.7 | 20<br>33.3 |
| 7     | Major diseases and their control     | 21<br>35.0    | 32<br>53.3 | 7<br>11.7  | 12<br>20.0        | 19<br>31.7 | 29<br>48.3 |
| 8     | Insect and pest management practices | 18<br>30.0    | 29<br>48.3 | 13<br>21.7 | 14<br>23.3        | 20<br>33.3 | 26<br>43.4 |
| 9     | Planting Method                      | 20<br>33.3    | 23<br>38.3 | 17<br>28.4 | 16<br>26.7        | 19<br>31.7 | 25<br>41.6 |
| 10    | Method of Fertilization              | 21<br>35.0    | 28<br>46.7 | 11<br>18.3 | 17<br>28.3        | 22<br>36.7 | 21<br>35.0 |
| 11    | Fertilization Dose                   | 30<br>50.0    | 17<br>28.3 | 13<br>21.7 | 11<br>18.3        | 34<br>56.7 | 15<br>25.0 |

**Table 2 Contd.,**

|    |  |            |            |            |            |            |            |
|----|--|------------|------------|------------|------------|------------|------------|
| 12 | Intercultural Operations               | 22<br>36.7 | 20<br>33.3 | 18<br>30.0 | 16<br>26.7 | 18<br>30.0 | 26<br>43.3 |
| 13 | Level of topping                       | 19<br>31.7 | 26<br>43.3 | 15<br>25.0 | 14<br>23.3 | 22<br>36.7 | 24<br>40.0 |
| 14 | Sucker Control Practices               | 21<br>35.0 | 33<br>55.0 | 6<br>10.0  | 11<br>18.3 | 23<br>38.4 | 26<br>43.3 |
| 15 | Pre-Harvesting time                    | 20<br>33.3 | 26<br>43.3 | 14<br>23.3 | 18<br>30.0 | 20<br>33.3 | 22<br>36.6 |
| 16 | Harvesting Procedure                   | 19<br>31.7 | 24<br>40.0 | 17<br>28.3 | 13<br>21.7 | 19<br>31.7 | 28<br>46.6 |
| 17 | Application of Plant Growth Regulators | 23<br>38.3 | 27<br>45.0 | 10<br>16.7 | 14<br>23.3 | 21<br>35.0 | 25<br>41.7 |
| 18 | Storage of produce after harvesting    | 31<br>51.7 | 26<br>43.3 | 3<br>5.00  | 4<br>6.6   | 20<br>33.3 | 36<br>60.0 |
| 19 | Curing method                          | 28<br>46.7 | 32<br>53.3 | 0<br>0     | 2<br>3.3   | 30<br>50.0 | 28<br>46.7 |
| 20 | Grading                                | 29<br>48.3 | 30<br>50.0 | 1<br>1.7   | 0<br>0     | 33<br>55.0 | 27<br>45.0 |

**N=120****A=Aware, P.A=Partially Aware, U.A=Un-Aware, F=Frequency, %=Percentage**

From the above table it can be observed that among beneficiaries majority (56.7%) of the respondents have complete adoption of improved seed varieties, most of the respondents (45.0%) have partial adoption of nursery preparation, most of the respondents (43.3%) have partial adoption regarding the time of planting, most of the respondents (41.7%) have partial adoption about the spacing of the crop, while majority (51.7%) have complete adoption in the fertilization method, most of the respondents (40.0%) have complete adoption regarding the irrigation method, majority (53.3%) of the respondents have partial adoption about the major diseases and their control method, most of the respondents (48.3%) have partial adoption about the insect and pest management practices, most of the respondents (38.3%) have partial adoption regarding the method of fertilization, majority (50.0%) of the respondents have complete adoption about the fertilization dose, most of the respondents (36.7%) have complete adoption about the intercultural operations, most of the respondents (43.3%) have partial adoption on the level of topping, majority (55.0%) of the respondents have partial adoption on sucker control practices, most of the respondents (43.3%) have partial adoption on the preharvesting time, most of the respondents (40.0%) have partial adoption on the harvesting procedure, most of the respondents (45.0%) have partial adoption on the application of plan growth regulators, majority (51.7%) respondents have complete adoption regarding the storage of produce after harvesting, majority (53.3%) of the respondents have partial adoption regarding the curing method and majority (50.0%) of the respondents have partial adoption regarding the grading method.

Similarly, among non- beneficiaries, majority (53.3%) of the respondents have low levels adoption on improved seed varieties, most of the respondents (41.7%) have low levels of adoption on nursery preparation, most of the respondents (38.3%) have low levels of adoption regarding the time of planting, most of the respondents (45.0%) have low levels of adoption about the spacing of the crop, while most of the respondents (36.7%) have low levels of adoption in the fertilization method, majority (51.7%) have partial adoption regarding the irrigation method, most of the respondents (48.3%) have low levels of adoption about the major diseases and their control method, most of the respondents (43.3%) have low levels of adoption about the insect and pest management practices, most of the respondents (36.7%) have partial adoption regarding the method of fertilization, majority (56.7%) of the respondents have complete adoption about the fertilization dose, most of the

respondents (43.3%) have low levels of adoption about the intercultural operations, most of the respondents (40.0%) have low levels of adoption on the level of topping, most of the respondents (43.3%) have low levels of adoption on sucker control practices, most of the respondents (36.6%) have low levels of adoption on the pre-harvesting time, most of the respondents (46.6%) have low levels of adoption on the harvesting procedure, most of the respondents (41.7%) have low levels of adoption on the application of plan growth regulators, majority (60.0%) of the respondents have low levels of adoption regarding the storage of produce after harvesting, majority (50.0%) of the respondents have partial adoption regarding the curing method and majority (55.0%) of the respondents have partial adoption regarding the grading method.

**Overall of Adoption Levels of the Respondents towards the Recommended Tobacco Production Practices**

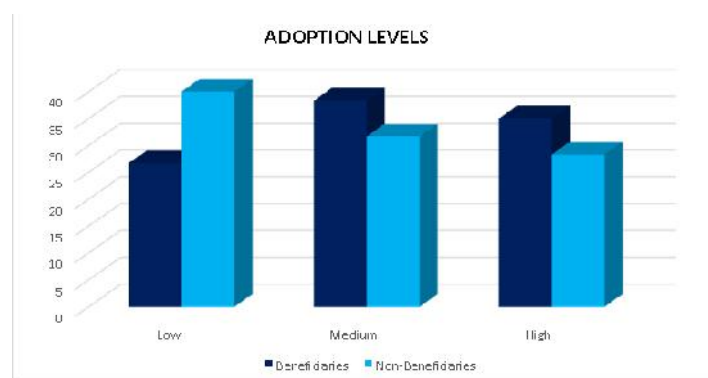
**Table 3: Distribution of the Respondents Based on their Overall Levels of Adoption**

| S.No. | Category | Beneficiaries |        | Non-Beneficiaries |        | Chi-square value ( $\chi^2$ ) |
|-------|----------|---------------|--------|-------------------|--------|-------------------------------|
|       |          | F             | P      | F                 | P      |                               |
| 1     | Low      | 16            | 26.67  | 24                | 40.00  | 15.741                        |
| 2     | Medium   | 23            | 38.33  | 19                | 31.67  |                               |
| 3     | High     | 21            | 35.00  | 17                | 28.33  |                               |
|       | Total    | 60            | 100.00 | 60                | 100.00 |                               |

F=Frequency, P=Percentage

Table value= 5.826 and 7.518 at 0.05 and 0.01 significance levels respectively

From the above table 4.3 it can be observed that among the beneficiaries 26.67 per cent of the respondents have low levels of adoption while 38.33 per cent of the respondents have medium levels of adoption and 35.00 per cent of the respondents have high levels of adoption regarding the recommended production practices of the tobacco. While among non-beneficiaries, 40.00 per cent of the respondents have low levels of adoption while 31.67 per cent of the respondents have medium levels of adoption and 28.33 per cent of the respondents have high levels of adoption regarding the recommended production practices in tobacco.



**Figure 1: Distribution of the Respondents Based on their Overall Levels of Adoption.**

From the above table 4.3 it is evident that most of the respondents (38.33%) have medium levels of adoption towards the recommended production practices in tobacco while among the non-beneficiaries most of the respondents (40.00%) have low levels of adoption towards the recommended production practices in tobacco. Hence it can be concluded that beneficiaries have high levels of adoption than the non-beneficiaries. It is found that the chi-square value (  $\chi^2$  ) 15.741 is greater than the table value = 5.826 and 7.518 at 0.05 and 0.01 level significance respectively. This shows that the recommended production practices have an impact on the adoption levels of the beneficiaries.

## CONCLUSION

Based on the major findings it can be concluded that among beneficiaries majority belonged to middle age group (36-45), were illiterate, belong to the BC community, have agriculture as their main occupation, with medium levels (1.5-3 lakhs) of annual income, have medium levels of social participation, have medium size (2.5-5 acres) of land holding with medium levels (7-12) years of farming experience, have medium levels of extension participation and high levels of mass media exposure. While most of the non-beneficiaries belong to middle age group (36-45), belong to the BC community, were illiterate, have agriculture as their main occupation, with low levels (< 1.5 lakhs) of annual income, have low levels of social participation, have small size (<2.5 acres) of land holding with low levels (<7 years) of farming experience, have low levels of extension participation and medium levels of mass media exposure. The beneficiaries were having a better socio-economic status than the non-beneficiaries. Hence it can be said that the adoption of recommended production practices in tobacco have helped to improve the socio-economic status of the respondents. This shows that the production practices have a positive impact on the socio-economic status of the respondents.

Similarly, it was found that the beneficiaries are having more levels of knowledge compared to the non-beneficiaries regarding the recommended production technologies in tobacco. Also, the beneficiaries were found to have high levels of adoption compared to the non-beneficiaries regarding the recommended production technology on the tobacco growers. The major constraints faced by the beneficiaries were inadequate and untimely rainfall, lack of regulated market and more attack of pest and disease. While among the non-beneficiaries the major constraints faced were inadequate availability of finance, unaware of the recommended package of practice and high cost of planting material. The major suggestions given by the beneficiaries were improvement in irrigation facilities, more availability of fertilizers and improvement in the transport facilities to the nearby market place.

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