

# International Journal of Statistics and Applied Mathematics

ISSN: 2456-1452  
Maths 2024; SP-9(5): 293-296  
© 2024 Stats & Maths  
[www.mathsjournal.com](http://www.mathsjournal.com)  
Received: 08-08-2024  
Accepted: 15-09-2024

## Telgote ME

M.Sc. (Agri) Student,  
Department of Agricultural  
Economics VNMKV, Parbhani,  
Maharashtra, India

## Thombre RF

Assistant Professor,  
Department of Agricultural  
Economics VNMKV, Parbhani,  
Maharashtra, India

## Munde TB

Assistant Professor,  
Department of Agricultural  
Economics VNMKV, Parbhani,  
Maharashtra, India

## Bhalerao SA

M.Sc. (Agri) Student,  
Department of Agricultural  
Economics VNMKV, Parbhani,  
Maharashtra, India

## Corresponding Author:

### Telgote ME

M.Sc. (Agri) Student,  
Department of Agricultural  
Economics VNMKV, Parbhani,  
Maharashtra, India

## Constraints faced by adopter and non-adopter of improved pigeon pea variety Godavari (BDN 2013-41) in Parbhani district of Maharashtra

Telgote ME, Thombre RF, Munde TB and Bhalerao SA

### Abstract

Pigeon pea (*Cajanus cajan* (L.)) commonly known as Red gram or Arhar, is the crop belonging to Fabaceae family and it is playing an important role in preserving poor smallholder's major source of tropics and subtropics. Looking to the importance of the problem, a study was conducted in Parbhani district of Maharashtra State and its objective was to examine constraints faced by the Godavari (BDN 2013-41) Pigeon pea adopters and non-adopters. By using multi-stage sampling design II talukas; Parbhani and Selu of Parbhani district were selected for the study. Total three villages selected from each taluka and 20 farmers were selected from each village. Thus, total sample size was 120 farmers. In this investigation, constraints were categorized into six different categories viz. Personal, Socio- economic, Communication, Technological, Agronomical and Marketing constraints. The constraints were analyzed with the help of Garret's Ranking Technique (GRT). The major constraint faced by Godavari (BDN 2013-41) from each category were Lack of knowledge (57.28 and 55.50 mean score), High cost (65.80 mean score) and Small land holding (59.00 mean score), Training of Pigeon pea package of practices (44.2 and 40.3 mean score), Non- availability of inputs (HYV seeds, fertilizers, equipment etc.) at proper time in village or nearby village (58.45 and 59.95 mean score), High incidence of pest (66.16 mean score) and High incidence of sterility mosaic virus (66.16 mean score), Low prices at the time of harvesting (22.79 and 29.11 percent) by adopter and non-adopter.

**Keywords:** Godavari, adopter, non-adopter, garret's ranking technique, constraints etc

### 1. Introduction

Pigeon pea is the second leguminous crop highly grow in Marathwada region of Maharashtra after Soybean. Godavari (BDN 2013-41) is one of the variety of Pigeon pea grown in Marathwada region of Maharashtra, developed by Agricultural Research Station (ARS), Badnapur in the year 2018. The variety recommended for irrigated land and heavy soil in drought area. Minimum one irrigation required for higher production. The yield ranges between 19.5-24.5 qntl./ha. The identified character of Godavari (BDN 2013-41) is yellow colour of flower and colour of mature seeds is white. The variety taken maturity within 160-165 days. As per the recommendation seed rate for Godavari (BDN 2013-41) is 10-12 kg./ha which helps to maintain the plant population in field and increases the production of farmer. The pigeon pea variety Godavari (BDN 2013-41) is resistant to wilt, sterility mosaic disease (SMD) and white seeded. The study conducted to examined the constraints faced by Godavari (BDN 2013-41) adopter and non-adopter.

### 2. Objective

To examined the constraints faced by Godavari (BDN 2013-41) adopter and non-adopter.

### 3. Methodology

The study was conducted in Parbhani district of Maharashtra state in year 2022-23. Parbhani district was selected on the basis of highest area and production under Godavari (BDN 2013-41) variety of Pigeon pea. By using Multi-stage sampling design Parbhani and Selu talukas were selected for the study. Three villages were selected randomly from each selected taluka.

Thus, total 6 villages were selected for the study. 10 adopter and 10 non-adopter of Godavari (BDN 2013-41) were selected from each village. Thus, 60 adopter and 60 non-adopter selected for the study. The data were collected with the help of well structured, pre-tested scheduled through personal contact.

The Godavari (BDN 2013-41) adopter and non-adopter were asked to give their responses regarding the constraints and Garret's Ranking Technique (GRT) was applied to study preference, change of orders of constraints into mean scores. Total score converted into percent by dividing respondents, obtained respondent percent score ranked as per highest percent. The results of such ranking were converted into score values by using following formula. Murkute *et al.* (2023) [4] also used similar technique to identify constraints.

$$\text{Percent position} = \frac{100 \times R_{ij} - 0.5}{N_j}$$

Where,

$R_{ij}$  = Rank given for the  $i^{\text{th}}$  variable by  $j^{\text{th}}$  respondent's  $N_j$  = Number of variables ranked by  $j^{\text{th}}$  respondent's

### 3.1 Different constraint faced by adopter and non-adopter of Godavari (BDN 2013-41)

1. Personal Constraints.
2. Socio-economic constraints.
3. Communication constraints.
4. Technological constraints.
5. Agronomical constraints.
6. Marketing constraints.

## 4. Results

In a present study constraints were categorized into following type i.e. Personal, Socio-economic, Communication, Technological, Agronomical and Marketing constraints.

### 4.1 Personal Constraint

In personal constraint the first constraint i.e. Lack of knowledge was majorly faced by both adopter and non-adopter with mean score 57.28 percent for adopter and 55.50 percent for non-adopter by taking rank first. Lack of education was a second major personal constraints faced by adopter with mean score 44.58 percent and by non-adopter 42.48 percent by taking rank second. While more age was third personal constraint faced by adopter and non-adopter with mean score 43.90 percent and 41.65 percent by taking rank third. The last fourth one constraint was Large family faced by adopter with mean score 20.23 percent and for non-adopter 26.36 percent by taking rank fourth.

### 4.2 Socio-economic constraint

Socio-economic constraints were correlated with different kinds of socio-economic factors. 21 the constraints small land holding for adopter taking mean score 42.52 percent and 59 percent by taking rank fourth and first for adopter and non-adopter. The next important constraint i.e. high cost taking mean score 65.8 percent and 57.98 percent with rank first and second for adopter and non-adopter. Low income is another socio-economic problem taking mean score 58.13 percent and 56.4 percent with rank second and third for adopter and non-adopter. Another important constraint i.e. credit was not available at proper time and in proper amount with mean score 46.46 percent and 45.21 percent by taking rank third and fourth for adopter and non-adopter. Lack of social

motivation was another constraint faced by adopter and non-adopter with mean score 31.3 percent and 28.65 percent by taking rank fifth for both. The last and important factor i.e. other people not adopt advanced technology with 18.71 percent for adopter and 15.75 percent for non-adopter by taking rank sixth.

### 4.3 Communication constraint

Communication was process of transfer of ideas from one person to another person by various media. There were two major communication constraints faced by adopter and non-adopter with given mean score and rank. Non availability of information at proper amount and proper time was problem faced by adopter with mean score 20.8 percent, for non-adopter

24.7 percent by taking rank second. Another important communication problem i.e. Training of pigeon pea package of practices taking mean score 44.2 and 40.3 percent for adopter and non-adopter by taking rank first respectively.

### 4.4 Technological constraints

There were four major technological constraints faced by adopter and non-adopter of Godavari (BDN 2013-41). Non-availability of inputs i.e. High yielding variety seeds, fertilizers, equipment at proper time in village or nearby village is a major problem faced by adopter and non-adopter with mean score 58.45 percent and 59.95 percent by taking rank first. Another important constraint i.e. unavailability of electric supply taking rank third in adopter and fourth in non-adopter with mean score 34.13 percent and 18.93 percent respectively. Lack of irrigation facilities with mean score 29.03 percent and 40.23 percent for adopter and non-adopter by taking rank fourth and third. Last constraint i.e. low mechanization was taking second rank with mean score 44.38 percent and 46.88 percent for both adopters and non-adopters respectively. In study region found that all the technological constraints were partially faced by adopters and non-adopters due to unavailability of extension services in that particular area.

### 4.5 Agronomical constraints

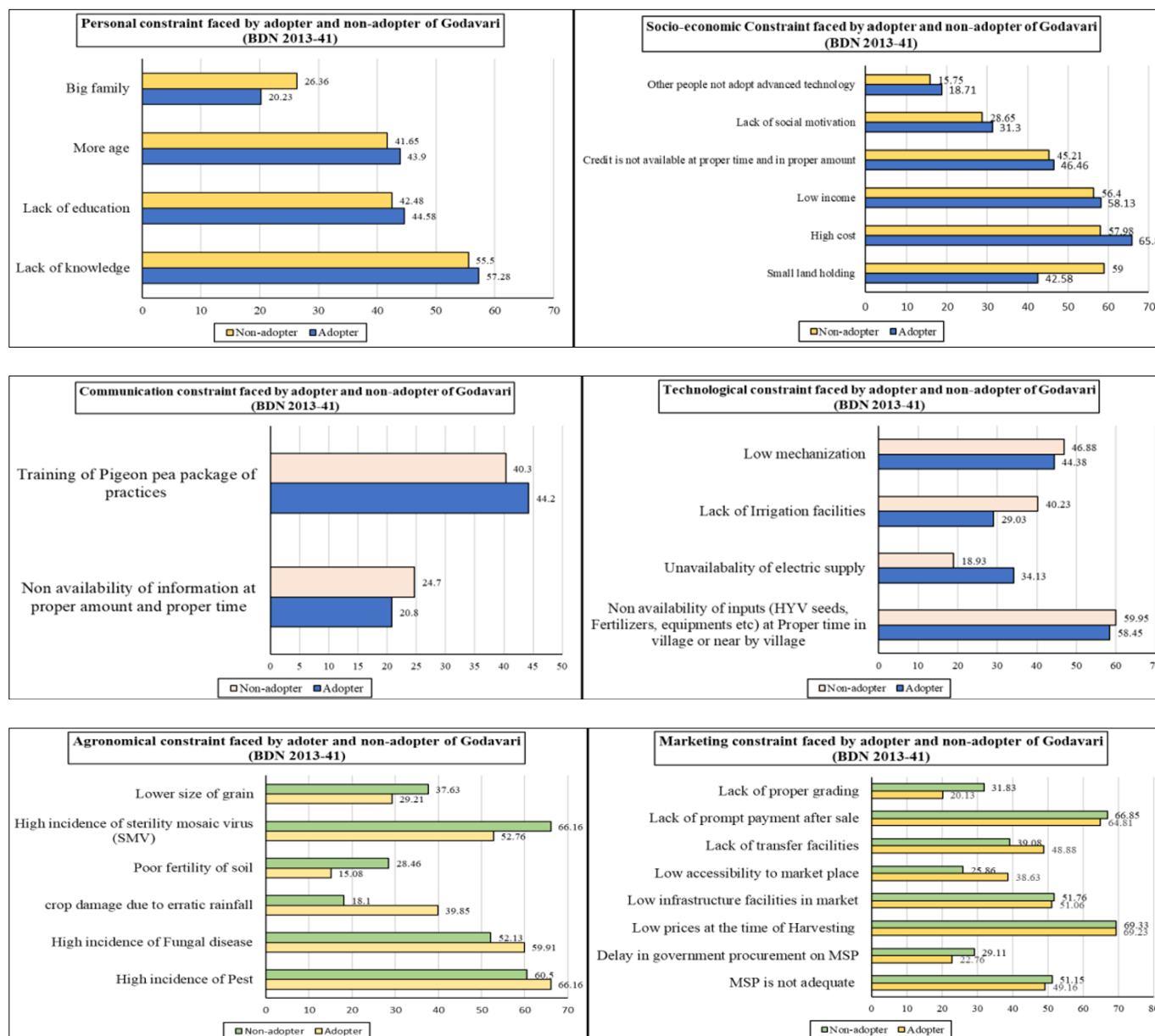
High incidence of pest was one of the agronomical constraints faced by adopter and non-adopter with mean score 66.16 percent by taking rank first and 60.5 percent by taking rank second. In case of incidence of fungal disease for adopter with mean score 59.91 percent by taking rank second and for non-adopter with mean score 52.13 percent by taking rank third. Another important agronomical constraint i.e. crop damage due to erratic rainfall with mean score 39.85 percent and 18.1 percent by taking rank fourth and sixth for adopter and non-adopter. Poor fertility of soil was another important agronomical problem faced by adopter and non-adopter with mean score 15.08 percent and 28.46 percent by taking rank sixth and fifth respectively. The incidence of sterility mosaic in case of non-adopter was high it was taking rank first with mean score 28.46 percent and in case of adopter its taken rank third with mean score 52.76 percent. The last agronomical problem i.e. lower size of grain faced by adopter and non-adopter with rank 29.21 percent and 37.63 percent by taking rank fifth and fourth respectively.

### 4.6 Marketing constraints

There were eight marketing constraints considered for research purpose based on market. The first problem faced by adopter and non-adopter i.e. MSP was not-adequate with rank

49.16 percent and 51.15 percent by taking rank fourth for both. Second market-based constraint i.e. delay in government procurement on MSP faced by adopter with mean score 22.76 percent and by non-adopter with mean score 29.11 percent by taking rank seventh by both of them. Low price at the time of harvesting was major problem faced by adopter and non-adopter by taking rank first with mean score 69.23 percent for adopter and 69.33 percent for non-adopter. Another problem i.e. low infrastructure facilities in market faced by adopter and non-adopter with mean score 51.06 percent and 51.76 percent by taking rank third. Low

accessibility to market place was another market-based constraint faced by adopter and non-adopter with mean score 36.83 percent and 25.86 percent by taking rank sixth and eight. While the constraint, lack of transfer facilities faced by adopter and non-adopter with mean score 48.88 percent and 39.08 percent by taking rank fifth. The rank second taken by problem lack of prompt payment after sale with mean score 64.81 percent and 66.85 percent by adopter and non-adopter. The last constraint i.e. lacks of proper grading faced by adopter and non-adopter with mean score 20.13 percent and 31.83 percent by taking rank eighth and sixth respectively.



**Fig 1:** Graphical representation of constraint faced by Godavari (BDN 2013-41) adopter and non-adopter

**Table 1:** Constraints faced by Godavari (BDN 2013-41) adopter and non-adopter

Sr. No.	Categories	Adopter		Non-adopter	
		Mean score	Rank	Mean score	Rank
<b>A.</b>	<b>Personal Constraint</b>				
1.	Lack of knowledge	57.28	I	55.5	I
2.	Lack of education	44.58	II	42.48	II
3.	More age	43.9	III	41.65	III
4.	Large family	20.23	IV	26.36	IV
<b>B.</b>	<b>Socio-economic Constraint</b>				
1.	Small land holding	42.58	IV	59	I
2.	High cost	65.8	I	57.98	II

3.	Low income	58.13	II	56.4	III
4.	Credit is not available at proper time and in proper amount	46.46	III	45.21	IV
5.	Lack of social motivation	31.3	V	28.65	V
6.	Other people not adopt advanced technology	18.71	VI	15.75	VI
<b>C.</b>	<b>Communication Constraint</b>				
1.	Non availability of information at proper amount and proper time	20.8	II	24.7	II
2.	Training of Pigeon pea package of practices	44.2	I	40.3	I
<b>D.</b>	<b>Technological Constraint</b>				
1.	Non availability of inputs (HYV seeds, Fertilizers, equipment etc.) at Proper time in village or nearby village	58.45	I	59.95	I
2.	Unavailability of electric supply	34.13	III	18.93	IV
3.	Lack of Irrigation facilities	29.03	IV	40.23	III
4.	Low mechanization	44.38	II	46.88	II
<b>E.</b>	<b>Agronomical Constraint</b>				
1.	High incidence of Pest	66.16	I	60.5	II
2.	High incidence of Fungal disease	59.91	II	52.13	III
3.	crop damage due to erratic rainfall	39.85	IV	18.1	VI
4.	Poor fertility of soil	15.08	VI	28.46	V
5.	High incidence of sterility mosaic virus (SMV)	52.76	III	66.16	I
6.	Lower size of grain	29.21	V	37.63	IV
<b>F.</b>	<b>Marketing Constraint</b>				
1.	MSP is not adequate	49.16	IV	51.15	IV
2.	Delay in government procurement on MSP	22.76	VII	29.11	VII
3.	Low prices at the time of Harvesting	69.23	I	69.33	I
4.	Low infrastructure facilities in market	51.06	III	51.76	III
5.	Low accessibility to market place	38.63	VI	25.86	VIII
6.	Lack of transfer facilities	48.88	V	39.08	V
7.	Lack of prompt payment after sale	64.81	II	66.85	II

## 5. Conclusion

From the above finding, it can be concluded that adopter and non-adopter of Godavari (BDN 2013-41) Pigeon pea variety experienced various constraints. Most of the respondents highlighted on constraint like lack of knowledge, small land holding and high cost of inputs, training of Pigeon pea package of practices, non-availability of inputs (HYV seeds, fertilizers, equipment) at proper time in village of nearby village, high incidence of pest and high incidence of sterility mosaic virus (SMV) and low prices at the time of harvesting of crop etc. along with this various personal, socio-economic, communication, technological, agronomical and marketing constraint were faced by adopter and non-adopter of Godavari (BDN 2013-41) were noticed in study area. Government policies should enable farmers to have access to extension services adequately as a lack of knowledge, input and credit unavailability had been indicated as the major barrier to the adoption of technology. Government should also focus on providing timely electric supply and proper irrigation facilities to enhance adoption of new technologies.

## 6. References

1. Thombre RF, Deshmukh KV, More SS, Chavan RV. Constraints and suggestion analysis in production and marketing of maize in Marathwada region of Maharashtra using Garrett's Ranking Technique. *Int J Curr Microbiol Appl Sci.* 2020;9(8):1773-1778.
2. Holmukhe SS, Kadam RP. Improved variety of pigeon pea BDN 711: Confronted constraints and suggestions assimilated by growers in Marathwada region. *Int J Stat Appl Math.* 2023;8(6):1252-1255.
3. Kamble VM, Perke DS, Pathrikar DT. Constraints faced by sorghum variety Parbhani shakti adopter and non-adopter in Parbhani district of Maharashtra state. *Biol Forum Int J.* 2023;15(11):578-580.
4. Murkute SP, Thombre RF, Munde TB. Constraints faced by chickpea growers in adoption of recommended chickpea production technology by VNMKV in Hingoli

district of Maharashtra. *Int J Res Trends Innov.* 2023;8(11):485-487.

5. Wankhade PU, Perke DS, Pathrikar DT. Constraints faced by pearl millet variety AHB-1200 adopter and non-adopter in Chhatrapati Sambhaji Nagar district of Marathwada region. *Biol Forum Int J.* 2024;15(12):258-260.