

# Analysis Of Constraints Influencing Sorghum Farmers Using Garrett's Ranking Technique; A Comparative Study Of India And Nigeria

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## Introduction

It is quite natural that a change in the system of agriculture in a country of more than a million people should be a well thought out process, which requires utmost care and caution. There may be several impediments on the way. An understanding of these problems and prospects will go a long way in decision making

## Methodology

The study was carried out in India and Nigeria. Both countries India and Nigeria were selected purposively being the 3<sup>rd</sup> and the 4<sup>th</sup> Sorghum producers in the world. So in India, Maharashtra was purposively selected based on its production. The state has six Divisions with 36 Districts; A list of all Sorghum producing districts was prepared the highest sorghum producing 2 districts (Solapur and Akola) were selected purposively. 2 villages from Solapur and two villages from Akola (Shirapur, Kalman, Kinkhed and Kanzara) were purposively selected on the basis maximum Sorghum production. A list of Sorghum producer was prepared in each village and the total of 240 Sorghum producers were selected randomly. In

Nigeria, Adamawa State was selected on the basis of highest production level was selected purposively in Nigeria. The state has twenty-one Local Government Areas which are categorized into four agricultural zones; South West, Central, North West and North East Zone. Twenty percent Local Government Area have been ( i.e four LGA) have been purposively selected from each zone, comprise Viz; Ganye, Guyuk, Mubi south and Girei.

## Analytical tool

Information regarding the problems faced by the farmers in sorghum cultivation will be procured. Constraints were identified in consultation with the experts of sorghum cultivation and farmers were be asked to rank the problems proposed to them. Garrett's Ranking Technique provides the change of orders of constraints and advantages into numerical scores. The prime advantage of this technique over simple frequency distribution is that the constraints are arranged based on their severity from the point of view of respondents. Hence, the same number of respondents on two or

more constraints may have been given different rank. Garrett's formula for converting ranks into percent is: **Percent position** =  $100 * (R_{ij} - 0.5) / N_j$  Where,  $R_{ij}$  = rank given for  $i^{\text{th}}$  constraint by  $j^{\text{th}}$  individual;

$N_j$  = number of constraint ranked by  $j^{\text{th}}$  individual.

The per cent position of each rank will be converted into scores referring to the table given by Garrett and Woodworth (1969). For each

factors, the scores of individual respondents will be added together and divided by the total number of the respondents for whom scores will be added. These mean scores for all the constraints will be arranged in descending order; the constraints will be accordingly ranked.

### Constraints to Sorghum Production

Garrett ranking technique has been used to analyse the factors influencing the production of sorghum by the respondents

**Table 1 Percentage Positions and their corresponding Garetts Table values**

Rank	Percentage Position		Garrett Table
1	$100(1-0.5)/12$	4.2	84
2	$100(2-0.5)/12$	12.5	73
3	$100(3-0.5)/12$	20.8	66
4	$100(4-0.5)/12$	29.2	61
5	$100(5-0.5)/12$	37.5	56
6	$100(6-0.5)/12$	45.8	53
7	$100(7-0.5)/12$	54.2	49
8	$100(8-0.5)/12$	62.5	44
9	$100(9-0.5)/12$	70.8	40
10	$100(10-0.5)/12$	79.2	34
11	$100(11-0.5)/12$	87.5	27
12	$100(12-0.5)/12$	95.8	18

Source; Field survey 2014

$$\text{Percentage position} = 100 (R_{ij} - 0.5) / N_j$$

Under Garrett Technique the percentage position is calculated by using the following formulae

Where  $R_{ij}$  = Rank given for  $i^{\text{th}}$  variable by the  $j^{\text{th}}$  respondent

$N_j$  = Number of variable rank by the respondent

The respondents were asked to rank the twelve factors identified for the purpose of this studies as 1, 2, 3, 4 .....12 in order to know their preference in the selection of constraint. The

calculated percentage position for the rank 1, 2, 3,.....12 and their correspondent Garrett table as show in Table 5 :23, For factors, the total score is calculated by multiplying the number of respondents ranking that factor as 1, 2, 3,,,,, and 12

## Results and Discussio

S/ N	Factor	Rank												Total No of resp ond ent	Total score in India	Total mean in India	Rank in India
		1	2	3	4	5	6	7	8	9	10	11	12				
1	shortage/high cost of inputs	165	4	1	3	15	2	12	3	17	8	4	6	240	17235	71.81	5
2	inadequate farm credit	170	11	9	10	4	6	3	7	2	8	4	6	240	17852	74.38	3
3	Striga infestation	108	3	3	4	12	6	4	24	30	16	10	20	240	14349	59.79	9
4	Shortage of labour	123	7	17	6	7	20	9	11	12	7	8	13	240	15876	66.15	8
5	Variability in amount of rainfall	150	34	11	6	9	5	6	4	3	5	4	3	240	17865	74.44	2
6	Pests and diseases	70	50	40	10	6	13	17	24	3	2	1	4	240	15981	66.59	7
7	Birds infestation	123	37	14	11	15	5	6	9	2	4	2	2	240	16729	69.70	6
8	Cattle rearers	50	40	15	5	25	23	15	17	12	13	11	14	240	13988	58.28	12
9	Inadequate research and extension support	134	35	11	12	7	13	8	4	5	2	1	8	240	17357	72.32	4
10	Land tenure	62	18	34	26	14	11	6	9	14	17	13	16	240	14186	59.11	10
11	Lack of good storage facilities	48	22	30	25	25	14	16	13	13	11	12	11	240	14057	58.57	11
12	Low price of sorghum	180	2	11	3	6	9	8	4	5	4	5	3	240	18081	75.34	1

**Table 2 Ranking constraint associated to sorghum production in India**

The result from table 5.24 indicates the various challenges/constraint experienced by the sorghum farmers in the study area. The study revealed that, the major challenges experienced by farmers

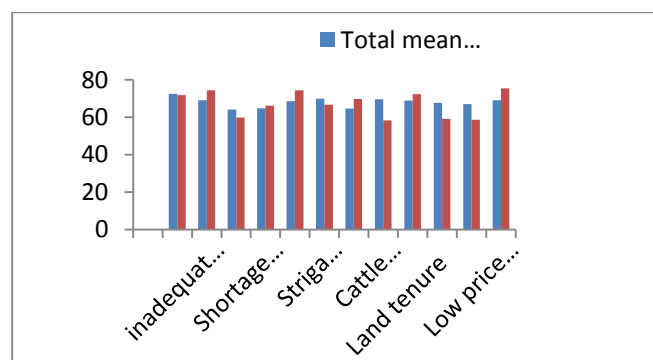
cultivating sorghum in India are the low price of sorghum (75.34), variability in amount of rainfall (74.48), inadequate agriculture credit (74.48), inadequate research and extension support

(72.32), shortage /high cost of input (71.81) and bird infestation (69.78).

**Table 3 Ranking constraint associated to sorghum production in Nigeria**

S/N	Factor	Rank												Total No of respondents	Total score in Nigeria	Total mean in Nigeria	Rank in Nigeria
		1	2	3	4	5	6	7	8	9	10	11	12				
1	shortage/high cost of inputs	158	10	10	12	3	5	2	15	10	5	5	5	240	17380	72.42	1
2	inadequate farm credit	144	8	6	12	14	6	4	6	8	12	11	9	240	16557	68.99	5
3	Pests and diseases	112	9	11	6	14	8	12	30	5	15	10	8	240	15397	64.16	10
4	Shortage of labour	120	18	8	12	4	2	6	18	12	12	8	20	240	15534	64.72	12
5	Variability in amount of rainfall	126	12	14	18	12	8	11	9	5	15	5	5	240	16448	68.53	7
6	Striga infestation	134	16	13	7	18	17	4	6	2	8	10	5	240	16790	69.96	2
7	Birds infestation	122	8	12	18	4	2	4	12	18	10	14	16	240	15502	64.59	11
8	Cattle rearers	150	10	5	5	6	14	10	4	7	3	16	10	240	16703	69.60	3
9	Inadequate research and extension support	140	9	11	8	14	6	2	12	8	13	10	7	240	16517	68.82	6
10	Land tenure	130	13	7	11	10	12	16	11	6	4	3	17	240	16229	67.62	8
11	Lack of good storage facilities	134	17	13	5	6	7	3	6	4	11	16	18	240	16068	66.95	9
12	Low price of sorghum	128	14	18	12	11	9	11	5	9	15	3	5	240	16587	69.13	4

Table 5.25 also reveals that the major problem facing farmers cultivating sorghum in Nigeria farming were shortage/high cost of inputs (72.42), Striga infestation (69.96), cattle rearers (69.69), low price of Sorghum (69.13), inadequate farm credit (68.99) and inadequate research and extension support.



**Fig 1 Mean distribution of constraints in India and Nigeria**

The following problems are more pronounced by the farmers are presented below

### 1. **Shortage/High Cost of Inputs**

The farmers also complained of shortage/high cost of inputs such as improved seeds, fertilizer, herbicides and pesticides as majority of the farmers cannot afford to purchase the right quantity needed to increase sorghum production. This finding collaborates with Kwaghe *et al.* (2000) who reported high cost of important farm inputs militating against efficient farming. It also agreed with the findings of Tashkalma *et al.* (2010) Zalkuwi (2012).

### 2. **Striga Infestation**

Majority of farmers identified striga infestation as a major problem affecting them and has no chemical to control it. Striga is capable of wiping out the entire crop; in fact it is very destructive. Most of the farmers look forward to getting a control or preventive measures for this witched weed/striga. This is in consonance with the the findings of Zalkuwi 2013

### **Inadequate Agricultural Credits**

Inaccessibility of credit facilities also militate against efficient sorghum cultivation in the study area. Most of the farmers complain of favouritism in granting loans to individuals who rarely engage in agricultural production. The implication of this scenario was that, the farmers who would have benefited from the credit facilities did not do so, from the underutilization of these inputs and hence, subsequently low productivity

### **Variability in Rainfall**

Farmers complained of shortage of rainfall during the sensitive cropping period of sorghum production. So this led to low productivity.

### **Low price of sorghum**

Farmers also complained of low price of Sorghum compare to other crops, which resulted to less profit compare to other crops so that is why they concentrate on other crops with higher prices

### **Inadequate research and extension support**

Inaccessibility of research and extension support facilities also militates against efficient sorghum cultivation in the study area. Most of the farmers complain of no extension visit to them to enhance their agricultural production

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