The Pharma Innovation Journal 2023; SP-12(7): 1090-1092

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(7): 1090-1092

www.thepharmajournal.com
Received: 01-04-2023
Accepted: 08-05-2023

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Constraint analysis in groundnut production in Mahaboobnagar District of Telangana: Garrett's ranking analysis

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Abstract
Mahaboobnagar district had major area under groundnut cultivation in Telangana state with 60 percent of the groundnut production in the state. For the study, a sample of 40 farmers each from marginal, small, and large categories were selected. Total 120 groundnut farmers were taken as the sample for the study. Garrett's ranking technique was used to analyze various constraints in groundnut production. The biggest Production constraint in the farmers view was "labor unavailability and high cost" followed by "lack of irrigation water". The major marketing constraint was "non-remunerative price" followed by lack of market information. Under other constraints "wild boar damage" became a major constraint for the groundnut farmers.

Keywords: Constraint analysis, Garrett's ranking, groundnut, production constraints, marketing constraints

Introduction
Groundnut is the KING of oilseeds, and it is botanically known as '*Arachis hypogea*' belongs to the family Leguminosae. Groundnut is a cash crop providing income and livelihood to the farmer. It also contributes to nutrition through consumption of pods. The pod contains 48.2% oil, 25.3% protein, 2.1% crude fibre and rich source of calcium, iron and vitamin B complex like thiamine, riboflavin, niacin and vitamin A.
Groundnut constitutes 2.61 percent of the total cropped area and 28.18 percent of the total oil seeds cropped area in Telangana. Mahaboobnagar, Warangal and Nalgonda districts together accounts for 86.66 percent of groundnut area in the state.

Methodology
The maximum area under groundnut cultivation is concentrated in Mahaboobnagar district of Telangana state therefore, Mahaboobnagar district was selected purposively for the study. Four villages *viz*. Uppununthala, Penmilla, Kalwakole and Vennacherla from two mandals *viz*., Peddakothapalli and Uppununthala mandal from Mahaboobnagar district were selected purposively on the basis of maximum area under groundnut cultivation as per secondary data obtained from Directorate of Economics and Statistics, Hyderabad. From the selected villages, the list of groundnut cultivators were obtained from the mandal agricultural office of the selected mandals. From each selected village, a sample of thirty (30) groundnut cultivators were selected randomly. Thus, the final sample consisted of 4 villages and 120 groundnut cultivators from both Peddakothapalli and Uppununthala mandal.
The data was collected by personal Interview by using a pre-tested schedule for groundnut cultivators. Garrett's ranking technique was used for analysing the various constraints such as Production, Marketing and other constraints in Groundnut production.

Functional analysis
For identifying and quantifying the influence of the constraints on yield gap Garrett's ranking technique was carried out. In this technique, respondents were ask to rank the constraints, then these ranks were converted into percent position by using the formula:

$$\text{PERCENT position} = \frac{100*(R_{ij}-0.5)}{N_j}$$

Where,
R_{ij} = Rank given to i^{th} constraint by the j^{th} individual,
N_j = No. of constraints ranked by the j^{th} individual.

By referring to Garrett's table the percent position estimated was converted into scores. Thus, for each constraint the scores of various respondents were added, and the mean values were estimated. The constraint with the highest mean value was considered as the most important one and other followed in the order.

Results and Discussion

The production constraints, marketing constraints and other constraints as per the ranks given by the farmers were analyzed to rank the order of the constraints from highest to lowest by using Garret's ranking technique. The production constraints given to the farmer to give rank were unavailability of HYV's, high cost of seed, lack of technical knowledge, occurrence of pest and diseases, high cost of plant protection chemicals, high cost of fertilizers, unavailability of machinery and equipment, high cost of machinery, labor unavailability and high cost, less seed viability, lack of irrigation water facilities and unavailability of credit. The marketing constraints given to the farmer to give rank were insufficient marketing facilities, non-remunerative price, lack of market information and storage facilities. Wild boar attack and monkeys attack were taken as other constraints.

By looking into table 1, it can be understood that the biggest constraint in the farmers view is labour unavailability and high cost with the highest Garret Score of 75.12, followed by lack of irrigation water with a score of 73.40. These two were the major impacting constraints groundnut is highly a labour intensive crop, labor scarcity during the peak periods leads to high cost of cultivation of groundnut crop and reduction in yield as groundnut is an irrigated crop, the frequent occurrence of droughts and untimely rains leading to reduction in the yield levels.

With a score of 70.88 high cost of seed was ranked as third constraint. Farmers opined that the cost of groundnut seed was very high, only few farmers mostly large farmers are getting subsidy seed. The seed distribution under subsidy was based on the bank account passbook irrespective of the acreage of farmer. This leads to farmers to buy seed from private dealers with a high cost.

With a Garret score of 57.27 unavailability of credit ranked as fourth major constraint by the sample farmers. High labor charges during peak periods, high cost of seed, plant protection chemicals, fertilizers and machinery charges contributing to the high cost of cultivation which the farmers cannot afford to pay because of the credit unavailability as per the opinion of farmers.

High cost of machinery and unavailability of machinery and equipment were ranked 5^{th} and 6^{th}positions with a Garrett score of 55.32 and 51.13, respectively. Tractors, threshers and bullock drawn implements are the major machinery and equipment used for field preparation, sowing, threshing and other operations.

Table 1: Production constraints in groundnut cultivation

S. No.	Constraint	Score	Rank
1.	Unavailability of HYV's	27.50	11
2	High cost of seed	70.88	3
3	Lack of technical knowledge	27.45	12
4	Occurrence of pest and diseases	47.64	8
5	High cost of plant protection chemicals	45.83	9
6	High cost of fertilizers	47.70	7
7	Unavailability of machinery and equipment	51.13	6
8	High cost of machinery	55.32	5
9	Labour unavailability and high cost	75.12	1
10	Less seed viability	29.61	10
11	Lack of irrigation water	73.40	2
12	Unavailability of credit	57.27	4

High cost of fertilizers was ranked 7^{th} with a score of 47.70, farmers opined that even though fertilizers were supplied under the government subsidy, the cost of the phosphorus fertilizers and potassium fertilizers are still high. Since the cost for nitrogen fertilizers are low, farmers are using excess amount of nitrogen fertilizers and lesser amounts of phosphorus and potassium fertilizers.

Occurrence of pests and diseases and high cost of plant protection chemicals were ranked 8^{th} and 9^{th} with a score of 47.64 and 45.83, respectively. As groundnut is susceptible to various insects and soil borne diseases farmers have to incur more expenditure on plant protection chemicals.

Less seed viability, unavailability of HYV's were ranked 10^{th} and11^{th}constraints with the Garret scores of 29.61 and27.50 by the sampled farmers. These two were also the yield impacting constraints because the unavailability of HYVs at the farmer's level and the spurious seed with low germination percentage by the private agencies affects the groundnut yield levels.

Last but not the least lack of technical knowledge was ranked as the 12^{th}important constraint with a Garrett's scores of 27.45 by the sampled farmers. Lack of knowledge about improved seed, seed treatment, proper sowing method, fertilizers usage and application and pest and disease control measures hindering the farmers from getting high yields and increases the cost of cultivation.

The suggestions to overcome the constraints are mechanization, efficient use of sprinkler, drip, etc. and seed production at village level to encourage farmers to produce their own seed which reduce the cost of seed. Research on development of suitable varieties for different situations to be intensified.

Table 2: Marketing constraints in groundnut cultivation

S.No.	Constraint	Score	Rank
1	Insufficient marketing facilities	41.02	4
2	Non-remunerative price	73.09	1
3	Lack of market information	44.73	2
4	Storage facilities	43.43	3

Table 2 revealed that, non-remunerative price and lack of market information were the major constraints given by the sampled farmers with the Garret scores of 73.09 and 44.73. As the cost of cultivation of groundnut was high and highly labor intensive, the market price should get at least minimum profits to the farmers. But low and highly fluctuating market prices leads to very low profits for the groundnut farmers which may be the major cause for the reduction in the groundnut area.

Storage facilities and insufficient market facilities were also important constraints for the groundnut farmers ranked 3rd and 4th with Garret scores of 43.43 and 41.02. Most of the farmers did not possess any storage structures because of the poor economic status of the farmers which is hindering them to store the produce until they get fair prices. Insufficient market facilities such as proper platforms to keep the produce in market yards, transportation facilities etc. were the other constraints given by the sampled farmers.

Table 3: Other constraints in groundnut cultivation

S. No.	Constraint	Score	Rank
1	Wild boar damage	69.98	1
2	Monkeys damage	15.40	2

Apart from the production constraints and marketing constraints, farmers were not left free of wild boar damage which was very common and considerable. Wild boar damage was severe and causing considerable yield loss to the farmer. Some of the farmers are also facing the monkeys damage in some of the areas but considerably less. Wild boar damage and monkeys damage were ranked 1st and 2nd with Garret scores of 69.98 and 15.40 respectively.

Forests in the nearby should not be damaged. Harmless methods without affecting the health of animals should be adopted such as solar fencing with mild shock, sounding methods etc.

Conclusion

Constraint analysis revealed that “labour unavailability and high cost” is the major constraint spelt out by the farmers, followed by “lack of irrigation water”. Therefore, changing some of the management practices such as herbicide application to reduce human labour for weeding, using labour-saving machinery, effective usage of irrigation water through storing water in farm ponds and closed tanks, using drip system for irrigation, bringing awareness on water use efficiency among the farmers etc. may result in avoiding these constraints.

Non-remunerative price was also the major constraint for the farmers. Low and fluctuating market prices and lack of market information, insufficient market facilities were resulting in low net returns for the farmers. Making farmers aware on market prices and fixed remunerative price for groundnut based on the cost of cultivation may result in bringing better profits to the farmers. Wild boar damage was also contributing to the yield loss and low profits to the farmers. Harmless scientific methods of wild boar control measures should be developed.

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