

Yield Gaps and Constraints in Groundnut Production in Karnataka*

S. M. PATIL AND L. B. KUNNAL

Department of Agricultural Economics,
University of Agricultural Sciences, Dharwad-580 005

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Abstract : The study was conducted in Dharwad district of Karnataka where groundnut is an important oilseed crop. Primary data were collected from the sample farmers while the research data and data on demonstration plots were collected from the research stations and extension education units of the University of Agricultural Sciences, Dharwad. As revealed by the results there was sizeable total yield gap in groundnut. The magnitude of the total yield gap on large farms was comparatively less than that on small farms. The magnitude of yield gap-I was higher. The yield gap-II on small farms was observed to be relatively large when compared to that on large farms. The perceived constraints by farmers for attaining higher yield in groundnut were, labour problem, non-availability of quality seeds, untimely and insufficient rainfall, soil problems, lack of capital and lack of technical know how.

Introduction

Groundnut is an important oilseed crop in Karnataka occupying an area of 1.19 million hectares with the production of 0.823 million tonnes. The average yield is about 693 kgs per hectare which is much less than all India average. Any new technology developed at research stations is tested amply through verification trials and demonstrations before it is released to the farmers for adoption. Even then the crop yields by the farmers on their farms tend to be considerably lower than those recorded at research stations. This shows the existence of a considerable untapped yield potential. The factors responsible for such yield differences are many. The present study has made an attempt to analyse the yield gaps in improved variety of groundnut 'Phule Pragati' (JL-24) produced in Dharwad district of Karnataka. An attempt is also made to analyse the constraints in achieving higher yields.

Material and Methods

The study was conducted in Dharwad district which occupies third place in area and production of groundnut in the state with 1.5 lakh hectares of area under groundnut and

32316 tonnes of production. Dharwad and Hubli taluks in Dharwad district were selected for the study based on higher percentage of groundnut area under improved varieties of groundnut. Four villages from each of the selected taluks were chosen. From each village 15 farmers growing improved variety of groundnut (JL-24) were selected at random. The total sample thus selected for the study was 120 consisting of 60 small farmers and 60 large farmers. The information on inputs applied, yields obtained and constraints in groundnut production were collected from the sample farmers through personal interview with the help of prestructured schedule for the agricultural year 1994-95. Simple tabular analysis was used to estimate the magnitude of yield gaps. The data pertaining to the performance of groundnut (JL-24 variety) at the respective Research Stations of University of Agricultural Sciences, Dharwad as potential yield and the data on 12 demonstration plots conducted by the Directorate of Extension, University of Agricultural Sciences, Dharwad were considered as potential farm yield for the present study to estimate the magnitude of yield gaps. The constraints perceived by the farmers in attaining higher yields in groundnut were also

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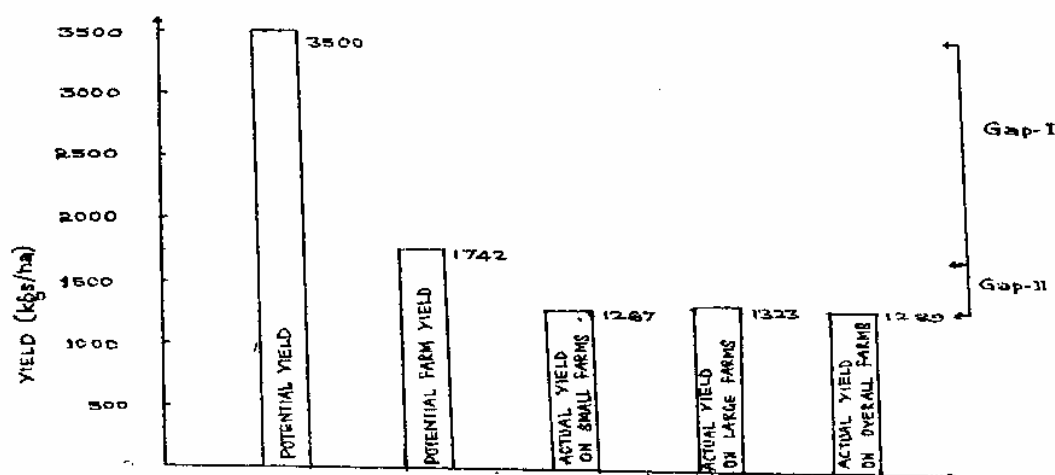


Fig. 1. Realised groundnut yield under different situations in Dharwad district, Karnataka

analysed through tabular analysis.

Results and Discussion

The present study concentrated on the analysis of yield gaps in JL-24 variety of groundnut under different situations. The per hectare realised yield of groundnut under different situations are presented in table 1. Potential yield is defined as the per hectare

Table 1 : Realised groundnut yield under different situations

Sl.No.	Particulars	Yield (Kgs/ha)
1.	Potential yield	3500
2.	Potential farm yield	1742
3.	Actual yield	
	a. On small farms	1287
	b. On large farms	1323
	c. On overall farms	1289

yield realised at the research station. This yield is considered to be maximum absolute production potential of the crop. The potential yield of groundnut was found to be 3500 kgs per hectare. The potential farm yield is defined

Table 2. Estimated yield gaps in groundnut

Sl.No.	Particulars	Yield gaps (Kgs/ha)	
1.	Yield gap-I	1758	(50.22)
2.	Yield gap-II		
	a. On small farms	455	(26.12)
	b. On large farms	419	(24.05)
	c. On overall farms	453	(26.00)
3.	Total yield gap		
	a. On small farms	2213	(63.23)
	b. On large farms	2177	(62.20)
	c. On overall farms	2211	(63.17)

(Figures in paranthesis are the respective percentages).

as the per hectare yield of groundnut was found to be 1742 kgs per hectare. Actual yield is the per hectare yield obtained at demonstration plots. The potential farm yield realised by the farmers on their own farm and with their own resources and management practices. The overall average productivity of groundnut realised by the sample farmers was found to be 1289 kgs per hectare. The productivity of groundnut on small farms was 1287 kgs per hectare and was slightly less than that on the large farms (1323 kgs/ha).

Yield Gaps.....

The estimated yield gaps in groundnut are presented in table 2. Yield gap-I referred to the difference between the potential yield and the potential farm yield and the difference between potential farm yield and the actual yield on the respective farms was referred to as yield gap-II. The total gap was the difference between the potential yield and actual yield on the respective farms. As revealed by table 2 there was a sizeable total yield gap in groundnut (2211 kgs per hectare). The magnitude of the total yield gap on large farms was comparatively less than that on small farms. This indicated that the performance of large farms in terms of total yield was better than that of small farms.

The magnitude of yield gap-I was 1,458 kgs per hectare. The yield gap-II on small farms was observed to be relatively large when compared to that on large farms. The smallest size of yield gap-II (419 kga/ha) in groundnut was noticed on large farms. While the largest size of the yield gap-II (455 kgs/ha) was observed on small farms. The smallest total yield gap (2,177 kg/ha) was recorded on large farms.

As revealed by the results of the study the yield gap-I was very high (50.22 per cent). This was attributed to environmental differences between research stations and farmer's fields and to the non transferable components of

Table 3. Perceived constraints on attaining higher yields in groundnut

Sl.No.	Particulars	Small farmers (N=59)	Large farmers (N=61)	Total farmers (N=120)
1.	Untimely rainfall	60.00	62.50	61.25
2.	Non availability of quality seeds	62.25	67.50	64.87
3.	Soil problems	65.00	62.25	63.62
4.	Use of insufficient fertilizer for want of money	20.00	10.00	15.00
5.	Diseases and pests	47.50	32.50	40.00
6.	Labour problem (scarcity of labour)	70.50	92.50	81.50
7.	Shortage of funds	27.50	7.50	17.50
8.	Lack of technical knowledge	40.00	50.00	45.00

technology. The experiments were conducted on very small plots under ideal conditions of land, soil, moisture and assured input supply and the technical expertise available at research stations was of higher order. These factors helped in attaining maximum productivity at the research stations. This gap was therefore termed as 'Research gap'. It could be reduced through considerable co-ordination between researchers and extension workers (Improper management of demonstrations might also have contributed to this yield gap).

Compared to yield gap-I, yield gap-II was smaller (26.12%). This gap was attributed mainly to the biological and socio-economic

constraints operating on the farmers' fields. The biological constraints related to the non adoption or partial adoption of the recommended technology or non application of the essential inputs at the recommended level.

The perceived constraints by farmers for attaining higher yield in groundnut are presented in table 3 and are discussed here.

Majority of the farmers felt that labour problem prevented them from attaining higher groundnut yield. The labour problem was comparatively less in small farms than in large farms, as all the members of the family in the case of small farms mostly worked on the farm. Though, we say that we have abundant labour

force but during peak seasons, farmers find it difficult to get the labourers to work on the field. As a result of this, they fail to carryout the particular operation at the a right time and this leads to reduction in their yields. Appropriate measures should be adopted to improve the efficiency of the labourer.

Non availability of quality seeds was another problem in attaining the higher yield as perceived by 65 per cent of the sample farmers. Seed is very vital input and a dynamic instrument for increasing agricultural production. It has been recognised that genetically good quality seed alone can increase crop production upto 20 per cent. Hence, it is necessary to gearup the seed distribution system in the state so as to supply certified quality seeds to the farmers. The Karnataka Oil Seeds Growers Co-operative Federation Limited (KOF) has recently taken up the task of supplying the seeds of groundnut to the farmers in the state. But its network is now limited only to few taluks. Its network has to be extended throughout the state. The Karnataka State Seed Corporation Limited (KSSC) should also continue to play a supplementary role in the supply of groundnut seeds.

As groundnut was rainfed crop in the study area and because of untimely and insufficient rainfall, farmers could not harvest the bumper crop of groundnut. Another major problem perceived by the farmers in getting higher yield in groundnut was soil problems. Because of the poor fertility of the soil the

productivity of groundnut was low. Hence, the farmers in the area should take up soil fertility building measures.

Shortage of capital was a problem with 27.5 per cent of the small farmers whereas large farmers did not face this problem in groundnut production. Use of insufficient plant nutrients (fertilizers) for want of money was another constraint in getting higher yield with 20 percent of the small farmers and 10 percent of the large farmers. Number of financial institutions are providing financial assistance to the farmers by way of supplying them credit for their production activities. Farmers should take advantage of these facilities to increase their production.

The other constraints as felt by the farmers were pests and diseases attack to the crop (40 per cent of farmers) and lack of technical know how (45 per cent of farmers). As about half of the sample farmers expressed lack of technical know how as one of the constraints in attaining higher yield, this calls for teaching the farmers about the new technology through various extension teaching methods like method demonstrations, result demonstrations, group discussions, field visits, etc.

According to sample farmers, these constraints made them to harvest lower yield in groundnut and as a result they could not attain the level of potential farm yield.

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