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A study on impact of groundnut production technologies in Dharwad and Haveri districts of north Karnataka

[1]Vinayak Savalagi, [1]KA Jahagirdar, [2]Sumayya Mullal, [1]SS Dolli and [3]SS Guledgudda

[1]Department of Agricultural Extension Education, College of Agriculture, Dharwad, University of Agricultural Sciences, Dharwad, Karnataka, India

[2]Department of Seed Science and Technology, College of Agriculture, Dharwad, University of Agricultural Sciences, Dharwad, Karnataka, India

[3]Department of Agricultural Economics, College of Agriculture, Dharwad, University of Agricultural Sciences, Dharwad, Karnataka, India

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Corresponding Author: Vinayak Savalagi

Abstract

Peanut, also known as the groundnut and botanically classified as *Arachis hypogaea*, is a leguminous crop mainly grown for its edible seeds. Groundnut variety G2-52 is prominent groundnut variety cultivated by farmers in Dharwad and Haveri districts of north Karnataka along with TMV-2. The study throws light on varieties in terms of spread, productivity and income. The study was conducted in Dharwad, Kundgol from Dharwad district and Savanur, Shiggaon form Haveri district of Karnataka state during 2020-21 with a sample of 80 groundnut farmers. A distinctive pattern of spread G2-52 variety was noticed. During 2018-19, the area of spread of G2-52 groundnut variety was observed to be maximum in Dharwad (55.50 ha), but during 2019-20 and 2020-21, Kundagol recorded highest area with 140.83 ha and 331.50 ha, respectively. Because farmers preferred G2-52 variety for its better resistance to leaf spot and rust diseases. The study found that the productivity and income of G2-52 variety showed significant difference when compared with TMV-2 variety.

Keywords: Comparison, groundnut, income, productivity, spread, varieties

Introduction

Peanut, also known as the groundnut and botanically classified as *Arachis hypogaea*, is a leguminous crop mainly grown for its edible seeds. Strangely among legume crop plants, groundnut pods grow underground (geocarpy) rather than above ground. With this distinctive characteristic of groundnut, the botanist Carl Linnaeus named the species as hypogaea, which means "under the earth". *Arachis hypogea* is a native of South America, now it is grown throughout India. India occupies 1st position in terms of area and 2nd position in terms of production. Groundnut has high oil content of about 44-55 per cent whereas, the protein content of groundnut is 22-32 per cent and soluble sugars is 8-14 per cent. In general, groundnut grown in *Kharif* season is usually infected by many insects-pest and diseases. Groundnut cultivation is affected by insects like leaf miner, tobacco caterpillar, thrips and white grubs while, diseases such as, leaf spots, stem rot, rust are commonly observed during groundnut cultivation. By considering their severity, seasonality and spread several crop protection technologies for groundnut production were formulated by AICRP-Groundnut located in Dharwad. These technologies include biofertilizers management, management strategies and integrated pest management (IPM) modules and intercropping with cotton, chilli, maize, pegionpea and millets for the effective management of insect-pests and diseases. Groundnut varieties like Dh 232 (2017), Dh 245 (2017) and Dh 256 (2019) which are resistant to foliar diseases were developed under AICRP, UAS, Dharwad on Groundnut. Groundnut growing farmers will be benefitted from this compilation. Because of shortage of labourers and high labour wages groundnut growing farmers are still facing difficulties while harvesting. Therefore, with an objective to reduce the drudgery of performing harvesting activity, to reduce the cost of labour and accelerate the work, machine uprooting, dry pod threshing, wet pod threshing, mechanical winnowing technologies were generated by AICRP-Groundnut, UAS Dharwad.

UAS, Dharwad released G2-52 variety during 2015 suitable for zone 8 in rainfed situations. Groundnut variety G2-52 is of the duration 105-110 days yielding 25-30 q/ha. It is resistant to leaf spot and rust disease and having even size pods and kernels as in case of TMV-2 variety with good quality oil. It is a foliar disease (leaf spot and rust) resistant. Considering the importance of groundnut as a commercial crop, the present study was conducted to assess the impact of groundnut production technologies in Dharwad and Haveri districts of north Karnataka.

Methodology

The study involved an "*ex-post-facto*" research, carried out in Dharwad district of Karnataka during 2020-21. Keeping

the criteria of maximum area under groundnut cultivation, two talukas from each district Dharwad and Haveri were selected, *viz.*, Dharwad, Kundgol from Dharwad district and Savanur, Shiggaon form Haveri district were selected. Based on highest area under groundnut cultivation, 2 hoblis were selected from each selected taluk. Thus, total of 8 hoblis were selected for the study. From the selected two hoblis from each taluk, Five G2-52 groundnut variety growers and five other groundnut variety growing farmers were randomly selected to constitute a total sample of 80 farmers. A structured interview schedule was used to collect the primary data from groundnut farmers by personal interview method. The spread of variety was studied based on secondary data obtained from the Karnataka State Department of Agriculture (KSDA), Karnataka State Seed Corporation (KSSC) and Raitha Samparka Kendra (RSK) of areas selected for the study. Productivity refers to the quantity of groundnut yield obtained per hectare. Income refers to the total income in rupees obtained by the farmer by cultivating groundnut crop. Income was worked out by using the following formula.

Gross returns = Average yield per hectare X Average market price per quintal

Net returns = Gross returns - Total cost of cultivation

Results and Discussion

Spread of groundnut G2-52 variety

The information presented in Table 1 gives a complete account of spread of G2-52 groundnut variety in some of the taluks of Dharwad and Haveri districts from 2018-19 to 2020-21. During 2018-19, the area of spread of G2-52 groundnut variety was observed to be maximum in Dharwad (55.50 ha), followed by Kundagol (33.33 ha) and Hubli (10.50 ha), with a combined area of 135.44 ha. During 2019-20, Kundagol recorded highest area with 140.83 ha, followed by Dharwad (10.16 ha) and Hubli (0.83 ha) with a combined area of 195.66 ha. There has been a surge in area under this variety in all the selected taluks in 2020-21, again Kundgol recorded highest area of 331.50 ha, followed by Navalagund (57.11 ha), Shiggaon (54.11 ha), Dharwad (48.17 ha), Hubballi (21.05 ha) and lowest area in Savanur with 1.01 ha with a combined area of 536.18 ha. This clearly shows that farmers preferred G2-52 as it was performing well during low moisture conditions in soil and possessed resistant to leaf spot. G2-52 variety is performing well and farmers have adopted it because of its high bolder seeds which is fetching high price in market and it is also giving high yield when compared to other variety TMV-2. The results were in accordance with the findings of the study documented by Goud (2019) [1] in Bellary district on groundnut crop.

Comparison of productivity and income of groundnut variety

The results presented in Table 2 revealed that the average yield of G2-52 (18.53 q/ha) groundnut variety was higher than TMV-2 variety which was only 15.71 q/ha. The average cost of cultivation for groundnut crop was 32,298.12 ₹/ha in case of G2-52 variety and TMV-2 with slightly lesser cost with 32,157.33 ₹/ha. The gross returns in the case of G2-52 variety recorded was 1,02,975.00 ₹/ha and in case of TMV-2 gross returns recorded was 86,428.12 ₹/ha. The net return in the case of G2-52 variety recorded was 70,676.87 ₹/ha. But TMV-2 farmers received lesser net returns of 54,270.78 ₹/ha. The benefit cost ratio calculated for G2-52 groundnut variety had ratio of 2:20 whereas for TMV-2 variety it was 1:70 ratio. It is clear from Table 3 that the 't' test showed significant difference in productivity and income between G2-52 and TMV-2 variety at 1 per cent level of significance. Whereas there is no significant difference between G2-52 and TMV-2 variety in terms of cost of cultivation. It was also noticed from Table 4.1 that there is yield gap of 18.65 per cent in case of G2-52 and 2.99 per cent in case of TMV-2 variety. As G2-52 variety is resistant to foliar disease such as leaf spot and rust and this variety has large bold seeds, higher oil content hence resulting in better yield. Whereas yield of TMV-2 is lower compared to G2-52 because TMV-2 seeds used by farmers are of poor quality, smaller seed size and it is also susceptible to foliar disease such as leaf spot, rust and pests. In case of income, farmers growing G2-52 variety are getting higher income since the produce is fetching better prices for their better-quality pods in market when compared to TMV-2 whose seed quality is on a lower side, henceforth they attract lesser price per quintal.

Table 1: Spread of G2-52 improved groundnut variety of UAS Dharwad in Dharwad and Haveri districts

		2018-2019		2019-2020		2020-2021	
		Seed sold (q)	Area (ha)	Seed sold (q)	Area (ha)	Seed sold (q)	Area (ha)
I. Department of Agriculture, Dharwad							
1.	Dharwad	99.90	55.50	18.30	10.16	86.70	48.17
2.	Kundgol	60.00	33.33	253.50	140.83	596.70	331.50
3.	Hubballi	18.90	10.50	1.50	0.83	37.90	21.05
4.	Navalgund	00.00	00.00	00.00	00.00	103.80	57.67
II. Department of Agriculture, Haveri							
5.	Shiggaon	00.00	00.00	00.00	00.00	97.40	54.11
6.	Savanur	00.00	00.00	00.00	00.00	1.82	1.01
III. Seed Unit (UAS, Dharwad)							
1.	Seed Unit	65.00	36.11	78.90	43.83	40.80	22.66
Total		243.80	135.44	352.20	195.66 (44.44%)	965.12	536.18 (174.87%)

Figures in the parenthesis indicates percentage change in total area of groundnut in the year 2018-19 and 2019-20, 2019-20 and 2020-21
Source: Seed Unit, UAS Dharwad and KSDA Dharwad & Haveri districts.

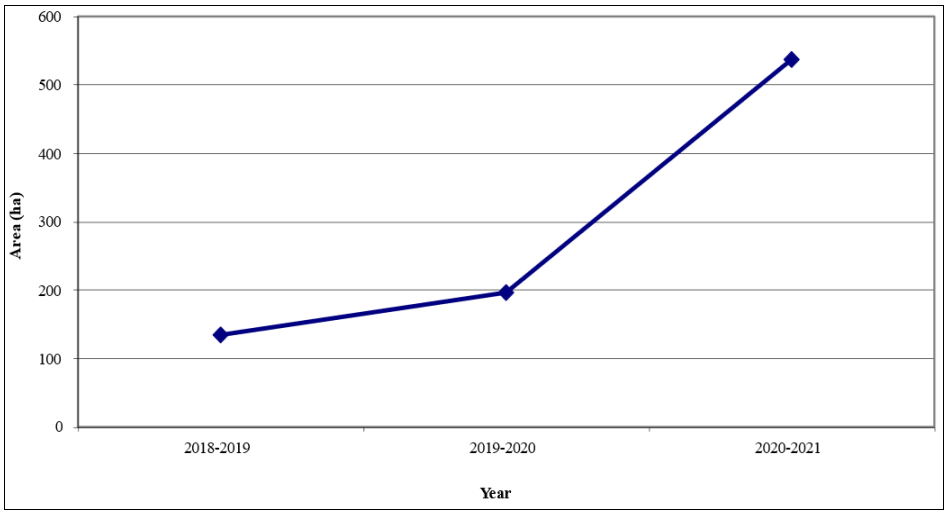

Fig 2: Spread of G2-52 improved groundnut variety

Table 2: Impact of groundnut varieties on productivity and income of farmers

Sl. No.	Particulars	G2-52	TMV-2	Percentage gap
1.	Average Yield (q/ha)	18.71	15.71	19.09
2.	Gross cost (Rs/ha)	32,298.12	32,157.33	0.43
3.	Gross return (Rs/ha)	1,02,975.00	86,428.12	19.16
4.	Net return (Rs/ha)	70,676.87	54,270.78	30.23
5.	B:C ratio	2.20	1.70	-

Table 3: 't' test to find the significant difference between the varieties in terms of productivity and income

Sl. No.	Particulars	G2-52	TMV-2	t-value
1	Average Yield	18.71	15.71	1.99**
2	Cost of cultivation	32,298.12	32,157.33	2.03^{NS}
3	Net returns	70,676.87	54,270.78	2.01**

** Significant at 1 per cent, * Significant at 5 per cent
^{NS} Non-significant

Conclusion

The improved groundnut G2-52 variety was found to be superior to and TMV-2, both in terms of productivity and income. It is fundamental that a variety with favourable attributes is essential for a farmer to enjoy a higher yield and successively earn better income from the crop. The findings of the study indicated that there was increase in area of groundnut variety G2-52 over three years, still there is a vast scope to expand the area compared over TMV-2. This calls for intensive effort by the University and Karnataka State Department of Agriculture (KSDA) to organize field demonstrations and training programs to motivate the farmers on new variety. Problems related to availability, accessibility and affordability of the farm inputs shall be addressed by KSDA through the Agricultural co-operatives and Farmers Organizations Producers at village level. The present study was confined only to Northern Transition Zone of Karnataka therefore, the study needs to be replicated which covers maximum groundnut growing areas in Karnataka so that the inference can be drawn in a generalized way and to a greater extend.

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