Society of Krishi Vigyan
www.iskv.in

J Krishi Vigyan 2025, 13(4) : 715-719

DOI: 10.5958/2349-4433.2025.00124.7

ISSN 2319-6432 (Print)
ISSN 2349-6433 (Online)

Performance of Groundnut Variety Dh-256 for higher yield in Bagalkote District of Karnataka

Dinesh Kumar S P[1*], Sudha S[2], Airadevi P. Angadi[3] and Kammar M R[4]
[1]Regional Agricultural Research Station (RARS)
Vijayapur, University of Agricultural Sciences, Dharwad, 586101, (Karnataka), India

ABSTRACT

Groundnut is a major oilseed crop, but its productivity in many parts of Karnataka remains low due to the continued cultivation of old varieties and adoption of traditional farmer's practices. To address this yield gap and demonstrate the benefits of improved varieties and production technologies under farmer's field conditions, a frontline demonstration was conducted to study the impact of new groundnut variety Dh-256 on yield and economics for two years, during 2019-20 and 2020-21 by ICAR-Krishi Vigyan Kendra, Bagalkote (Karnataka) with an objective to assess the yield level of new groundnut variety Dh-256 with an improved package of practices over the TMV-2 with farmer's practice and its economic impact. Improved practice recorded significantly higher kernel yield of Dh-256 with improved practice (28.28 q/ha) over TMV-2 with farmer's practice (21.04 q/ha) and there was an increase in the yield to the tune of 34.41 per cent. Similar trend was also noticed with yield parameters of groundnut. The improved technology in groundnut realized an additional income of Rs. 36,607/ha over farmer's practice which created awareness and convinced the other farmers to adopt the improved package of practices for groundnut.

Keywords: Groundnut, Extension gap, Pod yield, Technology gap Technology index, Variety.

INTRODUCTION

Groundnut (*Arachis hypogaea* L.) is one of the important oil seed crops grown in India, it is used as a vegetable oil and also called as vanaspathi ghee which contains 45-50% oil and 22-28% protein (Murugan and Nisha, 2016; Mallikarjuna *et al,* 2023). Among the vegetable proteins biological value of groundnut protein is higher and is equal to that of casein and it is good source of vitamins and minerals. In India groundnut grown in an area of 4.73 million hectares with a production 6.72 million tonnes and productivity of 1400 kg/haand in Karnataka it is grown in an area of 0.51 million hectares with a production 0.39 million tonnes and productivity of 759 kg/ha (Anonymous, 2020). In Bagalakote district the crop grown in *kharif* as well as summer seasons in an area of 0.31 lakh hectares with a production 0.30 lakh tonnes and productivity of 1032 kg/ha (Anonymous, 2021).

Groundnut variety TMV-2 is widely adopted by the farmers of Bagalakote district which is susceptible to early and late leaf spot diseases which is also affected by insect pest like leaf miner, thrips, spodoptera, leaf hoper *etc*., which contribute for lowering the productivity in the district. The farmers of Bagalakote district not only grow the groundnut for seed purpose they also grow it for fodder which is very palatable in nature and milching animals very much like this crop as their fodder. It also improves the soil fertility by covering the entire soil surface which will reduce the runoff loss and weed infestation. Groundnut variety Dh-256 was released in the year 2018 for cultivation in Karnataka and it released for peninsular India (Tamil Nadu, Andhra Pradesh, Karnataka, Telengana) during *kharif* season during 2020. This variety matures at 110-115 day after sowing (DAS), which can be cultivated in wide range of soil from red sandy loamy soil to black cotton soil and best suited for red sandy loam soil. This variety is tolerant to mid-season drought stress and tolerance to insect pest like *Spodoptera litura* and on par reaction to leaf miner, thrips and leaf hopper and diseases like late leaf spot and rust compared to the check, GPBD 4. Hence, a

Corresponding Author's Email - dineshspuasd@gmail.com
1Regional Agricultural Research Station (RARS), Vijayapur, University of Agricultural Sciences, Dharwad, 586101, (Karnataka), India
2Main Agricultural Research Station (MARS), University of Agricultural Sciences, Dharwad, 580005, (Karnataka), India
3Krishi Vigyan Kendra, Dharwad, University of Agricultural Sciences, Dharwad, 580005, (Karnataka), India
4Directorate of Extension, University of Agricultural Sciences, Dharwad, 580005, (Karnataka), India

Table 1: Comparison of improved practice and farmers practice under frontline demonstration in groundnut.

Sr. No.	Particular	Frontline demonstration	Farmer's Practice	Gap
1.	Variety	Dh-256	TMV-2	Full gap
2.	Seed rate (kg/ha)	150	200	Partial gap
3.	Seed treatment	*Rhizobium*	No	Full gap
4.		Trichoderma	No	Full gap
5.	Sowing method	Seed cum fertilizer drill	Seed cum fertilizer drill	No gap
6.	Spacing	45 cm x 10 cm	45 cm x 10 cm	No gap
7.	Depth of sowing	5 cm	Deep sowing	Full gap
8.	Sowing date	June	June	No gap
9.	FYM	7.5 t/ha	3 t/ha	Partial gap
10.	Fertilizer application	18:46:25 kg N : P_2O_5 : K_2O kg ha^{-1}	10:26:26 kg N : P_2O_5 : K_2O kg ha^{-1}	Partial gap
11.	Gypsum application	500 kg ha^{-1} at the time of pegging	No	Full gap
12.	Weed control	Pre-emergence application of Pendimethalin 30% EC @ 3.25 l/ha and one inter-cultivation at 45 DAS	One hand weeding at 20 days after sowing (DAS) and one inter-cultivations at 45 DAS	Partial gap
13.	Plant protection	Based on recommended dose (as per package of practice)	Overdose and non-recommended brands of pesticides	Partial gap

study was conducted to know the performance of groundnut variety Dh-256 for higher yield and economics under rainfed situation during *kharif* season at Bagalkote district of Karnataka, India.

MATERIALS AND METHODS

The present study was conducted in three villages with 10 farmers' having irrigation facility by adopting purposive sampling method. Before initiation of the study in the Bagalkote district of Karnataka, the pre-seasonal group meeting was conducted by interaction with the farmers. The information collected comprised of the variety cultivated, yield, profit, and problems faced by the farmers. Based on the information collected, technology gaps were identified and a suitable package of practice with new groundnut variety Dh-256 which was developed by University of Agricultural Sciences, Dharwad was introduced (Table 1) at Honnakatti, village of Bagalkote taluka, Benakanwari village of Ilakal taluka and Lingapur S.K. village of Bilagi taluka during 2019-20, and Shirur & Mallapur, villages of Bagalkote taluka, and Benakanwari village of Ilakal taluka during 2020-21. TMV-2 variety of groundnut grown by participating farmer or adjoining farmer served as control (farmer's practice) for the study. From each selected farmer, data pertaining to cost of cultivation, yield was collected. To work out the economics, the price of the produce were collected from Agricultural Produce Market Committee (APMC), Bagalkote. From the collected data yield, cost of cultivation, gross returns, net returns, and B:C ratio was computed. To know the overall impact of two years of assessment, the data were analyzed statistically using independent t-test. The extension gap, technology gap, and technology index were estimated (Samui *et al*, 2000).

RESULTS AND DISCUSSION

Growth and yield parameters

The two-year pooled data (Table 2) of groundnut under front line demonstration revealed that significantly higher plant (52.38 cm) was recorded with the farmer's practice (TMV-2) as compared to new groundnut variety (Dh-256) (35.03 cm). The significantly higher number of pods per plant and 100 seed weight were noticed in Dh-256 (31.50 and 35.78 g, respectively) with improved practice as compared to farmer's practice with groundnut variety TMV-2 (17.70 and 32.34 g, respectively). The reason for higher plant height in TMV-2 as compared to Dh-256 may be due to inherent character of each variety. The higher number of pods per plant and 100 seed weight in Dh-256 as compared to TMV-2 may be due semi-

Table 2: Growth, yield parameters and economics of groundnut variety Dh-256 under frontline demonstration.

Parameter	Treatment	2019-20	2020-21	Pooled
Plant height (cm)	Demo (Dh-256)	34.66	35.39	35.03
	Check (TMV-2)	52.02	52.73	52.38
t-value		-15.30***	-25.96***	-34.22***
p-value		0.0001	0.0000	0.0000
No. of Pods/Plant	Demo (Dh-256)	23.20	39.8	31.50
	Check (TMV-2)	17.80	17.6	17.70
t-value		9.00***	17.45***	12.46***
p-value		0.0008	0.0000	0.0000
100 seed weight (g)	Demo (Dh-256)	35.80	35.75	35.78
	Check (TMV-2)	32.32	32.36	32.34
t-value		12.05***	17.84***	20.56***
p-value		0.0003	0.0000	0.0000
Kernel Yield (q/ha)	Demo (Dh-256)	28.20	28.35	28.28
	Check (TMV-2)	22.93	19.15	21.04
t-value		15.90***	5.22***	6.55***
p-value		0.0000	0.0005	0.0001
Cost of Cultivation (Rs./ha)	Demo (Dh-256)	48560	48544	48552
	Check (TMV-2)	48560	48544	48552
t-value		-	-	-
p-value		-	-	-
Gross income (Rs./ha)	Demo (Dh-256)	118440	157343	137891
	Check (TMV-2)	96285	106283	101284
t-value		15.90***	5.22***	6.18***
p-value		0.0000	0.0005	0.0002
Net income (Rs./ha)	Demo (Dh-256)	69880	108799	89339
	Check (TMV-2)	47725	57739	52732
t-value		15.90***	5.22***	6.18***
p-value		0.0000	0.0005	0.0002
Additional Income (Rs./ha)		22155	51060	36607
B:C Ratio	Demo (Dh-256)	2.44	3.24	2.84
	Check (TMV-2)	1.98	2.19	2.09
t-value		16.37***	5.29***	6.21***
p-value		0.0000	0.0005	0.0002

*** Significant 0.1% level

Table 3: Grain yield, extension gap, technology gap, and technology index of groundnut Dh-256 under frontline demonstration.

Year	Grain yield (q/ha)		Per cent increase in yield	Potential yield (q/ha)	Extension gap (q/ha)	Technology gap (q/ha)	Technology index (%)
	Demo (Dh-256)	Check (TMV-2)					
2019-20	28.20	22.93	22.98	30	5.28	1.80	6.00
2020-21	28.35	19.15	48.04	30	9.20	1.65	5.50
Mean	28.28	21.04	34.41	30	7.24	1.73	5.75

spreading of plant and dark green colour of the leaves which increased the photosynthetic activity in the variety.

Kernel yield

The new groundnut variety Dh-256 with improved practice recorded significantly higher kernel yield (28.28 q/ha) as compared to farmer's practice with groundnut variety TMV-2 (21.04 q/ha) in two-year pooled data as well as in individual year (28.20 v/s 22.93 q/ha and 28.35 v/s 19.15 q/ha, respectively). The increase in the kernel yield of Dh-256 with improved practice was to the tune of 34.41 per cent over the farmer's practice with groundnut variety TMV-2. The adoption of improved practices such as seed treatment with *Rhizobium*, use of pre and post emergence herbicides, and plant protection measures at right time resulted in higher number of pods which intern increased kernel yield of Dh-256. These results are in conformity with the finding of Murugan and Nisha (2016), Mallikarjuna et al (2023) and Yenagi (2024).

Extension gap

During the assessment period, an extension gap was computed by the difference between improved practice and farmer's practices (Table 3), which ranges from 5.28 to 9.20 q/ha with an average of 7.24 q/ha. This alarming trend of extension gap needs to be conveyed by educating the farmers through various extension activities for the adoption of new and high yielding varieties of groundnut. These findings are similar to the findings of Sreenivasulu *et al* (2021).

Technology gap

To understand the technology gap (Table 3), the yield difference between potential and demonstration yield of new groundnut variety Dh-256 was calculated, which ranges from 1.65 to 1.80 q/ha with an average of 1.73 q/ha. The variation in the yield may be due to the weather and fertility status of the demonstrated fields. These results are in line with the findings of Hiremath and Nagaraju (2009).

Technology index

The feasibility of improved technology will be explained by the technology index at farmer's fields by comparing the potential yield of the variety with improved technology (Table 3). The lower values of technology index will indicate the higher feasibility of improved technology. The lower technology index (5.50 %) was noticed in 2020-21, followed by 2019-20 (6.00 %). During 2020-21 lower technology index was observed, this may be due to new groundnut variety Dh-256 performed well with improved technology in an area of higher soil fertility with congenial weather conditions. These findings were similar to the results noticed by Hiremath and Nagaraju (2009).

Economics

Computing the economics is one of the important measures to know the profitability of the system. Farmers tend to adopt such technology which gives them more profit. The economics were worked out for the pooled data as well as for each demonstrating year for both improved and farmer's practice (Table 2). The economic analysis of the pooled data over the years shows that, significantly higher gross return (137891 Rs./ha), net return (89339 Rs./ha) and B:C ratio (2.84) was noticed with new groundnut variety with improved practice as compared to farmer's practice (101284 Rs./ha, 52732 Rs/ha, and 2.09, respectively). The adoption of new groundnut variety Dh-256 with improved practice realized an additional income of Rs. 36607/ha. These findings were similar to the findings of Anuratha *et al* (2021). The results of the frontline demonstrations revealed that the higher profitability and economic viability of new groundnut variety Dh-256 with an improved package of practice.

CONCLUSION

The present study clearly demonstrated that adoption of the improved groundnut variety Dh-256

along with the recommended package of practices resulted in a significant yield advantage of 34.41 per cent over the existing farmer's practice, along with an additional net income of Rs. 36,607 per hectare. The superior performance of the improved technology not only enhanced productivity and profitability but also generated confidence among the farming community, motivating wider adoption. Therefore, frontline demonstrations proved to be an effective, practical, and reliable extension approach for enhancing area, production, and productivity of groundnut and contributing substantially towards doubling farmer's income in the study area.

REFERENCES

Anonymous (2020). All India Area, Production and Yield in groundnut. Directorate of Economics and Statistics, Agricultural Statistics at a Glance, 2020.

Anonymous (2021). Directorate of Economics & Statistics, Karnataka at a Glance-2019-20.

Anuratha A, Thilakam J, Chandirakala R and Ramasubramanian M (2021). Performance of Groundnut Varieties for Better Yield in Nagapattinam District of Tamil Nadu. *J Krishi Vigyan* **10**(1): 200-203.

Hiremath S M and Nagaraju M V (2009). Evaluation of front-line demonstration trials on onion in Haveri district of Karnataka. *Karnataka J Agri Sci* **22**(5): 1092-1093.

Mallikarjuna B O, Devaraja T N, Raghuraj J and Basavangowda M G (2023). Suitability of drought tolerant and high yielding groundnut varieties for Davanagere district. *J Krishi Vigyan* **11**(suppl): 233-237.

Murugan P and Nisha P R (2016). Evaluation of high yielding groundnut varieties for north eastern zone of Tamil Nadu. *J Krishi Vigyan* **5**(1): 64-66.

Samui S K, Maitra S, Roy D K, Mandal A K and Saha D (2000). Evaluation on front line demonstration on groundnut. *J Indian Soc Coastal Agri Res* **18**(2): 180-183.

Sreenivasulu S, Divya V, Sudhakar P S, Ramu Kumar T, Prasad J V, Prasad Y G and Prasad J V N S (2021). Performance of Drought Tolerant Groundnut Variety in Chittoor District of Andhra Pradesh. *J Krishi Vigyan* **10**(1): 196-199.

Yenagi B S, and Sugandhi R R (2024). Evaluation of High Yielding Groundnut Varieties for North Transitional Zone of Karnataka State, India. *Int J Plant Soil Sci* **36**(6): 770–775. https://doi.org/10.9734/ijpss/2024/v36i64682

Received on: 15/10/2025 Accepted on: 08/12/2025