

Original Research Article

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Evaluation of Different Virginia-Type Groundnut Varieties Suitable Under Central Dry Zone of Karnataka, India

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ABSTRACT

The groundnut, an important protein crops in India grown under rain-fed conditions. It is one of the world's principal oilseed crops, widely grown in areas ranging from latitude 40°N to 40°S. Nuts are eaten in a variety of forms, or crushed to provide vegetable oil for human consumption and protein rich meal for livestock's. However, there has been a consistent fluctuation in the area and production over years and across the states. The main focus of the groundnut improvement program was to see the performance of different Virginia-type groundnut varieties suitable under Central Dry zone of Karnataka. In this regard, Experiment was conducted during *Kharif* 2015-16 at Zonal Agricultural and Horticultural Research station, Hiriya, Chitradurga District. The present investigation consists of 11 entries sponsored by Directorate of Groundnut Research, Junagadh, Gujarat to see the performance of different Virginia-type groundnut varieties with an objective of exploiting suitable groundnut varieties under Central Dry zone of Karnataka. This investigation revealed that traits like 100 seed weight and haulm yield/ha recorded significant difference among different entries, further the entry NRCG CS 414 recorded the higher pod yields of 2891 kg/ha.

Keywords

Groundnut, Oilseed, Genotype, Yield

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Introduction

In India the groundnut, which was introduced around 250 years ago, is the most important oilseed crop of the country. Now it is grown on an area of about 8 m ha, in 260 districts, mostly as rain fed crop on well drained sandy soils in 500 – 2000 mm annual rainfall areas producing about 8 million tones. Up to 1960s the groundnut, in India was grown only in rainy season (*Kharif*), but from 1971-72 its

cultivation started in winter (*Rabi*) and summer also where it showed higher yield potential than *Kharif*. Presently, India has the largest groundnut area (32% of the world) and also till 1992 was the chief – producer of groundnut in the world. But, from 1993 onwards, China, due to its higher productivity than India, became the highest producer of groundnut and India stands second. In present scenario of increasing population as well as malnutrition problem, the production of

groundnut has to be increased to meet the demand both as oilseeds as well as food crop. As groundnut is an energy rich crop requiring more energy for oil and protein synthesis, comparative to other crops, its productivity cannot be increased after certain limit and its area in the traditional groundnut – growing belt is decreasing, the expansion of groundnut cultivation in central dry zone of Karnataka is areas of the alternative with suitable cultivar (Singh *et al.*, 2006).

Thus efforts were made during the last one decade, to popularize groundnut suitable groundnut varieties in these areas where there is tremendous scope to increase the production and productivity through introduction of new crop varieties. Hence, AICRP on Groundnut an attempt has been made to study the different entries suitable to Central Dry Zone of Karnataka.

Materials and Methods

The proposed study was conducted at the Zonal Agricultural and Horticultural Research Station, Hiriya (13^o 57' 32" N, 70^o 37' 38" E, 606 MSL), University of Agricultural and Horticultural Sciences, Shivamogga, India. The soil of the experimental sites belonged to medium black soil having pH of 7.7, low available nitrogen (162 kg ha⁻¹) and phosphorus (16.2 kg ha⁻¹), medium available potassium (270 kg ha⁻¹).

The material for the present study comprised of 11 different entries, sponsored by Directorate of Groundnut Research, Junagadh, Gujarat. Experiment was conducted during *Kharif* 2015-16 at Zonal Agricultural and Horticultural Research Station, Hiriya, Chitradurga district on performance of different Virginia-type groundnut varieties with an objective of exploiting suitable groundnut varieties under Central Dry zone of Karnataka. The experiment was laid out in a

Randomized Complete Block Design (RCBD), at four replications with recommended dose of fertilizers with plot size of 5.0 X 2.25 m with inter and intra row spacing of 45 cm and 15 cm respectively. To avoid border effect, one border row plants in all 4 sides of the plot were excluded from the plot yield. Required agronomic and plant protection practices were followed during crop growth period to raise a good crop.

During harvest time, five representative plants were collected in net plot randomly from each plot. Data were recorded on plant stand at time of harvesting, 50% flowering, plant height (cm), Shoot Length (cm), 100 seed weight (g), shelling percentage (%), pod yield (Kg/ha), Kernel yield (Kg/ha), Haulm yield/ ha. All the data on growth, yield and other yield attributes were analyzed statistically.

Results and Discussion

The study revealed that traits like 100 seed weight and haulm yield/ha showed significant difference among entries, further there was a non-significant difference observed for pod yield and kernel yield among the entries. However the entry NRCG CS 414 recorded the higher pod yields of 2891 kg/ha. The present results were in agreement with the findings of earlier study of Madhusudhana, (2013).

Further, as observed in the present study, Awal and Ikeda, (2003) as also reported the generative growth constitutes the development and growth of reproductive parts. From yield point of view, this phase assumes significance as the sink lies in the reproductive parts. Hence, the detailed observations were made on various aspects of generative growth at the stage of maturity. The number of flowers, pegs, and pods are the most important yield components that affect the yield potential of groundnut (Table 1).

Table.1 Analysis of variance for yield and yield attributing characters in different groundnut varieties

Treatments	Final plant count	Days to 50 % flowering	Plant height (cm)	Shoot length (cm)	100 seed weight (g)	Shelling %	Kernel yield/ ha	Pod yield (kg/ ha)	Haulm yield/ ha
PBS 22080	131	34	42	31	54.9	74	1866	2496	3972
JSP 61	147	34	54	43	54.0	69	1973	2797	6563
PBS 25033	152	34	47	35	42.8	65	1711	2393	3477
RG 595	145	33	54	43	65.0	68	1880	2780	5705
JSP 60	150	33	54	44	51.9	70	2036	2790	5351
RG 532	143	34	53	42	53.9	73	1690	2292	6438
NRCG CS 414	146	34	56	42	70.5	69	1804	2891	5403
CSMG-2010-11	150	34	49	38	68.6	72	1673	2522	4229
KDG 128 (ZC)	150	33	50	39	51.4	74	2290	2934	5014
CG 18 (ZC)	153	34	59	46	60.7	74	2088	2844	5398
ICGV 00348 (ZC)	140	34	47	35	46.7	70	1942	2678	4742
SEm ±	2.49	0.60	3.66	3.17	3.70	4.18	183.12	228.41	287.57
CD(P=0.05)	7.21	1.73	10.58	9.15	10.68	12.08	528.89	659.71	830.57

The present study confirms that groundnuts are a valuable source of protein, fat, energy, and minerals and generate cash income to many poor farmers in the developing world. Suitable variety and plant density in a given area greatly determines growth and development of crops particularly the yield components and yield.

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