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Performance of Different Spanish-Type Groundnut Varieties Suitable under Central Dry Zone of Karnataka, India

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A B S T R A C T

Groundnut (*Arachis hypogaea* L.) is one among the extensively grown oil crop and also it's an important food legume crop in terms of area, cultivation and utilization. It contributes significantly towards food and nutrition security. This crop also contributes to improving soil fertility via biological nitrogen fixation and organic matter returns to the soil while its haulms and provide valuable supplementary feed for livestock especially during the long dry season. The main focus of the groundnut improvement program was to see the performance of different Spanish-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, Hiriyur, Chitradurga District. The present investigation consists of 17 entries sponsored by Directorate of Groundnut Research, Junagadh, Gujarat to see the performance of different Spanish-type Groundnut varieties with an objective of exploiting suitable groundnut varieties under Central Dry zone of Karnataka. The results revealed that the data on kernel yield/ ha, pod yield (kg/ha) and haulm yield/ha did not differ significantly among 17 entries of Spanish groundnut except for 100 seed weight. However, the genotype JL 1085 (4674 kg/ha) followed by VG 13127 (4375 kg/ha) gave higher pod yield.

Introduction

Groundnut or peanut (*Arachis hypogaea* L.) is an annual legume of indeterminate growth habit and it's primarily grown for its high-quality edible oil (44–56%) and easily digestible protein (22–30%) in its seeds. Groundnut seeds also contain carbohydrates (10–25%), a rich source of vitamins (E, K, and B complex), minerals (Ca, P, Mg, Zn, and Fe), and fiber. Its production utilized directly as food or in confections in the world and third most important source of vegetable protein in the world (Wijnands *et al.*, 2009) taxonomically, the cultivated peanut A. *hypogaea* L. is divided into two subspecies, one with two botanical varieties, and another one with four. In the subspecies *hypogaea var. hypogaea* (Virginia and Runner market types) and *var. hirsuta*, the varieties have long

duration cycle and seeds are dormant. While in subspecies *fastigiata* with *var. fastigiata* (Valencia market class) and var. *vulgaris* (Spanish market class), the varieties are early-maturing but generally without fresh seed dormancy (Krapovockas and Gregory, 1994). Spanish and Valencia varieties are currently the most commonly cultivated peanut varieties in dry areas. However, these early-maturing varieties lack generally fresh seed dormancy and are prone to *in situ* germination. The growing trend of areas occupied by early-maturing varieties will still increase during the next coming decades since drought is now a worldwide abiotic constraint for peanut production. There is a need to develop short duration peanut varieties having fresh seed dormancy to prevent yield losses due to field sprouting in unpredictable rainfall environments.

Materials and Methods

The material for the present study comprised of 17 different entries, sponsored by Directorate of Groundnut Research, Junagadh, Gujarat.

Experiment was conducted during *Kharif* 2015-16 at Zonal Agricultural and Horticultural Research Station, Hiriyur, Chitradurga district on performance of different Spanish-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 1.5 m with inter and intra row spacing of 30 cm and 10 cm respectively. To avoid border effect, one border row plants in all 4 sides of the plot were excluded from the plot yield and yield kg/ha. 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 50% flowering, plant stand at time of harvesting, plant height (cm), Shoot Length (cm), 100 seed weight (g), shelling percentage (%), pod yield (Kg/ha), Kernel yield (Kg/ha) etc., All the data on growth, yield and other yield attributes were analyzed statistically.

Results and Discussion

The results revealed that the data on kernel yield/ ha, pod yield (kg/ha) and haulm yield/ha did not differ significantly among 17 entries of Spanish groundnut except for 100 seed weight. However, the genotype JL 1085 recorded higher pod, kernel yield and also shelling percentage (4674 kg/ha, 3609 kg/ha and 77%) followed by VG 13127 recorded pod yield of 4375 kg/ha. Such variation with respect to field performance of different genotype is reported by (Mallikarjuna *et al.*, 2003)**.** Among the yield components, number of primary branches per plant, number of pods per plant and pod yield per plant were more closely associated with pod yield per ha. Similar findings were also reported by (Borkar *et al.,* 2014; Sah *et al.,* 2000; Kumar *et al.,* 2014). Higher kernel yield was mainly attributed to greater shelling percent, kernel yield per plant, 100 kernel weight, sound matured kernel and kernel uniformity in different genotypes (Table 1).

Especially in drought prone areas, Due to lack of irrigation facilities and poor alternative cropping patterns, farmers are depends on cultivating groundnut crop from the last several decades. Hence, it may be concluded that there is a perceptible contribution of groundnut in meeting the protein and energy needs of these farmers. Groundnut has also been observed to be the cheapest source other protein and energy rich foods like fish, meat, egg, etc. consumed by the farm households.

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

Entries	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)
J 88	163	31	43	32	51.2	72	2517	3491
TVG 0924	203	32	41	32	47.1	71	1921	2717
TG 80	177	32	45	36	48.0	76	2266	2978
VG 13163	175	34	44	33	48.2	75	3003	3990
J 89	203	31	46	36	46.6	72	2451	3396
VG 13127	128	32	46	36	43.5	70	**3050**	**4375**
PBS 15041	143	31	46	36	42.5	70	2222	3190
VG 13153	160	33	47	36	49.2	76	2793	3672
GKVK 5	167	31	54	44	41.5	69	2967	4299
RTNG 42	159	32	42	36	43.7	69	2811	4064
NRCG CS 332	207	31	43	31	41.9	74	2264	3068
NRCG CS 363	160	32	39	31	36.9	74	2438	3282
JL 1085	196	32	40	30	43.3	77	**3609**	**4674**
R 2001-2 (ZC)	149	32	48	38	36.9	69	2951	4286
GPBD 4 (ZC)	183	33	45	35	40.2	72	2985	4120
R 2001-3 (ZC)	147	32	40	31	39.5	73	3011	4142
VG 9816 (ZC)	170	33	46	37	40.1	76	2955	3906
SEm ±	16.44	0.63	3.56	3.13	1.90	1.99	313.19	406.78
CD(P=0.05)	46.74	1.79	10.13	8.89	5.39	5.67	890.55	1156.67

This low-cost energy-rich grain legume (groundnut) may be popularized in this area to increase the frequency and quantity of its intake to develop a nutritionally-secured human resource.

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