

Screening of elite groundnut (*Arachis hypogea* L.)cultures suitable for high rainfall areas of Andhra Pradesh, India

ABSTRACT

Groundnut is an important self-pollinated oil seed crop grown in Andhra Pradesh. It is one of the major oil seed crops used for both edible oil and table purpose. Groundnut crop requires a rainfall of 400-500 mm. In North coastal zone of Andhra Pradesh, the annual rainfall ranges from 1100-1200 mm which is very high for groundnut crop resulting in luxuriant growth especially during Kharif. Hence the main objective of this experiment is to screen the elite groundnut cultures with high pod yields suitable to North Coastal Zone of Andhra Pradesh. Twelve elite groundnut cultures along with four checks are tested during Kharif 2022 at Agricultural Research Station, Yellamanchili. The results have shown that among all the entries, K1909 recorded significant pod yield of 2740 kg/ha followed by K 2313 with 2673 kg/ha when compared with the best check Dharani (1679 kg/ha) and with other checks K-6 (1429 kg/ha) and Dheeraj (1307 kg/ha). These two groundnut cultures K1909 and K 2313 after further testing may be utilized by the farmers of North coastal Zone of Andhra Pradesh for achieving good yields in Groundnut.

Key words: Groundnut, screening, elite cultures, pod yield

Introduction:

Groundnut is an important self-pollinated oil seed crop grown in Andhra Pradesh. Groundnut cultivated over 40 m ha in world for food and table purpose (Janali *et al.*, 2013). It is one of the major oil seed crop used for both edible oil and table purpose. It is grown in more than 100 countries. India is second largest producer of groundnut after China, Pasupuleti *et.al.*, 2013. In Andhra Pradesh it is generally grown during Kharif and Rabi. Groundnut crop requires a rainfall of 400-500 mm. The cultivated groundnut varieties are usually spreading and erect types. In high rainfall areas, vegetative growth occurs luxuriantly resulting in low yields in many varieties of groundnut [5-7]. In North coastal zone of Andhra Pradesh, the annual rainfall ranges from 1100-1200 mm which is very high for groundnut crop resulting in luxuriant growth especially during Kharif [8-10]. Hence the main objective of this experiment is to screen the elite groundnut cultures with high pod yield suitable to North Coastal Zone of Andhra Pradesh.

Materials and Methods:

Twelve elite groundnut cultures along with four checks are tested at Agricultural Research Station, Yellamanchili, Anakapalle District, Andhra Pradesh. The twelve elite groundnut cultures are developed from Regional agricultural Research Station, Tirupathi, Agricultural Research Station, Kadiri and Agricultural Research Station, Yellamanchili. All the twelve elite groundnut genotypes are newly developed groundnut cultures. The experiment is conducted during Kharif 2022 using Randomized Block Design with three replications. Each entry is sown with six rows each of 5.0 m row length. All the agronomic operations are adopted as per the recommendations. The plant protection measures are adopted as and when required as per the recommendations. The data is recorded for eight parameters *i.e.*, Plant height(cm), Days to maturity, Days to 50% flowering, Branches per plant, Pods per plant, Pod yield per ha (g), Shelling %, Test Weight (g). The data is statistically analysed.

Results and discussion:

Groundnut crop is self-pollinated crop requires rainfall of 400-500 mm. Spreading and bunch type groundnut varieties are available. In North coastal zone of Andhra Pradesh due to heavy rainfall, the groundnut crop grows luxuriantly to a high stature. Due to high stature of the plant, the pegs hang up in the air and unable to reach the ground for development of the pods. Hence in groundnut, short stratured and spreading type of groundnut varieties are more desirable. The statistical analysis showed significance difference between the genotypes in pod yield per plant. Among all the groundnut cultures K 1909 recorded significant highest Pod yield (Kg/ha) of 2740 kg /ha followed by K 2313 with 2673 kg/ha. The ground culture K 1909 recorded plant height of 58.5 cm and K 2313 also recorded plant height of 43.3 cm. The checks Check K 1812 recorded 2488 kg/ha with 47.1 cm; Dharani recorded 1679 kg/ha with a plant height of 76.3 cm; Kadiri-6 recorded 1429 kg/ha with plant height 73.5 cm and Dheeraj recorded 1307 kg/ha with 71.9 cm plant height. Highest shelling percentage is recorded for Dharani (71.73%) followed by Kadiri 6 with 68.14% followed by K 2313 with 67.33%. (Table 1). The results are in accordance with Hamid *et.al.*, 2006 ; Janila *et.al.*, 2013; Vekaria 2022

Conclusions:

Groundnut cultures with significant high pod yield *i.e.*, K 1909 (2740 kg/ha) and K 2313 with (2673 kg/ha) are identified high yielding varieties suitable to North coastal Zone of Andhra

Pradesh even under the high rainfall conditions. The above said varieties may be recommended to farmers after further testing procedures.

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Table 1: Pod yield parameters of Groundnut (*Arachis hypogea* L.)

S.NO	Entry	Plant height (cm)	Days to maturity	Days to 50 % flowering	Branches per plant	Pods per Plant	Pod yield kg/ha	shelling %	Test weight (g)
1	K1909	58.5	136	35	6	45	2740*	54.39	30.0
2	K 2313	43.3	133	31	8	41	2673*	67.33	38.5
3	K 1812 ©	47.1	136	32	6	31	2488	66.51	38.0
4	TCGS 2233	45.7	138	28	7	49	2345	65.98	36.0
5	TCGS 1862	42.1	137	24	7	39	2113	65.37	43.5
6	TCGS 1872	63.9	137	31	7	40	2075	64.14	38.0
7	TCGS 2104	59.1	133	24	6	37	2035	65.50	45.5
8	TCGS-1707	55.7	137	28	6	36	1816	64.88	31.5
9	TCGS 1877	67.0	133	23	6	35	1787	65.00	39.5
10	YLG-4	55.7	133	23	6	34	1748	63.2	35
11	Dharani ©	76.3	132	24	6	39	1679	71.73	37.5
12	TCGS 2117	50.9	136	24	7	40	1494	64.3	56
13	Kadiri 6 ©	73.5	132	21	5	23	1429	68.14	46
14	Dheeraj ©	71.9	133	21	5	31	1307	64.76	37
15	K 1736	53.8	137	32	6	29	1301	61.26	38
16	YLG-3	65.9	132	25	5	38	979	67.02	36.5
		57.3	135	27	6	37	1871.14		
		12.8	1.25	1.66	0.89	12.23	741.52		
		13.3	0.56	3.71	8.72	19.83	23.72		