



Growth and Pod Yield of Groundnut as Influenced by Cultivars and Times of Sowing Under Irrigated Conditions During Early *Kharif*

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ABSTRACT

Field experiment was conducted on “Growth and pod yield of groundnut as influenced by cultivars and times of sowing under irrigated conditions during early *kharif*” at RARS Farm, Tirupathi during 2011. Greeshma and Dharani are the two cultivars used with six times of sowing starting from April 1st to June 16th at fortnightly intervals. Groundnut cultivars sown on May 16th recorded the highest pod yield (3397 kg ha⁻¹), which was significantly superior over other times of sowing. The lowest pod yield of 1736 kg ha⁻¹ was recorded when groundnut was sown on June 16th. The interaction effect between varieties and time of sowing was found significant. Groundnut cultivars Dharani and Greeshma when sown on 16th May recorded the highest pod yields of 3514 and 3280 kg/ha respectively which was significantly superior over other dates of sowing. Both the cultivars recorded significantly the lowest pod yield when sown on June 16th.

Key words : Early *Kharif*, Groundnut cultivars, Greeshma, Dharani, Times of sowing and Pod Yield.

Groundnut is an important oilseed crop of Chittoor District of Southern Agro-Climatic zone of Andhra Pradesh. Farmers are growing groundnut starting from April to May and claiming that April or May sown crop recorded the highest yield. Recommendation on time of sowing for *Kharif* as well as *Rabi* groundnut is available. However, information on optimum time of sowing for early *Kharif* groundnut is not available. Hence, it is proposed to know the performance of groundnut cultivars and optimum time of sowing for irrigated groundnut during early *Kharif* season in Southern Agro – Climatic Zone of Andhra Pradesh.

MATERIAL AND METHODS

Field experiment was conducted on “Growth and pod yield of groundnut as influenced by cultivars and times of sowing under irrigated conditions during early *kharif*” at RARS Farm, Tirupathi (13.27° N, 79.36° E, 189 m MSL) during early *Kharif*, 2011. The experimental field was well ploughed with tractor drawn cultivator followed by rotavator and levelled thoroughly. Greeshma and Dharani (TCGS -1043) are the two test cultivars used and sown under six times of sowing at fortnightly intervals starting from April 1st to June 16th. Spacing adopted was 30cm x 10 cm. The

experiment was tested in randomised block design with factorial concept replicated thrice. Weather data for the experimental period was recorded at S.V. Agricultural College meteorological observatory (Class ‘A’ as per IMD, Pune). The data on growth parameters, yield attributes and yield were subjected to statistical analysis as per Panse and Sukhatme (1967). The texture of the soil was sandy loam in nature with pH 7.5, E.C 0.15 dsm⁻¹. Initial nutrient status was analysed and found low in available nitrogen, medium in phosphorus and potassium status. Recommended dose @ 20-40-50 N, P₂O₅ and K₂O kg ha⁻¹ was applied along with Boroax @ 10 kg ha⁻¹ and ZnSo₄ @ 50 kg ha⁻¹. Gypsum was applied @ 500 kg ha⁻¹ at flowering stage and incorporated into the soil.

RESULTS AND DISCUSSION

The results of the experiment conducted during early *Kharif*, 2011 revealed that times of sowing influenced groundnut growth and yield significantly. However, the cultivars did not differ significantly with regard to ill filled pods and filled pods per plant and pod yield. (Table-1). The results are in accordance with Chandrika *et al.*, (2008). However, significantly taller plants were obtained with Dharani compared to Greeshma. Similarly,

Table 1. Growth, yield attributes and pod yield as influenced by groundnut cultivars and times of sowing under irrigated conditions during early *Kharif*, 2011.

Treatments	Plant height. (cm)	100 pod weight (g)	100 kernel weight (g)	Shell-ing %	Filled pods/plant	ill filled pods/plant	Pod yield (kg/ha)
Cultivars							
Greeshma	39.0	53.5	34.5	68.4	12.5	2.1	2514
Dharani	51.6	63.1	37.5	71.3	12.9	2.5	2620
(TCGS 1043)							
CD at 5 %	4.38	2.29	1.2	1.9	NS	NS	NS
Times of sowing							
April 1 st	39.9	57.7	35.9	68.3	13.1	2.2	2706
April,16 th	46.6	60.5	37.4	69.6	12.8	1.9	2574
May,1 st	47.2	65.3	39.6	69.1	13.1	2.7	2760
May,16 th	38.1	53.0	33.8	73.6	13.9	2.3	3397
June,1 st	46.9	56.5	34.5	69.6	11.8	2.7	2229
June,16 th	53.0	57.0	34.8	68.9	11.5	2.1	1736
CD at 5 %	7.5	3.9	2.1	3.3	1.5	NS	285
V x D	NS	NS	NS	NS	2.2	1.3	404

Fig 1. Influence of temperature on the Pod yield in Groundnut during early *Kharif* 2011.

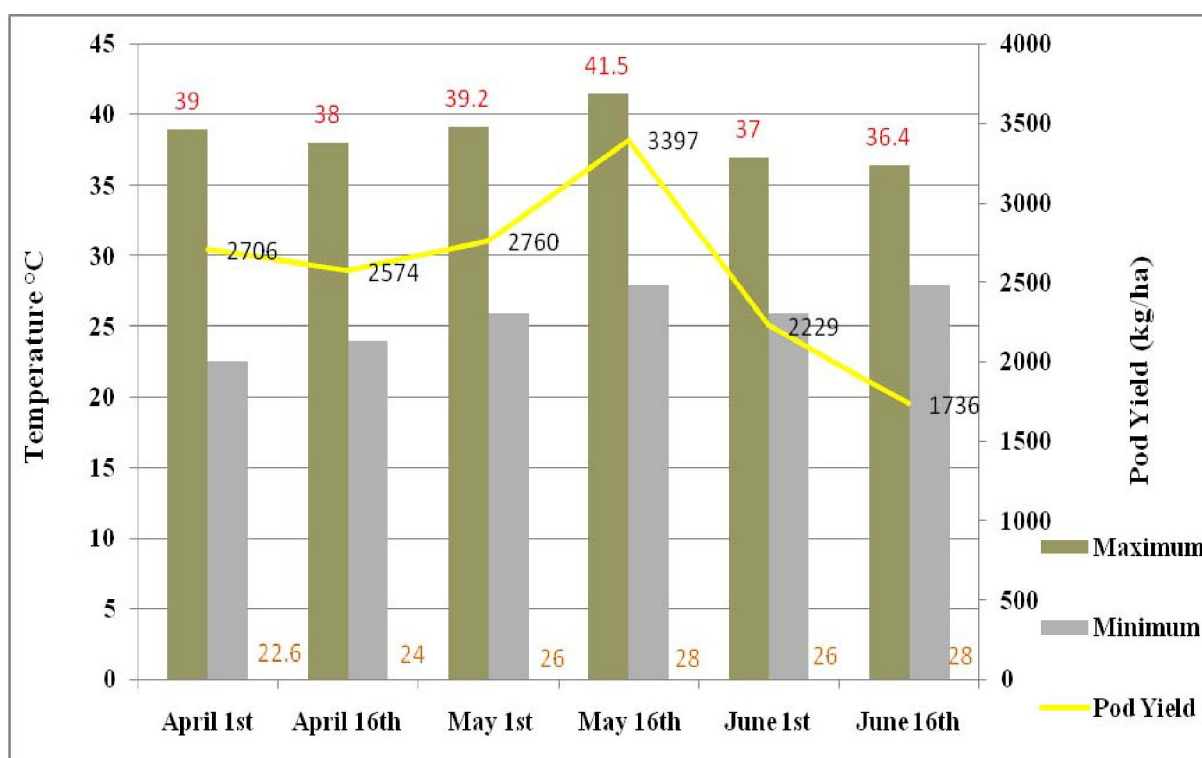


Table 2. Interaction effect of cultivars and times of sowing on the pod yield of groundnut during Early *Kharif*, 2011.

Time of sowing	Pod yield (kg/ha) of Groundnut cultivars	
	Greeshma	Dharani (TCGS -1043)
April 1 st	2340	3073
April, 16 th	2542	2608
May, 1 st	2686	2834
May, 16 th	3280	3514
June, 1 st	2468	1991
June, 16 th	1769	1703
SEd	195	
CD at 5 %	404	

hundred pod and kernel weight and shelling percentage were significantly higher in Dharani than Greeshma.

Time of sowing influenced plant height as well as yield attributes and yield significantly. The tallest plant height was recorded when groundnut was sown on June 16th (53 cm) which was on par with May 1st (47.2 cm), June 1st, April 16th. Shortest plants were recorded when groundnut sown on May 16th (38.1 cm). Significantly highest 100 pod and 100 kernel weights were recorded with May 1st sown groundnut. However, the highest shelling percentage (73.6%) was recorded when the groundnut was sown on May 16th which is significantly superior over rest of the times of sowing. Significantly more number of filled pods per plant was recorded in May 16th sown groundnut. The lowest filled pods per plant was obtained when the crop sown on June 16th. With regard to pod yield of groundnut, the highest pod yield of 3397 kg/ha was recorded when sown on May, 16th followed by May 1st sown groundnut (2760 kg/ha). The results are in accordance with the findings of Reddy *et al.*, (2000) and Virendar Sardana and Kandhola (2007) from PAU, Ludhiana who reported May sown groundnut crop recorded the highest pod yield. This is because of higher photosynthesis, net assimilation, better translocation of assimilates from source (leaf) to sink (pods). The better sunshine, humidity, cool and dry temperatures during growth period, less incidence of foliar diseases,

might have helped to increase source to sink capacity. The maximum and minimum temperatures recorded for May month ranges from 26^o C to 41.5^o C. These temperatures also contributed for the better assimilation of photosynthates compared to other times of sowing (Fig. 1). The uniform and timely distribution of rainfall is also one of the major contributing factor for realizing the highest yield attributes and pod yield in both the groundnut cultivars when sown during the month of May (Table -3).

Lowest pod yield of 1736 kg/ha was obtained when crop was sown on June 16th. This might be due to lanky plant growth coupled with continuous rainfall during initial time had resulted in lowest pod yield in June sown groundnut crop resulted in poor partitioning of nutrients from source to sink. (Table 3)

The interaction effect between varieties and time of sowing was found to be significant. Groundnut cultivars Dharani and Greeshma when sown on 16th May recorded the highest pod yields of 3514 and 3280 kg/ha respectively which was significantly superior over other times of sowing. Both the cultivars recorded significantly the lowest pod yield when sown on June 16th (Table 2)

From the present investigation it can be concluded that both the tested groundnut cultivars can be sown during the second fortnight of May for realizing higher pod yield in Southern Agro-Climatic Zone of Andhra Pradesh.

Table 3. Rainfall received by the groundnut cultivars sown at different times of sowing during the early kharif, 2011.

Month	April 1 st				Month	April 16 th			
	Greeshma		Dharani			Greeshma		Dharani	
	Rainfall	Rainy days	Rainfall	Rainy days		Rainfall	Rainy days	Rainfall	Rainy days
April	20.5	3	20.5	3	April	20.5	3	20.5	3
May	117.7	6	117.7	6	May	117.7	6	117.7	6
June	44.4	2	44.4	2	June	44.4	2	44.4	2
July	46.2	2	53.0	4	July	68.0	6	112.6	9
Total	228.8	13	235.6	15	Total	250.6	17	295.2	20

Month	May 1 st				Month	May 16 th			
	Greeshma		Dharani			Greeshma		Dharani	
	Rainfall	Rainy days	Rainfall	Rainy days		Rainfall	Rainy days	Rainfall	Rainy days
May	117.7	6	117.7	6	May	115.2	5	115.2	5
June	44.4	2	44.4	2	June	44.4	2	44.4	2
July	112.6	9	112.6	9	July	112.6	9	112.6	9
August	48.6	3	48.6	3	August	110.2	9	110.6	9
Total	323.3	20	323.3	20	Total	272.2	25	272.2	25

Month	June 1 st				Month	June 16 th			
	Greeshma		Dharani			Greeshma		Dharani	
	Rainfall	Rainy days	Rainfall	Rainy days		Rainfall	Rainy days	Rainfall	Rainy days
June	43.4	2	43.4	2	June	0.4	0	0.4	0
July	112.6	9	112.6	9	July	112.6	9	112.6	9
August	110.2	10	110.2	10	August	110.2	10	110.2	10
September	24.6	2	40.2	4	September	110.8	5	110.8	5
					October		0	2.0	0
Total	266.2	23	266.2	25	Total	223.2	24	223.2	24

Note* Variation in amount of rainfall received by the cultivars are different because the differences in their maturity periods either early or late by five days or one week, though both cultivars sown on the same day.

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