GAU Res. J. 1996. 22 (1) : 106-108

Influence of Different Agro-Techniques on Germination, Growth and Yield of Summer Groundnut (*Arachis hypogaea* L.)

V. C. Raj and Z. G. Patel

Department of Agronomy, N. M. College of Agriculture, Gujarat Agricultural University, Navsari-396 450

In summer groundnut (*Arachis hypogaea* L.) germination is delayed due to cold winter if sown early, and if sown late, harvesting poses difficulty due to early monsoon rains. Attempt have been made to overcome these problems through use of soil ammendments, growth regulators and mulch.

A field experiment was conducted at the Instructional Farm, Gujarat Agricultural University, Navsari Campus during summer 1995 with ten treatments (Table 1) in randomized block design each replicated thrice. The soil of the experimental field was clayey in texture having organic carbon (0.41%), available P_2O_5 (29 kg ha^{-1}) K_2O (342 kg ha^{-1}) and pH 7.5. Summer groundnut Cv. Somnath was sown 45 cm apart with a seed rate of 100 kg ha^{-1}. The crop was fertilized with 25-50-0 NPK kg ha^{-1} and was irrigated as and when required. The crop was sown on 31-1-95 and harvested on 4-6-95.

Significantly the highest seed germination was recorded with gibberellin seed treatment. Addition of FYM and gypsum slightly increased the germination however significant reduction in germination was recorded with castor cake, paddy straw mulch and rhizobium inoculation. Earlier germination of summer groundnut was noted with lime, paddy straw mulch. Gibberellin FYM and Gypsum application. Sangupta *et al.*, (1977) and Soliya *et al.* (1991) also reported similar results.

Pressmud and lime application registered almost same plant height which was significantly higher than other treatments. Paddy straw mulch significantly reduced the lowest plant height. Plant spread was maximum with FYM application and found to be at par with all other treatments except T_4 and T_8. Control recorded the lowest plant spread.

Maximum pod yield was recorded due to FYM application but remained at par with T_9, T_{10}, T_6 and T_5 due to increased number of pods $plant^{-1}$. Maximum haulm yield was recorded with gibberellin treatment but was at par with T_{10} and T_2 due to better plant spead. These findings are in agreement with the findings of Reddy (1991). The lowest pod and haulm yield was recorded with control but it did not differ from T_3 and T_7.

TABLE 1

Effect of different treatments on growth, yield attributes, pod and haulm yield of summer groundnut.

Treatment	Germination percentage	Days to germination	Plant height (cm) at harvest	Plant spread (cm) at harvest	No. of branches/plant	No. of pods/plant	Pod yield (q/ha)	Haulm yield (q/ha)
T_1 — Control	73.67	12.0	34.9	77.6	5.07	11.3	9.39	58.91
T_2 — FYM @ 10 t/ha	78.00	10.0	36.7	96.6	6.20	19.3	14.72	74.61
T_3 — Castor cake @ 500 kg/ha	60.67	12.0	32.4	93.7	6.07	12.9	10.93	67.26
T_4 — Pressmud @ 500 kg/ha	75.00	12.0	42.6	88.5	5.80	14.5	11.64	70.88
T_5 — Lime @ 500 kg/ha	63.67	9.0	42.5	90.5	6.07	16.9	12.79	70.03
T_6 — Rhizobium culture inoculation	61.67	12.0	36.2	94.0	5.53	15.9	12.85	72.87
T_7 — Pre-sowing water soaking	65.33	13.3	34.5	90.3	5.60	13.2	11.11	63.82
T_8 — Paddy straw mulch @ 5 t/ha	61.00	9.0	27.4	85.5	5.80	13.3	12.44	70.07
T_9 — Gibberellin 0.1 mg/l	88.67	10.0	38.3	95.6	5.83	19.1	14.52	82.66
T_{10} — Gypsum @ 500 kg/ha	78.00	10.0	37.7	94.8	5.23	15.4	13.10	75.55
S. Em. ±	3.42	0.11	1.05	2.30	0.35	1.27	0.71	2.84
C. D. at 5%	10.16	0.31	3.11	6.83	NS	3.77	2.00	8.47

Thus for getting higher production of summer groundnut, seed should be treated with either gibberellin (0.1 g/l) or rhizobium culture or the crop should be applied with 10 t FYM or 500 kg gypsum per hectare.

(Received on 2nd Oct., 1995)

REFERENCES

Reddy, M. S. (1991). Effect of soil ammendments on the hardening of red sandy loam (Chalka soils) of Andhra Pradesh. *Ann. Agric. Res.* **12** (2) : 174-176.

Sangupta, V. K., G. S. Sirohi, M. S. Kaim and T. C. Pokhriyal, (1977). Effect of growth regulators on seed germination in groundnut. *Indian J. Plant Physiol.* **20** : 91-96.

Soliya, D. T., M. K. C., Borty, N. Subash, (1991). A note on the effect of selected bioregulatory treatments on seed viability and associated biochemical changes in summer groundnut Cv. G. G. -2. *J. Oil Seeds Res.* **8** (2) : 280-284 (Fide : Field Crop Abstracts (1993) Vol. 46 No. 2 : 129).