



RESEARCH ARTICLE

YIELD IMPROVEMENT THROUGH OPTIMUM PLANT DENSITY AND GYPSUM APPLICATION IN GROUNDNUT

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ABSTRACT

Effect of plant density and gypsum application on yield of groundnut was demonstrated under rainfed conditions in farmers fields of Srikakulam district of Andhra Pradesh. Based on two years demonstrations, pod yield increased 18.14 % by adopting optimum plant population and gypsum application.

INTRODUCTION

Optimum plant density is a pre-requisite for maximum yield in all the crops in general and groundnut in particular. Increasing plant density results in suppression of the biological yield of individual plants, but production increases on the basis of unit land area. Calcium is one of the elements that has been reported to have a favourable influence on fruitification of groundnut (Sivanesarajah, 1995). Calcium is a yield limiting factor in groundnut. Its deficiency is most often seen in groundnut fields as pops. Calcium deficiency is also expressed as a black ended plumule inside the seed halves known as black heart while its minor deficiency can result in seeds which do not germinate or produce weak or deformed seedlings (Sullivan *et al.*, 1974). Hence, the present technology of adopting optimum plant population and gypsum application was proposed to demonstrate in the farmers fields. Adoption of an improved variety alone can increase the yield by about 20 per cent only. Hence a proper understanding of management practices viz., season, suitable varieties; optimum plant density, efficient nutrient and water management are necessary to enhance the productivity of peanut which in turn helps our country to avoid shortage of edible oils (Annadurai *et al.*, 2009)

MATERIALS AND METHODS

Filed demonstrations were conducted in the farmers' fields on the technology entitled "Plant density and gypsum application in Groundnut" through Krishi Vigyan Kendra, Amadalavalasa, Srikakulam district, Andhra Pradesh in *Kharif* season during 2005 and 2006 in Bharanikam and Jadapeta villages of Srikakulam district under rainfed conditions to demonstrate the advantage of optimum plant population (33/m²) and gypsum application (200 kg/ac) at the time of flowering followed by hoeing in groundnut as the farmers go for less seed rate than recommended and do not apply gypsum which is required for proper filling of pods.

RESULTS AND DISCUSSION

During *Kharif*, 2005 pod yield was increased by 15.5 % by adopting optimum plant population and gypsum application (11.24 q/ha) over farmers practice (9.73 q/ha) across 25 locations in Bharanikam and Jadapeta villages. During *Kharif*, 2006 pod yield was increased by 20.8 % by adopting optimum plant population and gypsum application (11.81 q/ha) over farmers practice (9.78 q/ha) across 10 locations in Bharanikam village. Over two years of demonstration yield improvement was 18.14 per cent.

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Table 1. Yield of groundnut during Kharif, 2005

S.No	Name of the farmer, Village	Yield (q/ ha) Demonstration	Yield (q/ ha) Check
1.	M. Ramana murthy Bharanikam	10.4	9.2
2.	K. Narayanamma Bharanikam	10.6	9.8
3.	L. Ramulu Bharanikam	10.9	9.0
4.	P. Suryanarayana Bharanikam	10.5	9.4
5.	K. Adinarayana Bharanikam	11.6	10.0
6.	P. Venkunaidu Bharanikam	9.5	8.1
7.	M. Gunnayya Bharanikam	12.6	10.0
8.	M. Papa Rao Bharanikam	12.2	10.6
9.	P. Satyam Bharanikam	12.0	10.4
10.	A. Simhachalam Bharanikam	10.7	10.2
11.	J. Appala Naidu Jadapeta	10.4	9.0
12.	Ch. Chandramouli Jadapeta	11.5	10.0
13.	M. Ramana Jadapeta	10.3	8.8
14.	M. Kotubabu Jadapeta	11.8	10.1
15.	K. Chandram Naidu Jadapeta	12.2	10.5
16.	R. Suryanarayana Jadapeta	12.5	10.7
17.	G. Suryanarayana Jadapeta	10.7	9.2
18.	P. Kannam Naidu Jadapeta	11.9	10.2
19.	K. Chandra Rao Jadapeta	12.5	10.9
20.	R. Thavudu Jadapeta	10.6	9.2
21.	J. Satya Rao Jadapeta	10.6	9.2
22.	J. Rama Krishna Jadapeta	12.0	10.4
23.	J. chinnayya Jadapeta	12.6	11.0
24.	J. Satyam Jadapeta	10.6	8.2
25.	J. Sriramulu Jadapeta	10.0	9.2
	Average	11.24	9.73

Table 2. Yield of groundnut during Kharif, 2006

S.No	Name of the farmer, Village	Yield (q/ ha) Demonstration	Yield (q/ ha) Check
1.	M. Krishna, Bharanikam	12.12	10.71
2.	L. Asirinaidu Bharanikam	10.28	8.97
3.	P. Satyam Bharanikam	11.97	9.46
4.	P. Tammi Naidu Bharanikam	12.84	10.91
5.	A. Rama Rao Bharanikam	12.12	9.91
6.	A. China Rama Rao Bharanikam	11.70	9.92
7.	A. Appa Rao Bharanikam	10.94	8.73
8.	G. Satyam Bharanikam	11.83	9.18
9.	A. Satyam Bharanikam	11.93	9.82
10.	L. Ramulu Bharanikam	12.81	10.81
11.	A. Ramana Bharanikam	10.86	9.82
12.	P. Narayanudu Bharanikam	12.32	9.12
	Average	11.81	9.78

Conclusion

Groundnut perform better in terms of yield and quality under optimum plant density coupled with efficient nutrient and water management. Application of fertilizer including gypsum in adequate quantities become more essential for obtaining higher yields.

REFERENCES

- Annadurai, K., Naveen Puppala, Sangu Angadil and Masilamani P 2009. Agronomic management technologies for peanut production: A Review. Agric. Rev., 30 (4) : 235 - 261.
- Sivanesarajah, K., Sangakkara, U.R.1 and Sandanam S 1995. Effects of Plant Density, Nitrogen and Gypsum on Yield Parameters of Groundnut (*Arachis hypogea* L.) in Regosols of Batticaloa District Tropical Agricultural Research, 7 :112-123
- Sullivan, G.A., Jones, G.L and Moore, R.P 1974. Effets of dolomitic limestone, gypsum and potassium on yield and seed qulality of peanuts. Peanut Science. 1:73-77
