

## Phosphorus efficient cultivars for increasing peanut productivity in India

A.L Singh

*ICAR-Directorate of Groundnut Research, PB 5, Junagadh 362001, India*

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Peanut is an important food legume of semiarid tropical world mainly grown in light textured soils, where phosphorus (P) deficiency is one of the most limiting factors affecting its growth, and N<sub>2</sub>-fixation (Singh et al 2015). However, being a P-efficient crop, the response of peanut to P depends greatly on the soil P and genotypes (Singh and Basu 2005). India has released nearly 200 peanut cultivars and hence, it is most pertinent to identify and make use of P-efficient cultivars by resource poor farmers to harvest reasonable yield.

In this series, 100 peanut cultivars, were evaluated for their yield attributes and seed P concentrations, in field under P-deficit and adequate-P condition for two consecutive years, under P-unfertilized (UF) and P-fertilized (50 kg P ha<sup>-1</sup>) conditions in a soil having low available phosphorus (6-7 ppm P), 7.6 pH, 0.70 % organic C and 570 ppm N. The cultivars were categorized as P-efficient when their yields were more than population mean plus standard deviation (SD) and the one having pod yield less than population mean minus SD as P-inefficient (Singh et al 2015).

Application of P increased yield and seed P concentration with huge differences in pod yield, but small differences in seed P among 100 peanut cultivars, with more pronounced effect on pod yield which was identified as selection criterion for P- efficient cultivars. The average and range of pod yields were 165 and 59-276 g m<sup>-2</sup> under UF which increased to 171 and 66-292 g m<sup>-2</sup>, respectively with 50 kg P. Out of 100 cultivars, 21 and 22 cultivars under UF and F, respectively, with >200 g m<sup>-2</sup> pod yield were P-efficient. On the other hand 15 cultivars with <130 g m<sup>-2</sup> pod yield under both F and UF were P-inefficient. However nearly 30 cultivars did not respond to P application. Based on the overall performance following cultivars were identified as:

- P-efficient: GG 5, ICGS 1, RG 141, TMV 2, Tirupati 2, Tirupati 4, ICGV 86031 and 86590, GG 3, ICGS 37 and 44, GG 7, SB XI and JL 220 (>200 g m<sup>-2</sup> pod yield)
- P-inefficient: TKG 19 A, GAUG 10, RS1, RS 138, ALR 1, Chico, MH 2, MH 4, T 64 R 8808 and Gangapuri (<130 g m<sup>-2</sup> pod yield).

The P-efficient peanut cultivars having superior yield under both P-fertilized an P-unfertilized conditions are of practical significance and farmers are recommended to grow them to reduce the P fertilizer and maintain P resources.

### References

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