

## Performance evaluation of power drawn six row groundnut planter

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■ **ABSTRACT** : A new power operated six row groundnut planter developed at the Division of Agricultural Engineering, UAS, Bangalore was evaluated for its performance by conducting lab tests and field trials. The tests comprised of the determination of average weight of seeds discharged, percentage damage of seeds, calibration of a planter, field performance studies and average depth of placement of seeds. Studies revealed that, the average weight of seeds discharged from hopper was 830.20 g and the percentage damage was found to be 2.5 per cent. In field studies, the planter was having the field capacity of 0.25 ha/hr with row to row spacing of 300mm and seed to seed spacing of 100-140 mm. The performance of groundnut planter was satisfactory with calibrated seed rate of 113 kg/ha. The average depth of seed placement was observed to be 50mm. The average plant population was found to be 33 plants/m<sup>2</sup> with the overall planter efficiency of 86.80 per cent.

■ **KEY WORDS** : Groundnut planter, Performance evaluation, Spacing, Depth, Efficiency, Seed rate

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Groundnut (*Arachis hypogaea* L.) is one of the major oil seed crops of India. As it can withstand drought, it is suitable and most popular crop under dry land farming situations. In India, groundnut is grown on an area of 8 million hectares with total production of 7.5 million tonnes and 75 per cent of the productions are concentrated in the four states viz., Gujarat, Andhra Pradesh, Tamil Nadu and Karnataka. Its average productivity is 1364 kg/ha in India, while in Karnataka, the yields are very low (380 kg/ha). In Karnataka groundnut covers an area of 0.86 million ha and a production of 0.60 million tonnes (CRIDA, 2004). One of the reasons attributed for poor yield is improper spacing between plants, besides the crop is grown under dry farming situations where in moisture is an additional constraints for achieving higher crop productivity (Anonymous, 2005). Therefore, to achieve optimum plant population, crops need to be sown immediately after the receipt of rains before soil moisture gets depleted with an improved seed drill. Existing practices of sowing with human labour is tedious and time consuming. Groundnut is a labour intensive crop and hitherto bullock drawn seed drills are being used in the country as well in the state to sow seeds. Regulation of spacing within and between the seed rows is one of the problem identified for poor crop yields. The existing animal drawn seed cum fertilizer drill for groundnut consist of separate seed and fertilizer bowls. Efficiency of seeds and fertilizers dropping depends on the

skill of labour, soil condition, type of bullock man and draft animals used. Therefore, there exists a wide variation in spacing from seed to seed leading to sub-optimal reduction in plant population. Also in recent years, scarcity of draft animals has become acute and there is a need to develop such efficient seed drills suiting to the local conditions which are operated by a tractor. Tractors are available in good numbers and so far not much effort is made in developing such seed planters for groundnut in Karnataka. Introduction of power drawn seed planter would enable timely operation with an increased operational efficiency for establishing uniform and optimum plant population. Therefore, the present study was undertaken during the period 2009-2011 to address the problem through mechanized sowing.

Preliminary evaluation on a power tiller operated groundnut planter cum fertilizer drill (Pradhan *et al.*, 1997) showed that the optimum planting condition for productivity was attained with an actual field capacity of 0.160 ha/h. TNAU has developed tractor mounted cultivator seed planter during 1985-87 for sowing groundnut. The use of planter had reported the increased crop yield to an extent of 20 per cent with a 0.63ha/hr and 78 per cent field capacity and field efficiency, respectively (Pandey *et al.*, 1997). The field trials of TNAU model planter in the mission mode project for dry land mechanization under AICRP during early part of this century in the groundnut growing regions had not given good impact.