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Development and performance evaluation of tractor drawn groundnut planter for *Rabi* season

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ABSTRACT : An eight row tractor drawn planter was developed for sowing of groundnut seed in irrigated (*Rabi*) condition at Agricultural Research Station, Anantapur. The seed metering in the planter is of inclined plate type. Power is transmitted from ground wheel to metering system through chain and sprockets. A double point shovel type furrow opener was provided for opening the furrows. The seed is placed in the furrows at desired depth. The implement can be operated by a 35 hp tractor. During evaluation the field capacity of the planter was found to be 0.35 ha/h at the average speed of operation of 2.88 km/h with field efficiency of 66.5 per cent. It was found that, the cost of sowing with local manual seed drill was observed to be 51 per cent higher than the sowing with groundnut planter. Manual seed drill required 11.3 man-h/ha more than the groundnut planter.

KEY WORDS : Groundnut, Seed drill, Planter, Seed rate, Seed to seed spacing, Man-h/ha

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Groundnut (*Arachis hypogea* L.) is an important source of edible oil in India and ranks second in the world (after China) in groundnut production and cultivated in an area of 5.8 million ha with a productivity of 948 kg/ha. Three southern states namely Andhra Pradesh, Tamil Nadu, Karnataka and the Western state of Gujarat together account for close to 80 per cent of the annual output in India. In Andhra Pradesh, groundnut is sown normally from June to July in *Kharif* (rainfed) and November to December in *Rabi* (irrigated). In *Kharif* under rainfed conditions, the area normally stands at around 14.5 lakh ha. About 2 lakh ha of area is sown under *Rabi*.

In Andhra Pradesh, traditionally groundnut is sown directly by hand dropping of seed using funnel and tube attached to 8-row tractor drawn cultivator in both parallel and perpendicular directions under irrigated condition. Main disadvantages with this one are more seed rate and non-uniformity of seed to seed distance in a row. Studies in some countries have shown that seed-cum-fertilizer drills introduced in irrigated areas during the last two decades have increased yields by 10-12 per cent over conventional methods of seeding due to better plant establishment and proper application of inputs (Choudhary, 1983). The interest in the popularizing seed-cum-fertilizer drills is the consequence of non-availability of skilled labour during the sowing season and for judicious utilization of seed and fertilizer due to their increasing costs and at the same time to increase the production of food grains, pulses and oilseeds (Bolton and Booster, 1981). When groundnut is cultivated under irrigated conditions or during post rainy season (*Rabi*) or in summer only bunch types are grown. Under such situation, 140 to 150 kg/ha of seed rate was recommended to maintain plant population of 44 no. per m^2 (ICRISAT-Groundnut Cropping Systems). Keeping this in view, a tractor drawn groundnut planter suitable for *Rabi* season was developed and evaluated its performance.

METHODOLOGY

A 8 row tractor drawn groundnut planter having row to row spacing of 22.5 cm suitable for *Rabi* season was developed in Agricultural Engineering Division, Agricultural Research Station, ANGRAU, Anantapur. The major components are mainframe with hitching unit, hopper, metering unit, seed tube cum furrow opener, ground wheel and power transmitting unit. The detailed specifications of the functional components of groundnut planter is presented in Table A.