

Development of High Clearance Unit in Small Tractor for Cotton Crop

D Ananda Babu, C Ramana, S Joseph Reddy, L Edukondalu and V Srinivasa Rao

College of Agricultural Engineering, Bapatla, A.P.

Agriculture is one of the major sectors in Indian economy. Nearly 60 per cent of the population depends on agriculture and it is considered as backbone of the country. Cotton 'the white gold' is one of the most important commercial crops playing a key role in the economical, political and social affairs of the country. The existing clearance of the small tractor was increased with developed high clearance unit using mild steel as a structure. The tractor was lifted up to height of 1.4m using front and rear legs of front axle and rear axle. A frame was developed to support the tractor weight and dynamic loads of the legs were provided for all the wheels for motion. The drive from the tractor rear axle was transferred to the rear wheels using chain and sprocket arrangement for both the rear wheels. The front legs of front wheels and rear legs of rear wheels were connected using horizontal bar for proper supporting and load distribution. The dynamic analysis of the tractor with weeding and spraying unit was studied and found that, the tractor was in stable condition during operation up to a depth of 10 cm. It was found that the location of centre of gravity of tractor was 1.9 m from the ground surface. The critical speed of tractor is 2.55 m/s and the front and rear wheel reactions are about 2045.38 N and 7813.66 N respectively at maximum depth of operation.

Key words: *Cotton crop, High clearance tractor, Stability, Tractor dynamics*