

# Development and evaluation of tractor drawn inclined cell plate type Bt cotton planter

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■ **ABSTRACT** : The performance evaluation of seed metering inclined cell plate under laboratory conditions was carried out on existing Bt cotton planter in term seed rate, cell fill percentage, seed to seed distance and soil cover over the seed. The seed rate obtained with seed hopper in level position and at speed ratio of 3:1 were 1.75kg/ha, 2.40kg/ha and 2.65kg/ha in large medium and small seed size categories, respectively. These seedrate are quite close to the recommended seed rates of Bt cotton varieties. Based on the results of lab study the optimum speed ratio of 3:1, seed release height of 30 cm inclined cell plate type metering roller and shoe type furrow opener were selected and improved prototype of Bt cotton planter was developed. The development and evaluation of improved prototype Bt cotton planter was carried out under field condition and compared with existing inclined plate type cotton planter. The effective field capacity of both machines was 0.73 and 0.71 ha/h at average operating speeds of 4.1 and 3.8 km/h, respectively. Time lost in turning of both planters was 35 and 37 sec/turn and the field efficiency was 59.34 and 58.77%, respectively. The germination of seed was recorded after 21 days of planting and it was 16-19 plants in case improved Bt Cotton planter and 12-16 in existing planter. The distribution of plants in row and crop response at farmer's field indicated that mean plant spacing was 71.8 cm and quality of feeding index was 75.57% in case of improved Bt Cotton planter whereas, the mean spacing of 77.6 cm and quality feeding index 68.81 % was recorded in existing cotton planter. The missing index and multiple index recorded in improved Bt cotton planter were 15.45 % and 8.88%, respectively, whereas it was 22.86% and 8.33% in existing cotton planter.

■ **KEY WORDS** : Improved Bt Cotton planter, Seed rate, Cell fill percentage, Missing index, Multiple index

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