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Research Paper :

Modification and performance evaluation of rice cum green manure crops seeder

SANTOSH SINGH SENGAR, J.S. NIKHADE, N.H. TAYADE AND M. QUASIM

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See end of the article for authors' affiliations

Correspondence to:

SANTOSH SINGH SENGAR
Central Institute of Agricultural Engineering, BHOPAL (M.P.) INDIA

ABSTRACT

To sow dry paddy in dry tilled soil, animal drawn rice cum green manure crops seeder was modified at CIAE, Bhopal. The machine served the three purpose at a time such as seeding of rice with basal application of fertilizer, seeding of green manuring crop and subsequent interculture biasi operation . The seeder was evaluated its performance in the laboratory as well as in the field and comparing with other seed drill. The comparative studies were conducted to evaluate the performance of rice cum green manure crops seeder. The study showed that the average tillering and plant population (No/m^2) at maturity were 5-6 and 268, respectively of RCGM. The field test result showed draft of 37 kgf with effective field capacity of 0.06ha/h at field efficiency of 80%. The mechanical damage of seed was found to be negligible. The seed distribution efficiency was 91.38% as compared to other seed cum fertilizer drills. But from studied data of other seed drills, it was found that the overall performance index was highest (0.880) in case of Naveen seed cum fertilizer drill. But this modified rice green manure crop seeder is specific technology suits well in the Biasi cultivated areas.

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Broadcasted rice generally gives high plant mortality due to uneven distribution and non uniform placement of seeds combined with moisture stress and high atmospheric temperature during the premonsoon period. In case of broadcasting, weeding is a main problem . The weeding problem is less in row seeded crops because it allows the use of mechanical weeders. The broadcasting method required more seed rate and less germination due to uncovered seeds spread on the surface of soil and birds infestation on seeds. In direct seeding and transplanting are two general method for planting rice. Direct seeding method the seeds are directly sown in the field with seeddrill or broadcasted. While transplanting of rice, requires raising of seeds on bed and then the raised plants are transplanted in field. Hence, direct seeding method is labour and seed saving as well as less time consuming method and so it requires less cost of operation compared to transplanting.

One of the most important factors that influences the germination of seeds is the uniformity of seed distribution at proper depth where adequate moisture would be available for germination of the seeds. This results in a better crop stand thereby increasing the crop yield. By putting the seeds in line, intercultural operation like weeding , hoeing and top dressing of fertilizer become easy besides being time saving and economical.

Several researchers (Abdul *et al.*, 1989; Singh *et al.*, 1983) have reported that seeding in rows along with basal application of fertilizer has facilitated higher initial establishment of crop. Further it has been reported (Singh, 2000) that green manuring improves soil fertility and requires less use of chemical fertilizer. Matiwade and Shilavantar (1992) stated that the grain yield obtained with green manuring of *Sesbania rostrata* alone was equal and even more when compared with the recommended dose of nitrogen alone. Due to small and scattered land holding pattern, the farmers mainly depend upon animal as a source of power, a suitable animal drawn seed cum fertilizer drills are essential for the farmers to complete the seeding operation in time. Keeping these in view, a animal drawn inter row crop seeder was developed for sowing of two rows of rice with seeding of one row of green manure crop in between the rice rows. The green manure crop in row spaces may be incorporated into soil by biasi tool.

The machine, therefore, would serve the threee