Design and development of a direct paddy seeder for row seeding of paddy with plant spacing in drained paddy fields

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Historically the Agricultural systems of the country based on the rice based cropping system, which make Sri Lankan's one of the most experienced rice-growing Nation. However, in recent years Sri Lankan rice production has been facing the serious problems. For a long time the Sri Lankan farmers have been supported in many ways, however the rice has not been defended enough to compete with the Indian or Japanese rice in quality, price and the yield per unit area at International market level.

The new appropriate machine and method of direct seeding introduced here will be of great help in reducing the production cost, which is mostly needed for Sri Lankan rice.

The invented seeder consists of nine 'unit row seeders', a combine furrow opener, a combine furrow closer, a main frame, handle and two floaters or depth wheels. The 'unit row seeder' is a unit, which is carrying out the seeding work. It comprises a hopper, a new rectangular shape horizontally sliding seed plate and seed tube. Two experiments were conducted to compare the performance of the developed seeder with existing Roller type paddy seeder. Weight of 1000 seeds, seed moisture, Germination, bulk density of the seeds, Rate of damage seed caused by metering mechanism were inspected in the Laboratory.

In the field experiment, working capacity, width of seeding, labor unit per hectare were conceded as criteria for the evaluation of designed seeder.

From the results, It was observed that the delivery rate and damage seed percentage were 70-95 kg/ ha and 2.8% respectively. The working capacities, width of seeding, and labor requirement of the design seeder were 0.12 ha/ h, 2 m, and 0.9 units/ ha, respectively. Above observation of conventional seeder were 0.07 ha/ h, 1 m, and 1.6 units/ ha respectively. The cost of production of design seeder was Rs. 4576/=, but local selling price of the conventional seeder was around Rs. 5560/=. But the working capacity and width of seeding of the designed seeder was greater by 41% and 50% than the conventional row seeder. The labor requirement per hectare was decreased by 47% than the conventional seeder. Therefore the overall field performance of designed seeder (Patent no:13353) was very satisfactory.

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