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Development of Air-assisted Strip Seeding for Direct Seeding in Flooded Paddy Fields —Seeding Machine and Effect of Air Assistance—

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Abstract

We have investigated the use of air-assisted strip seeding for direct seeding in flooded paddy fields. A seeder was developed using a commercially available granule applicator remodelled for tractor installation. The seeder swath was widened, and the blow head was improved. The diameter of the blow head was reduced and the blow head was lengthened to improve seeding results.

Analysis using a high-speed camera of the effect of the air assistance used by the developed blow head showed that the speed of rice seed falling was from 4 to 7m/s and that the direction of falling was 7.1° from vertical. A sowing test using imitation paddled soil demonstrated that the developed blow head reduced the width of the sown strips by about 40% compared with a conventional head and that seeds were buried deeper. These results were confirmed by sowing rice seeds into an agar bed, which simulated a paddled paddy. The sown strips were from 50 to 80mm wide, and the seeds were buried less than 5mm deep.

These results show that an air-assisted seeder with an improved blow head can effectively seed flooded paddy fields.

Key words

[paddy](#), [direct seeding in flooded field](#), [air-assisted seeding](#), [seed behavior](#), [strip shaping](#),

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