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An Automatically Controlled Lactic Acid Bacillus Sprayer for Rice Whole Crop Harvester

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Abstract

Compared to other crops, such as wheat, barley and soybeans, rice whole-crop-silage (WCS) conserves the functionality of paddy fields such as the irrigation systems and soil conditions, and it can also provide high-quality roughage for cattle feed. The production of rice WCS has thus been increasing significantly in Japan. Spraying a solution of lactic acid bacilli onto the rice plants prior to their being ensiled improves the fermentation and preserves the quality of wrapped silage. However, a device for spraying such a solution with high efficiency and high controllability has not been available on the market.

We have developed a lactic acid bacillus sprayer for use with a rice whole-crop harvester. It has a simple control system with three sensors and a simple control circuit for automatically switching the spraying on and off. This automatic control stops the spraying whenever the machine is not processing rice plants, so solution wastage is reduced. Moreover, it eliminates the troublesome manual switching operation. Work time simulation and field-testing showed that the amount of lactic acid bacilli needed was reduced by about 37%.

Key words

[Rice whole-crop harvester](#), [Lactic acid bacilli](#), [Sprayer](#), [Automatic control](#)
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