

Smart production systems contributing to productivity improvement in paddy rice cultivation

Production

Demonstration and implementation

Item: Paddy rice

Labor productivity enhancement

Outline

Smart agricultural technologies, such as automated rice transplanters, multi-robot work systems*, and yield-monitoring combine harvesters** have been developed. These technologies contribute to significant improvements in the productivity of paddy rice cultivation.

* A system with which an operator can drive multiple agricultural machines at the same time

** A combine harvester with functions of weighing unhulled rice and determining water content of the grains

Background/effect/note

Automation technologies for agricultural machines have been developed to achieve efficient production (Fig. 1). They are especially important because the number of farmers has decreased. Smart agricultural machines reduce the workload of operators, improve work efficiency, and decrease the number of farm workers. Additionally, smart agricultural machines enable variable rate fertilizer application in fields with uneven fertility and crop growth. Furthermore, performing tasks, such as record and data aggregation management of farms, crops, and work history become easy by linking with the agricultural management system. Consequently, the efficiency of farm management can be improved.

Automated rice transplanter



Multi-robot work system



Yield combine



Map-based variable rate fertilizer applicator



Fig. 1. Examples of smart agricultural production systems

Technical Details: [Japanese]

https://www.naro.go.jp/publicity_report/press/laboratory/iam/075850.html

https://www.naro.go.jp/project/results/4th_laboratory/tarc/2017/17_003.html

Movie: [English]

<https://www.youtube.com/watch?v=yGizlqBcL80&list=PLW99yTRNzVkPpBMyGubqVY3TeqSurjusE&index=3>

<https://www.youtube.com/watch?v=-ZxVm6QgLC8&list=PLW99yTRNzVkPpBMyGubqVY3TeqSurjusE&index=19>

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