

Underdrain-drilling machine “Cut Drain”: Easy construction of subsurface drainage without additional materials

Production

Implementation

Item: Field crop

Climate disaster mitigation

Outline

Deep drainage cavities can be constructed continuously by towing the “Cut Drain” with a tractor without using additional materials, such as pipes. In Japan, drilling unit developed and practically applied for this purpose is sold by a domestic tractor manufacturer and is used and popularized for drainage improvement in flat and clayish agricultural lands.

Background/effect/note

The “Cut Drain” constructs cavities underground by towing the drilling unit with a tractor to resolve the poor drainage in the farmland (Figs. 1–3). Additionally, the “Cut Drain” eliminates salt through underground infiltration in semi-arid lands and has been demonstrated as a simple and low-cost technology to reduce salt hazard in Uzbekistan. The technology is also useful for subdrainage in low-level wetlands and salt-damaged areas in Asia, Africa, and other regions.

However, the application of “Cut Drain” is limited to the clay soil type. The development of inexpensive grade units is currently under consideration for overseas countries.



Fig. 1. Drilling unit of “Cut Drain”



Fig. 2. Drilling unit in operation



Fig. 3. How to create a water conduction hollow without pipes

Technical details:



<https://www.naro.go.jp/english/topics/laboratory/nkk/137842.html>

https://www.jircas.go.jp/sites/default/files/publication/manual_guideline/manual_guideline_-_55.pdf (JIRCAS)

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