

[P2] Farming System

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 2 (Poster) (Farming System)

1:15 PM - 2:00 PM

[P2-22] Verification of Effects of "Three-dimensional farming system" on Soybean Cultivation in a Converted Paddy Field in a Temperate Zone

*Nominated for Presentation Awards

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Kozui Otani (1876-1948) introduces a strange farming technique named "three-dimensional farming system" in his book "Tropical Agriculture". "Three-dimensional farming system" means a farming method that digs a deep trench (180cm or more) between ridges and promotes growth of crops. We verified if this method was effective for soybean (*Glycine max* L. cv. Kotoyutaka) cultivation in a converted paddy field in a temperate zone. In order to reproduce the farming system, trenches with a depth of about 100 cm were dug at both ends of the ridge, and soybean was transplanted in the ridge. The growth and yield of soybean were investigated during the flowering and full-ripe stages. As a result, in the flowering stage, the shoot dry weight was about twice, the root dry weight was about 1.6 times, and the number of nodules was about twice those of the control by the farming system. In the full-ripe stage, even though significant increases of the main stem length, the stem diameter, and the shoot dry weight were observed by the farming system, the number of pods set, coarse grain weight, and 100 grain weight increased only slightly. It was suggested that nutrient translocation from the foliage to the grain was not performed successfully. Moreover, by the farming system, the soil temperature became strongly affected by the atmospheric temperature, and the drainage property of the soil was improved. However, no clear difference could be confirmed for EC. It also became clear that the microflora of cultivated soil greatly changed especially in the deep part.