A Study on the Comprehensive Demonstration and Optimization of Soybean Smart Agricultural Standard Model

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Abstract

The agricultural population in Korea is continuously decreasing, and as of 2023, it was about 2,089,000, a 31.8% decrease from 2010. In particular, the proportion of farmers aged 65 or older was 52.6% in 2023, more than 2.4 times higher than 21.7% in 2000. In addition, as government policies to improve soybean self-sufficiency were strengthened, soybean cultivation area increased 33.6% from 50,638 ha in 2018 to 67,671 ha in 2023, and self-sufficiency rate improved from 25.3% to 34.7%. Meanwhile, various smart agricultural element technologies such as irrigation and drainage systems, drone control, nutrient diagnosis, pest prediction, and autonomous driving agricultural machinery are being developed and infrastructure is being expanded to implement sustainable agriculture to cope with aging and climate change. However, it is still necessary to comprehensively demonstrate and optimize the smart agricultural standard model specialized for soybean cultivation that can be applied to actual agricultural sites. Accordingly, from 2022 to 2024, Jonbuk State Agricultural Research & Extension Services developed a leading digital agricultural model and built infrastructure for automating soybean production. From 2025 to 2028, we plan to promote comprehensive demonstration and optimization of the soybean smart agricultural standard model, focusing on key technologies such as ① eco-data-based integrated platform, ② Automatic irrgation, drainage and fertilzer technology ③ AI-based pest prediction and variance control technology, ④ precision disaster response technology, ⑤ growth monitoring and decision-making support ⑥ autonomous agricultural machinery advancement and ⑦ smart farm integrated control system.

Keywords: Soybean, Smart Agricultural, Optimiazation