

OA-07

## A Research on None Covering of Top Soil for Rice Seedling Nursery in the Sparse Machine Transplanted Rice

Kwang Ho Park<sup>1\*</sup>, Hun Yeol Ryu<sup>1</sup>

<sup>1</sup>Department of Food Crops, Korea National College of Agriculture and Fisheries(KNCAF), 1515 Kongjwipatjwi-ro, Deokjin-gu, Jeonju-si, Jeollabuk-do, 54875, Republic of Korea

### [Introduction]

The sparse machine transplanting in the KNCAF has introduced from Japan and extended to nationwide for rice growers since 2016. This new technology would be a useful to labor and cost reduction in rice cultivation. However, it should be improved to able to adopt in Korea rice growing environments in terms of soil, cultivar, temperature, and different rice growing regions in temperate country. Therefore, we have done research on determination of a stable growth and productivity such as planting density, machine, tillering, double cropping system, and high altitude etc. In addition we have developed a none top soil covering method with the iron-coated seeds in rice seedling nursery which has been known as a reduction of bed soil input and weight of nursery seedling box during transportation as well as a process of machine transplanting. This research was conducted to determine a stable growth and development of rice seedling establishment and growth for the sparse machine transplanting.

### [Materials and Methods]

This experiment was performed at the Korea National College of Agriculture and Fisheries from May 5 to May 27 in 2019 and used the shindongjin(japonica) as a test rice cultivar. There were 4 methods like the conventional method with 230g seed rate of preemerged seeds and top soil covering, high sowing density 1(290g seed rate of preemerged seeds and top soil covering), high sowing density 2(290g seed rate of preemerged seeds and none top soil covering), and high sowing density 3(290g seed rate of iron-coated seeds and none top soil covering). The data was collected in terms of germination percentage, shoot length, root length, leaf number, fresh weight, leaf color until 35days after sowing.

### [Results and Discussion]

There was not statistical difference in germination percentage of 95% in untreated control and 98% in iron-coated seeds. However, the seedling height was the highest growth according to the conventional(230g seed rate of preemerged seeds and top soil covering)>high sowing density 1(290g seed rate of preemerged seeds and top soil covering) ≥ high sowing density 2(290g seed rate of preemerged seeds and none top soil covering)>high sowing density 3(290g seed rate of iron-coated seeds and none top soil covering). There were no statistical differences in root length, leaf number, leaf color chart, and SPAD values. Thus, high sowing density of 290g for rice nursery seedling box was recommendable to the sparse machine transplanting in rice cultivation being with the none top soil covering method as long as the iron-coated seeds might be used to a rice nursery.

\*Corresponding author: Tel. +82-63-238-9072, E-mail. kh5008@korea.kr