

**PA-109**

## Comparison of Methane Emissions by Rice Ecotype in Paddy Soil

Tae Hee Kim<sup>1†</sup>, Jisu Choi<sup>1</sup>, Seo Young Oh<sup>1</sup>, Seong Hwan Oh<sup>1\*</sup>

<sup>1</sup>Department of Southern Area Crop Science, National Institute of Crop Science, Miryang 50424, Korea

### [Abstract]

South Korea greenhouse gas emissions have increased year by year, resulting in a total emission of 727.6 million tons of CO<sub>2</sub> eq in 2018, a 2.5% increase compared to 2017. Among them, the agricultural sector emitted 21.2 million tons of CO<sub>2</sub> eq., accounting for 2.9% of the total. Among the greenhouse gases emitted from the agricultural sector, a particularly problematic is methane gas emitted from rice paddies. Methane is one of the important greenhouse gases with a global warming potential (GWP) that is about 21 times higher than that of carbon dioxide due to its high infrared absorption capacity despite its relatively short remaining atmospheric period. Since the pattern of methane generation varies depending on the rice variety and ecological type, research related to this is necessary for accurate emission calculation and development of reduction technology. Accordingly, a study was conducted to find out the changes in greenhouse gas emission according to rice varieties and ecology types.

As for the rice eco-type cultivar, early maturing cultivar (Haedamssal) and medium-late rice cultivar (Saeilmi) were used. Haedamssal was transplanted on May 25 and June 25, and Saeilmi was transplanted on June 10 and June 25.

The amount of methane generated according to the growing day showed a tendency to increase as the planting period was earlier. The difference between varieties was that Haedamssal showed higher methane production than Saeilmi. The total CH<sub>4</sub> flux in the saeilmi was 18.7 kg·h<sup>-1</sup>(Jun 10 transplanting), 12.4 kg·h<sup>-1</sup>(Jun 25 transplanting) during rice cultivation. Lower methane emission was observed in Saeilmi than in Haedam rice. In addition, the earlier the planting period, the higher the methane emission.

This study is the result of the first year of research, and it is planned to investigate the amount of greenhouse gas emission between double cropping and single cropping using wheat cultivation after harvest for each ecological type.

### [Acknowledgement]

본 연구는 농촌진흥청 공동연구사업(PJ01713201)의 지원에 의해 이루어진 결과로 이에 감사드립니다.

\*Corresponding author: E-mail, osh0721@korea.kr Tel. +82-55-350-1161