

**Project Title :** The Effect of Rice Cultivars On Methane Emission From Irrigated Rice Field

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Rice plants have been reported to affect methane (CH<sub>4</sub>) emission from rice fields. The objectives of this study were to determine the effect of rice cultivars on CH<sub>4</sub> emission from flooded rice and to develop crop management strategies with rice cultivars characterized by low methane emission while sustaining high yields. The 4 rice cultivars studied were Memberamo, Cisadane, IR64 and Way Apoburu. The CH<sub>4</sub> emissions were determined in the wet season of 2001/2002 (November-February) using an automated closed chamber technique in an irrigated field condition in Jakenan, Java, Indonesia. Farmyard manure at 5 t ha<sup>-1</sup> was given to the plots to ensure that carbon was not limited. Root weight, root length, biomass, and number of tillers were determined at 17, 36, and 57 days after transplanting (DAT). The results showed that the mean CH<sub>4</sub> emission was highest in the plot planted with Cisadane (94.8 kg CH<sub>4</sub> ha<sup>-1</sup>), and lowest with IR64 (37.7 kg CH<sub>4</sub> ha<sup>-1</sup>). The plots treated with Memberamo and Way Apoburu recorded intermediate CH<sub>4</sub> emission (61.1 and 58.9 kg CH<sub>4</sub> ha<sup>-1</sup>, respectively, on average). No significant differences in yield among the cultivars was observed. The yields of Memberamo, Cisadane, IR64 and Way Apoburu were 5.882, 5.764, 5.873 and 6.065 t ha<sup>-1</sup>, respectively. Statistical analysis showed that there were no significant differences in the root weight and root length among the cultivars. However, Cisadane gave the highest dry matter weight (222 g hill<sup>-1</sup>) at 57 DAT compared to the other cultivars (175-190 g hill<sup>-1</sup>). Plant tillers did not show significant differences among the cultivars. Regression analysis showed that CH<sub>4</sub> flux was significantly related with root weight, root length, aboveground biomass, and number of plant tillers. This finding shows that the use of selected cultivars, such as IR64, can potentially lower CH<sub>4</sub> emission without reducing yields.