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KEY WORD: METHANE EMISSION / GREENHOUSE GAS / LOWLAND RICE FIELD / FLOATING RICE FIELD

WILAI TIAWYUENYONG : METHANE EMISSION FROM LOWLAND RICE FIELDS AND FLOATING RICE FIELDS IN PHRA NAKHON SI AYUTTHAYA PROVINCE.

THESIS ADVISOR : ASSO. PROF. ORAWAN SIRIRATPIRIYA, Ph.D., AND

THESIS CO-ADVISOR : TAWEE KUPKANCHANAKUL, Ph.D., 241 pp.

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Methane is a greenhouse gas effected global warming. Rice cultivation has been a methane emission resulted from human activity. Field study about methane emission and factors affected the emission from lowland rice and floating rice was conducted in Phra Nakhon Si Ayutthaya province. Experimental design was randomized complete blocks with 3 replications. Planting rice was sown broadcast for two cultural practices. Rice varieties were RD 23, Suphanburi 90 for lowland rice and Huntra 60, Leb Mue Nahng 111 for floating rice. Closed chamber was collection method. Four rice plant stages of growth consisting of tillering, booting, grain development, and maturation were measured. During 6.00 a.m. - 22.00 p.m. a day gas sample was collected 6 times. Gas chromatography (flame ionization detector, FID) was an analytical technique for methane.

The results showed that total amounts of methane emission from rice field planted with Suphanburi 90, RD 23, Leb Mue Nahng 111, and Huntra 60 rice varieties were 68.666, 63.720, 32.870, and 15.200 gram/square meter, respectively. The annual methane emission from rice fields in Thailand during wet season crop estimated base on Suphanburi 90, RD 23, Leb Mue Nahng 111, and Huntra 60 rice fields were 5.539, 5.140, 2.652, and 1.226 teragram, respectively. (1 teragram = 1 million metric ton).

Rice plant was methane emission route from rice fields that travelled through the atmosphere. Average methane emission rate from Suphanburi 90, RD 23, Leb Mue Nahng 111, and Huntra 60 rice fields were 20.570, 18.920, 7.216, and 3.332 milligram/square meter/hour, respectively. Booting stage was the highest methane emission rate of RD 23 and Suphanburi 90. In part of grain development stage was the highest for Huntra 60 and Leb Mue Nahng 111. Therefore, order of the highest methane emission rate from rice fields with consideration of rice varieties were Suphanburi 90, RD 23, Leb Mue Nahng 111, and Huntra 60.

Factors affecting the methane emission from lowland rice and floating rice fields were rice plant, rice variety, height of rice plant, biomass of rice plant, water level within rice field, soil moisture, anoxic condition of soil, and soil pH.