Nitrogen fertilization management can decrease methane emission from wetland rice fields of Central Vietnam

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1. Objective: to assess the influence of rates and types of nitrogen application on CH$_4$ emission in the two rice cropping seasons in Central Vietnam

2. Materials and methods

- The basic properties of topsoil (0–20 cm) before the experiment are given with pH$_{KCl}$ (4.10); OC (1.14%); total N (0.085%), total P (0.034%); total K (0.48%) and clay content (60%).

- Methane flux was measured in 3 replicates of the experiment using the static chamber method as described by Parkin and Ventera (2010) every seven days for the period 8 to 10 am and measured with gas chromatograph (GC- SRI 8610) by a flame ionization detector.

3. Results

- Increasing rates of N application for rice resulted in increasing CH$_4$ emission (Figure 1). The highest CH$_4$ flux was found at 120 kg N/ha for both types of N fertilizer.

- Less CH$_4$ is emitted from rice fields supplied with NH$_4$Cl compared with fields supplied with urea.

- The CH$_4$ emission was higher in summer rice crop season as compared with winter spring rice crop season at the same rate and type of N fertilizer application.

4. Conclusions:
The effect of inorganic fertilizer N on CH$_4$ emission depends on rate and type of N application. Further research should aim at quantifying the effects of it on N$_2$O emission and combining mitigation options.

Figure 1: Effect of N rates and types on CH$_4$ emission flux in two rice cropping systems

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