

Abstract

Rice is the main food crops and the culture of the highland community, but rice yields are often low and insufficient for household consumption. Normally, rice cultivation in the Thai highlands is usually on terraced paddy fields that are rainfed and rice grown in the most of the slope area, low soil fertility. So this research was conducted in cooperation with farmers for foods security in highland community. This research were (1) to research and development of technology for local rice seeds production, (2) to evaluate and select local rice for photoperiod insensitivity and tolerance to gall midge, (3) to restore the fertility of soil and to manage of nutritious in soil, (4) to demonstrate the water-saving system for rice cultivation in highland, (5) to study the guidelines for reduce the impact of climate variability, (6) to research and develop the value-added of local rice and (7) to study the crops rotation for reducing the shipping areas of upland rice.

The results show that (1) local rice seeds of 75 samples from the research process were through the quality standard of seed as 45 samples (through the 60%). (2) The four local rice varieties were tolerance to a gall midge which grown for extension seeds on dry-season, and then evaluated the tolerance of a gall midge on wet-season at Bok-lua, Le-tor, Huay-pong and Longkhod. (3) The ridge of legumes combined with crop rotation and incorporated the scrape of soybeans into sandy soil was increased the organic matter in soil as 1.5%. (4) The non-flooded water was 56% less water than the flooded water treatment and cumulative methane emissions in the non-flooded was 75% less than emitted in the flooded treatment. Cumulative nitrous oxide emissions were 14% less than emitted in the flooded treatment. Combined, non-flooded fields produced 46% less carbon equivalents than the flooded treatment. (5) The reducing guidelines for the impact of rain was transplanted the young seedlings as 20-days after sowing, compared with 40-50 days seedlings, which reduced the problem lack of rain. (6) Farmers of Wat-chan village were added the value of local rice to brown rice and coarse rice as Bae-bomol, Bae-pado. For Papae village also produced the brown rice of local rice Hugletin variety. And (7) the crop rotation with Lablab beans was highest of rice yields and was 73% more yield than shipping cultivation of 5 years. From the research must be based on participation with hill tribe farmers to produce the rice quality and sustainability of rice farming on highland.

Keywords: Highland, Local rice, Gall midge, water-saving, value-added, Crop rotation, Methane