STUDIES ON ZERO TILLAGE TECHNIQUE FOR RICE CULTIVATION ON WELL DEVELOPED ACID SULPHATE SOILS IN THE MEKONG DELTA

VO-TONG XUAN[1], NGUYEN VAN SANH[1], DUONG VAN NI[2], VO-TONG ANH AND PHAM TAN DUNG[3]

1. Professor of Agronomy, and research assistant, Mekong Delta Farming Systems R & D Center, University of Cantho, Haugiang, Vietnam.
2. Research assistants Department of Soils, University of Cantho.
3. Undergraduate student, Faculty of Agronomy, University of Cantho.

ABSTRACT

The zero tillage technique applied during the late Dong Xuan (dry season) crop to enable farmers to grow three rice crops per year became more and more popular in areas surrounding the Plain of Reeds of the Mekong Delta. This method was developed among the farmers by experience passed on from one to another. However, the technique was not standardized. Rice yields were variable among locations and years. A detailed survey of 54 farmer's fields and 9 experiments carried our simultaneously at three local environments using the same farmer's methodology in CaiLay district, Tiengiang province to determine optimum conditions for high yield production. The results showed that :

1) The zero tillage technique was more profitable compared to conventional wet broadcast. It saves expenses for ploughing, chemicals for weed and insect control, and fuel for irrigation.

2) It restructured top soils, increased root length and grain yield. In enabled farmers to avoid acid water in early rainy season.

3) In order to achieve high yields from zero tillage technique the following conditions must be met : a) Top soils with medium to high organic matter should be 20 cm deep or more, pH should not be less than 4.5. b) Irrigation water should have pH more than 5.5, the irrigation system should be available. c) Fertilizer rate should be from 75 to 100 kg N/ha and from 60 -m 90 Kg P_2O_5/ha.

Before the Dong Xuan rice crop is harvested, the rice field had been drained off during the last 7-10 days. The stubble and straw were then spread evenly over the field and let dried in 3-4 days. Then they were burnt to further decrease the moisture content of the top soils. Immediately after straw burning, rice seeds were broadcast directly onto the ash; irrigation water was

rushed in to break up soil clods and soak the seeds. The water was maintained 3 - 4 cm for 24 hours then drained off for rice germination. Then the soil was kept saturated for 3 days. After that the field water was gradually increased to reach 5 cm level at 10 days after sowing. The technique thus described gave rice yields of around 5.5 t/ha.