

# FIELD TEST RESULTS

## RICE



2011

### CHI LIQUID CARBON INCREASED CROP PRODUCTION OF RICE

- **Objective:** To use organic matter (humic acids) to increase the yield of rice
- **Collaborator:** Eco Tiger, Ho Chi Minh City & Cuu Long Rice Research Institute, Cantho, VIETNAM
- **Period:** August to November 2011
- **Tested product:** CHI-Powder and CHI-Soluble Powder (source of humic acids)
- **Tested crop:** Rice of OM 5451 (90-95 days) variety
- **Location:** Cantho area, VIETNAM
- **Soil type:** Alluvium, pH = 5.5, organic matter = 2.7%, total N = 0.2%, available P = 2.8 ppm (Olsen's), exchangeable potassium = 5.9 cmol/kg, CEC = 20.1 cmol/kg
- **Test plots:** 5.5 x 6 m<sup>2</sup> each; separated with 1 m distance by 0.2 x 0.3 m<sup>2</sup> furrow drains

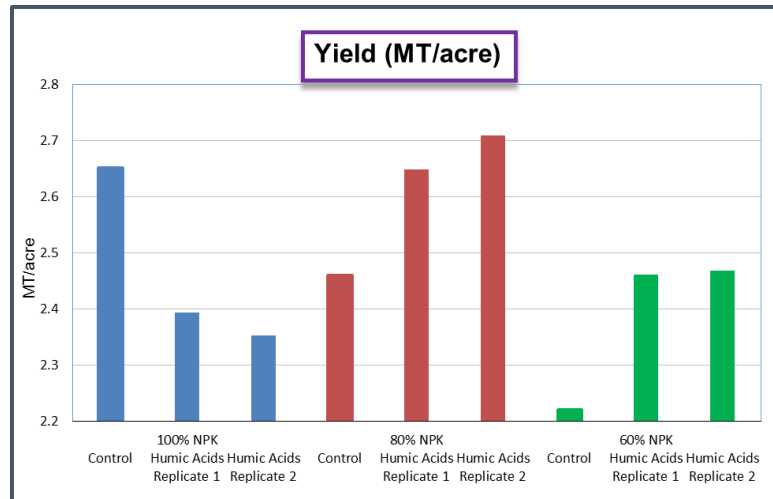
#### ■ DESIGN OF EXPERIMENTS

- **Control 1:** 100% NPK (88-35-26 lbs/acre)
- **Treated 1-1:** 100% NPK; 88 lbs/acre CHI-Powder; 0.36 lbs/acre CHI-Soluble Powder
- **Treated 1-2:** replication of Treated 1-1
- **Control 2:** 80% NPK (70-28-22 lbs/acre)
- **Treated 2-1:** 80% NPK; 88 lbs/acre CHI-Powder; 0.36 lbs/acre CHI-Soluble Powder
- **Treated 2-2:** replication of Treated 2-1
- **Control 3:** 60% (53-21-16 lbs/acre)
- **Treated 3-1:** 60% NPK; 88 lbs/acre CHI-Powder; 0.36 lbs/acre CHI-Soluble Powder
- **Treated 3-2:** replication of Treated 3-1
- NPK and CHI-Powder were applied before sowing; CHI-Soluble Powder was applied after sowing incrementally 3 x 0.12 lbs up to 55 days
- Control, Treated 1-1, 1-2, 2-1, 2-2, 3-1, and 3-2 was each completed in triplicates; yields were recorded and averaged

## ■ RESULTS

CHI-Powder, CHI-Soluble Powder, and 100% NPK resulted in lower yields compared to 100% NPK only, indicating that humic acids and nutrients at the applied rates were too much for the plants. At reduced nutrients, the addition of CHI-Powder and CHI-Soluble Powder significantly increased yields compared to controls (80% and 60% NPK only), suggesting that humic acids made nutrients more available to plants.

The best overall results were observed with the addition of CHI-Powder and CHI-Soluble Powder to 80% NPK, in which yields were maintained and even slightly increased by 2% (from 2.65 to 2.71 MT/acre) compared to that of 100% NPK.



## ■ CONCLUSIONS

With the incorporation of CHI-Powder and CHI-Soluble Powder, the yield of rice could be maintained at 20% reduced nutrient inputs. Both products were practical, economical, and compatible with most nutrients.