

# **IMPROVING SOIL FERTILITY AND MAIZE YIELD BY USING ORGANIC FERTILIZERS AND BIOCHAR IN COMBINATION WITH NITROGEN FERTILIZER**

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## **Summary**

Changing cultivation methods without solely use of chemical fertilizers is a new direction that is being considered in sustainable agricultural production. In order to evaluate the effect of integrated use of organic fertilizer, biochar and nitrogen fertilizer in improving soil nutrition and maize yield, the experiment was continuously conducted in Loan My commune, Tam Binh district, Vinh Long province in two seasons (autumn-winter 2016 and winter spring 2016-2017 crop seasons). The experiment consisted of 12 treatments with 3 levels of nitrogen (100 kg N, 150 kg N and 200 kg N / ha), two levels of organic fertilizer (0 and 5 tons / ha) and two levels of biochar (0 and 10 ton / ha). The experiment was a randomized complete block design (RCBD) with four replicates. The results showed that applying organic fertilizer and biochar increase soil organic matter content, and available nitrogen and phosphorus content in soil statistically significant difference with no organic fertilizer application. Better improvement was achieved when organic fertilizer was combined with biochar, or biochar was combined with nitrogen fertilizer. The results also showed that there is an interaction among organic fertilizer, biochar and level of nitrogen fertilizer on biomass, foliage and yield of maize. Applying organic fertilizer and biochar combined with 200 kg N resulted in higher maize yield that's statistically difference with solely application of organic fertilizer, biochar and nitrogen fertilizer. However, there was no statistically significant difference in maize yields when applying 200 kg N in combination with organic fertilizer and biochar compared to 150 kg N in combination with organic fertilizer and biochar.

**Keywords:** *Biochar, organic fertilizer, level nitrogen, yield maize.*