

## **Effect of incorporation of crop residue and inorganic fertilizer on yield and grain quality of maize**

### **ABSTRACT**

A field experiment was conducted during 2014 at Universiti Putra Malaysia, Serdang, Malaysia, to evaluate the effect of incorporation of crop residues with supplemental inorganic fertilizers on yield and quality of maize crop. Treatments included an unfertilized control, incorporation of maize residue, soybean residue and a mixture of maize and soybean residue with and without phosphorus and potassium fertilizer and the use of a complete inorganic nitrogen, phosphorus and potassium fertilizer. Results showed that soybean and maize + soybean residue applied without inorganic fertilizers or with inorganic fertilizer (phosphorus and potassium) increased maize yield and enhanced grain quality of maize. However, incorporation of maize residue without supplemental inorganic fertilizer was ineffective in increasing grain cob yield (11,237 kg/ha) and grain quality ( 11.1% protein content, 10.9 o brix sugar content and 4.77% oil content) of the maize crop above that of control (10,323 kg/ha green cob yield, 8.30 % protein content, 9.00 o brix sugar content and 4.77% oil content). The application of soybean residue with supplemental phosphorus and potassium fertilizer gave maize yield (37,290 kg/ha) similar to that of the complete inorganic fertilizer treatment (36,500 kg/ha). Therefore, inorganic nitrogen fertilizer can be replaced with soybean residues without any reduction in maize yield and grain quality.

**Keyword:** Crop residue; Inorganic fertilizer; Soil chemical properties; Yield