Soil management by using organic fertilizer combination with mulching for passion fruit (*Passiflora foetida*) in non-pesticide agriculture

Kamalapa Wattanaprapat , Isariya Meesing , Anocha Thepsupornkul and Arthit Sukhkasem[3]

Abstract

The research project was conducted at Research and Land Development Technology Transfer Center, Pakchong district, Nakhon Ratchasima province, during 2007-2009. The experiment aims to study effect of application of organic fertilizer combined with mulching or planting cover crop on soil properties change, yield of passion fruit and soil moisture content. The experiment was designed by using Randomize Complete Block Design (RCBD) comprising 3 replications with 7 treatments as following :- 1) no mulching (control) 2) mulching with natural grass 3) mulching with vetiver grass 4) mulching with *Arachis pintoi* 5) mulching with *Arachis amarillo* 6) mulching with *Arachis pintoi* and leaves of vetiver grass 7) mulching with *Arachis amarillo* and leaves of vetiver grass.The research result was found that application of compost combined with mulching with *Arachis* spp., natural grass and leaves of vetiver grass improved soil properties included soil bulk density, organic matter content, available phosphorus and potassium. For the mentioned practices, there was the primary nutrients higher than no mulching practice. Soil bulk density was decreased from 1.52 to 1.31-1.46 g/cm.^{3}.Organic matter content was increased from 2.14 to 2.45-3.12%. Phosphorus was increased from 14 to 16.3-21.3 mg/kg. Potassium was increased from 454.7 to 462.0-575.7 mg/kg. For yield of passion fruit, mulching with *Arachis pintoi* or *Arachis amarillo* and covered with cut leaves of vetiver grass gave 2,956.27 and 2,940.93 kg/rai respectively. These practices gave the significant difference of yield higher than mulching with natural grass and no mulching. Planting of cover crop and /or covered with cut leaves was able to preserve soil moisture better than no mulching. Planting of *Arachis pintoi* to cover the soil preserved the best soil moisture that higher than no mulching 46%.

Keywords: soil management, organic fertilizer, mulching, passion fruit (*Passiflora foetida*), non-pesticide agriculture