

D M P Dissanayake, K. Sanmuganathan, W L Bodhinayake, T B J Rajapakse,  
W K N Shanthichandra

*Sugarcane Research Institute, (SRI) Uda Walawe*

Sugarcane is cultivated in Sri Lanka predominantly in the dry zone in rolling landscape with slopes varying from 3 to 10% predominantly in Reddish Brown Earths (Rhodustalfs). The Reddish Brown Earths in the dry zone, where the rainfed sugarcane is cultivated possess low water holding capacity and low organic matter. The uneven distribution of rain during the growing period impose water stress which limits yield and quality of rainfed sugarcane. For many years, burnt cane harvesting methods were responsible for the destruction of trash. This management practice has depleted the soil organic matter and exposed the soil to intense monsoonal rains. Leaving trash on the surface after harvesting is the best possible option available to the sugarcane farmer to increase the organic matter and conserve soil and water.

An investigation was undertaken at SRI to study the use of trash as a mulching material to conserve soil and water and its contribution to soil improvement of soil. Mulching was compared with un-mulched area by burning the trash. Rate of decomposition was determined by trash bag method. Micro-organisms responsible for degradation were also identified.

There is no significant difference ( $p=0.05$ ) in the total Nitrogen and exchangeable Potassium between mulched and un-mulched plots. The available Phosphorus content was higher in the burnt plots due to the addition of soluble phosphates from ash and declined gradually.

Trash mulch conserved soil moisture and added organic matter, thus, increasing the Cation Exchange Capacity of the soil. The trash mulch plots have shown an 8% increase in yield. Trash degradation was slow in the early growth stages due to high C/N ratio (61), low soil moisture (5%) and presence of few micro-organisms. An amount of 50% of the trash decomposed within 6 months and reached 70% within the next 2 months. *Trichoderma harzianum* and *Rhizopus oryzae* are mainly responsible for the degradation. Bacterial contribution is insignificant.