



Study on Effect of Incorporation of Shredded Cotton Stalks by Cotton Stalk Shredder on Soil Properties

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Incorporation of cotton stalks into the soil ensures rapid decomposition. The most rapid decomposition occurs when residue is placed 10 cm deep and shredding stalks as finely as possible. A tractor operated cotton stalk shredder was used for shredding cotton stalks in the field. The commercially available rotavator is used as *insitu* applicator for incorporation of shredded materials. The shredding was accomplished by ashredder fitted in the front portion of the tractor and incorporation of the shredded material was done by rotary tiller in the rear portion of the tractor. Experiments were conducted with 4 treatments *viz.* disc ploughing with the standing cotton stalks, operation with cotton stalk shredder cum *insitu* applicator with 2.0, 2.5 and 3.0 km h⁻¹ to find out the efficient method. The influence of the selected treatments on soil physical and chemical properties was investigated. Operation with prototype shredder cum *insitu* application at 2 km h⁻¹ forward speed was judged as the best among all the treatments which recorded favorable increase in hydraulic conductivity (1.38 to 2.30 cm hr⁻¹), decrease in bulk density (1.33 to 1.25 Mg m⁻³), increased available N (199.0 to 252.0 kg ha⁻¹), P (12.6 to 20.1 kg ha⁻¹), K (541.0 to 640.0 kg ha⁻¹) and organic carbon (0.36 to 0.54 kg ha⁻¹) in soil.