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Farmers’ and academia’s views”

Weed control using with environmentally friendly alternatives in smallholder agriculture in Cuba

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Abstract

Plant residues and organic amendments have shown to have herbicidal effects under different climatic conditions. In countries like Cuba, this is particularly important because such materials are available, while herbicides usually are hardly affordable for small farmers. In addition, organic amendments as soil treatment were shown to have less environmental impacts than chemical herbicides. In order to evaluate the herbicidal effects of plant residues in comparison the manure and plastic mulch the following treatments were tested: I) air dried cabbage (*Brassica oleraceae* L.) residues at an amount of 10 Mg ha⁻¹, II) poultry manure applied at an amount of 50 Mg ha⁻¹ with plastic mulch, III) plastic mulch only, IV) a control without any treatments against weeds. The experiment was carried out on a Ferric Acrisol soil in the central part of Cuba with four replicates during 60 days. The taxonomic classification of the weeds, their number and weight were determined at the end of the experiment. The results showed 11 predominant species in the control treatment while the other variants had a maximum of only two species. The only treatment capable of eliminating all weeds was the application of cabbage residues. The plastic mulch alone or with poultry manure could not control *Eleusine indica* and *Cyperus rotundus*, because of their vigorous reproductive structure resistant to solarisation. Furthermore, the application of manure leads to an increase of the weed’s biomass due to the nutrients applied. Especially for smallholder farms, dry cabbage residues can be recommended as a cost-effective and environmentally friendly weed control measure.

Keywords: Agroecology, organic farming, weed management