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(22) Three years evaluation of mulch materials for weed control in tomato

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Field trials have been carried out in Zaragoza (Spain) in 2005, 2006 and 2007 using different biodegradable mulching materials in the same plots all years. The aim was to study non-chemical weed control techniques in drip irrigated processing tomato as alternatives to the normally-used techniques in the area. The trial comprised of 10 treatments with 4 replicates, randomly distributed within blocks. The treatments were: (1) rice straw mulch; (2) barley straw mulch; (3) maize straw mulch; (4) *Artemisia absinthium* plant mulch; (5) biodegradable black plastic mulch (Mater Bi 15 μ); (6) brown Kraft paper (Saikraft 200 g/m^2); (7) black polyethylene mulch (15 μ); (8) herbicide (rimsulfuron in 2005; rimsulfuron + metribuzine in 2006); (9) manual weeding (two times); (10) unweeded control. All the straw mulches were applied at 1 kg/m^2. Weed density of the main species (*Cyperus rotundus* L., *Portulaca oleracea* L., *Chenopodium album* L. and *Digitaria sanguinalis* (L.) Scop.) was assessed and yield was determined. The straw mulch (1,2,3) achieved a moderate weed control while the paper (6) had an excellent control on all weed species, even better than plastic mulch (5,7), especially by avoiding *C. rotundus* emergence. Tomato yield was generally related to weed control. After three years of trials, paper (6), rice (1) and the biodegradable plastic mulch (5) seemed to be true alternatives to polyethylene (7) and herbicide (8) use. Maize (3) gave irregular yield results, and barley (2) and especially *A. absinthium* mulch (4) generated less attractive results.

Key words: Biodegradable, plastic, straw, paper, *Cyperus rotundus*.