

Watcharasak Sukcharoenvipharat 2008: Development of Weed Management in Green Soybean Production. Master of Science (Agriculture), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Associate Professor Tosapon Pornprom, Ph.D. 130 pages.

Development of weed management in green soybean production was carried out in three seasons. In early rainy season (May-July), acetochlor, alachlor, clomazone, isoxaflutole, metribuzin, oxadiazon and pendimethalin were applied to evaluate the efficacy use of pre-emergence herbicides for weed control. Control of weeds in green soybean with all pre-emergence herbicides can be variable. No visible crop injury was observed after alachlor, clomazone, metribuzin and pendimethalin application, while acetochlor, isoxaflutole and oxadiazon caused visible crop injury to green soybean. After crops harvested, herbicide residues in soil was determined using bioassay test with several tested plants. All tested plants, i.e. pak choy, maize, cucumber, yard long bean and green soybean germinated in the field normally without injury. Furthermore, field trials were repeated to confirm in late rainy season (August-October) and dry season (December-February). Alachlor, metribuzin, pendimethalin, clomazone + pendimethalin, metribuzin + pendimethalin, fluazifop-P-butyl, imazethapyr and fluazifop-P-butyl + fomesafen were used. The results showed that all of these herbicides have different levels of effectiveness in controlling weed. Metribuzin, pendimethalin, and metribuzin + pendimethalin showed the best efficacy use for weed control. These herbicides reduced the weed density but caused no yield reduction and crop injury to tested plants. The herbicide residues in crop yield were determined using Gas Chromatography-Mass Spectrometry (GC-MS). No herbicide residues was detected in crop yield (or MRLs < 0.01 ppm) for all herbicides used in this study. From these results, it can be concluded that metribuzin at 525 g a.i./ ha was sufficient to provide satisfactory full-season control of several weed species. In addition, pendimethalin at 1,031.25 g a.i./ ha, and metribuzin at 350 g a.i./ ha + pendimethalin at 928.125 g a.i./ ha can be provided a similar level of weed control for an alternative to reduce herbicide dosage use, and further increased for the food and environmental safety in green soybean production.

W. Sukcharoenvipharat

Student's signature

T. Pornprom

Thesis Advisor's signature

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