Chanatip Sukonjan 2008: Studies on Efficiency and Residue of Some Herbicides in Vegetable Soybean Production. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Associate Professor Tosapon Pornprom, Ph.D. 140 pages.

Studies on efficiency and residue of some herbicides in vegetable soybean (*Glycine max* L. Merr. cultivar KPS 292) production were carried out in the Asian Vegetable Research and Development Center, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom and the National Corn and Sorghum Research Center, Nakhon Ratchasima during May, 2006 - April, 2008. A survey of key weeds in the field showed that the number and species of above-ground weeds was greater than the weed seed bank in the soil. Investigation of some weed species that can be alternate-hosts of pathogens showed that *Euphorbia heterophylla* L., *Mimosa invisa* var inemis Adelb. and *Cyperus rotundus* L. were infected by *Oidiopsis* sp., *Cercospora* sp. and *Puccinia philippinensis*., respectively. However, weed species and weed pathogens were different in each location and cropping season. The efficacy of several pre-emergence herbicides for weed control in vegetable soybean were evaluated. The results showed that tank-mixed metribuzin 56 g a.i. /rai + pendimethalin 148.5 g a.i. /rai was the most effective for weed control and gave the highest yield, followed by metribuzin 84 g a.i. /rai and pendimethalin 165 g a.i. /rai, respectively. Herbicide used had no effect on vegetable soybean growth throughout the 65 days until the crop harvest. After crops were harvested, herbicide residues in the soil were observed using a bioassay test with several tested plants i.e. pak choi, baby corn, cucumber and vegetable soybean. The results showed that herbicide used had no effect on tested plants. Herbicide residues in the vegetable soybean product were determined using Gas Chromatography-Mass Spectrometry (GC-MS) 7 days before harvested and were found to be lower than the maximum residue limits (MRLs < 0.01 ppm). In addition, the pest management conducted to integrate the systems of disease, insect and weed control by seed treatment with KPS46 + Imidacloprid (70% WS) plus herbicide use by tank-mixed metribuzin 56 g a.i. /rai + pendimethalin 148.5 g a.i. /rai or metribuzin 84 g a.i. /rai and foliage spray by KPS46, [algae extract + CaB] + insecticides (cypermethrin, acetamiprid and methomyl) and neem extract at 50 days after sowing had the highest efficiency for pest control in vegetable soybean production and obtained the highest marketable yield with 1,428 - 1,484 kg /rai.

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