Thawan Pramaul 2014: Efficacy of Post-Emergence Herbicide and Its Residue Analysis in Pineapple by GC–MS and LC–MS/MS. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Associate Professor Tosapon Pornprom, Ph.D. 71 pages.

Development of pineapple production capable of high yield and good quality, for industrial use and the export market, is based on several factors of crop production, in particular: weed problems and the way in which they are managed. It is estimated that if this is unable to control weeds, resulted in crop yield loss and herbicide residue in pineapple production. In this study, field and laboratory experiments were conducted during the period September 2011 – January 2013, in order to evaluate the effect of post-emergence application of herbicides to the cultivar Pattawia pineapple. A randomized complete block design (RCBD) with seven treatment and four replications was used in the experiment. The results showed that all post emergence herbicides achieved variable levels of weed control in pineapples, 15, 30, 45, and 60 days after application (DAP). Application of penoxsulam 18.75 + fluazifop–P–butyl 150 g a.i./ha and penoxsulam at 12.5 + haloxyfop–R–methyl 84.4 g a.i./ha produced an excellent outcome in terms of weed control at the four leaf stage of weeds, no phytotoxic effect on the growth and crop yield of the pineapple. The main weeds which it was able to control were: Guinea grass (*Panicum maximum* J.); Running grass (*Brachiaria reptans* L.); Praxellis (*Praxelis clematidea* R.M. King) and Calalu (*Amaranthus viridis* L.). Furthermore, application of penoxsulam at 12.5 + haloxyfop–R–methyl 84.4 g a.i./ha demonstrated a similar level of effectiveness concerning weed control, and no phytotoxic effect on the growth and crop yield of the pineapple was evident. Pineapple sampling was conducted at 7 days before harvest (or 11 months after herbicide application) and the herbicides residue were determined using GC–MS and LC–MS/MS methods. Analysis showed that no significant herbicides residues on crop yields (or MRLs < 0.01 mg/ kg) were caused by any of the herbicides used in this study. As a result, the findings of this study revealed that application of penoxsulam 18.75 + fluazifop–P–butyl 150 g a.i./ha was sufficient to provide satisfactory full season control of several weed species. In addition, penoxsulam at 12.5 + haloxyfop–R–methyl 84.4 g a.i./ha can provide a similar level of weed control, with no phytotoxic effect on the growth and crop yield, and no significant herbicide residue on the pineapple thereby increasing food safety in pineapple production.

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