

Pharnuwat Mahatamnuchoke 2006: Fenoxaprop-Resistant Chinese Sprangletop
(*Leptochloa chinensis* L. Nees) in Rice Field. Master of Science (Agriculture), Major
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From paddy field observations in 2002 and 2004, fenoxaprop-ethyl resistance in Chinese sprangletop (*Leptochloa chinensis* L. Nees) have been studied using information collected from 11 sites at the Saphan-Sung district of Bangkok, Thailand. The resistant Chinese sprangletop was found in 9 rice fields, whereas the susceptible Chinese sprangletop was found in only two rice fields. In green house experiments both fenoxaprop-ethyl resistant- and susceptible-Chinese sprangletop from the same location were investigated for a 50% growth reduction dose based on a phytotoxicity, plant height and dry weight. The resistant-Chinese sprangletop showed apparent resistance in 14-21 days after herbicide application at the rate of 21.09-337.6 g ai ha⁻¹. The resistance index of resistant-Chinese sprangletop was 10-25 folds higher than that of the susceptible one. In addition, Chinese sprangletop did not exhibit the multiple resistant to oxadiazon, propanil and quinclorac. According to acetyl-CoA carboxylase (ACCase) assays, the level of ACCase specific activity in the resistant-Chinese sprangletop was significantly higher than that of the susceptible one. Similarly, the ACCase activity of the resistant-Chinese sprangletop was 10 fold less sensitive to fenoxaprop than that of the susceptible-Chinese sprangletop based on the I₅₀ values. In the present study, the mechanism responsible for resistance in the investigated resistant biotypes indicated that there was a close association between the concentration-response at the whole plant level and ACCase sensitivity to fenoxaprop-ethyl, resistance to fenoxaprop conferred by a modified ACCase at the target site as speculated by higher specific activity and less sensitivity to the herbicide.

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Thesis Advisor's signature

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