Supattra Saenthet 2010: Effects of Irrigation Frequencies on Fresh Weight of Four Sweet Sorghum Varieties for Ethanol Production. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Associate Professor Ed Sarobol, Ph.D. 107 pages.

The effects of irrigation frequencies on fresh weight of four sweet sorghum varieties for ethanol production was tested at the Khao Hin Son Research Station, Chachoegsao province during February 2008 – March 2009. This research was carried out for 2 experiments and a split plot in RCBD was used with 4 replications. Experiment 1 (Feb-May 2008), the main plots were 4 sweet sorghum varieties (SW1001, SW1002, SW1005 and SW1008) and the sub plots were 4 irrigation frequencies (every 7, 10, 14 and 21 days; the amount of water for each irrigation frequencies was 35 mm). And experiment 2 (Nov 2008-March 2009), the main plots were 4 sweet sorghum varieties (SW1001, SW1002, SW1005 and SW1008) and the sub plots were 4 irrigation frequencies (every 7, 10, 14 and 21 days; four different water amounts 35, 50, 70 and 105 mm, repectively). Experiment 1, the results illustrated that sweet sorghum varieties and irrigation frequencies did affect days to flowering, plant height, fresh weight, amount of juice and amount of juice/ton cane. SW1005 gave the greatest amount of juice per 1 ton fresh weight (515 kg) while SW1002 yielded the lowest (331 kg). Sweet sorghum grown under the most frequent irrigation (every 7 days) gave the highest juice/ton cane (476 kg) whereas those under the infrequent irrigation (every 21 days) gave the lowest (306 kg). The greatest ethanol yield was obtained from SW1005 (42.41 l/rai) and 7 days irrigation frequency (53.29 l/rai). Experiment 2, the results illustrated that sweet sorghum varieties and irrigation frequencies did affect days to flowering, plant height, fresh weight, amount of juice and amount of juice/ton cane. SW1005 gave the greatest amount of juice per 1 ton fresh weight (498 kg) while SW1008 yielded the lowest (432 kg). Sweet sorghum grown under the most frequent irrigation (every 7 days) gave the highest juice/ton cane (806 kg) whereas those under the infrequent irrigation (every 21 days) gave the lowest (275 kg). The greatest ethanol yield was obtained from SW1005 (74.31 l/rai) and 7 days irrigation frequency (162.82 l/rai)

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