

Irrigation and Fertigation for Cassava and Sugarcane Production.

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Abstract:

Cassava and sugar cane are among the most important economic crops in Thailand. The largest growing areas are in the Northeast of the country. The average cane yield in this area is 10.5 ton/rai and cassava tuber yield is 3.5 ton/rai which are significantly lower than their potential yields. Water deficit is the most critical limiting factor for their production because of short period of rainfall and its erratic distribution. Both crops require about 10 months of water supply but usually receive only 4-5 months of rain water during their growing periods.

The irrigation studies showed that total water requirement of cassava in this area was about 1000mm. and sugar cane was about 1400mm. The amount of water supply by drip irrigation ranged between 30-50 % of total water requirement and the rest received from the rain. The monitoring of volumetric moisture content of the soil in cassava fields showed that, without irrigation, the soil water content was close to permanent wilting point during long period of drought while under drip irrigation, the water content was kept to above 50 % of the soil water holding capacity. With drip irrigation, cassava and sugar caneyield increased about 200 % compared to no irrigation fields. Furrow irrigation, even though could produce high yield as drip irrigation, it used about 1.5 times more water than drip irrigation. It is not an efficient irrigation method in current condition in which water is very limited. Moreover the studies also found that under the drip irrigation system, fertigationincreased crop water and nutrient use efficiency as well as crop yields about 20-30 % over the solid fertilizer application with the same amount of plant nutrients.