

CROPPING SYSTEMS FOR ENERGY CANE GROWN ON VOLCANIC SOILS IN A TROPICAL CLIMATE: INITIAL RESULTS ON PLANTING DATES, CYCLE DURATION AND PEST PRESSURE

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Abstract

Studies conducted in Guadeloupe (West Indies) were designed to investigate the benefits of producing sugarcane biomass as a dedicated energy feedstock with a view to reducing the dependency on fossil fuel. The objective of this study was to identify elements of sustainable cropping systems for energy cane production on a volcanic soil in a tropical climate. Initial results on the impacts of planting date and cropping cycle duration on above-ground dry biomass (DAB) production and stem borer damage by variety are presented.

In the first experiment, a multipurpose variety (BBZ92076) was planted on two dates (June and November) and harvested after 8 (D8) and 12 (D12) months, and allowed to ratoon over two years in order to produce three crops for D8 and two crops for D12. Total DAB produced from multiple harvests over the two year period were compared between the different treatments. In another experiment at the same location, stem borer damage was recorded in 100 stalks each of four multipurpose varieties (BBZ92076, WI79460, WI79461, WI81456).

Planting at the end of the rainy season (November) produced a little more DAB over the two year period for both cropping cycles, compared to planting in June. Cropping cycle D8 produced slightly less DAB in three harvests, than that produced in two harvests from cropping cycle D12 (Table 1).

Table 1. Cumulative dry above ground biomass produced by variety BBZ92076 variety over a two year period (kg/m² in two years) for two planting dates and two cropping cycles.

Planting date	Cropping cycle	
	D8 (3 x 8 months)	D12 (2 x 12 months)
June	10.8	12.5
November	12.4	13.6

Fewer than 3% of internodes were damaged by stem borers, regardless of variety. This is well below the economic threshold of 5% that is commonly observed in commercial varieties in Guadeloupe. The species of stem borer collected has been identified as *Diatraea saccharalis* (Lepidoptera: Crambidae)

These initial findings will be augmented by information on soil organic matter management, fertilization, and weed control. This should help to build new sustainable cropping systems for energy cane for a more profitable production.

Keywords: Multipurpose cane, Energy cane, Sustainable cropping system, Cycle duration, stem borer damage