

Evaluation of Energycane for Biomass Yield and Ecosystem Services on Fallow Croplands in Florida



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Introduction

The problem

Abandoned croplands in Florida due to citrus greening.



Materials & Methods





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Harmful algal blooms (HABs) from human activities.



The alternative

Energycane (high fiber sugarcane), is a promising alternative perennial crop for bioenergy in fallow croplands that can provide ecosystem services for pollutants trapping.



Treatment	*N	*P ₂ O ₅	*
$T_1 = N_1 - P_1$	100%	100%	
$T_2 = N_2 - P_1$	50%	100%	
$T_3 = N_1 - P_2$	100%	50%	

Nutrient applied from the recommended fertilization \checkmark N₁ = 100% \checkmark N₂ = 50% \checkmark P₁ = 100%

Soil invertebrates' diversity





Results & Discussion

Our findings

Energycane growth and yield was not affected by lower fertilization rates of nitrogen and phosphorus. This crop requires less fertilizers than recommended for sugarcane.

Energycane uptakes soil nutrients very efficiently even in sand soils



Energycane planting and side dressing fertilization



Periodical harvests to measure growth and yield





Energycane did not allow the nitrogen and phosphorus leaching from fertilized plots.

The diversity of soil invertebrates was not impacted by energycane cultivation, compared to fallow cropland.

Data collection will continue during the 1st ratoon (2nd-year crop) and 2nd ratoon (3rdyear crop)



Extensive root system in energycane (L) compared to sugarcane (R)

Devices to monitor energycane ecosystem services

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