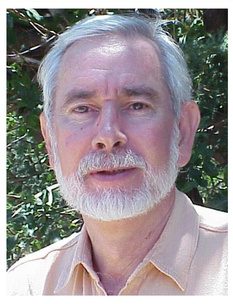
# ROOT BIOMASS QUANTIFICATION OF SUGAR AND MULTIPURPOSE CANE VARIETIES FOR SUSTAINABLE PRODUCTION




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**Sugarcane (SC) root biomass is:**
- **a component of carbon partitioning in plants and carbon balance soils**
- **important when the whole shoot biomass is used for energy purposes**
- **naturally mixed to the soil**
- **may be the only components returning to the soil**
- **not well-known.**

**The dry root biomass (DRB) production of a commercial and 3 multipurpose SC varieties was quantified.**

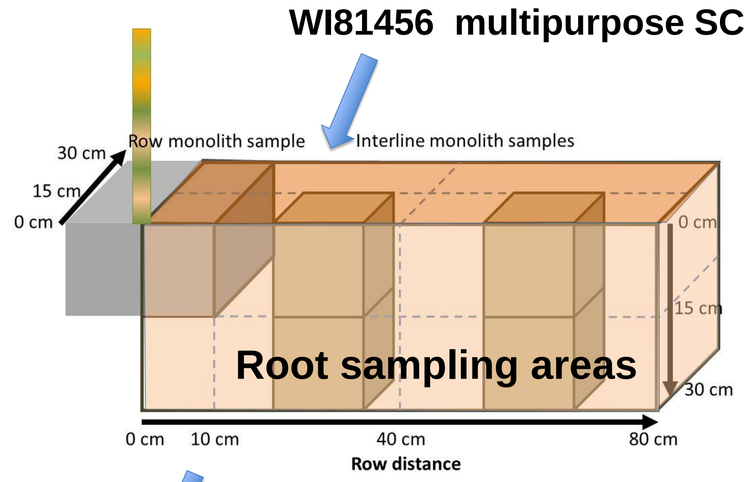


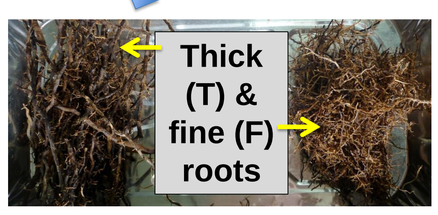
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**WI81456 multipurpose SC**

## Methods

A local SC (R579) and 3 multipurpose canes (WI79460, WI81456, WI86015) tested in Guadeloupe (REBECCA energy cane project), 3 replicates.
- Volcanic soil, planted cane, 1.6 m row spacing.
- Measurements 10 months after planting.
- DRB measured from soil monoliths (3375 $cm^3$),
  2 depths 0-15, 15-30 cm
  3 distances from the cane row (0-15, 18-33, 53-68 cm).
- Fine (<1 mm) and thick roots (>1 mm) measured separately (turnover in soil may be different).



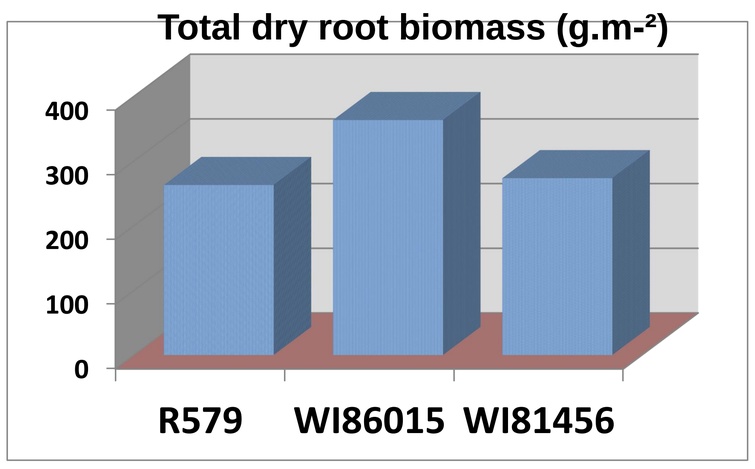




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## Results

- ✓ Total dry shoot biomass (DSB)/$m^2$:
  Sugarcane: 5400 g/$m^2$,
  Multipurpose cane: 6600 g/$m^2$.
- ✓ Total DRB/$m^2$:
  Sugar cane: 262 g/$m^2$
  Multipurpose cane: 318 g/$m^2$.
- ✓ Horizontal DRB gradients.
- ✓ Higher DRB of thick roots than fine roots.
- ✓ DRB of multipurpose sugarcane:
  < top biomass (860 g/$m^2$) > fallen leaves (80 g/$m^2$).
- ✓ Low gap between DSB and DRB of sugar and multipurpose canes: DSB (+22%), DRB (+21%).





*What is REBECCA ?*

*A research & R-D project (CIRAD, INRA, QUADRAN) conducted in Guadeloupe, aiming to generate electricity from sugarcane.*

*Partially founded by E.U.*



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## Conclusion

**Root biomass of multipurpose canes can now be used to :**
- ✓ **calculate the soil organic carbon (SOC) balance**
- ✓ **account for root systems for SOC management of sugarcane cropping systems for energy or for animal feed.**