
Valoriser la ressource canne
eRcane
Serving the sugar industry
in Réunion island
since 1929
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Research activities in eRcane

- Breeding (1929)
- Industrial Automation (1973)
- Processing & industrial innovation (1985)
- Biorefinery (2006)
- Cultivation techniques (2007)

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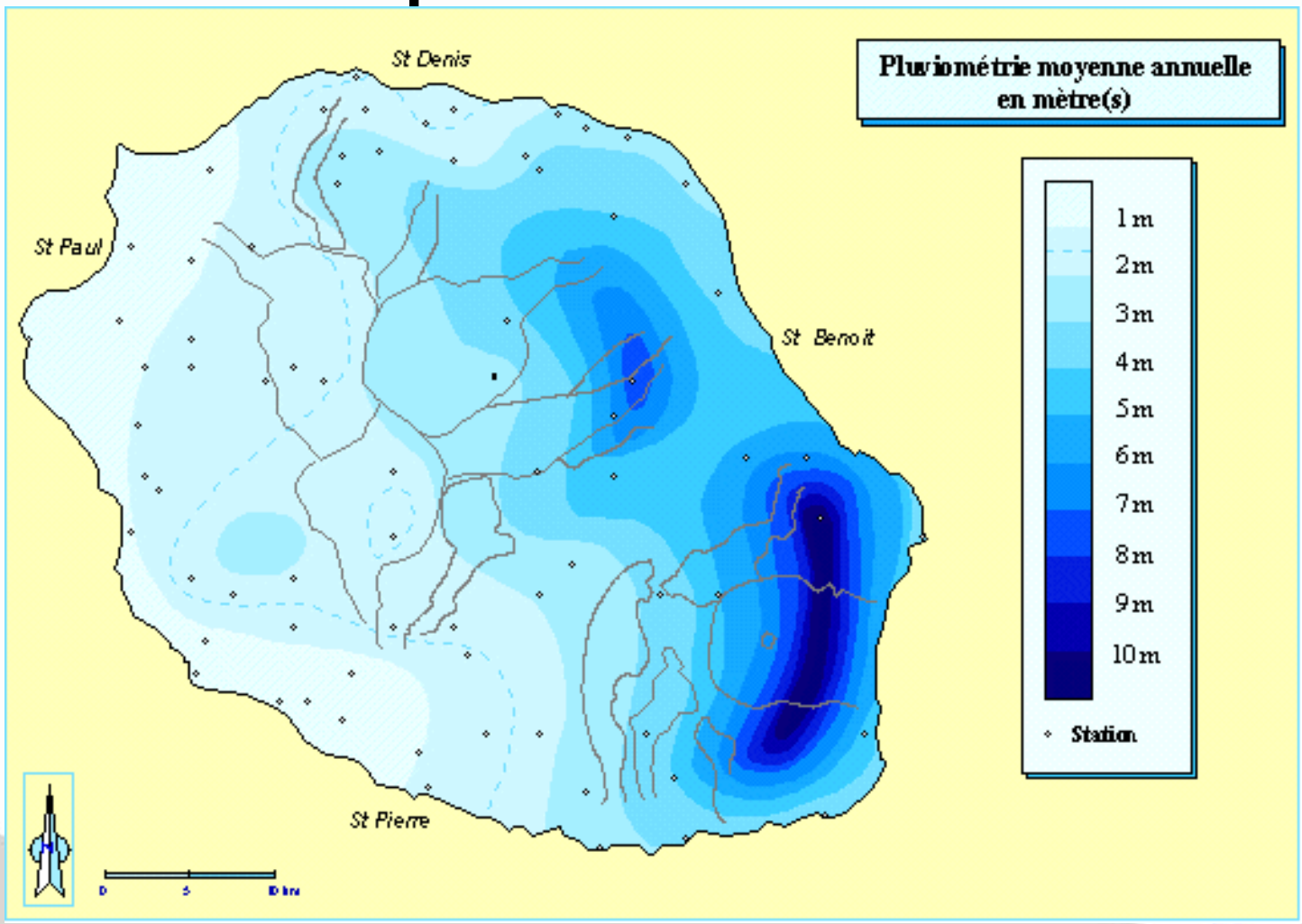
Breeding

Breed and select new cane varieties adapted to local agro-climatic conditions

- Improving cane yield and sugar content
- Disease resistance
- Ratooning ability

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Very contrasted areas of production



Very contrasted areas of production

- From 500 to 5000 mm of rainfall
  - Rainfed or irrigated
- From 0 to 1000 m altitude
  - 10°C to 35°C
  - Very different sunshine expositions
- Different soil types

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eRcane target environments

Coastal zone, dry conditions, irrigated

Coastal zone, dry conditions, irrigated under water stress

Coastal zone, rainfed conditions, water stressed

Coastal zone, propitious rainfed conditions

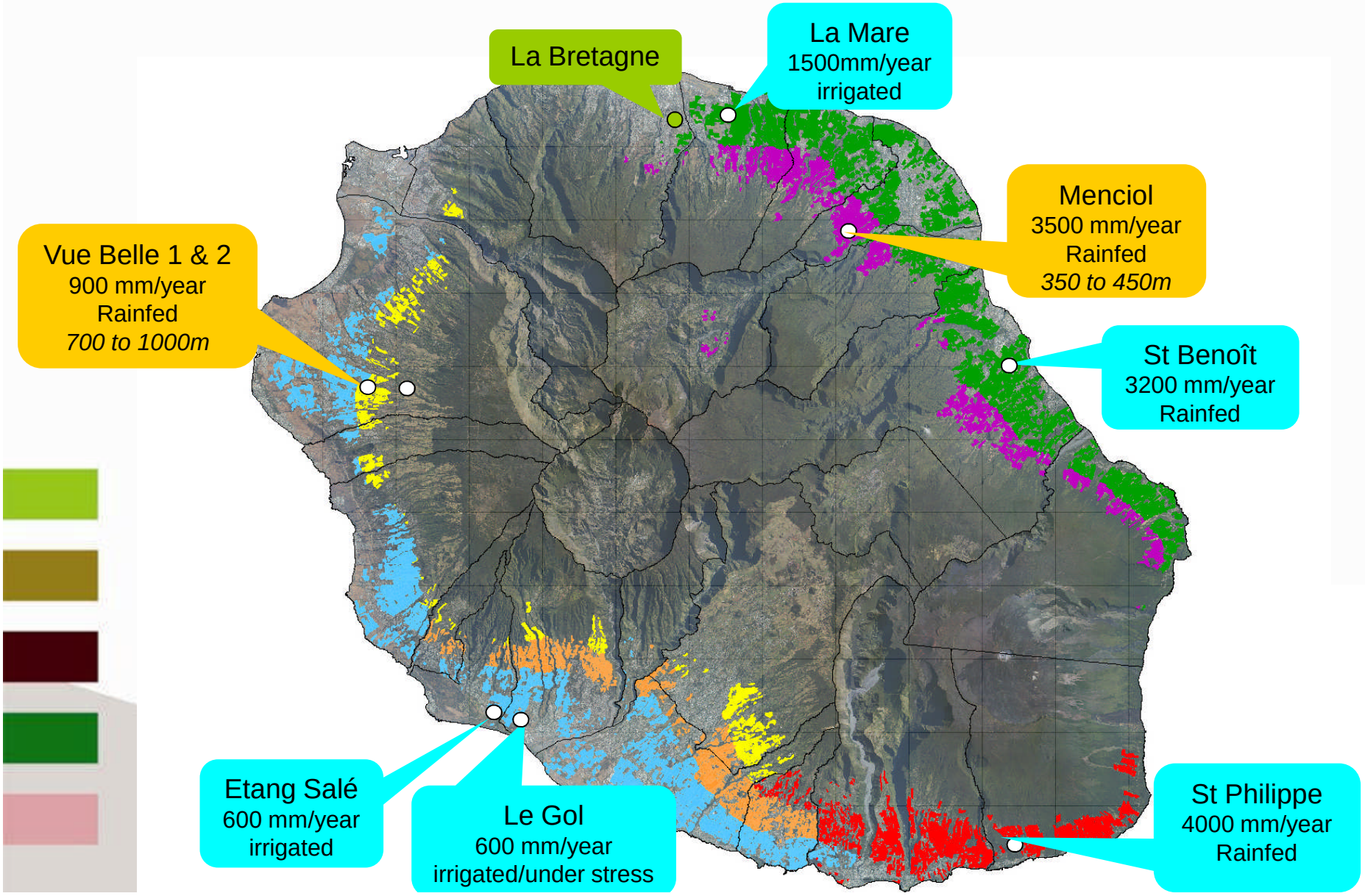
Highlands, dry conditions

Highlands, sub-humid conditions

Coastal zone, rainfed conditions, difficult soils

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MULTILOCAL EXPERIMENTAL NETWORK



SELECTION CRITERIA

1. Quantitative traits

Tons of saccharose/ha



Tons of cane / ha



Sucrose content

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SELECTION CRITERIA

2. Qualitative traits

- Vegetative behaviour : quick germination, large canopy limiting weed invasion, low flowering, self-trashing, erected shape

- Resistance to major local diseases

- Ratooning ability

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A new cane variety's birth

- **Hybridization**

  Targeting the best combination

- **Selection**

  Identifying the best variety

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HYBRIDIZATION

1-Crossing



Reproductive organs



Breeding lantern

<u>May to July , flowering season</u>

Choosing the parents in a collection of more than 1000 varieties

-50% local R varieties

-50% foreign varieties

→ Creation of genetic variability through targeted cross pollination

1800 different combinations
2500 biparental crosses

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HYBRIDIZATION

2- Germination



Seedling germination



Direct transplanting in the field

August to October, sowing period

100 000 seedlings

December, seedling are transplanted into the fields

→ Beginning of the selection

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SELECTION

1-Visual selection



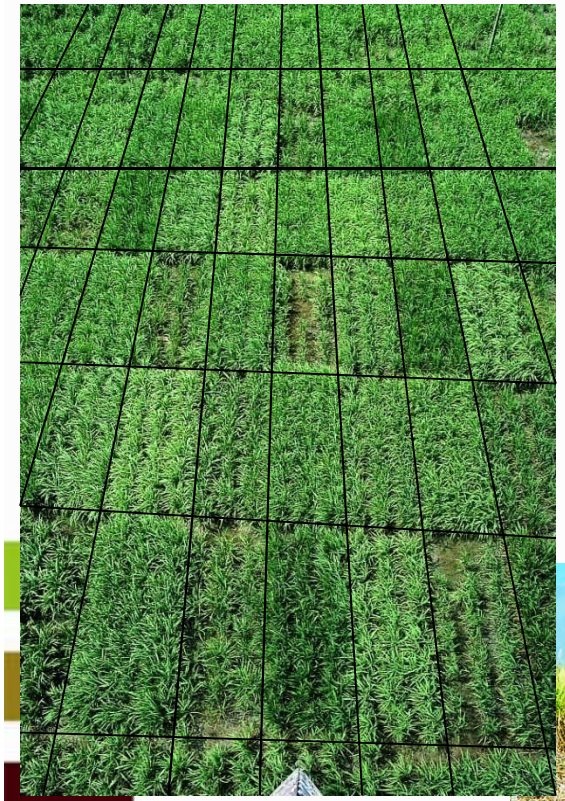
Families evaluation in seedling nursery (1 year)



Stage 1 row : visual observation and brix (massal selection, 2 years, planted cane + 1rst ratoon)

SELECTION

2- experimental selection



Stages 2 rows (3 years) and 3 rows(4 years)

(randomised blocks designed with 3 repetitions, individual plots 2 rows of 5 m or 3rows of 10 m)

Yield assessment

weight and analysis (brix, pol, fiber)

→ Tons of sugar per hectar

Agronomic observations

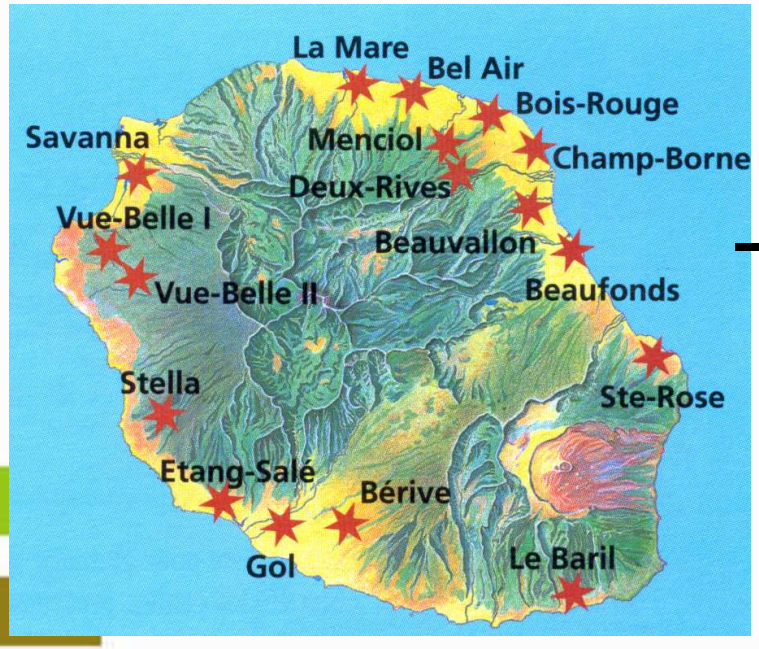




eRcane

SELECTION

3-multilocal selection network, release of a new variety



Final trials : 30 varieties are tested all around the island (4 years)

Trials at commercial scale in growers' fields

RELEASE of a NEW VARIETY



SELECTION

4- selection for disease resistance (in partnership with Cirad)



Smut
Ustilago



Gumming
Xanth. Camp.



Leaf-scald
Xantho. Albi.

Fungus

Bacteria

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STAGES OF SELECTION

Seedlings nursery

100 000 —1 year→ 12 000

Visual selection : eliminating the low yield varieties

12 000 —2 years→ 700

Experimental selection : Assessing the productivity

700 —3 years→ 180 —4 years→ 30

Multilocal selection : testing local adaptations

30 —4 years→ 1 ou 2

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3rd June 2015: Field trip

- Vue-Belle selection station
- Etang-Salé selection station
- La Bretagne facilities

3rd June 2015: Field trip

- Vue-Belle sélection station
  - Stage 1: seedlings
  - Stage 2: 1 row
  - Stage 4: 3 rows
  - Stage 5: Multi-local trial

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Vue Belle (La Saline-les-Hauts)



30 hectares at 700m

Selection in altitude and rainfed conditions, cane under water stress (900mm/year), low temperature

2 trials in very high altitude (1000m)

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3rd June 2015: Field trip

- Etang-Salé sélection station
  - Stage 1: seedlings
  - Stage 5: Multi-local trial
  - Smut trial
  - Homologation and new herbicides testing

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selection

Etang-Salé



26 hectares, sea level, dry area

Selection in irrigated conditions (drip irrigation)

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3rd June 2015: Field trip

- La Bretagne facilities

  - Hybridization facilities: flowers preparation, germination chamber, glasshouse

  - Cane analysis (NIRS)

  - Sugar processing and industrial innovation laboratory

Merci de votre attention

