A Yam collaborative selection Plateform in Guadeloupe :

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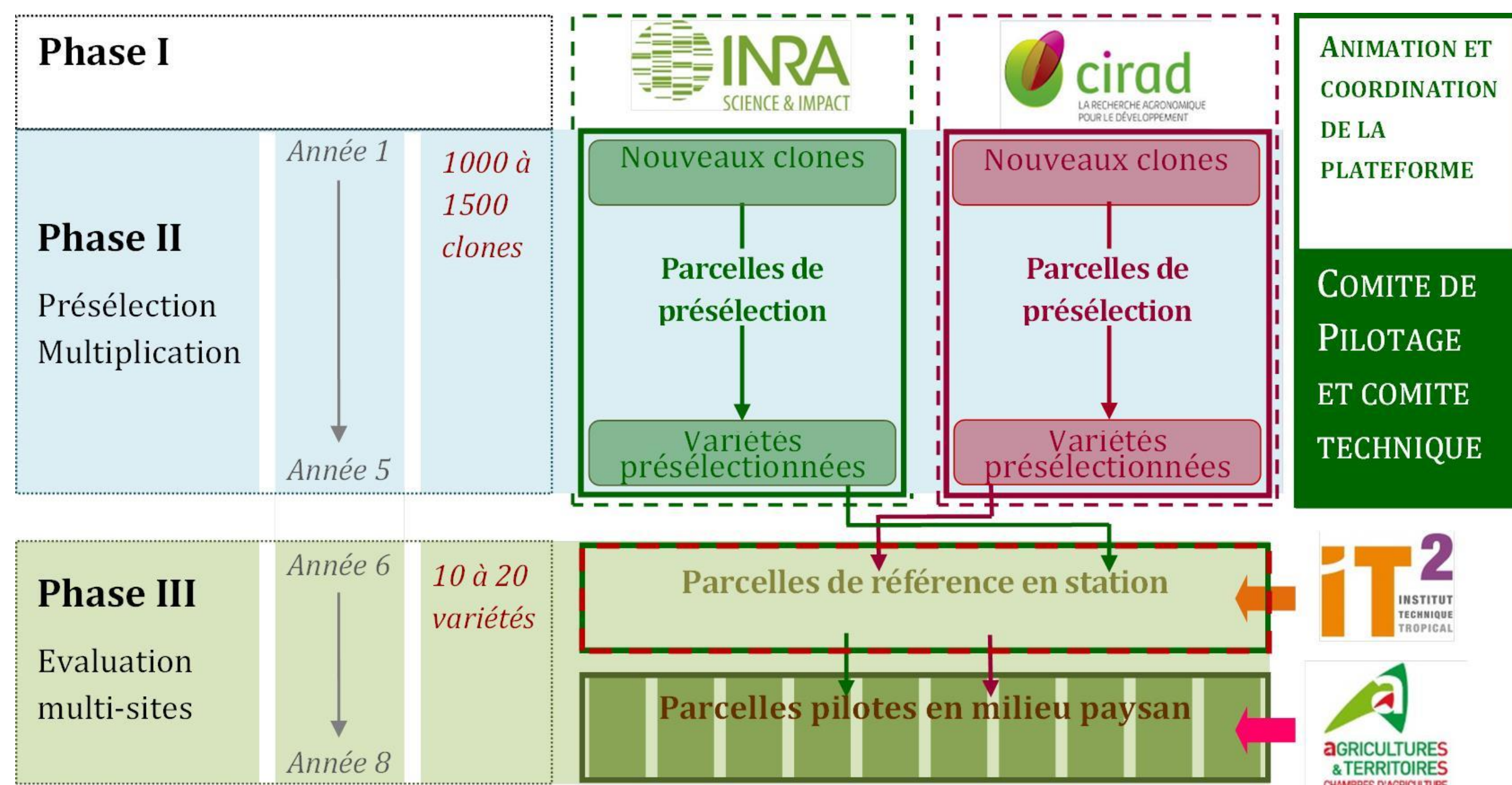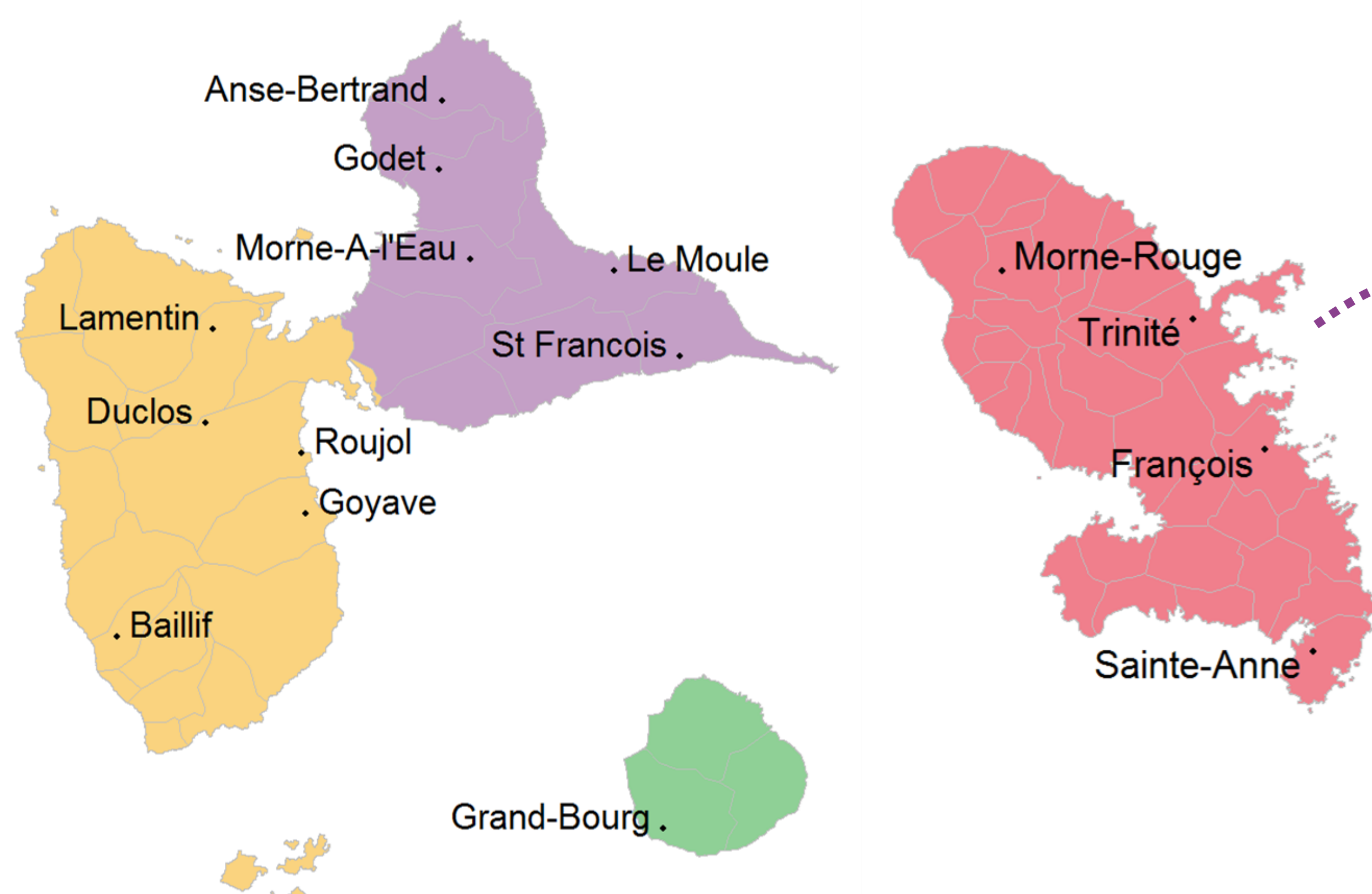
Introduction

Since the early years of 2002, INRA and CIRAD in Guadeloupe have implemented complementary yam breeding programs to develop highly successful and locally well-adapted yam hybrids to fit both producers and consumer's requirements, yielding to nearly 20 pre-selected innovative cultivars.

In 2012, a multi-local, multi-partenarial and participative field plot network was implemented to achieve evaluation of cultivar performance at field scale in contrasted geographical and productive environments throughout Guadeloupe.
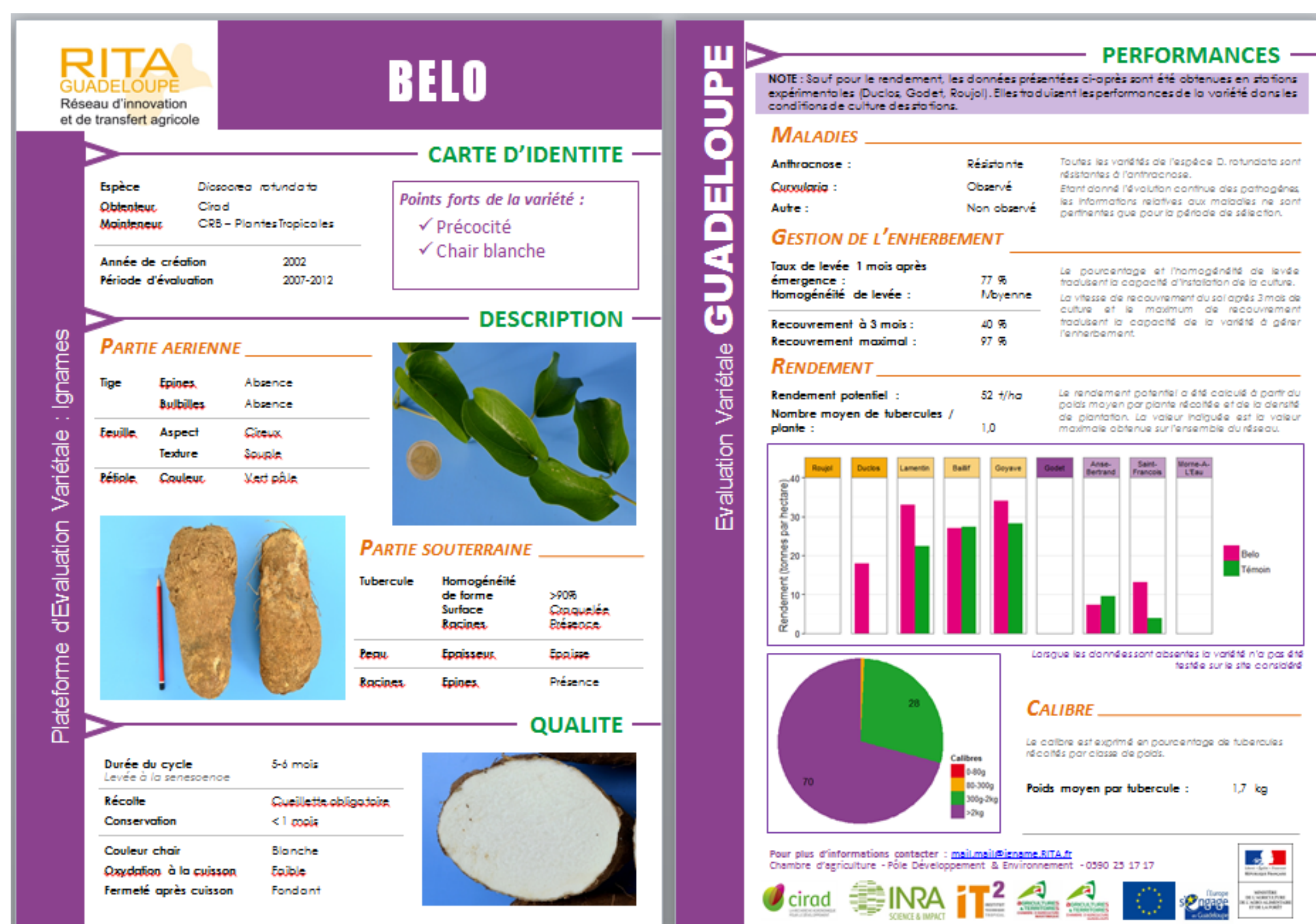
The yam selection platform in Guadeloupe since 2012

A multilocal evaluation network in Guadeloupe and Martinique since 2012

Anse-Bertrand
Godet
Morne-A-l'Eau · Le Moule
Lamentin · St Francois
Duclos
· Roujol
· Goyave
· Baillif

· Morne-Rouge
Trinité
François
Sainte-Anne

Grand-Bourg

Platform output : cultivar description factsheets

Objective

Develop and distribute successful yam cultivars adapted to local climatic and agronomic productive conditions that fits producers and consumers requirements.

A collective organisation

From the choice of selective indicators to the use of collected data, platform management is collective and collaborative, including actors of the whole local yam sector within a "comité de pilotage", representing research and technical institutes, growers professional organizations, chambre d'agriculture and growers.

A regional network

The Regional Platform in Guadeloupe and Martinique with :
- 4 evaluation plots in experimental stations called "parcelles de reference".
- 9 evaluation plots at local growers field scale in various and contrasted environments called "parcelles pilotes".

The 19 currently evaluated cultivars belong to the 2 major cultivated species : *Dioscorea alata* (*i.e.* Kabusah) et *D. rotundata* (*i.e.* Grosse-Caille).

Outreach and Education

- Training of trainers (technical staff),
- Field-day at the farm,
- Cultivar description factsheets,
- Communication (local radio and TV),
- Students education.

Demonstrative Field day

Taro (*Colocasia esculenta*)

Taro, also called "madère" in Guadeloupe and "dachine" in Martinique, also has been integrated to the evaluation platform. In 2013, 15 promising varities from Fiji CePaCT have been introduced in Guadeloupe for further multiplication and evaluation.

A model for effective multipartenarial and participative program

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Towards yam sector durability

In order to achieve yam sector requirements, limits and opportunities for both agronomic production and yam commercialization were pointed out with all actors, and traduced into experimental evaluation criteria.

Towards increased disease tolerance

- Anthracnose for *D. alata* species.
- Curvularia for *D. rotundata* species.

Towards improved yields

- Potential yields of the new cultivars are compared to those of local cultivated varieties within experimental field plots.
- Yield performance and stability of each cultivar is evaluated at each farmer's field site thoughout major yam producing areas.

Towards enhanced commercialization

- Yam tubers fitting mechanization requirements are quantified.
- Cultivars phytoperiodic tolerance is characterized to assess potential for all-year-long production.
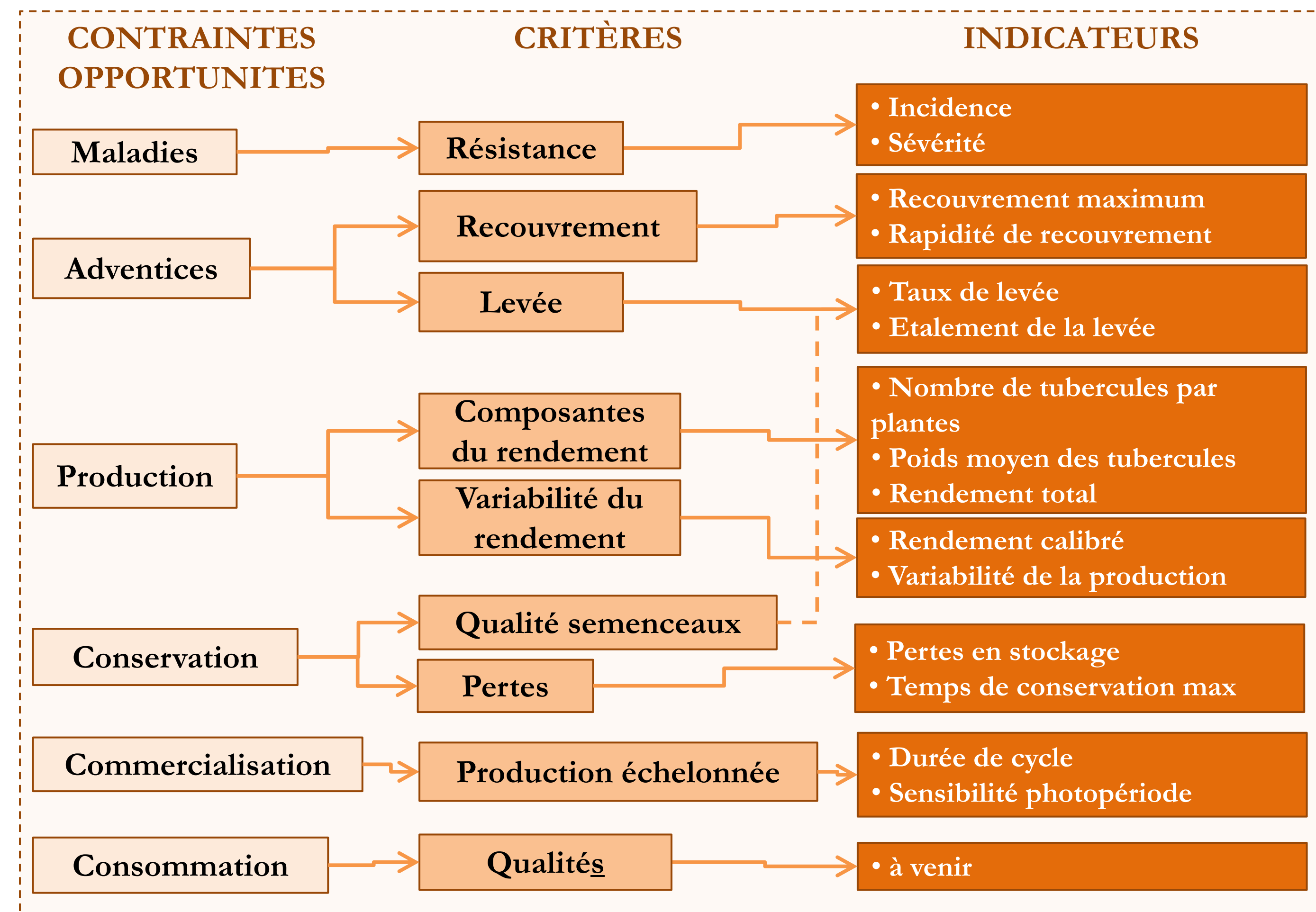- Cultivar potential for industrial transformation is evaluated.

Towards better weed management

- High percentage and homogenity of yam cultivar germination are related to rapid field cover and best weed management.
- After germination, rapidity of ground coverage by yam foliage will reduce manual sarcling necessary for weed control.
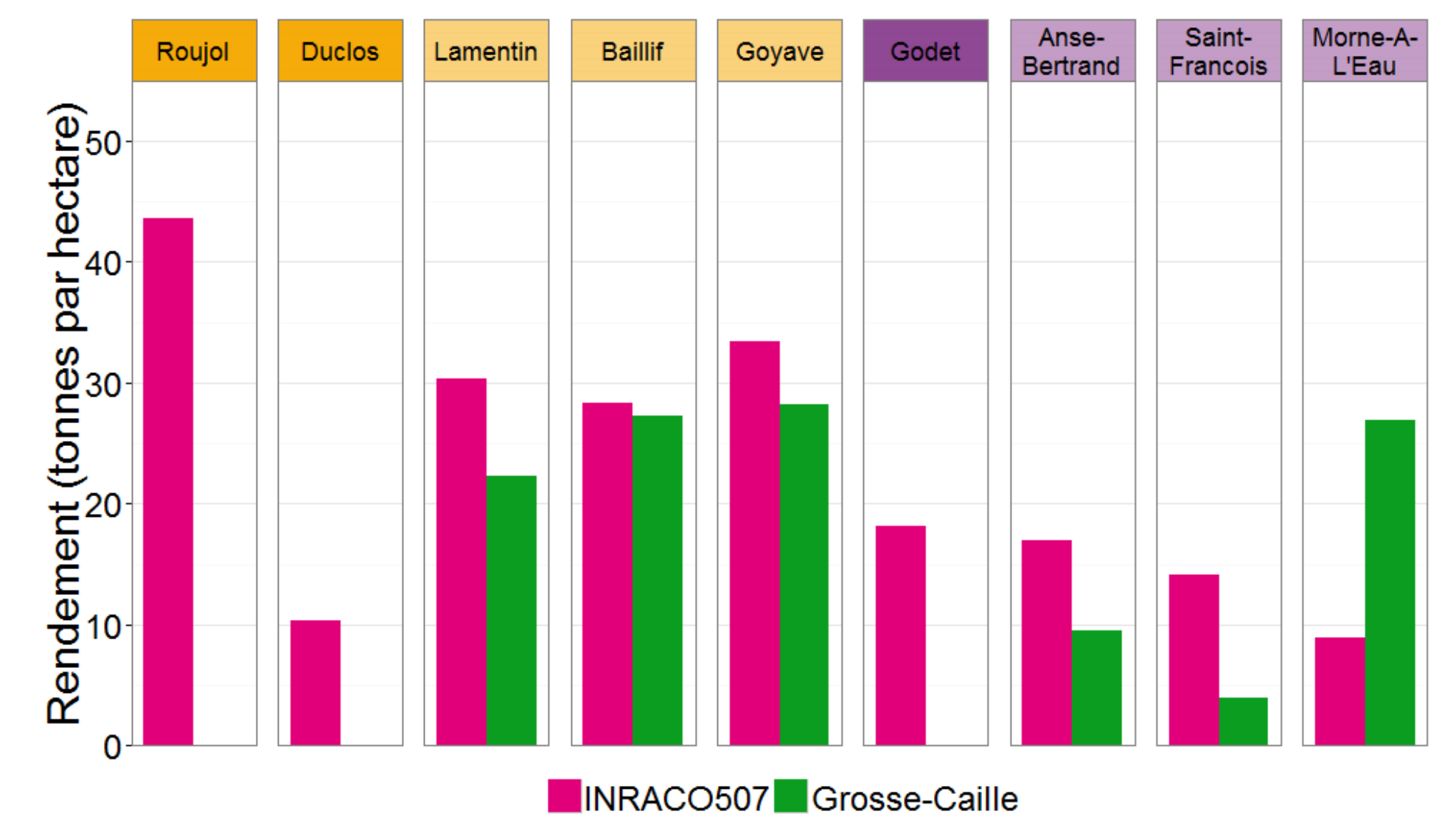
Towards optimized quality

- Yam tuber aspect (shape, size and color) is assessed.
- Flesh color and absence of graying at tuber cutting and cooking are estimated.
- Cultivars organoleptic quality is evaluated by testing jury to fit consumers requirements.
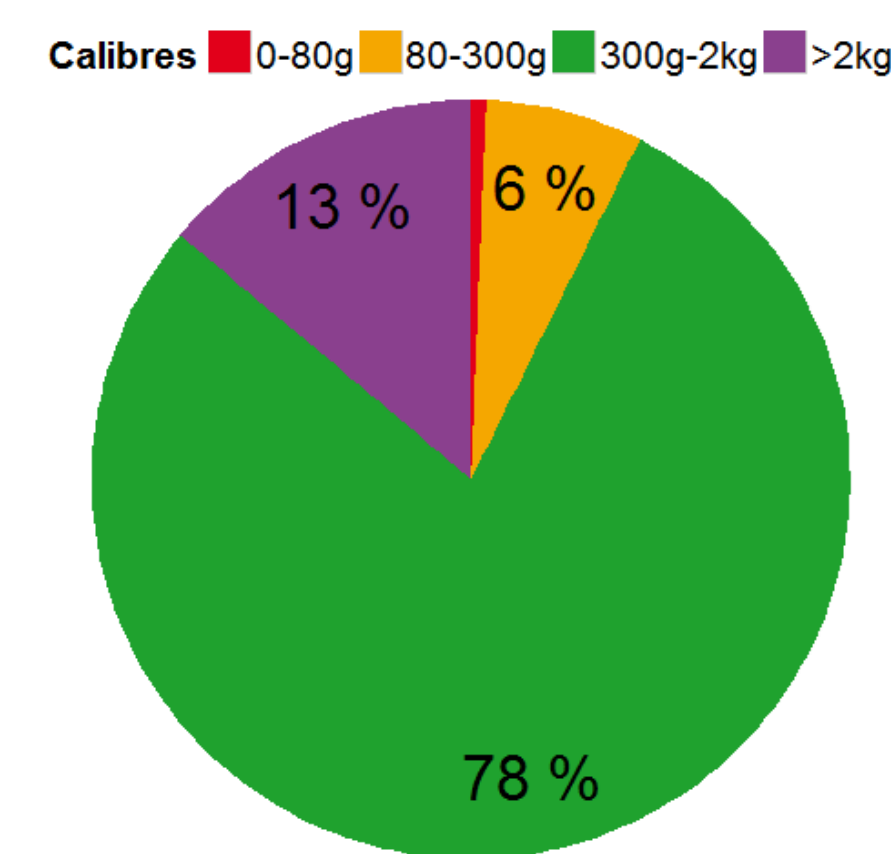
Collective and participative identification of priority limits and opportunities

CONTRAINTES OPPORTUNITES	CRITÈRES	INDICATEURS
Maladies	Résistance	• Incidence • Sévérité
Adventices	Recouvrement	• Recouvrement maximum • Rapidité de recouvrement
	Levée	• Taux de levée • Etalement de la levée
Production	Composantes du rendement	• Nombre de tubercules par plantes • Poids moyen des tubercules • Rendement total
	Variabilité du rendement	• Rendement calibré • Variabilité de la production
Conservation	Qualité semenceaux	• Pertes en stockage • Temps de conservation max
	Pertes	
Commercialisation	Production échelonnée	• Durée de cycle • Sensibilité photopériode
Consommation	Qualités	• à venir

Potential yieds of cv. INRA CO507, as estimated in experimental stations and at farmer's field sites

Rendement (tonnes par hectare) — Roujol, Duclos, Lamentin, Baillif, Goyave, Godet, Anse-Bertrand, Saint-Francois, Morne-A-L'Eau

INRACO507 — Grosse-Caille

Weight distribution for tubers of the TiClair cv.

Calibres: 0-80g, 80-300g, 300g-2kg, >2kg
13 %, 6 %, 78 %

Yam tubers of the Roujol cv.

Foliage ground coverage progress curves of the Malalagi cv.

Malalagi — Pakala
Recouvrement du sol — Semaines après émergence
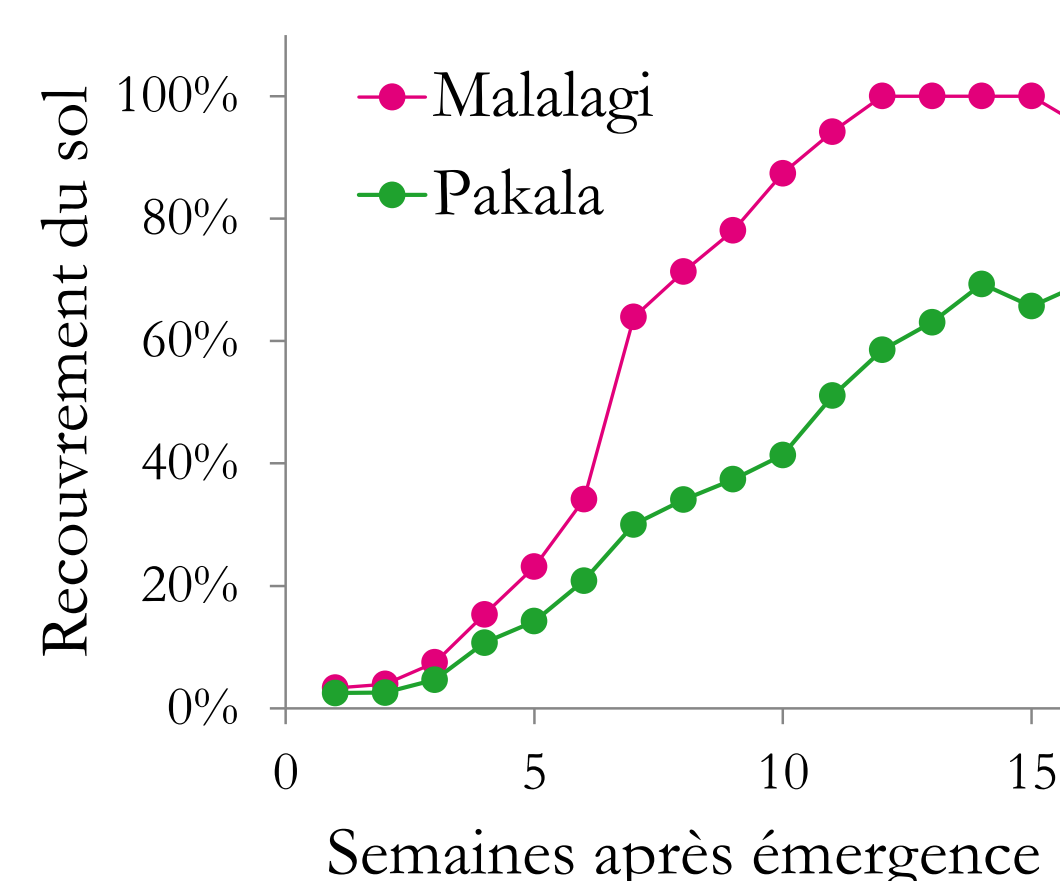
Evaluation and comparison, using image analysis, of ground coverage of 2 different cvs. 3 months after germination

65%
46%
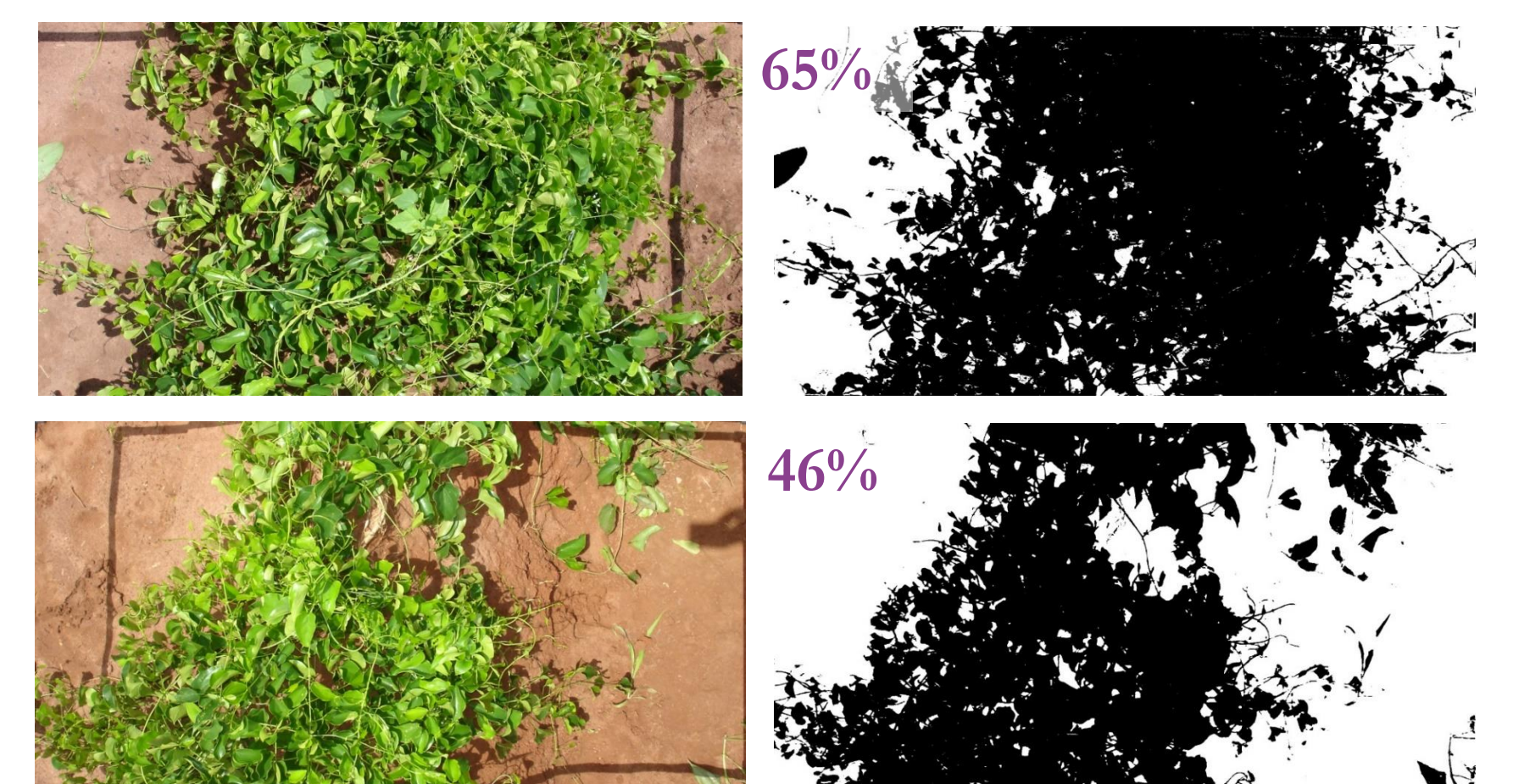
Therefore is required…

- Need for development of computer-based decision tools to help grower's and technical advisors with identification of cultivars best adapted to there are of production.
- Need for implementation of a local plant quality production program to allow distribution of new successful cultivars and ancestral lost varieties.
- Need to maintain and favor top-down interactions between growers and breeders to best integrate final consumer requirements into breeding processes.