MusaNet meeting (28 February – 3 March 2011)

Global strategy for the conservation and use of banana & plantain (Musa) genetic resources .

Theme 2: Germplasm evaluation

Evaluation of quality traits: post harvest quality of edible banana (Musa sp.)

S. Ricci [1], O. Gibert [2]

1 UMR AGAP, Carbap-Cameroun

2 UMR QUALISUD , Cirad-France

Objectives and method

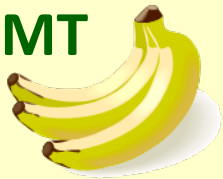
- *Investigation of the diversity of edible musacea in relation to the traditional preferences & uses*
- *Investigation of the post-harvest quality*
- *Differentiation of consumption groups & genotypes on the basis of some « objective » quality traits*
- *Research needs on post-harvest quality & prospects*

Edible musacea production and diversity

Dessert bananas

AA	– Sucrier, Samba,..
AAA	**– Cavendish**, Gros Michel,..
AB	– Ney Poovan, Kunnan
AAB	– Silk, Pome, Mysore, ..
ABB	– Pisang Awack
AAAA	– FHIA hybrids, ..
AAAB	– FHIA hybrids

69 MT



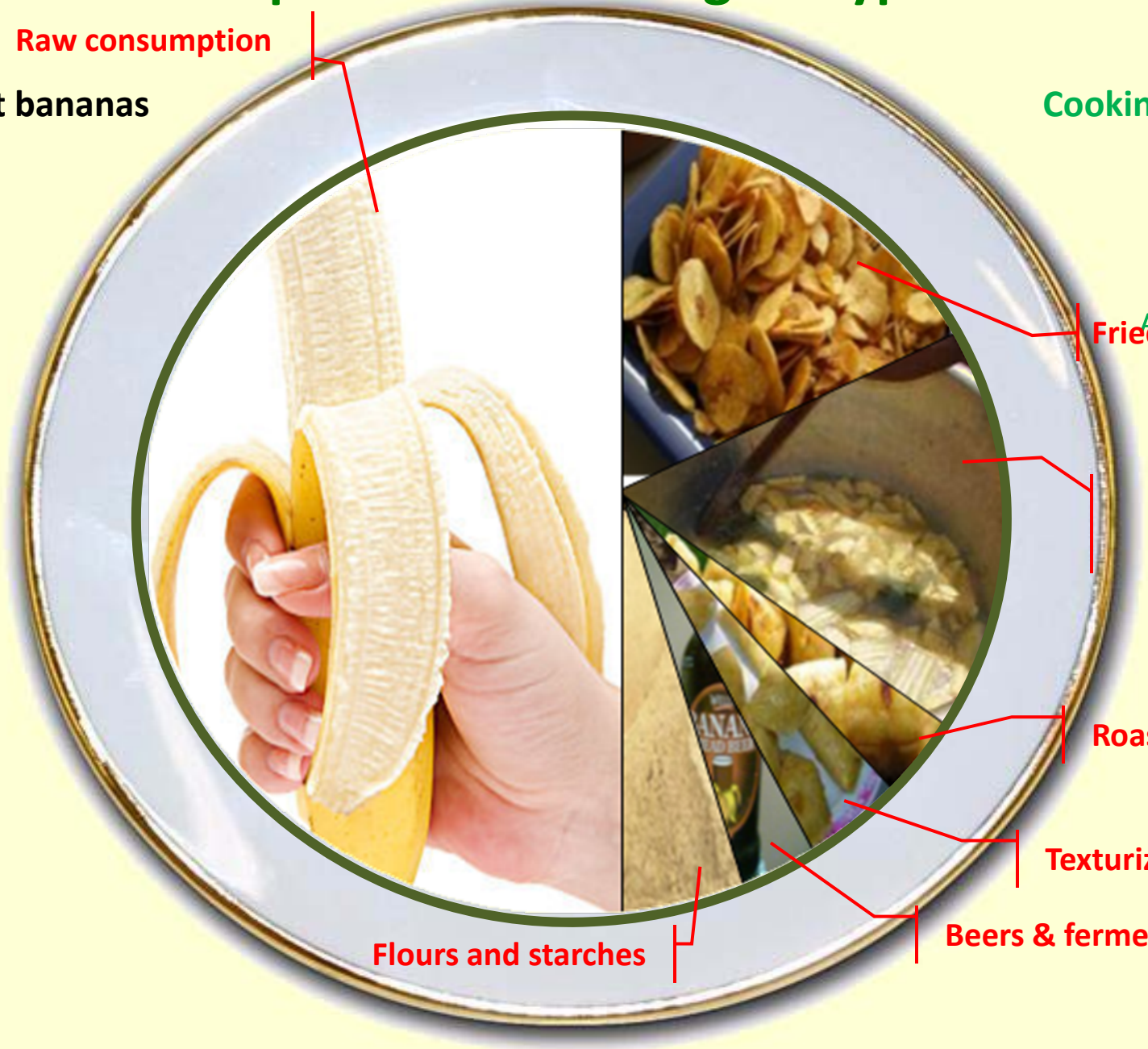
Cooking bananas

AAAea	– Lujugira
AAB	– **Plantains,** Maia maoli,..
ABB	– Bluggoe, Pelipita, Saba,..
AAT/AT	– Féhis
AAAB	– FHIA hybrids,..

41 MT

Bakry et al., 2009; Lescot, 2010

Consumption modes and genotypes



Dessert bananas

AA

AAA

AB

AAB

ABB

AAAA

AAAB

Cooking bananas

AAA

AAB

ABB

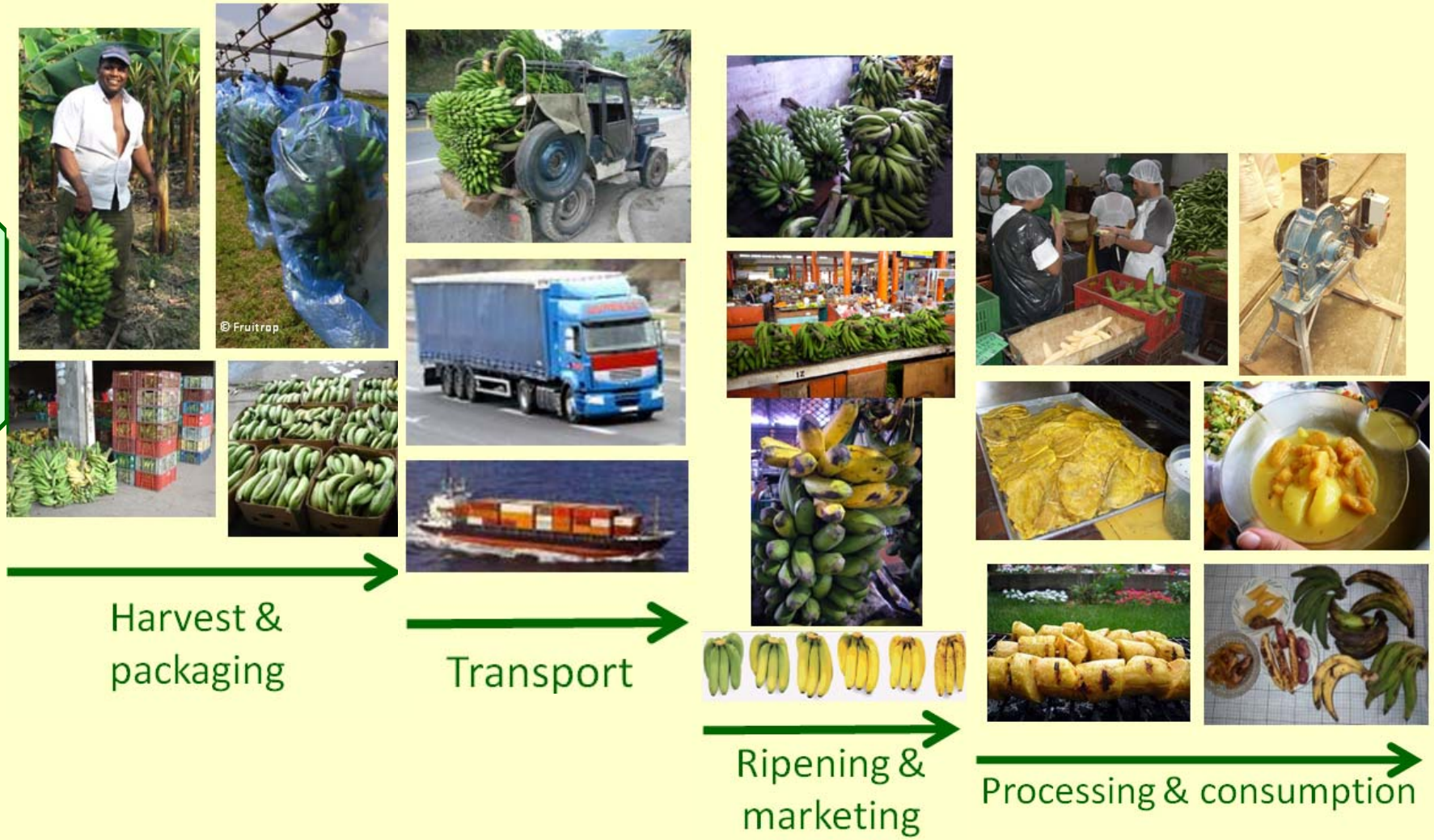
AAT/AT

AAAB

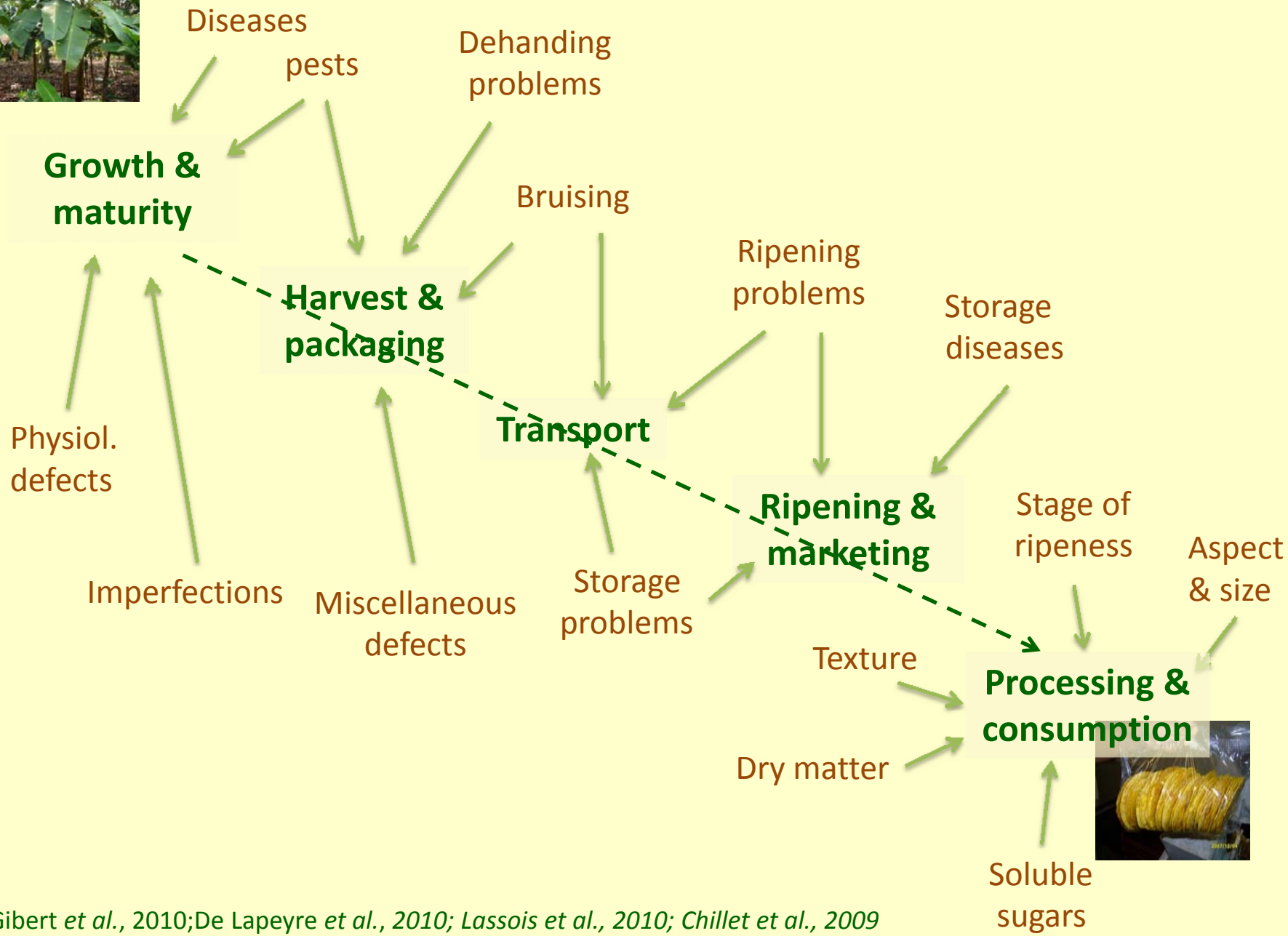
Noupadja et al., 2001; Englberger, 2004; Ngoh et al., 2005; Quintero et al., 2008; Gibert et al., 2009

Quality construction from harvest to consumption

5 to 45 days



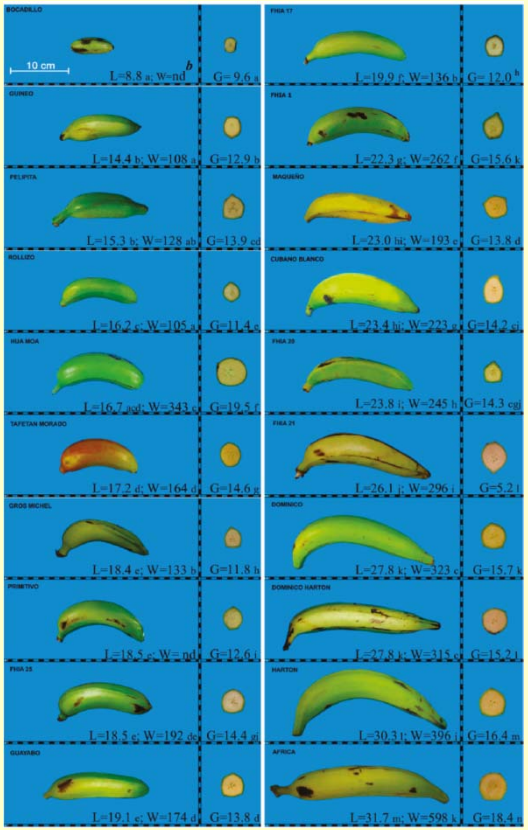
Banana quality defects

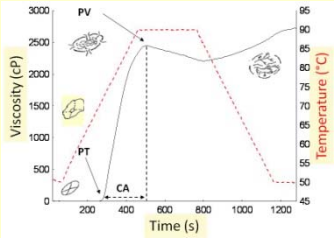


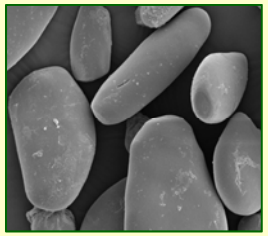
Gibert *et al.*, 2010;De Lapeyre *et al.*, *2010; Lassois et al., 2010; Chillet et al., 2009*

Some “objective” criteria for the characterization of the post-harvest quality

- Dry matter, ash, fibre & minerals
- Amylose & starch content
- Soluble sugars & titratable acidity
- Thermal, textural & functional properties







Gibert et al., JAFC 57, 2009, err. 58, 2010

Dufour et al., JAFC 57, 2009

Gibert et al., JFE, 2010

Prospects: post-harvest strategy according to the target

Dessert bananas

Quality = physiological strategy ***x*** storage

- ✓ Reducing post-harvest losses due to improper post-harvest practices
- ✓ Better knowledge of local biodiversity for breeding
- ✓ Optimization of industrial production

Cooking bananas

Quality = *variety* ***X*** *process* ***X*** *maturity*

- ✓ Industrial healthy "traditional" ready-to-eat foods locally processed
- ✓ Valorisation of diversity for consumer acceptability

Other needs and prospects

- Screening & selection of the varieties with optimal "technological profiles" in a germplasm collection, for limitation of non-genetic contributions

- Integration of some "objective" quality traits in the strategy for the conservation and use of banana and plantain genetic resources

- Investigation of the stability of quality traits after breeding

Thank you for your attention

Contact: O. Gibert
olivier.gibert@cirad.fr