



Stimulating innovation in cocoa post-harvest methods for quality chocolate

Exploring genetic diversity and post-harvest processing management towards genetic branding

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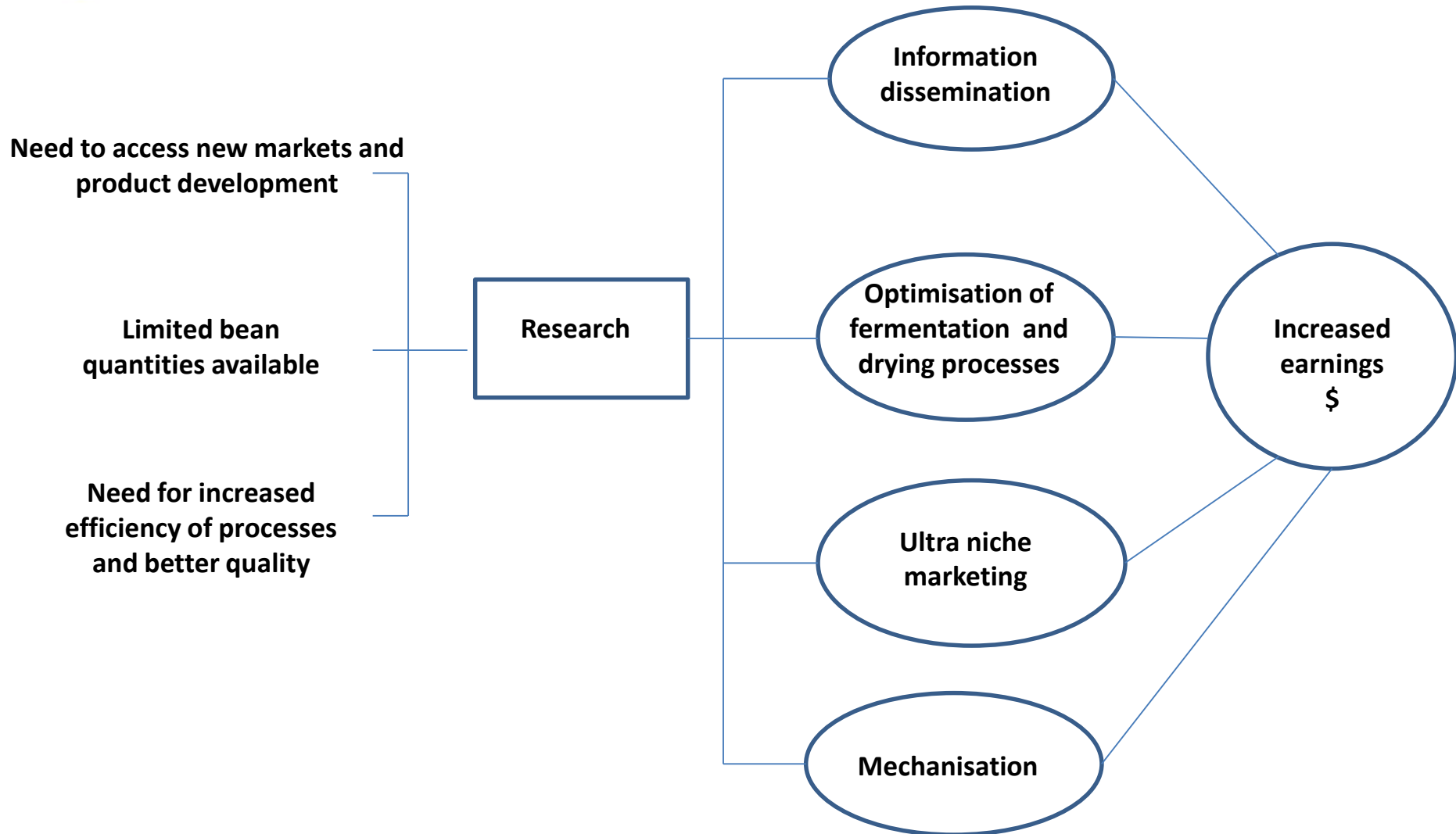
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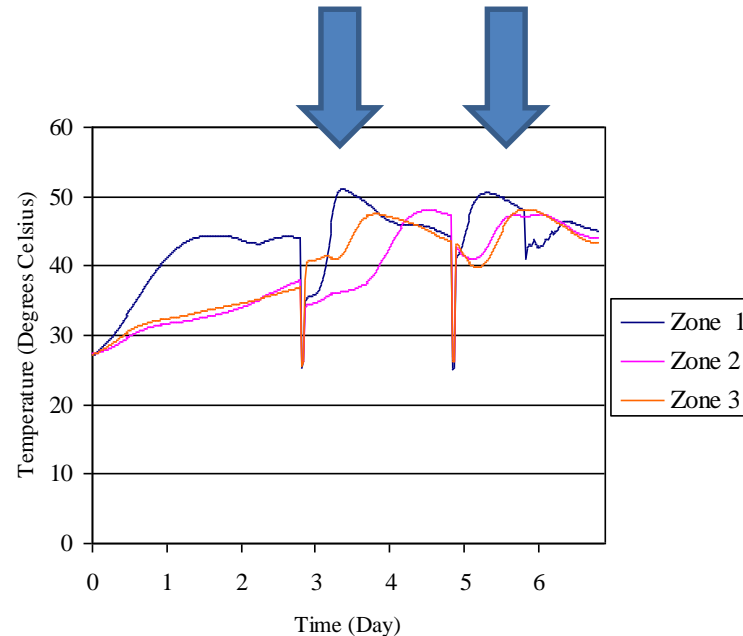
Why innovate at post-harvest?





Why optimise cacao fermentation protocols?

- Fermentation is a critical step in flavour development.
- Many variables impact fermentation.
- A temperature peak $\geq 44^{\circ}\text{C}$ is imperative in fermentation and is usually possible in larger masses or well insulated smaller fermentations.





50-200 Kg



≤30 Kg



5 Kg

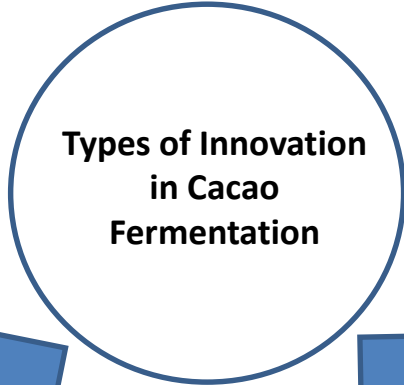


3-5 Kg

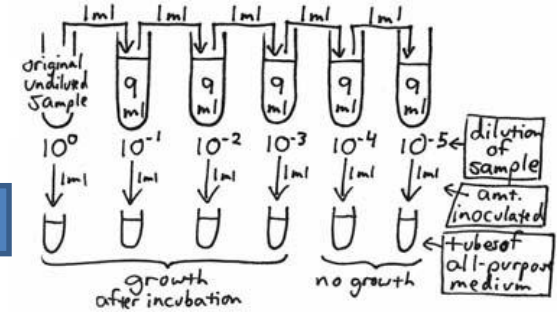
Small scale, insulated, variable capacity fermentation protocols



Single pod fermentations



Types of Innovation in Cacao Fermentation



Use of inoculums and starter cultures



Modification of aromatic profiles via fruit pulp and juice addition to fermentations



De - pulping pre fermentation



Investigating fermentation dynamics in various cacao genetic groups towards genetic branding

Genetic groups being profiled

Contamana
Nacional
Nanay
Amelonado
Iquitos
Marañón
Trinitario
Refractario

Parameters assessed

During fermentation

Temperature
pH (mass)
pH (testa and cotyledon)
Cut tests (fermenting beans)
Pulp colour
Pulp °Brix

Dried beans

Moisture content
Individual bean weight
Bean count
Bean length
Bean width
Bean thickness

Chemical analyses (NIRS)

Organic acids
Sugars
Proteins
Purines
Polyphenols
Fat

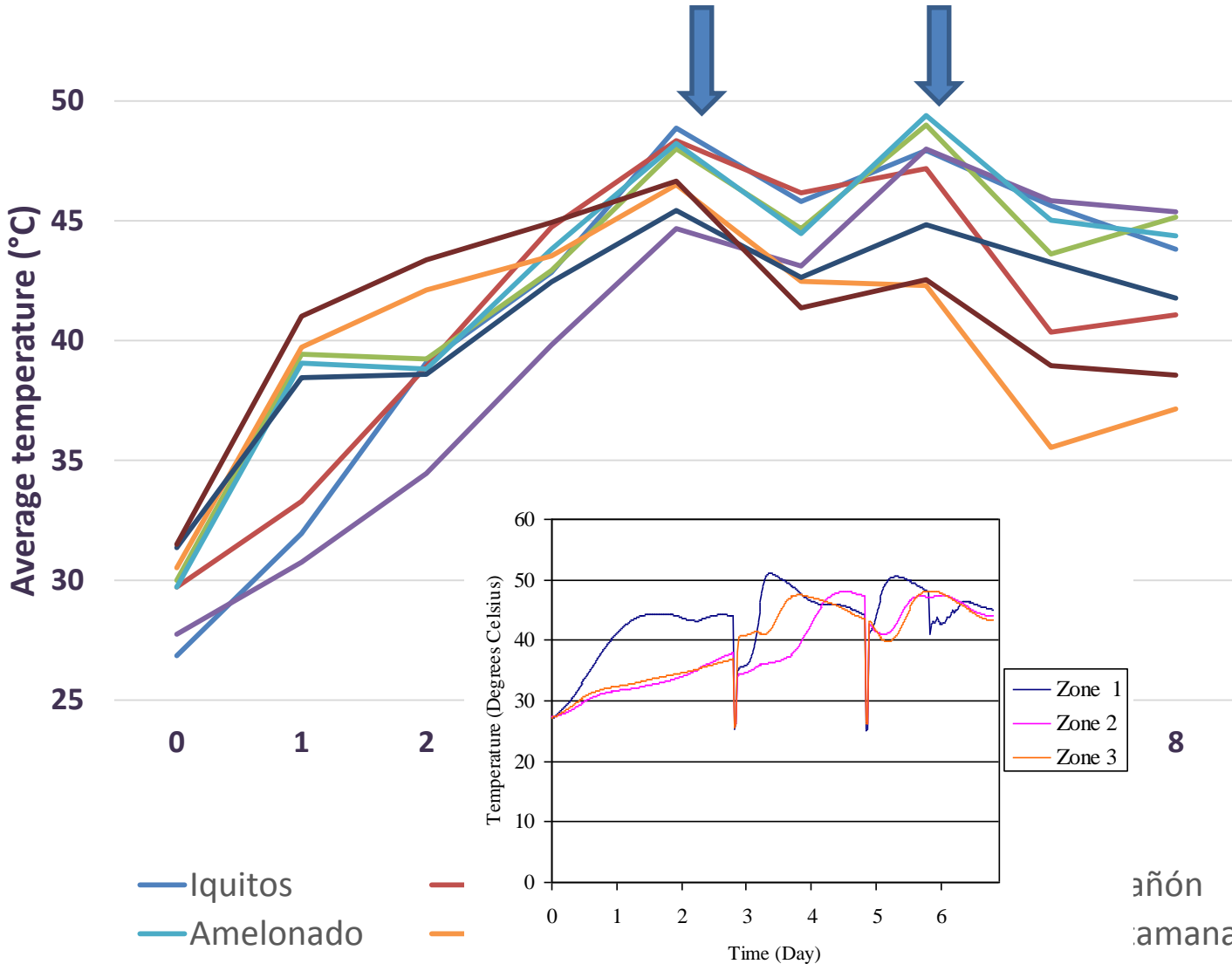
Sensory assessment





Investigating fermentation dynamics in various cacao genetic groups towards genetic branding - some preliminary results

Temperature progression comparison of 8 genetic groups

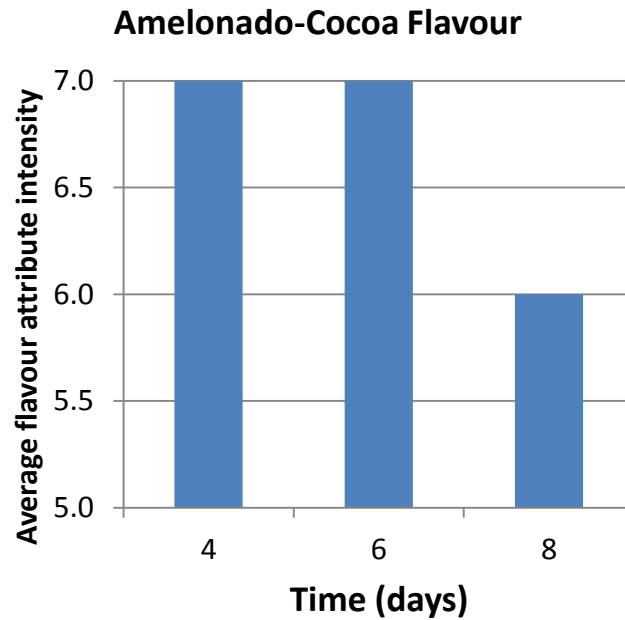
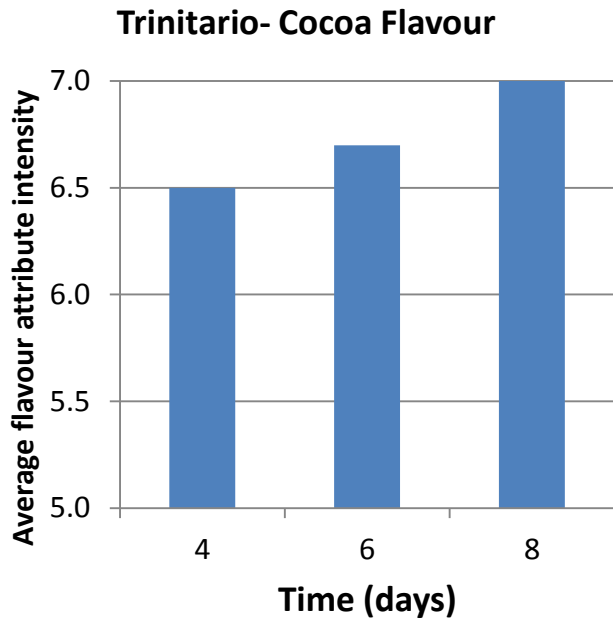




Investigating fermentation dynamics in various cacao genetic groups towards genetic branding - some preliminary results

Flavour analyses

- Comparison of 2 groups- Cocoa flavour on Days 4, 6 and 8

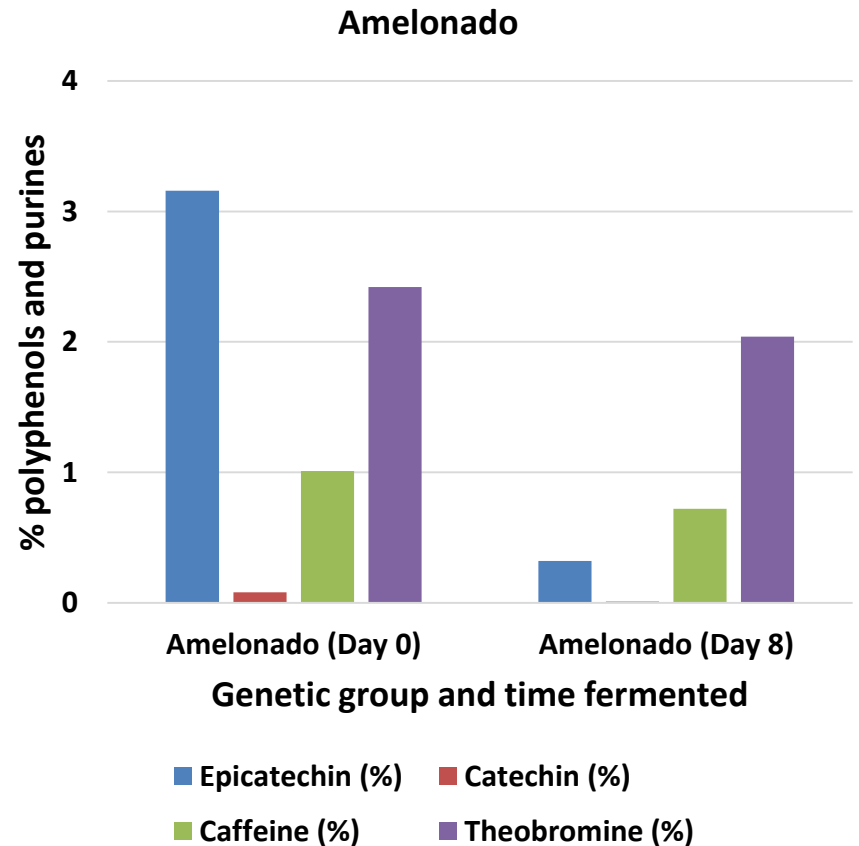
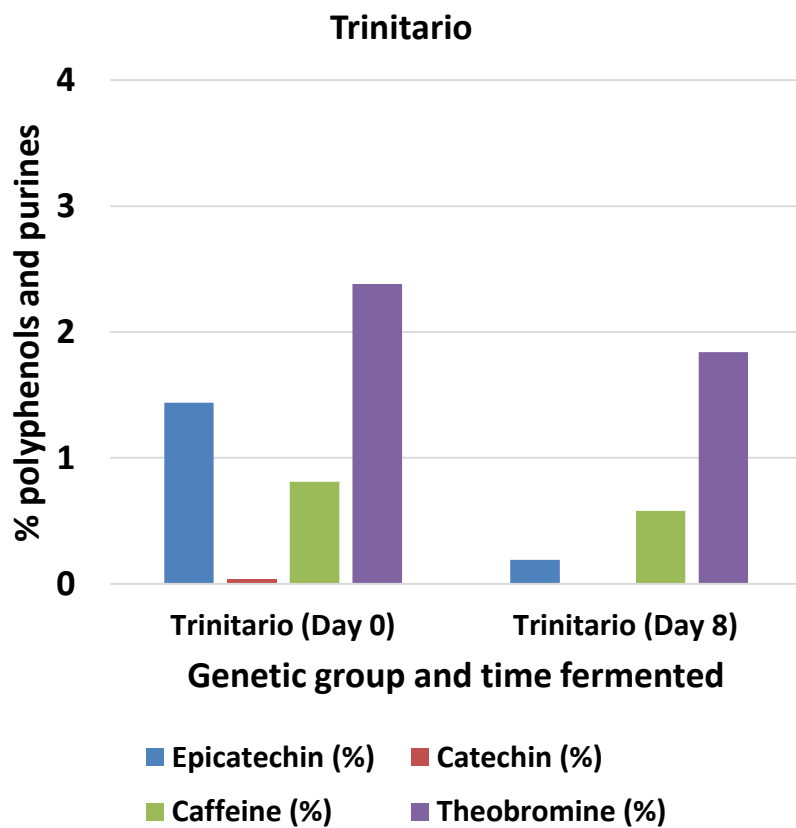




Investigating fermentation dynamics in various cacao genetic groups towards genetic branding - some preliminary results

Chemical analyses

Comparison of 2 groups-Purines and polyphenols on Days 0 and 8





Conclusion



Advantages of genetics based branding:

- Niche marketing potential – towards increasing farmer income.
- Celebrating genetic diversity.
- Accessing a spectrum of flavour attribute experiences.
- Accessing an array of nutraceuticals.





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