Ecuador:
Valorising cacao pulp to improve farmers' income

A research project funded by the Dutch Topsector Agri & Food, and the Topsector Horticulture & Starting Materials

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PROBLEM

& SOLUTION

- Cacao is a fruit, but only the beans (20%) are being sold.
- 6 million farmers producing +/- 6 million tons of cacao beans. Small holder farmers, with a small piece of land. Farmers are poor, unsustainable business.
- The cacao pulp drips in the soil during fermentation.
- Pacha de Cacao is a purpose-led agrifood start up that makes beverages from the pulp.
- Our question: How can we scale up our supply operations in Ecuador, with more financial returns for farmers and a lower cost price for Pacha's supply chain?
- Consortium
- Quantitave research and experiments.
- Milestones: pod experiments, yield improvement experiment, technical design, farmer survey (90 farmers), economic modeling.

Pacha de Cacao FRESH JUICE made from Cacao-pulp

ebbens engineering expert in proces

rikolt:o

WAGENINGEN UNIVERSITY & RESEARCH

Enspirall CAPITAL Trusted Advisors | Valued Deals

espol Escuela Superior Politécnica del Litoral

RESULTS

- Before extraction of the pulp the cacao beans/pulp must be inspected for defects.
- When the pulp is stored for 3 days at 5°C, the quality can be guaranteed it can be stored for 3 days without effects on pH, Brix and flavor.

COST PRICE

- The amount of pulp that can be extracted from the pods is limited.
- However, there is great variability between different cacao genetics.
- The yield of the pulp collecting is the major parameter on the production costs.

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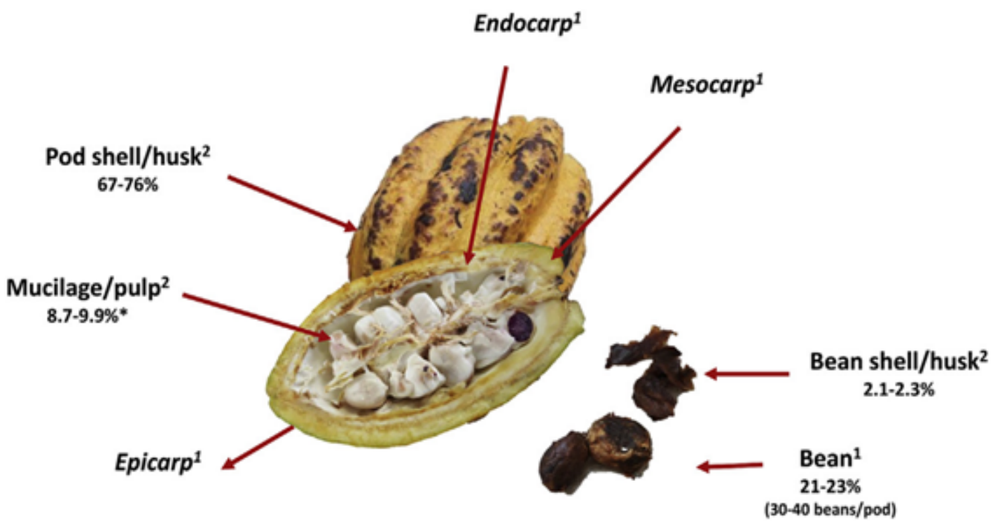
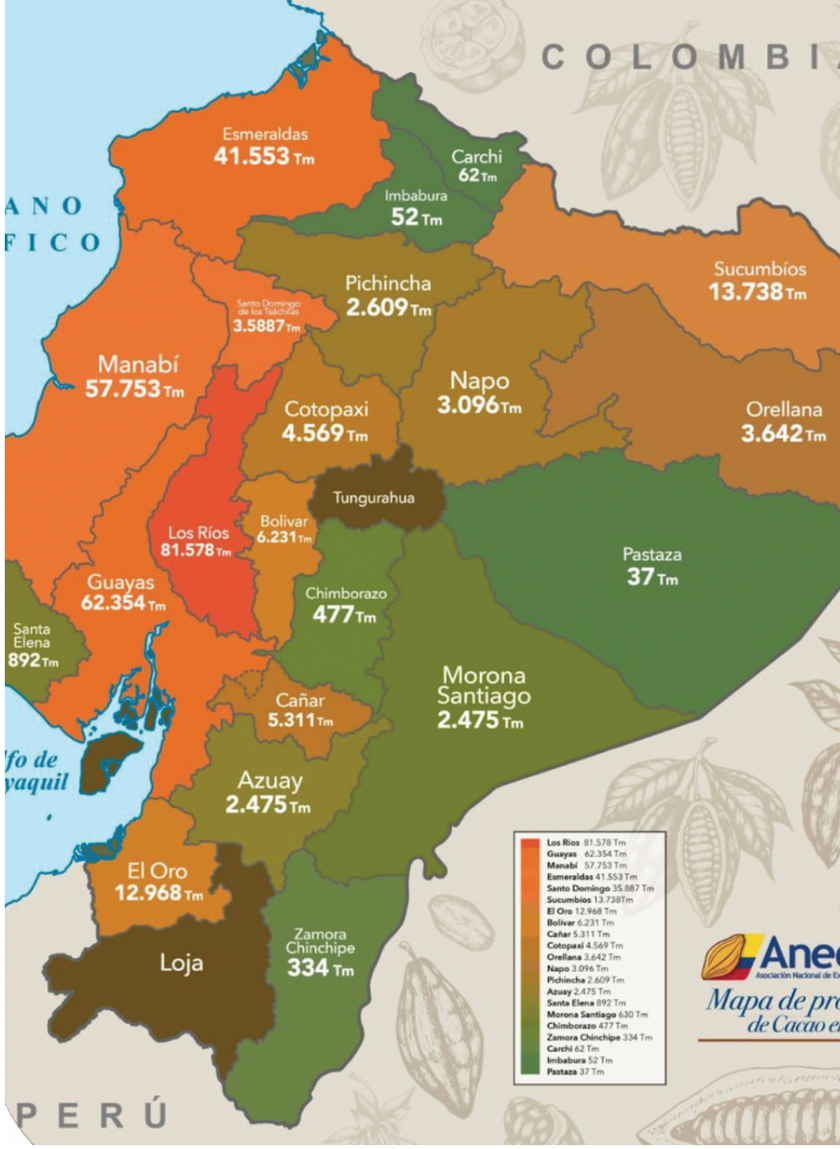


Fig 1. The cocoa fruit structures[1] and wastes[2] (with information of Babatope, 2005; Oddoye, Agyente-Badu & Gyedu-Akpto, 2013; Awarikabey et al., 2014; Sobowale el atl., 2015; Papalexandrator & Nielsen, 2016; *By difference).

SUPPLY

- Production: average 10.000 pods per hectare, max 20.000 pods per hectare.
- Average farmer has 1 to 4 hectares.
- Collection area
  - One factory: needs pods from 600ha, if 60%of the pods can be acquired
  - 4 semi-fixed locations: needs 150ha.



MAIN CONCLUSIONS

- The pulp has to be extracted directly from the pod.
- The pulp quality can be guaranteed for at least 3 days when stored at 5°C.
- For transport overseas the pulp has to be concentrated to create an ambient shelf stable product.
- The farmers are willing to sell their pods instead wet pulp
- Large scale production of cocoa pulp can be feasible
    - But not with a MPU that daily change his location, rather an SMPU (Semi Mobile Pressing Unit).

NEXT STEPS

- The cacao pulp extracting is used as one of the cases in EUproject CREA
  - Project to increase opportunities for sustainable products in the European market, generating income and employment in the Ecuadorian agri-food sector.
  - CREA is led by Rikolto and implemented in consortium by COSPE, ANFAB, KU Leuven and Espol.
  - Espol (Guayaquil, Ecuador) will study the improving of the yield and the concentration of the pulp.
- Discussion potential partnership with cacao trading company in the NL.
- Pilot testing of the SMPU.

BENEFITS

- Increased knowledge and a concrete plan about logistics and alternative production to pulp processing.
- A draft design for the semi-mobile pressing units.
- Economic model showing the positive impact.
- Increased network.

Questions?

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