

# An integrated concept towards cocoa pulp use and living income

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Session 3  
INNOVATIONS TO SUPPORT THE COCOA  
PROCESSING & MARKET DEVELOPMENT

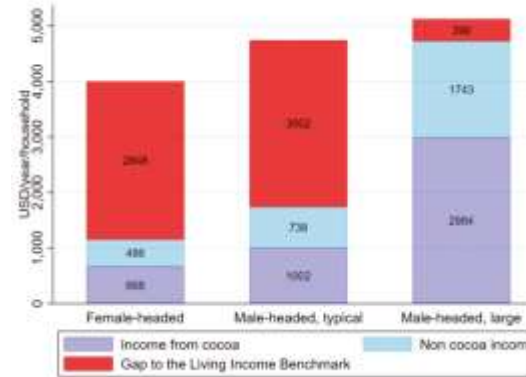
Montpellier, December 6 2022



# Closing the living income gap

- The average living income gap in West Africa is (still) huge
- High inflation rates increase costs of living
- COVID-19 and Living Income Differential have reduced (temporarily) demand for West African cocoa
- There is no silver bullet to solve the Living Income gap
- There is a need for holistic and innovative approaches and multiple strategies

Figure 14: Gap to the Living Income Benchmark per analytical group (using median values)



*Analysis of the Income Gap of Cocoa Producing Households in Ghana. Source Tyszler et al, 2018*

Figure 9: Comparison of households annual income to the Benchmark (Gaussian kernel smoothed)

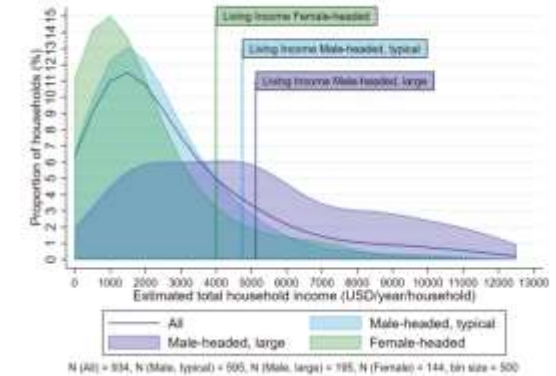


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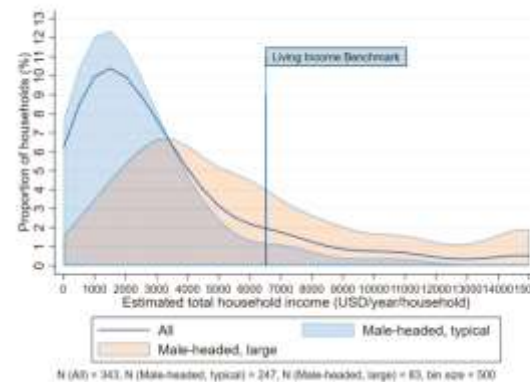
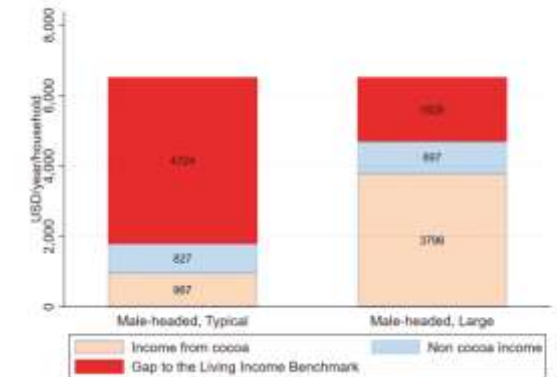


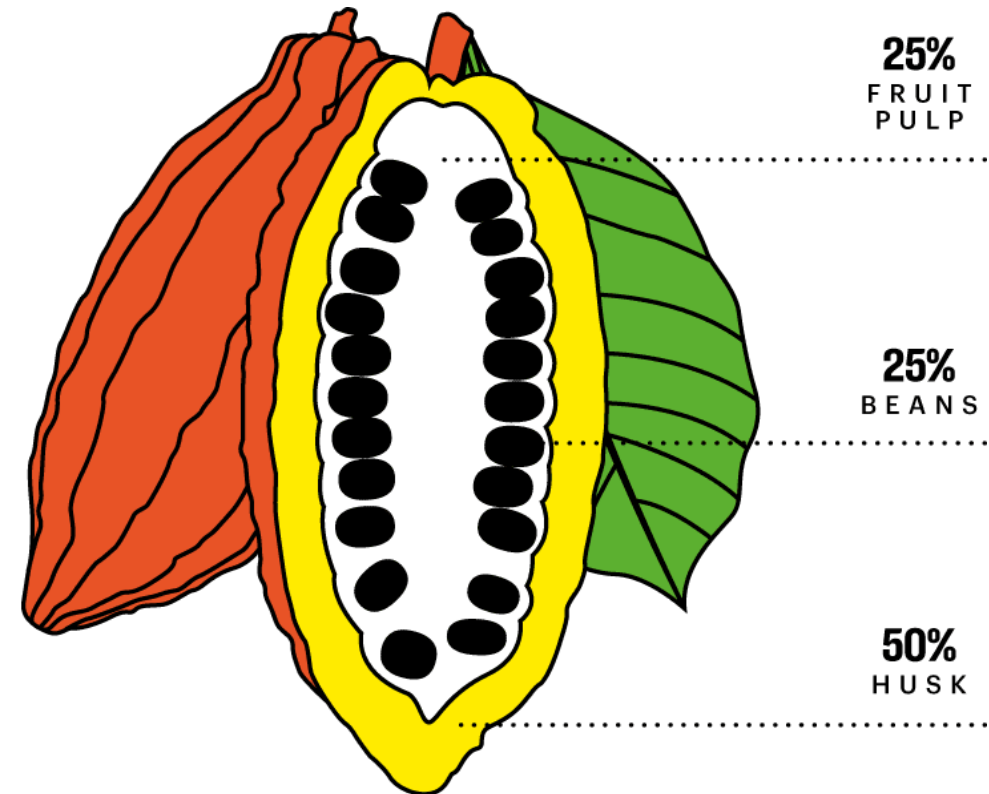
Figure 13: Gap to the Living Income Benchmark per analytical group (using median values)



*Analysis of the Income Gap of Cocoa Producing Households in Côte d'Ivoire. Source: Tyszler et al 2018*

# Juicy beans: an integrated approach towards cocoa pulp use and living income

- Cocoa pulp is usually an overlooked waste product, particularly in West-Africa
- Cocoa pulp is increasingly used by chocolate industry
  - ✓ Sweetener/substitute for sugar (e.g. Whole Fruit Chocolate – ‘upcycling’)
  - ✓ Improve quality of the beans by reducing the pulp content (e.g. CCN-51)
- Cocoa pulp has recently been processed on a larger scale into fruit juice/soft drinks (for export)
- Removal of pulp speeds up the fermentation process and impacts on flavour of the beans.
- **Our hypothesis:** Controlled removal of pulp, in combination with adequate (potentially shorter) box fermentation and sun-drying results in superior beans: **Juicy Beans**



# Juicy beans emerged from a partnership

- Pilot: **the Cocoa Fruit Lab** in Bouaflé (Côte d'Ivoire)
- **Partnership:** COVIMA, Beyond Beans Foundation/ETG, Döhler, Kumasi Drinks, Anna Laven (Rokbar/Rokit Science) and Alexandre Bellion (independent), co-funded by the Sustainable Trade Initiative (IDH).
- **Aim:** empowering women to become the producers and marketers of their own cocoa products, shifting value-addition processes to origin countries by making/selling cocoa juice, quality beans and chocolate.
- The partnership brought together passionate people + different disciplines & knowledge + infrastructure + market + room to experiment
- The partnership created momentum and the infrastructure for piloting **juicy beans**.



# Juicy beans brings the idea to life that pulp removal can bring extra income to cocoa farming families

- Pulp removal speeds up the fermentation of beans and impacts on quality
  - Previous studies on cacao beans have shown that reducing pulp content before fermentation process, improve chocolate flavour as reduce in sourness, bitterness, and astringency (Lopéz et al, 2022).
  - Already in 1979 (Alex Lopez) examined the effect of the partial removal of juice from the pulp of cacao beans on the fermentation process and the flavour of chocolate.
  - According to Freire et al (1996) under normal conditions cacao pulp is excessive (which results in excessive presence of acids) and should be partially removed in order to accelerate the fermentation and to obtain a product of higher quality.
  - There are different ways to remove the pulp (and differences in % being removed), which influences the number of days of box fermentation (some experiments show reduction from 6 to 4 days fermentation)

# Illustrating changes in temperature rates as result of pulp removal

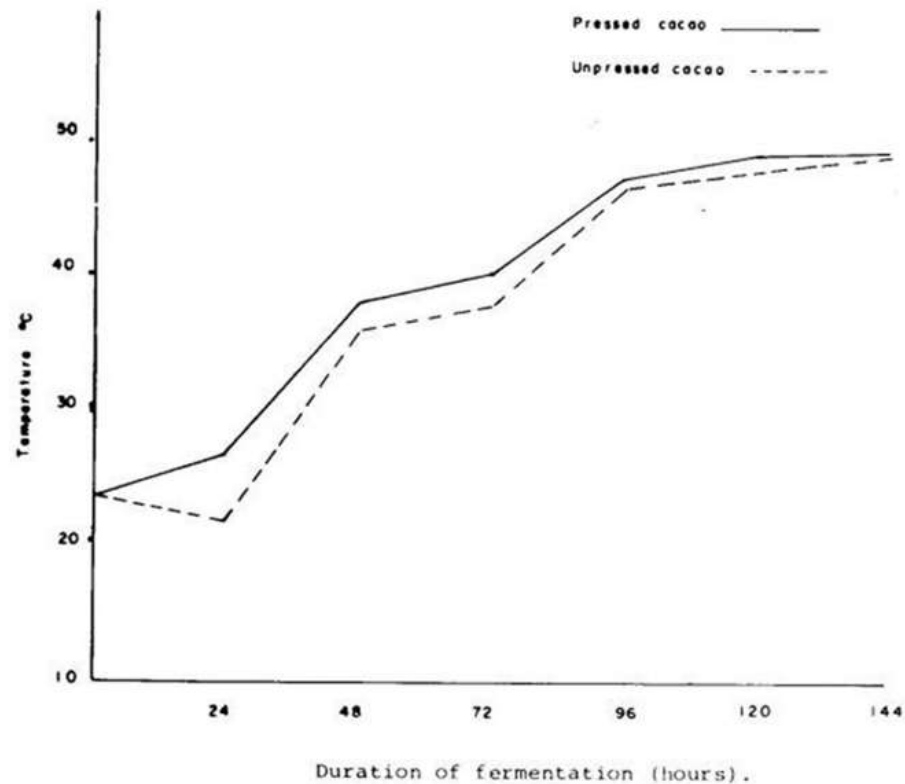
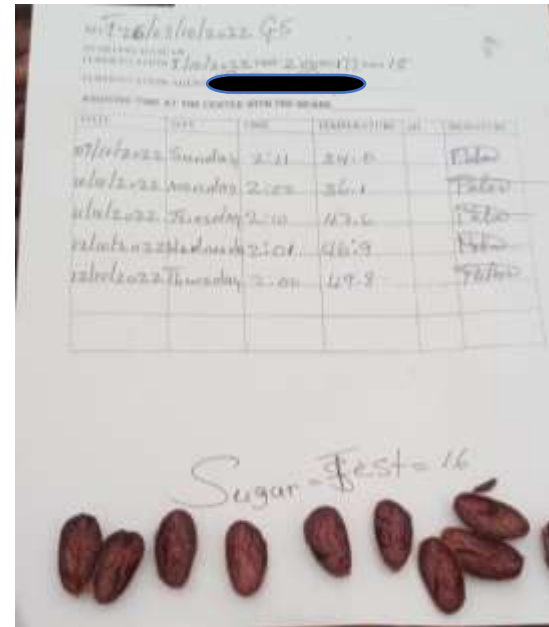


Figure 3 – Differences in the temperature changes between fermentations with pressed and unpressed cacao.

Source: Alex Lopez, 1979



**Example of two samples from Liberia (by Alexandre Bellion, 2022):**  
 Left: 10% cocoa juice extracted – 5 days fermentation  
 Right: no juice was extracted – 6 days fermentation

**Observation:** temperature increases faster

# Juicy beans brings price incentives and market for the juice and the beans

## Direct impact

- Cocoa juice increases income from cocoa by up to 30% per kilo of cocoa beans → closing the Living Income gap with ~10%
- Quality premium for juicy beans (in pilot we paid 3,50 Euro/kilo to the cooperative (~2x farmgate price and > LIRP).
- Employment of youth (male/female)

## But also (potentially)

- Promote savings through instant MoMo
- Save labour costs (e.g. outlet for wet beans and/or reduce days of fermentation) – depending on the approach taken
- Allows for immediate payment to hired labourers involved in harvesting and timely payment of schoolfees (no need to be indebted)
- Improve infrastructure/means of transportation
- Stimulates local trade (in other crops/businesses) as there is more money locally available

# How does it work?

- Farmers are trained on harvesting healthy and mature pods
- Wet beans are collected and pressed
- ~30% of the juice is taken from the wet beans by a private collector or farmer organization (via mobile press)
- Farmers are immediately paid for the juice
- The juice is pasteurized and packed
- The beans are (shorter) fermented in box, using strict protocol (turn each 24 hours)
- The beans are sun-dried
- **Result: juicy beans** with distinctive flavour

# Our approach:

- Learning by doing & make **Juicy Bean Bars!**
- Don't wait for a mature grading system for quality cocoa
- Tasting and testing with experts, change makers and industry the potential of juicy beans
- Compete for cocoa and chocolate awards
- Continue with testing and learning to optimize taste and impact
- Change business as usual: quality as mechanism to pay fair prices (less is more), local value addition and reduce waste.



# How does it taste?



**Juicy bean bars:** 70% juicy cocoa beans, cane sugar, cocoa butter, sunflower lecithin (0,4%). Made by [www.chocolateexplorers.com](http://www.chocolateexplorers.com)

# References

- Alex Lopez (1979) *Fermentation and organoleptic quality of cacao as affected by partial removal of pulp juices from the beans prior to curing*. Rev. Theobroma (Brasil) 9 : 25 - 37. 1979.
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# Thank you!

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