



Analysis of on-farm fertilizer trials in Côte d'Ivoire

Based on a paper by Chloe Stemler,
supervised by François Ruf (CIRAD)

Jonas Mva Mva

PPPP

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the sustainable
trade initiative

Overview

1. Why is there a need to increase fertilizer use?
2. Many factors may influence effect of fertilizer on productivity
3. Strategies to encourage fertilizer adoption: 3 options tested on the ground
4. Challenges

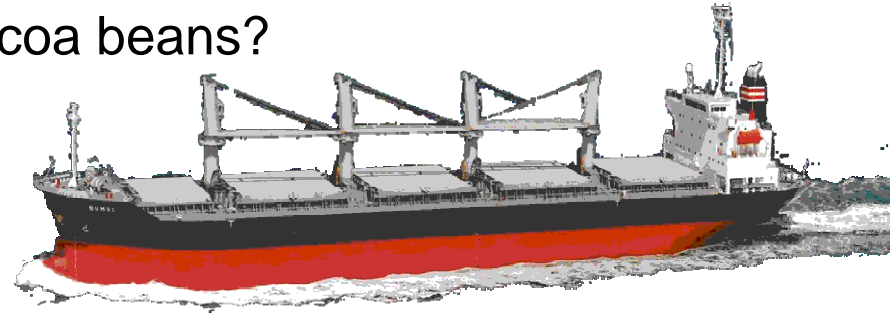
Why is there a need to increase fertilizer use? (1/3)

What is in a 10 000 mts bulk vessel of cocoa beans?

Beans are made of chemical elements:

- N : 210 mts
- P₂O₅ : 86 mts
- K₂O : 111 mts
- MgO : 40 mts
- CaO : 11 mts

Replacement fertilizer equivalent : 1 125 mts



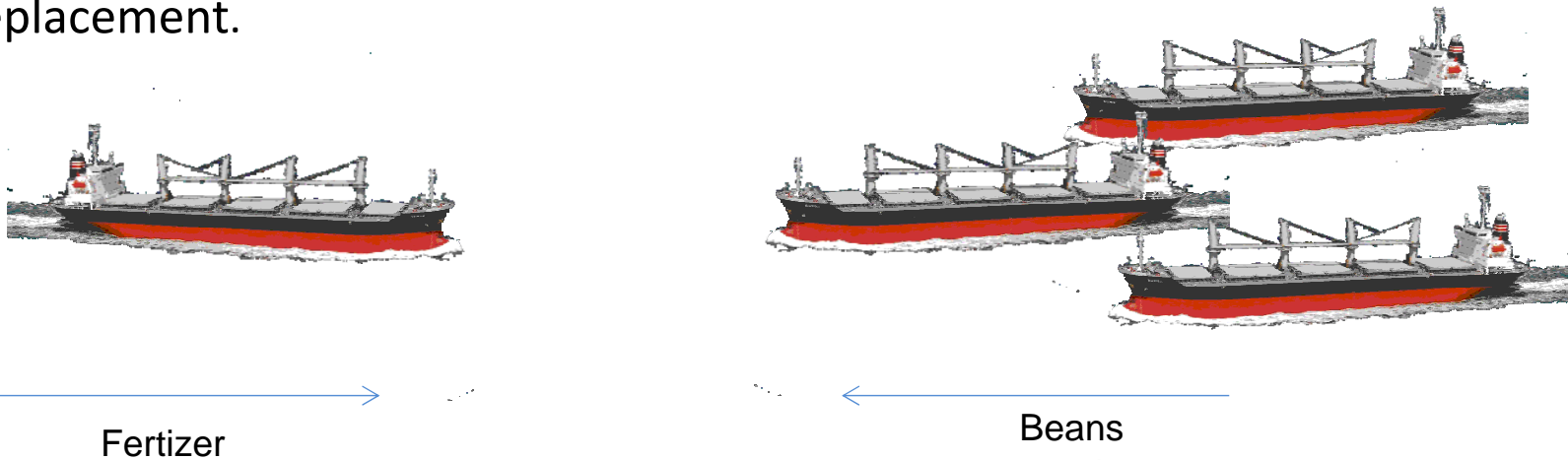
Why is there a need to increase fertilizer use? (2/3)

- Intensification of cocoa farming by means of fertilizer to:
 - Restore soil fertility
 - “Reactivate” production of aging plantations
 - Halt the extensive cocoa farming system
 - Double/triple production with half or 1/3 of the land
 - Free more land for food crops
 - Increase revenues of cocoa farmers
 - Protect the environment

Replacement VS needs (3/3)

- Replacement is just balancing the export of nutrients
- Sustainable production
 - Productivity increase (x1,5 to x2)
 - Soil improvement
 - Balancing the soil leakages
 - Replancing nuitriments from husks and tree

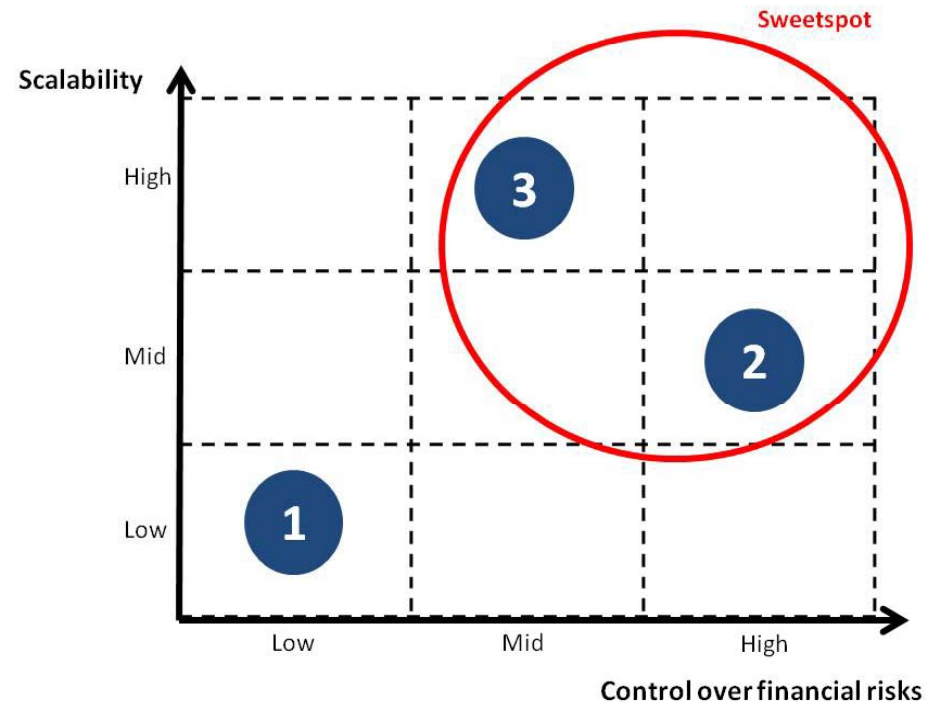
Sustainable input supply would require 3 times more fertilizer than single replacement.



Three delivery models

There are 3 basic models to leverage the cocoa supply chain in delivering fertilizers to the farmers. In a range from complex to simple, the models are:

- 1. Farm finance:** The farmer group takes a bank loan for fertilizer for its members, with risk-sharing from the other supply chain agents
- 2. Fertilizers-for-beans:** The cocoa supplier is partially paid in fertilizer upon delivery of beans to the trader
- 3. Cash-and-carry:** Building on the supply chain infrastructure, fertilizer is made available at selling points close to farmers to buy in cash

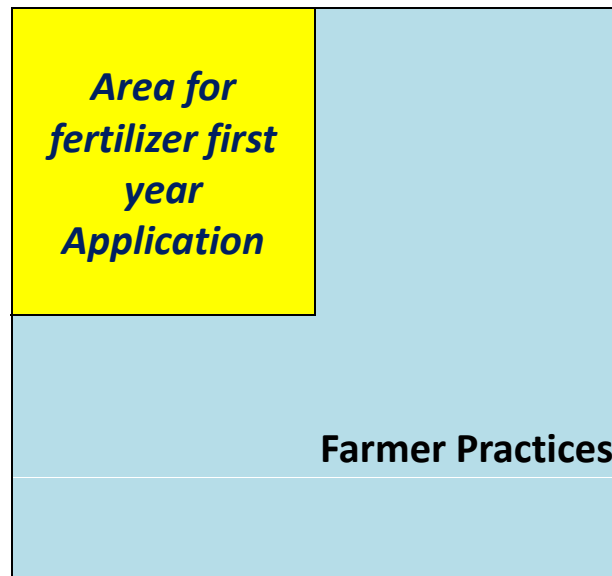


Challenges in fertilizer uses

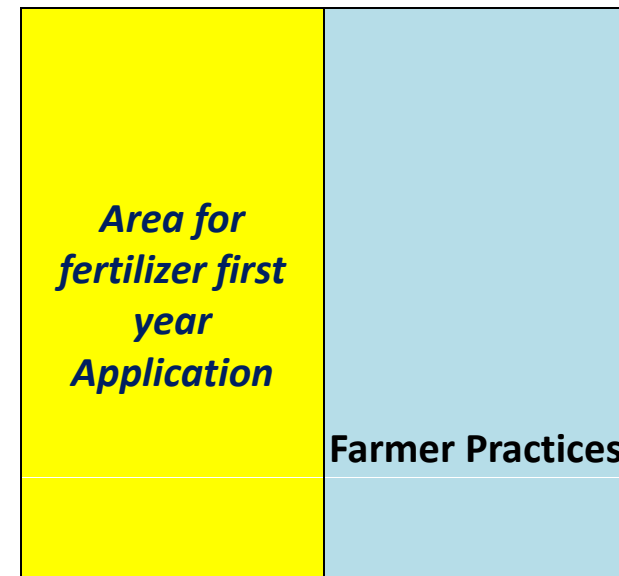
- Adapted fertilizer formulas
 - African soils are different, lack of adapted formulas
- Financing :
 - Lack of cocoa prices visibility, influencing the investments decisions of small holders
 - Limited capacities of investment to shift production modes
- Logistics, from mines to farmers
 - No real stream of cocoa specific fertilizer
 - Difficult to deliver for the last mile

Potential strategies to encourage fertilizer adoption

Option 1



Option 2



To insure a better success on the fertilizer applications, will be advised to start progressively

Thank you

Jonas Mva Mva
Sr. Cocoa Program Manager
mvamva@idhsustainabletrade.com

