

CLIMATE SMART STEPWISE INVESTMENT PATHWAY FOR COCOA FARMERS IN GHANA

Introduction and Background

In Ghana, the CCAFS flagship project on mainstreaming CSA practices in cocoa systems developed tailor-made practices which aim at mitigating key climatic hazards identified in three climatic zones in cocoa growing belts of Ghana. Our mission is to ensure food security for some of the world's poorest people and provide them with viable strategies that create real, long-term results for economic development and community stability, while building an ecologically sound future that takes into account the issues of climate change. The International Institute of Tropical Agriculture (IITA) in partnership with Agro Eco Loius Bolk Institute has over the past two years been developing a case for private sector investment in CSC through evidence based demonstration plots. To facilitate the above and the farmers adoption of CSC, a farmer segmentation analysis of the agro-ecological zones (cope and adjust) under the project have been done and demonstration plots have been set up to learn the impact of stepwise climate smart cocoa practices in Ghana. Learning is underway in the two (2) agro-ecological zones with over 100 smallholder cocoa farmers.

Description of the Approach

IITA in an earlier study identified that, most cocoa farmers in Ghana bundle various agronomic practices together as one 'basket of practices' and apply them all at once in a quest to boost production. IITA recognizing this shortfall on the part of the farmers and observing that most farmers were misusing their already constrained resources, decided to work on developing "STEPWISE" practices comprising of good agronomic practices (GAP) and climate smart agricultural (CSA) packages to be followed in an orderly and systematic way to aid Ghanaian cocoa farmers realize the maximum harvest out of their cocoa farms. This is because the misapplication of agronomic practices retards crop yield and alas negatively affects farmer productivity. The carefully tailored "STEPWISE" practices are designed according to cocoa farming zones and responds to the climate hazards in these zones (Transform, Adjust and Cope). The Stepwise investment pathway comes in handy and timely to help farmers realize the benefits they can obtain from their investments at each stage of their cocoa farming.



Figure 1: A section of cocoa farmers after a stepwise climate smart cocoa training session

Stepwise Climate Smart Cocoa (CSC) Pilot Treatments:

Industry experts are of the view that the CSC basic technological practices be encouraged/practiced in the follow order:

- T1= Weeding + Pruning (formation + sanitary) + Cultural (Pest and Disease) Management
- T2= T1 + fungicide and Insecticide Application
- T3= T2 + Fertility Management (organic matter)
- T4= T3 + Fertilizer Application
- T5= Control

Methodology

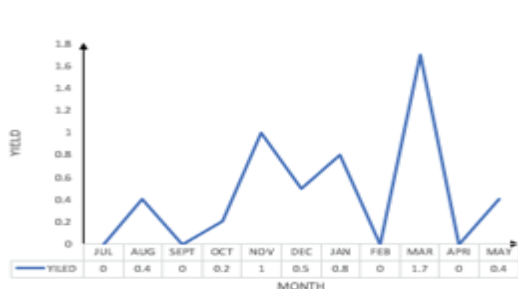
The demonstration plots in the two (2) agro-ecological zones have been set up on a 1 acre plot each, of a standard size of cocoa farm which has been divided into four (4) equal parts. The treatments namely T1, T2, T3, T4 (described above) with a control plot T5 located nearby are clearly demarcated and tagged with 10 selected cocoa trees under observation. The above practices under each treatment are carried out according to the climate smart cocoa calendar. Relevant data is taken monthly from the cocoa trees under each treatment on flowering intensity, tree vigor, canopy health vegetative cover, cherelle count, cherelle wilt, mature pods, pods damaged by rodent, capsid and mirids attack, cocoa shield bug, blackpod attack and mistletoe presence. This informs the CCAFS Cocoa team in Ghana on result-based comparison of each treatment.

Overall Benefits of the Stepwise Climate Smart Cocoa Approach

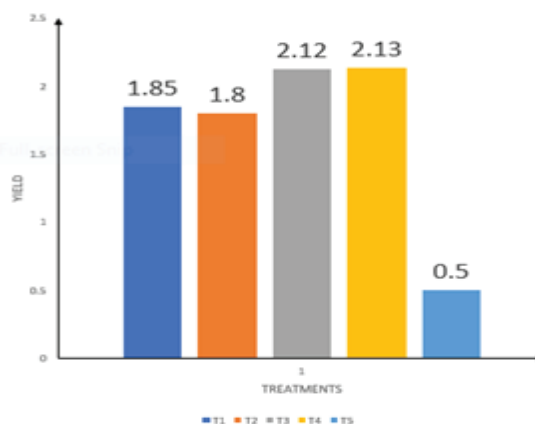
- Ensures efficient use of farmers' resources
- Enhances target based and effective cocoa farmer extension
- Supports effective monitoring of impact of specific agronomic practices

Preliminary Feedback / Results

Figure 1: Adjust impact zone plot results



- T5=(0.5) which is the control plot

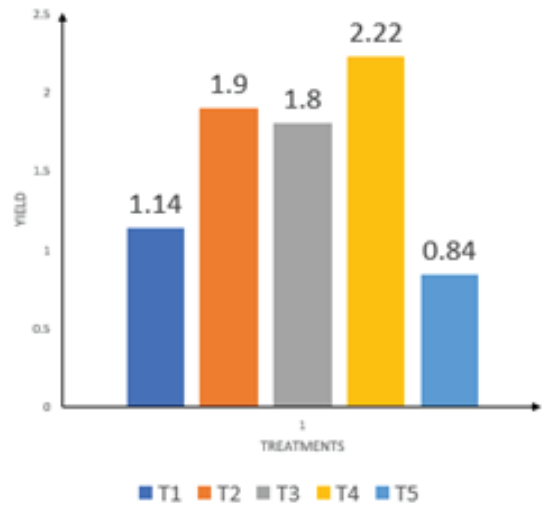


Overview of the performance of all treatments and control plots in the adjust impact zone

Figure 2: Cope impact zone plot results



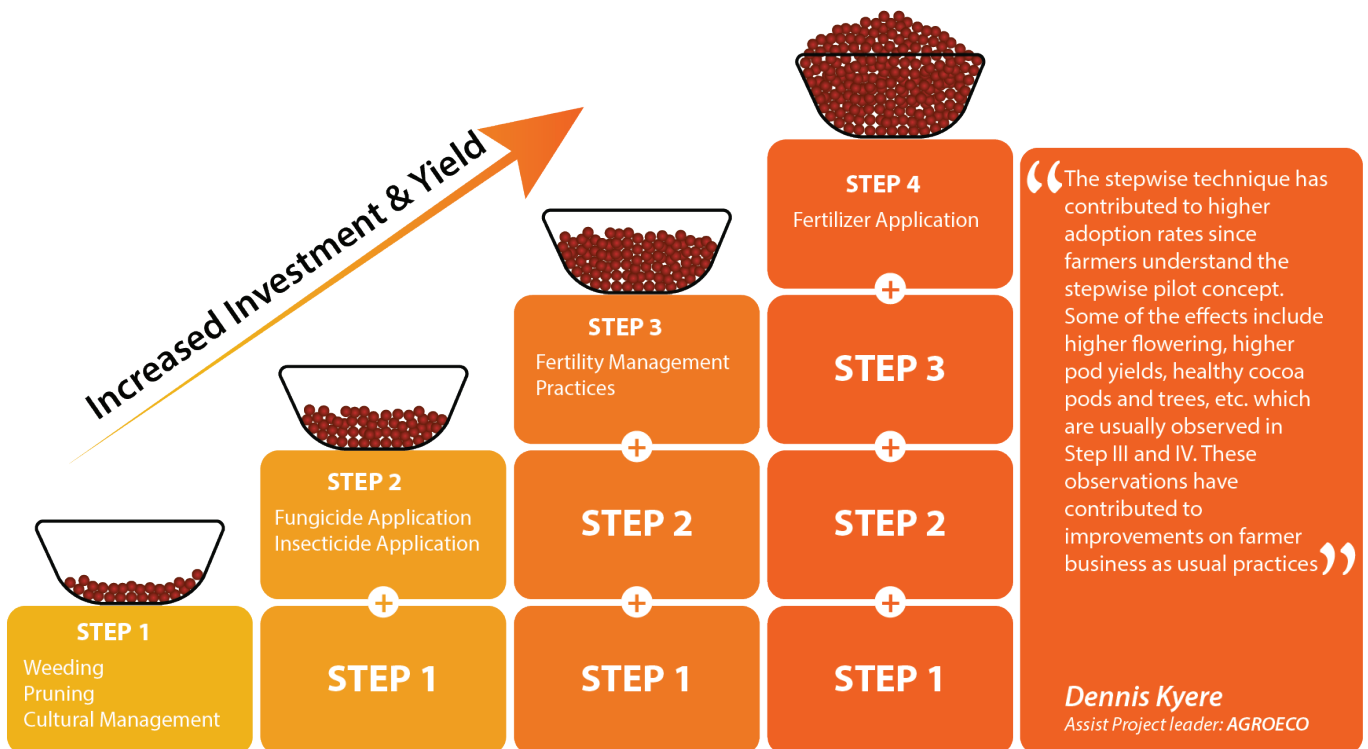
T5= (0.84)



- Overview of the performance of all treatments and control plots on yield in the cope impact zone

COPE IMPACT ZONE

From the figures above, T4 (highest level of stepwise practices) recorded the highest yield in both impact zones and T5 (farmers business as usual) recorded the lowest yield in each impact zone. The total yield on all plots in the various zones showed that with a yield of 1.68, the adjust impact zone recorded higher yields than the cope impact zone (1.58). The total yield of step 4 in both impact zones is 4.36, and the total yield from the farmers business as usual plot in both impact zones is 1.34. This shows that the stepwise practice 4, increases yield about 3.25 times what the average normal farmer will gain from his farm using their known technologies. The pest and disease incidence is lower for T3 and T4 for both Adjust and cope zone hence the high productivity.



Conclusion

Preliminary results from the demonstration plots show a positive impact of the stepwise climate smart cocoa practices. A scale up of CSC is encouraged in more communities across the cocoa growing belt to generate for more evidence to facilitate adoption of the Stepwise Approach.

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