Session Notes

Session Title: **Climate Smart Agriculture in Action**

Day and Time: Tuesday 5/20/14, 3:40pm

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1. Key Learning or Take Home Messages:

1. Climate change is already affecting agricultural production, and several missions with FTF programs are already tacking the problem with various "climate-smart" agricultural technologies and practices that simultaneously (i) increase production and incomes of poor smallholders, (ii) to increase their adaptation/resilience to the changing and less predictable climate, and even (iii) to help reduce net greenhouse gas emissions (so less additional adaptation will be required in the future). A triple-win is possible.

2. Many of these practices have existed for some time, and often made sense without climate change, but they make even more sense now.

3. CSA technologies and practices discussed by representatives of four missions included: fertilizer deep placement, integrated aquaculture/horticulture/agro-forestry, farmer-managed natural regeneration (of fertilizer trees on farms, aka FMNR), rock lines for soil and water conservation, conservation agriculture (no/low till + cover crops + crop rotation – especially including legumes), forest management, and saltwater intrusion management.

4. In addition to the above, mission reps and practitioner-partners in the audience discussed adaptive measures such as: transmission of weather forecasting to farmers via mobile cellphones (SMS), development and deployment of drought-, flood-, and salt-resistant crop varieties, farmer uploading of rainfall data by cellphones, weather-indexed crop (and livestock) insurance, crop diversification, agro-forestry with fertilizer trees or shrubs, and bio-reclamation of degraded lands.

2. Notes from the session: *For each speaker and discussion please capture the main points of what you are hearing, with consideration of information that may be useful in future or otherwise noteworthy.*

Moffatt Ngugi, Moderator

We are seeing increased recognition of the urgency of sustainability and climate issues now. Climate change is a cross-cutting FTF theme.

David Yanggen, Bangladesh and Mali experiences (with PowerPoint)

Different climate contexts:
-Bangladesh: flooding (cyclones, river, flash, drainage), salinity

-Mali: drought, low rainfall, variability

CSA Criteria (David's):
1. Mitigation – reduction in GHG emissions, or sequesters (removes emissions). But atmosphere is a global public good, so no incentive for farmer – need win-win with other criteria.
2. Adaptation – managing climate risk (drought, flooding), changing agronomic conditions (salinity, temperature), etc.
3. Low cost – affordable to poor, small farmers
4. Income-generating
Rank each practice on a scale of 1-3.

Technologies applied in Bangladesh or Mali:

1. Urea (or Fertilizer) Deep Placement (Bangladesh): super granules placed near roots, by hand or machinery prototype. Reduced nitrous oxide emissions by ~30% (mitigation). No adaptation benefit, but reduces the amount of fertilizer needed and therefore the cost of production by 30%, while increasing yields by 15-20%. Staple crop. Criteria Scores: 3+1+3+2 (total = 9)
2. Integrated aquaculture production system (Bangladesh): fish pond + coconut + horticulture (trellises over ponds). Scores: 2 (coconut trees sequester carbon) +3+1+3 (total = 9). Not low cost, but high income generation.
3. Rock Lines for soil & water conservation (Mali): not much mitigation (leaf litter) – 1.5+ Good water conservation/adaptation = 3+ cost = 1.5 (labor intensive)+ Income 1.5 (total =7.5)
4. Farmer-Managed (assisted) Natural Regeneration (Mali): Nari, Baobab, High mitigation (trees) 3 + High adaptation/trees resilient to drought = 3 + Extremely low cost = 2-3 + Income depending on tree crops, increases in crop yields = 2-3 (total = 10-12)

   Clarification Question – Is "Farmer-Assisted" different from "Farmer Managed" Natural Regeneration?
   Dennis Garrity – "Managed" usually refers to regenerating trees from roots in crop fields (as done on 5M hectares in Niger), while "Assisted" usually refers to regenerating forests in more natural systems (e.g. Clean development Mechanism project in Humbo, Ethiopia), so this work in Mali would be Farmer-Managed NR.

Peter Trenchard, Senegal experience (with PowerPoint)
The 10-year Wula Nafaa project was about Natural Resources Management + Agriculture, based on USAID's Nature, Wealth, and Power framework (NWP – USAID 2002, 2013). As President Obama has said, we know how to get this done. NWP (empowering people via natural resource-based enterprises) is based on 30 years of experience managing natural resources. Even the value chain approach is NWP. $41M in revenue generated.

1. Conservation Farming – increased yields 25-135%. Not as labor intensive as I was afraid, due to adaptations. Increased organic matter in soils, degreased soil degradation, reduced impact of irregular rainfall. The private sector preferred this to improved seeds because they saw an immediate 30% increase.

2. Forest Management. Increased income from forest products- new international markets established, charcoal. 1000 people earned $2500/year. Just coppice trees, in rotation, reduced illegal pressure.

3. Water Management. Inverse delta – salinization. Anti-salinization dikes reclaim 1700 ha of dead soils. 12 dikes for distributing irrigation water in two lowlands.

Brian Martalus, Zambia experience (no PowerPoint)

Smallholders in eastern Zambia are 99% rainfall-dependent, with 1 growing season per year. Unpredictability is affecting production more than temperatures – don't know when to plant. British taught mono-cropping and ridge cropping to get out of the flood zone. Labor intensive. But if there's a drought, ridges dry out quicker. So conservation agriculture.

Business model: COMACO (NGO) conservation agriculture (minimum tillage, crop residues, mulching & compost, crop rotation. Premuim price to farmers, then process products under own brand "*It's Wild*." 90,000 farmers so far, scaling to over 100,000 in eastern province (FTF ZOI) – over 67% adoption rates, much higher than in government-promoted conservation agriculture areas. Market-based approach: price premium incentive, also getting 30% higher yields for maize and groundnuts. Consumer loyalty to *It's Wild* because supports local farmers. Also social accountability – farmer groups each have a lead farmer and a COMACO trainer. If a group is not adopting the practices, they don't get premium. Also works through traditional chief leadership to encourage, and gov't extension service helps do monitoring. Good distribution channels to export the products.

Q&A

1. What are the specific farmer practices in COMACO? – minimum till (pot-holing, use every year, moisture and compost accumulate. Or strip-tilling. Leave crop residue to hold moisture and nutrients in same spot – keep cows out. Crop rotation with legumes (soy & groundnut).

2. PV – COMACO is also promoting agroforestry – e.g. a row of Glyricidia every fourth row fixes nitrogen, leaves provide fodder for goats, firewood.

3. Guatemala mission – on water management, our problem is runoff of rain, so we're promoting reservoirs in dry areas. Also water harvesting, by schools. "—cement? – low cost 1/10 normal construction).

4. Peter Trenchard responds – similar to the coastal delta of Bangladesh (and Vietnam), sea rise is devastating to arable land in Senegal due to saltwater intrusion into freshwater wells, soils (whole cities losing water supplies).

5. Farmer Education about climate change? Some of these practices have been around for a long time – is farmers' willingness to adopt now based on new education about climate?

6. David Yanggen: Climate change has been happening in the Sahel for decades, lots of attention, different technologies tried. New information strategy on weather [seasonal]

forecasting to enable planting time adjustments, crop choice – Plus drought and salt-resistant varieties (seeds) is another technology.

7. Jorge Oliveria, USAID West Africa – the weather forecasting system and seed-switching was set up in 1980s by CILLS – with radio broadcasts.

8. Brian Martalus – Zambia also has a drought-resistant seed program on maize.

9. _____World Cocoa Foundation – 2 way SMS messaging in Ghana to farmers on weather predictions & back with questions to extension agents.

10. Jorge Oliveria, USAID West Africa– in each village, measuring rain – send info to Met service, total up, then can make suggestions to villagers for crops.

11. ___ USAID/Mali – complementing Jorge – we're planning to improve the educational component of messaging. Messaging has been going on for a long time, but to scale up, need to improve content.

12. Rob Bertram (BFS/ARP) – The ADVANCE project in northern Ghana – saw a Swedish group doing cell-phone weather prediction delivery to farmers on a 3-5km grid – at a cost of $5/season. Much more specificity than normal. (This is a private company started with oil companies. Now using satellite.

13. Peter Trenchard - The ADVANCE chief-of-party is here – opened up first Farmer Call-in Service. Also Crop Insurance now linked to rainfall

14. Becky Chacko (E3/GCC) – views on extent to which these can be scaled up – by FTF? Can FTF be 100% Climate-conscious? What are the barriers?

15. David Yanggen - have to put the farmer at the center- mitigation is not a direct incentive [yet]. Socioeconomic analysis of low cost techs adoptability for poor farmers- secondary crops/tree crops integration into market. Shea butter is one of the priciple FMNR tree crops. So need to get financial incentives for farmers, by linking them to markets such as shea butter. Get the technology & incentives right for the farmers' circumstances to move to scale.

16. Peter Trenchard – the focus now has to be adaptation. We have the seeds and technologies. Resiliency comes in part from diversification of crops. FTF should be thinking about more than 3 crops/value chains – even non-traditional crops such as shea or fonio that are better adapted to soils and climate – they'll have staying power.

17. Ron Greenberg (BFS/ARP) – a lot of adaptation technologies do have mitigation benefits – not that rare. Conservation agriculture, Africa Rising, Asia Cereals – using resources and fuel more efficiently, all adding to soil organic matter.

18. Brian Martalus – These techniques make sense without climate change, and even more so with it.

19. Kirstin Spainhower (BFS/CSI) – Regarding why wouldn't they adopt – is there enough data on the markets for CSA crops, yield increases, getting another season?

20. Brian – COMACO lead farmers collect data, demonstrate to the ones around them.

21. How translate to scale?

22. Peter Trenchard – Wula Nafaa = conservation farming. Went from 0 to 7000 ha in 3 seasons when he was skeptical at start.

23. Andy Keck (IRG-Engility) – plus another project went way beyond that, with 3 crops – technology adapted to fit larger farms. Grants to ripper maker. Astounding adoption rates. More powerful message than "the rain is going to stop."

24. Brian Martalus – a scaling challenge has been getting consistent extension messages – is it CA or CSA or…

25. Rolf Anderson (E3/GCC) – what are the big regional organizations pushing for CSA? Is that the sweet spot, or is it the private sector?

26. Sarah Durso – conservation agriculture plus "Bioreclamation of degraded lands" techniques in arid eastern Senegal and Niger (**Yajeende** project –link to video in references). ICROSAT technology.

3. Additional notes, resources cited, or important issues raised.

Nature, Wealth and Power:
2013: http://rmportal.net/library/content/nwp-2.0/view
2007-2012: http://rmportal.net/library/content/translinks
2002: http://rmportal.net/library/content/nature-wealth-and-power-emerging-best-practice-for-revitalizing-rural-africa/view

CSA Videos on USAID's RMPortal:

FMNR in Niger: http://rmportal.net/news/news-usaid-nrmd-video-spotlight/a-good-news-story-for-a-deforested-and-degraded-world-farmer-managed-natural-regeneration

FMNR in Burkina Faso: http://rmportal.net/news/news-usaid-nrmd-video-spotlight/burkina-faso-farmers-food-security-climate-change-resilience

Yajeende project – conservation agriculture and bioreclamation of degraded lands in Senegal and Niger http://rmportal.net/news/news-usaid-nrmd-video-spotlight/yaajeende-conservation-agriculture

Pastoralist Voices on Climate Change: http://rmportal.net/news/news-usaid-nrmd-video-spotlight/pastoralist-voices-on-climate-change

The CGIAR Research Program on ***Climate Change, Agriculture, and Food Security*** (**CCAFS**) also has several videos and reports on climate-smart agriculure: http://ccafs.cgiar.org

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