Agriculture Sector Council

Opportunities, Challenges & Lessons Learned from Conservation and Development Programs in the Field

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Participants

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Sponsor

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Kevin Kamp: First, I'd like to thank the organizers and Dr. Kunen for bringing us here today. I think for those of us who have been working a little bit in conservation agriculture are quite passionate about conservation agriculture and some of the results that we're seeing from that. I think what's particularly exciting about it is that the data that we have, and I think the data of others, really shows a strong linkage between conservation agriculture, increases in agriculture productivity, positive impacts on the environment, and ways to address both climate change via adaptation and mitigation, and that leading to general improvements in food security.

I'm going to focus my discussion a bit today on sub-Saharan Africa, although we do have programs in Asia and Latin America, as well, and I'd also like to sort of say thanks to the Howard Buffett Foundation and OFDA, big supporters of a lot of our programs in sub-Saharan Africa, as well as Latin America, and some of our research partners that help us actually tease out the data and information and the results that we're getting from our programs, overall.

I'd like to start with a short definition of what conservation agriculture is. Often, there's a misconception of what we're actually talking about. Just very briefly, it's about zero tillage or minimum tillage agriculture, not really using the plow anymore, keeping a permanent soil cover on or as much cover as we can on 24/7, and rotating crops, and there's a lot of iterations that we do across all three of those. Regardless of the crop – and we're involved in rice, cassava, maize, sorghum, you name it – those three basic principles are going to apply. I find some of the work that we're doing, particularly in West Africa but I think East Africa, as well, particularly exciting.

The right-hand, top picture shows a slash-and-burn system, where farmers are moving from slashing and burning to slashing and planting, and moving towards a more permanent agricultural system, and the farmers that do this, of course, are a little bit concerned the first year, but I think when they start to see the immediate results within a month, I mean the growth differences are extraordinarily higher in the system which they don't burn, and they're just planting through the mulch system. But regardless of the system, all three of these principles apply. The other thing that's often a misconception is that this is about organic agriculture. Often, the farmers that we work with do it organically only because they don't have other access to inputs to put in, but this is not about organic agriculture, and if you look at some of the conservation agriculture done in places like the U.S./Brazil, you find that it's a fairly high input system. So, I think there's a range from A to Z, whether it's a fairly high input system that's based on these three principles, to a rather or at least a low external input system, but maybe a high internal input system.
So, why are we excited about conservation agriculture? I wasn't a believer in it not so many years ago until I started seeing some of the benefits from this, and I would say my first experience was really in Laos, and looking at some of the very steep hillsides that were being planted in maize. Across the board, I think there are some things that we can see from this. Increased water infiltration, so when it rains, we're capturing the rain in the soil. It improves the water conservation. So, once the water is in there, and especially with a mulch cover, you can imagine that the water is retained much longer in the soil. Increased soil fertility. Reduced soil erosion. Decreased cultivation costs. When you no longer have to plow, that makes a considerable reduction in the amounts of costs, particularly in labor, for cultivating, and that's particularly important for sub-Saharan Africa, where most farmers are women and women are severely constrained in terms of their amounts of time they have to commit to agriculture. Lower labor requirements. Some of these have little asterisks on them. We get a little bit of both—sometimes it's more, sometimes it's less—it depends on how things are actually being implemented in the field. And the potential for carbon sequestration greater than traditional agriculture.

I promised myself I would put in at least one graph, and this one is actually not from our work. It's from some work that's from, I think, Brazil. But this is a graph that shows—the top line in blue shows water infiltration rates, basically, in a no-till system, with a cover crop. The green and the red are more traditional plow-based systems with and without a cover crop. The difference is impressive, and I think for most people it's sort of counterintuitive. You think, "Well, if you plow the soil, the rain ought to be able to soak in quite well." The reality is that that's exactly what does not happen, okay? It tends to run off rather than soaking in. Some of these impacts of conservation agriculture are well known, well documented, and yet not so well distributed across the world. Africa is one of the regions where conservation agriculture has the least foothold. The U.S., Brazil, Australia, places like that are taking up conservation agriculture on quite a wide scale.

One of the areas that we are extremely interested in is how conservation agriculture techniques can address climate change. Most of the countries we work with or work in in sub-Saharan Africa are being affected by changes in rainfall, changes in weather patterns, reductions in the rain, both droughts and floods, increases in temperature. In countries like Ghana and Mali, where we're working, and I would say that the same is sort of true from other countries, as well, if we have a bad rainfall year, if farmers have a bad rainfall year, they can generally expect to receive twice as much production if they have implemented a conservation agriculture program, compared to a traditional way of planting
the crop and plowing. Now, that's fairly significant. In a good rainfall year, we might not see as much of a difference, but in a bad year, and we're getting more bad years, there are significant differences.

I think that the pictures I have up here, the one on the far left is from Madagascar, I think we see pictures like that in many of the countries we work with – Ethiopia, Haiti – we are working with systems that not only address climate change, but you can imagine when it rains hard what happens to the hillsides in terms of erosion, and this is something that I really picked up in Laos when I was there, because they farm very steep hillsides, hillsides so steep that you can't plow them across; they back the tractor up the hill because they can't drive it up. You back it up, and then just rake it down to plant, and putting in a conservation agriculture system like this reduces, almost stops soil erosion by getting in a good cover crop and then planting through it.

I think many of you know CARE and WWF have sort of come together to create an alliance, and we're beginning to work on a number of issues that interface between agriculture and environment. And one of the things that we have done together is commission a study and brought in Ecoagriculture Partners and ICRAF to look at both of our efforts in conservation agriculture, and we picked Mozambique and Tanzania. So, I'm looking at some of the data that's come from that, and I actually can give you that document and maybe access it on the website, as well, after we're finished. We had them go out and look at some of the benefits of conservation agriculture, but we also did it with a particular goal in mind: We wanted to make it better. We know that there's problems, there are some problems in adoption rates, et cetera, but one of the things we wanted to look at is how well can it sequester carbon into the system. That's something that we think we really need to do more in agriculture. Adaptation is just not enough. We need agriculture systems that are actually mitigating against climate change, as well.

So, we wanted them to take a look from that point of view, and they did note a couple of things and I think came out with quite some good recommendations, and, as I mentioned before, they noted all the increases in crop yields, increases in flows in watersheds, and some other things. They talked about increased cooperation between genders, and setting up local learning facilities that really helped the uptake of conservation agriculture, but they also had some recommendations to help with climate change adaptation, things about rainwater harvesting, putting in more trees, particularly agroforestry systems, improving seed systems and the input systems. They also looked at climate change mitigation. Their conclusion was that we weren't really doing that much, and I think the recommendations that come from that are quite
important. One is we need to look at it more from a landscape or farmscape scale, okay? We need to increase the amount of biomass being produced within the landscape associated with conservation agriculture techniques within the farm themselves, all of these leading to greater food security with the populations that we work with.

And so I think one of the things that we're taking back from this is we're going to continue working in conservation agriculture, finding ways to make it better, but begin to look at this from more of a landscape scale, incorporating in opportunities to increase biomass in many areas of the landscape, many areas of the farm, where we're not currently working. We need to do more than just focus our efforts on the field, but focus those efforts a bit more broadly. I would just like to end this just by saying, again, we are quite excited about conservation agriculture. There's a growing group of practitioners who see the real linkages between increasing agricultural productivity, mitigating and adapting to climate change, opportunities to make improvements in the environment, and all of this leading to improvements in overall food security. Thank you.

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