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Adopting conservation agriculture through hands-on learning

There is strong evidence to suggest that conservation agriculture practices are being adopted both within and outside of farmer field schools.

Agricultural development efforts across the world seek to improve the sustainable production of a greater quality and quantity of crops and/or animals. The waves of independence that swept across most of Africa from the late 1950s into the '70s carried with them the agriculture watershed known as the Green Revolution, and the large-scale efforts by newly independent governments to build pathways out of poverty through a strong emphasis on commodity crops.

But the revolution had some serious flaws, including the fact that research and extension methods were aimed almost exclusively at men. Women, *the primary producers of foodstuffs for most rural African households*, received virtually no agriculture extension services; nor was there much in the way of research or extension oriented toward the diversity of crops that they produced. Also, modernizing agriculture relied heavily on external farming inputs and provision of knowledge, which created a gap in institutional farming know-how, and worse, disenfranchised farmers who used conventional practices.

A safe learning environment

Through farmer field schools (FFS), the CARE-WWF Alliance is engaging women and men in conservation agriculture to improve food production, protect natural resources and bridge the gender gap that persists decades after the Green Revolution. Conservation agriculture is an approach that focuses on soil conservation and improvement through three principles: minimum tillage; permanent organic soil cover; and crop rotation and/or diversification.

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Since 2010, the Alliance has implemented conservation agriculture interventions in the coastal districts of Angoche, Larde and Moma in southeast Nampula province of Mozambique through FFS, in partnership with the National Association for Rural Extension.

The FFS methodology has been refined over the past 40 years. In a typical FFS, 10 to 30 farmers meet as a group on a fixed schedule in a local field setting with the guidance of a trained facilitator. They design a plot layout to make side-by-side comparisons between local conventional practices and alternative practices. They experiment by measuring plant development, taking samples of pests, doing counts of diseased plants, yields, soil characteristics, etc.

It's up to the farmers to determine what works best through their trials and comparative observations. The scientific approach of experimenting with conservation agriculture and conventional practices allows farmers to both formally and viscerally learn from and refine alternative methods, increasing ownership of conservation practices by farmers. On a deeper level, it builds the confidence of both the group and the individual farmers to conduct their own experiments.

Methodology

In August – September, 2015, a research team from CARE-WWF Alliance, AENA and the Ministry of Agriculture conducted a survey using wealth ranking and CARE's Participatory Performance Tracker (a management and outcome monitoring tool) to understand adoption of recommended sustainable agriculture practices. Focus group discussions were held with 520 farmers (FFS graduates, incoming FFS members, and non-members) in 36 communities in Angoche, Larde and Moma districts, followed by field visits with 465 of the farmers.

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Farmers were classified according to their adoption of the three basic principles of conservation agriculture:

A. **Minimum tillage.**
B. **Permanent soil cover** – no burning, mulching, use of cover crops, and intercropping.
C. **Crop diversification and/or crop rotation** – use of food legumes, cover crops, or intercropping.

A farmer who practices minimum tillage, intercropping and no burning, for instance, is a full adopter of conservation agriculture, as he or she is fulfilling the basic principles (ABC). A farmer practicing no burning only would be ranked as a partial adopter (B).

Findings

There is strong evidence to suggest that **conservation agriculture practices are being adopted both within and outside of the farmer field schools**. Evidence also suggests that, across the three districts, more experienced farmers are more likely to graduate toward adopting practices supporting all three principles due to longer exposure to the FFS intervention than new- and non-members, particularly as these farmers have seen success on their own farms. Conversely, *former* member farmers may abandon ("un-adopt") one or more practices without continual participation from the FFS intervention. The vast majority of single-technology adopters practiced crop diversification/rotation techniques (C) or a combination of minimum tillage, permanent soil cover and/or crop diversification (AC, BC or ABC).

Moving forward

Human decision-making is complex. Adoption of any practice takes place within an intricate and shifting web of relationships between people, their natural environment, their climate (which is changing), their socio-cultural norms and barriers, external political and economic forces, their history, and their own aspirations. For interventions requiring a farmer's participation and time, consideration of these complexities must be inherent in programmatic design. Many conservation agriculture projects across the region have been slow to expand because the focus has been on getting farmers in diverse agro-ecological configurations to adopt an often narrow scope of "proven" practices.

This research suggests that **CARE-WWF Alliance work promoting conservation agriculture through farmer field schools has effectively facilitated adaptation of practices to diverse local agro-ecological contexts.** Among former FFS members, about 32 percent of women have adopted practices that support all three conservation agriculture principles, while 28 percent of men have. That suggests that uptake of practices may be strongly influenced due to long-term exposure to FFS activities, and that adoption seems to be relatively gender-balanced. The Alliance has achieved these adoption rates without engaging in one-off "handouts" of non-replicable inputs (e.g., fertilizer, hybrid seed, etc.) that are often parts of other agricultural development interventions and tend to grievously distort adoption measurements.

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