## ACKNOWLEDGMENTS

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ABOUT GROW

Greater Rural Opportunities for Women (GROW) is made possible with the generous support of Global Affairs Canada and implemented by Mennonite Economic Development Associates (MEDA) with a total budget of CAD 20 million. With support from five Key Facilitating Partners (KFPs) – PRONET North, TUDRIDEP, PRUDA, CARD and CAPECS – the GROW project operates in 8 districts in the Upper West Region, empowering women farmers to create opportunities through cultivation, utilization and sale of soybeans, accessing extension services and markets to increase their household’s economic well-being.

GROW’s goal is to improve food security for 20,000 women farmers and their families in the Upper West Region of Ghana. Project activities include helping women improve the availability, access to and utilization of appropriate and nutritious food by strengthening production, processing and linkages to markets. To achieve this, women Lead Farmers are identified to help train others in their

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1 The GROW budget of CAD 20 million is made up of CAD 18 million from the Government of Canada and CAD 2 million from MEDA. The project began in 2012 and closes at the end of 2018.

2 MEDA’s KFPs are: CAPECS (Capacity Enhancement and Community Support), TUDRIDEP (Tumu Deanery Rural Integrated Development Program), CARD (Community Aid for Rural Development), ProNet (Professional Network North) and PRUDA (Partnerships for Rural Development Action).
communities on good agronomic practices to maximize crop yields, with a special focus on soybean cultivation. Entrepreneurial women farmers are trained and supported to become Sales Agents, buying and aggregating soy from other women and selling it to processors and markets. Women are linked to appropriate financial services, including Village Savings and Loan Association (VSLA) groups, financial institutions and insurance providers. Advocating for women’s increased agency, particularly as it relates to decision-making within the household and community, is another key component of the GROW project.

### 2017 Harvest Season

During the 2017 harvest season, GROW supported 21,500 farmers to harvest 13,643 hectares of soybean, producing a yield of 14,632 metric tons. GROW farmers sold 11,169 tons of this soya at an average price of GHS 200 per 100kg, earning a total of over GHS 22.3 million, or approximately CAD 6.7 million (2017 harvest figures).³

**The GROW Learning Series**

Over seven years of implementation, the GROW project has learned a great deal about women’s economic empowerment and food security in northern Ghana. The project team is happy to share our lessons learned in the GROW Learning Series, a set of documents we are releasing in 2018. Topics include women’s economic empowerment, nutrition and food security, financial inclusion, women and technology and conservation agriculture.

³ In 2017, the average exchange rate was 1 GHS (Ghanaian cedi) to 0.30 CAD (Canadian dollars).
What is Conservation Agriculture?

The Food and Agriculture Organization of the United Nations describes Conservation Agriculture (CA) as “an approach to managing agro-ecosystems for improved and sustained productivity, increased profits and food security while preserving and enhancing the resource base and the environment.” In other words, “CA is a concept trying to reconcile ecology, economy, and performance.”

CA is characterized by the three principles listed below. CA works optimally if the principles are applied simultaneously in an integrated way.

- Minimal mechanical soil disturbance
- Permanent organic soil cover (Crop residue, cover crops or mulch)
- Diversification of crop species (Crop rotation and intercropping)

These three principles of conservation agriculture combined allow for environmentally sustainable and profitable agriculture and for soil organic matter to “build up and increase the soil’s resilience to climate change [...] build up a cover of protective vegetation or litter that foster the biological-tillage activity of macro-fauna (such as earthworms) that burrow and make channels for air and water.” All three principles need to be applied in order to truly practice CA, but their implementation is adapted to the local context, landscape, soil quality and needs.
Successes and Uptake of Conservation Agriculture in GROW

The training methodology implemented by GROW proved very effective for knowledge dissemination in remote, disparate communities. GROW targeted women soybean farmers. These smallholder farmers practice rainfed agriculture, as they rely on rainfall to water their crops and have limited access to irrigation systems. Over the life of the project, more than 21,406 GROW clients were trained in conservation agriculture practices, including minimal or no-till farming, non-burning of crop residues, slash and mulch, crop rotation, as well as compost preparation.

MEDA’s KFPs received trainings from Ghana’s Ministry of Food and Agriculture and the Environmental Protection Agency, agencies of the Ghanaian government, and passed this training on to Women Lead Farmers. All clients of the GROW project were part of a VSLA, savings and loan groups composed of 15 to 30 women. The KFP-trained Lead Farmers trained the women farmers in their groups, either by organizing specific meetings or sharing their newly acquired knowledge during regular VSLA meetings.

In the baseline data research that was completed in 2013, only 4.57% of the farmers interviewed reported implementing conservation agriculture practices. The end of project results for the uptake of CA practices are graphed below. The increased use of CA practices indicates that measures to enhance soil fertility were increasing among GROW clients.

Figure 2: Uptake of Conservation Agriculture Practices in the GROW project
Challenges and Tradeoffs of Conservation Agriculture

One of the major problems facing smallholder farmers in crop production in Ghana’s Upper West Region (UWR) is the continuous decline in soil fertility. Traditionally, farmers replenished lost soil fertility by practicing shifting cultivation and land rotation to allow a piece of land that was cropped for a number of years to lie fallow in order to restore its fertility. These were common farming practices when the population was low. However, with increased population pressure, rising demand for agricultural products and reduced space for agricultural expansion, farmers have shortened or abandoned long fallow periods in favour of continuous cropping on the same piece of land. Continuous cultivation of land leads to the over-extraction of soil nutrients and deterioration of the resource base of the soil. Women farmers are particularly affected by soil infertility because they are sometimes unable to afford fertilizers and have inadequate knowledge of alternative and affordable means of maintaining soil fertility.

Using minimum tillage, which reduces ploughing of the soil, leaves crop residue as surface coverage and causes less soil disturbance. It reduces soil erosion and preserves organic matter. Further, climate change has led to unpredictable rainfall and increased the risk of drought in UWR, and it has been proven that surface soil from no-till lands retains more water than ploughed lands, and zero tillage has been shown to reduce nitrate leaching. For this reason, GROW promoted minimum tillage among clients. However, while leaving organic matter in the soil increased the nutrient content, it also increased the growth of weeds. Weeds compete with crops for water, light, soil nutrients, and space. In conventional agriculture, weeds are usually controlled mechanically (with tractors, for example), and weeds are usually killed because they are buried.

In order to help control the weeds, GROW also promoted herbicides, namely glyphosate-based agrochemicals, as part of the CA practices. MEDA also provided linkages to input suppliers for the herbicides, mostly glyphosate. Since there are some health and environmental risks associated with glyphosate, MEDA also ensured that all farmers had access to the necessary personal protective equipment required to handle and spread the herbicides safely. As a result of the training on minimum tillage, herbicide use, and access to PPEs, women farmers expressed that they were less dependent on their husbands for tractor rentals, and had the knowledge and materials required to farm their land independently.

In addition, because the soil composition in the UWR is poor, building the organic matter to improve soil fertility is difficult and takes a long time. A lot of organic matter is needed to rebuild the soil quality and reserving material for permanent soil cover is arduous, as grazing livestock animals often eat the soil cover and plant residues, stopping the decomposition and nutrient cycling.
Looking Forward:
Approaches to Improving Agriculture in UWR

The project learnings indicate that the implementation of all three CA practices in an integrated way was minimal. However, more than 80% of women began implementing at least one CA practice. Slash and burn among women farmers in the UWR has been minimized almost entirely as a result of GROW, and three quarters of women farmers now do crop rotation on their fields.

Other approaches that MEDA has identified as having potential to increase crop yield and quality in UWR but were not chosen for the GROW project, include:

- Rainwater harvest (barrels, catchment systems, irrigation) to address the unpredictable rainfall and protect against drought.
- Tractor-pulled roll-crimpers that crimps and crushes the stems of the crop to create a rich mulch.
- At harvest time, native legume cover crops could be planted to help remove competition weeds when planting season arrives, and to add nutrients to the soil.