



Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program

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Trip Report: Mozambique

13 February – 1 March 2012

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- Purpose:**
- (1) Visit with CIMMYT and IIAM partners and visit on-farm demonstration sites in Manica and Sofala Provinces,
 - (2) Visit local agri-dealers, input suppliers, grain traders and identify potential private sector partners for up-scaling of conservation agriculture in Sofala and Manica provinces, and
 - (3) Attend IIAM / USAID conservation agriculture “up-scaling” workshop in Maputo

Sites Visited: Biera, Maputo, Chimoio, Gorongosa, Sussundenga, Nhamatiquite, Nhamatanda, Barwe, and Gondola

Description of Activities

Conservation agriculture (CA) demonstration sites managed by CIMMYT, IIAM and local Extension officers in Manica and Sofala provinces were visited. These sites are demonstrating a number of CA technologies (direct seeding, improved varieties, herbicides, fertilizer, residue cover and rotations). Additional visits were made to local agricultural dealers to assess potential for collaboration on CA up-scaling. I also attended a workshop on up-scaling conservation agriculture in Mozambique hosted by IIAM and USAID in Maputo.

1. CIMMYT / IIAM / SANREM Conservation Agriculture (CA) Demonstrations, Manica and Sofala Provinces, Feb 20th to 24th, 2012

CIMMYT has a number of on-farm CA demonstrations at sites across central Mozambique. These demonstration sites have been going on for up to five years depending on the source of funding donor. In most cases the demonstrations are comparing farmer practice (tillage, local maize varieties, hand weeding, and no fertilizer) with a combination of improved conservation agriculture technologies (direct seeding by using potholes, jab-planter or ‘matracca’, dibble stick, or animal traction no-till drills; improved CIMMYT selected maize varieties; crop rotations or intercropping with cowpeas or pigeonpea as legumes; use of fertilizer (200kg per

hectare of 12: 24: 12 as a starter fertilizer, followed by 100 kg of urea), herbicides and residue covers

Over the course of the week in Mozambique we visited sites north, south, east and west around Chimoio. Sites were visited in Gorongoza (SIMLESA and IFAD funded demos), Sussundenga, Nhamatiquite, Nhamatanda, Barwe and Gondola. At each location there were 5 to 6 demonstrations per community under different levels of management and supervision. This season rainfall in Sussundenga and Barwe has been much better than in Nhamatanda in the east, so the quality of the demonstrations and cover crops were much better closer to Chimoio.

Many of the demonstrations that were visited appeared to be well managed and have been received well by the collaborating farmers, as well as neighboring farmers. Farmers involved in the demonstrations have a good understanding of the importance of early planting, timely weed control, and the benefits of using improved seed and fertilizer and crop rotations. Few if any farmers appear to be adopting CA on their own fields, due to the unavailability of inputs and the lack of markets for their surpluses. A major obstacle in the up-scaling of adoption of conservation agriculture is the unavailability of inputs (fertilizers, herbicides, insecticides and improved seed) and seeding equipment (jab planters, or animal traction direct seeders) to small-holder farmers. Where inputs are available (in Chimoio town) they are very expensive and without access to small-loans or other credit facilities farmers are unable to purchase them. An additional problem is the lack of markets for any surplus crops that are grown (for example, cowpeas are grown as part of the rotations but are not preferred food. Aphid control using a commercial pesticide is also essential).

Termite activity at the Sussundenga research station continues to be an issue. It has been impossible to maintain a residue cover for more than a couple of months on most of the long-term CA research plots at the station even where up to 10 tons of residue per hectare was applied.

2. Visit local agri-dealers, input suppliers, grain traders and identify potential private sector partners for up-scaling of conservation agriculture in Sofala and Manica provinces

For successful up-scaling and widescale adoption of CA in Mozambique farmers will need to have improved access to inputs, credit and markets for their crops. At the current time, the private sector would appear to be best suited to meet the needs of farmers in terms of supplying credit, inputs and markets.

Visits were made to agri-dealers, input suppliers, grain traders and potential private sector partners for up-scaling of conservation agriculture in Sofala and Manica provinces. The following enterprises were visited Clean Star Mozambique (Beira and Dondo), Mozambique Fertilizer (Beira and Chimoio), Agro-focus (Beira), Empresa de Comercialização Agrícola or “ECA” (Chimoio) and DECA a grain marketing company (Chimoio). There is great potential for collaboration on CA with each of these organizations.

Currently fertilizer is largely unavailable to small-holder farmers in Mozambique. Where it is available it is very expensive. For example, Agro Focus in Beira was selling a 50kg of urea and

12.24.12 for about US\$80 (or about \$1,600 per ton!) The Mozambique Fertilizer Company at Beira are importing a lot of nitrogen, potash and phosphates from South Africa and blending them at their facility outside of Chimoio. Currently their customers are the tobacco and sugar cane industries. Fertilizers at the Mozambique Fertilizer Company in Chimoio were about half that quoted in Beira. The following nitrogen fertilizers were available urea, ammonium sulphate and lime ammonium nitrate for 1000, 900 and 750 MT per 50 kg bag. Sulfate and muriate of potash was also available (at 1350 and 1100 MT per bag) and single super phosphate (800 MT per bag). (34 Metical (MT) = \$1 US).

In Chimoio, I visited with Grant Taylor and Moses Muchayaya of Empresa de Comercialização Agrícola Ltd (“ECA”). ECA currently is working with over 800 small-holders around Catandica and hopes to expand to 2,000 next year. ECA aims to introduce sustainable farming practices and access to markets (initially focusing on maize and higher value crops such as sesame, sorghum, soya, cow peas, and sugar beans). ECA works with groups of small-holder farmers giving them extension advice, agricultural inputs (fertilizer, improved seed and insecticides) and access to markets. By directly marketing their commodities ECA can offer crop prices which are higher than those offered by local traders. ECA expressed a keen interest in working on conservation agriculture. ECA is working with a local bank to provide group loans to farmers to enable them to pay for their inputs.

DECA is a grain marketing company based in Chimoio. Last year they purchased 34,000 tons of maize from small-holders from a large part of the region. Unlike ECA they do not supply farmers with extension advice or inputs.

Clean Star Mozambique is a startup company with offices in New York, Beira and Maputo with support from many international investors, including the Danish enzyme group Novozymes. Clean Star is setting up a small ethanol plant at Dondo, near Beira. The company will buy cassava from local farmers and use the cassava flour as the feed stock to produce ethanol (for cook stoves). Clean Star currently works with several hundred small-holder farmers to produce cassava and other agricultural commodities using conservation agriculture techniques that the University of Tennessee is assisting them with. Some of the funding for Clean Star comes from carbon credit markets. Clean Star expressed an interest in measuring carbon differences using the “Bowen’s Ratio” instrument currently in use in Lesotho. During my visit a replicated NPK fertilizer experiment was designed that will be implemented and managed by GinaLuca Luongo at the Dondo plant.

3. Up-scaling Conservation Agriculture in Mozambique, Workshop Maputo, Mozambique 28 February, 2012

This symposium was hosted by Mozambique’s Agricultural Research Institute (Instituto de Investigação Agrária de Moçambique or IIAM) and USAID,

The workshop objectives were to share and document information on the state of conservation agriculture in Mozambique and develop a strategy for up-scaling and supporting adoption of conservation agriculture in the country. The workshop brought together about 50 participants from across the public and private sectors in Mozambique including IIAM, several of the CG

centres (CIMMYT, CIAT, ILRI) and several NGOs (IRD and CLUSA). There was one representative from Michigan State University.

The workshop was opened by Dr. Maposse, the new IIAM Director. After several talks that summarized the state of CA in Mozambique participants broke into several workgroups to identify: current knowledge gaps and research priorities; discuss existing CA technologies and their dissemination; and investments and policies needed to promote CA in Mozambique. A summary of the workgroup conclusions follows:

Current knowledge gaps and research priorities

1. Need to conduct meta-analysis of existing data from different agro-ecological zones
2. Need to integrate livestock into systems
3. Learn more about reasons for non-adoption of CA
4. Need research on C sequestration rates under CA
5. Need to translate English CA literature to Portuguese
6. Develop CA curriculum for schools

Discuss existing CA technologies and their dissemination

1. A number of different planting techniques, rotations and intercropping systems have been demonstrated in the country
2. There is a low number of extension workers and a lack of resources
3. Need a regional co-ordinating “platform” for the Beira corridor
4. Need better linkages between NGOs, researchers and farmers
5. Need to form farmer co-ops
6. Need to create incentives for CA farmers

Investments and policies needed to promote CA in Mozambique

1. Scaling-up must mean increasing the number of farmers using CA
2. Need to give farmers a package of options not just one “package”
3. CA curriculum is needed in the school
4. Land tenure and access to inputs are issues that need to be addressed
5. Incentives are needed for farmers / traders / NGOs
6. Need to link farmers to buyers and the banking sector
7. Remove tariffs on inputs and taxes on items such as steel to stimulate use of inputs
8. Restrict and enforce the ban on burning of crop residues
9. Need to build the capacity of Extension and researchers
10. CA needs a co-ordinating, mini-platform with IIAM, donors, private sector representatives

Suggestions and Recommendations

1. Follow-up with contacts made at ECA and Mozambique Fertilizer in Chimoio
2. Develop strategies to integrate project with other private sector partners to enable farmers to access inputs and credit and have market for their commodities
3. Broaden scope of CA systems to include cassava in crop rotation

List of Contacts Made:

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Appendix I:

Trip Log for South Africa and Mozambique Trip, February 2012

Tuesday 14th February. Arrive Johannesburg on flight from Atlanta. Overnight in Johannesburg

Wednesday 15th February. Fly to Beira, Mozambique. Meeting with Clean Star Mozambique

Thursday 16th February. Visit to Clean Star operations at Dondo. Visit to cassava production and variety evaluation trials in Sevane.

Friday 17th February. Visit to Mozambique Fertilizer at Beira port and agri-dealer in Beira. Meeting with local grain processors to learn about grain marketing value chains

Saturday 18th February. Filming with European Parliament documentary team at Dondo on cassava production, soil fertility, and conservation agriculture

Sunday 19th February. Weekend in Beira

Monday 20th February. Travel to Chimoio. Meeting with CIMMYT team and Paula Pimental, USAID Maputo

Tuesday 21st February. Visit to CIMMYT / IIAM / SANREM conservation agriculture demonstration sites in Gondola and Nhamatanda districts. (Lamego and Cafumbe villages)

Wednesday 22nd February. Visit to CIMMYT / IIAM / SANREM conservation agriculture demonstration sites in Ssusendenga district. Visit to IIAM Research Station at Ssusendenga. Visit to Mozambique Fertilizer blending plant, Chimoio

Thursday 23rd February. Visit to CIMMYT / IIAM / SANREM conservation agriculture demonstration sites in Catandica district.

Friday 24th February. Meeting with ECA (Empresa de Comercialização Agrícola Ltd “ECA” a market-oriented extension program) in Chimoio
http://www.agdevco.com/userfiles/file/Investment_Pack_Final.pdf

Visit to DECA (grain marketing company), Chimoio.
<http://www.agriterra-ltd.com/operation-deca.aspx>

Return to Beira

Saturday 25th February. Day in Savane tree-planting with team from Fruit Tree Planting Foundation <http://www.ftpf.org/>

Sunday 26th February. Day in Beira

Monday 27th February. Travel to Maputo by air.

Tuesday 28th February. Attend USAID / IIAM Up-scaling of Conservation Agriculture at IIAM headquarters, Maputo.

Wednesday 29th February. Travel to Johannesburg. Evening flight to Atlanta

Thursday 1st March. Arrive back in Knoxville