



Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program

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Trip Report: Lesotho 17 November – 1 December 2010

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Purpose: To assess the initial implementation of the Developing Sustainable Conservation Agriculture Production Systems (CAPS) for Smallholder Farmers in Southern Africa (LTRA-9); observe the baseline data collection survey implementation; and assess the application of the Technology Networks survey modules.

Sites Visited: Growing Nations (NGO) in Maphutseng; the National University of Lesotho (NUL) in Roma; survey villages in Butha Buthe; US Embassy in Maseru; and the USAID Regional Mission in Pretoria, South Africa.

Description of Activities

Conservation Agriculture Production Systems (CAPS) are being pursued vigorously in Lesotho. Several NGOs, FAO, and the Ministry of Agriculture have all been promoting it. However, successes in “adoption” have been countered with dis-adoptions. It is not enough to introduce this complex technological system and move on. The proper implementation of CAPS components needs to be mastered by farmers and the specific techniques adapted to local conditions and farmer resource levels. Consequently, the SANREM research and adaptation project led by the University of Tennessee (UT) is right where it needs to be researching and testing agronomic practices that will ensure uptake by the wide range of Basotho farmers interested in higher productivity and control over soil erosion. UT is collaborating with strong partners in the National University of Lesotho (NUL) and the NGO, Growing Nations. These partners provide on-going technical information and support for farmers and extension agents interested in CAPS.

The project is developing appropriate techniques and systems for regions in both northern and southern Lesotho, as well as adapting systems to address the challenges of smallholders: who can't afford animal traction (through *likoti*, pothole seeding); who farm more extensively with animal traction; and those who use tractors. Current research focuses on plant densities, optimal fertilizer recommendations, and cover crops to control weeds. Adapted implements for animal traction and motorized tractors will be explored in the coming year. In addition, research is

beginning on the monitoring of atmospheric carbon to facilitate determination of carbon sequestration.

Discussions were held with research team members, as well as the baseline survey interviewers, farm men and women, extension agents, a private sector entrepreneur, the US Embassy Political and Economics Officer, and the USAID Senior Regional Agricultural Program Manager. There were several highlights during the visit. One in particular included viewing one of the two functioning tractor-drawn no-till seeders (Vence Tudo-Brazilian) in the country working in a farmer's field. This equipment is owned by the Ministry of Agriculture and rented out to farmers and farmer associations. I also visited the National University of Lesotho whose faculty and students were on strike precluding my holding a seminar and making a presentation on the SANREM CRSP. A visit to the market in Butha Buthe demonstrated the formalized nature of the commercial sector in Lesotho. There are no informal weekly markets.

Perhaps the most interesting and valuable opportunity was to observe the baseline data collection survey in Butha Buthe. This was a well-organized effort and afforded me the chance to observe interviews with 10 farm households. Each evening the interview team debriefed and shared what they had learned during the day. These occasions not only assured quality data collection practices but enhanced the team spirit and morale. My only concern was the rapidity with which some of the interviews were being conducted. I also learned important lessons for the technology networks module.

The Basotho do not appear practiced in the response to attitudinal questions and tend to simply agree with statements that others would consider contradictory without much reflection or differentiation. We will need to carefully analyze these data to determine the extent to which there is a meaningful pattern of responses – market oriented questions did seem to elicit alternative responses. Further, network linkages appear to quickly link across the border to South Africa where many have or have had employment. Identifying network influence on agricultural production decisions may require more probing than had been initially expected. Although it appeared from these early interviews (higher up the mountain sides) that there were few network partners involved in the production process, there may be another layer of linkages that influence a farm household's approach to farming that we missed.

The students working at the Growing Nations research and demonstration farm, and the recent NUL graduates hired as interviewers for the baseline survey are an excellent pool of recruits for graduate studies on CAPS at the University of Tennessee.

Suggestions and Recommendations

One discussion we had concerned the lack of a Basotho social scientist on the team. The original social scientist opted out at the last minute and the team has been searching for an appropriate replacement. A sociologist was found in the extension service of the Ministry of Agriculture who would be an excellent partner (for both substantial and institutional reasons). To date, however, an institutional arrangement has eluded the team. Recruiting a social scientist is of particular importance because of the original proposal's emphasis on social capital in the development and implementation of CAPS. If there is any point at which the baseline survey is weak it is in following up on this dynamic aspect. Further, there is a need to investigate some of

the reported successes and the reasons for them. In particular, the uptake of *likoti* by a group of older women who were introduced to it, not through training, but through being hired to weed a CAPS field.

Given the importance of CAPS for enhancing soil water retention capacity as well as reducing erosion, more efforts may be needed to reinforcing this component as part of an overall climate change mitigation strategy.

List of Contacts Made:

Name	Title/Organization	Contact Info (address, phone, email)
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Appendix: Field Notes

Bill Herbert, Manager, Hardware Store Mohale's Hoek

Mr. Herbert was quite interested in the success of the SANREM research project at Maphutseng. He saw it as an opportunity to build and better adapt his store's merchandise for the local market. He was particularly interested in delivering animal traction implements for conservation agriculture. Indeed, he had already sold hundreds of one-ox drawn ripper attachments which could be converted for a standard animal traction plow for only 150 Rand. A new one would cost about 900 Rand. He was able to supply a complete conservation tillage planter for 5,849 Rand (compared with a traditional planter for 4,923). He also supplies a conversion kit for 1,428 Rand. He put me in contact with his wholesaler in Johannesburg, Oscar Guizzardi, and mentioned that there was an Animal Traction Unit at the University of Fort Head, Eastern Cape Coast. He was interested in learning more about more appropriate fertilizer mixes and looked forward to the research results in this regard. He has already made smaller sacks of fertilizer for local farmers from the importation of the base elements. It's cheaper for both him and the farmers, a good deal all around.

Matetuma Lekhetho, Farm Woman, Majakeneng

Ms. Lekhetho has been farming her own fields since 1997. She has four fields, one close by the farm house and the other three more distant. She just started Conservation Agriculture (CA) last year after having been introduced to it through one of the SANREM supported trainings led by Growing Nations. She thinks that CA improves her soil's fertility, but most important to her appears to be that she doesn't have to hire a cattle team and feed the shepherds to plow her fields anymore. Production appears to have doubled on her CA field last year. She began CA on one field and this year will introduce it to a part of another field since her husband is sick and she has to do all the hoeing on her own.

Butha Buthe Extension Office

Ms Hawkins, the District Agricultural Officer told us about their operations. The district office has about 140 employees, seven Resource Centers (serving livestock, crops, horticulture, irrigation, nutrition, and home economics), and 35 subcenters manned by multidisciplinary experts. Subject matter specialists are based at the central district office. They conduct varietal demonstrations annually, as well as rent out tractors to farmers and manage the delivery of government subsidized fertilizer. These latter two activities are in competition with some private sector tractors (second hand ones from South Africa) and local merchants. They are also supporting the CA outreach efforts of the ministry.

The major cropping system is beans intercropped with maize (using mainly local varieties). Wheat production is decreasing, perhaps because the ministry's combines have fallen into disrepair. Sorghum seems to be increasing in area planted.

For the last two or three years, the ministry has been supplying subsidized seed and fertilizers. Routine deliveries in season were being made from the warehouse in Maseru to the District. It was noted that the cost of transport was added to the price at delivery to the substation.

Fertilizer	Price (in Rand at Buta Buthe)
6-2-1 – 31%	110
3-2-1 – 25%	110
2-3-2 – 22%	115
LAN (28% N, lime)	120-130
Urea (48% N)	140

They supplied hybrid maize. The recommended variety (they weren't too sure on this one) was Pannar CG141 in 10-kilo bags for about 200 Rand. Beans were also a Pannar variety in 25-kilo bags for 260 Rand. They say that farmers are using hybrids in the low lands. Avalanche is the pesticide supplied for stock borer and pollen beetle. Storage of grain is a major problem and some fumigation is done. Local traders are the sole source of farm implements.

Selomo Resource Center

This resource center serves some 39,000 farm households (the majority headed by women farmers). The center is also staff mainly by women. The primary issues they deal with are: (1) the subsidies¹ for fertilizer and seeds; (2) requests for training; and (3) providing a market (through the Ministry of Trade, Marketing and Cooperatives) for farm output.

There are two government supported market outlets: Lesotho Farm Mills (buys low from the farmers); and Lesotho Highlands Market Project (has trucks and a better price).

Training focuses on pest management/crop protection; crop husbandry from production through storage. Five subcenters organize training events for their areas. Technical staff are called upon to go there and conduct training. They have found that their field demonstrations have not been particularly successful, so they prefer to use farmer fields. The reason for non-success on extension demonstrations was largely because they weren't convincing the farmers that they could do it – since extension had access to special resources that farmers didn't have.

Farmers in the area are predominantly over 40 years of age. Men and women grow the same crops. The extension agents categorized farmers into three groups: prominent (ask sophisticated questions – ~5%); mediocre (subsistence without questions – ~65%); and lower ones (needing donations, plant but don't weed - ~30%).

The extension service is only involved in the delivery of seed and fertilizer if there is a subsidy (usually about 30% off of market price). The most popular fertilizer is the 6-2-1 – 31%. They recommend 2 bags per acre for maize, but they prefer to base recommendations on a soil test. They can get the results in about a month from the research service.

¹ Donations are distinguished from subsidies in that donated inputs are given gratis as in some projects. The government requires some payment which is below market prices (verified by our tour of the market).

They have been promoting Conservation Agriculture and now have 4 groups. The latest had its first training in August at the village of Marakabe. There are three successfully organized associations that are continuing to conduct CA. Both prominent and mediocre farmers are among the participants, with a majority (55%) being women. The first group from Khotsokoaneng was established with an FAO donation of inputs. The extension agent is hopeful they will keep going as they paid for the planter this year. The other two groups only had the usual government subsidy for their inputs of seed and fertilizer. In order to resolve weeding problems, the extension agents drove to Bethlehem across the border in South Africa to purchase herbicides (RoundUp) for these farmers.

CA Associations Organized by the Selomo Resource Center

Village	Acres	Total Farmers	Women Farmers
1. Khotsokoaneng	49.8	19	9
2. Qulo	43.0	16	13
3. Maloseng	24.5	12	4
total	117.3	47	26

The extension agents told us that they were quite satisfied with the results so far and intend to expand CA, but to do so they will need more trained extension workers. They sent two farmers from their area to see the demonstration sites at Growing Nations in Maphutseng. They have learned some lessons so far. One is that it is important to use RoundUp and better target it. They didn't have money for a tractor and boom sprayers and ended up having to use a backpack sprayer and killed the beans. Also, they have learned that working in associations is useful because of the benefits in terms of the consolidation of labor and the solidarity generated to ensure that livestock stay out of the CA fields. The three associations are using the same Brazilian planter owned by the Extension Service. [Increasing numbers of CA farmers will require additional equipment!]

They told us that the associations were beginning to formalize their status. Members in each group are currently paying dues to a kitty to pay for the planter and other inputs collectively. They also are collecting to pay a registration fee to the Cooperatives Ministry to formally register their association. The extension leader told us that these groups had solidarity because they were made up of members who also were members of other community groupings like the funeral societies.