

Climate Smart Agriculture

In the Lower Olifants River Catchment

10/05/2018



USAID: RESILIENCE IN THE LIMPOPO BASIN PROGRAM (RESILIM) - OLIFANTS





Climate change adaptation, Limpopo

1 Description of the programme

RESILIM-O is large multi-faceted, multi-stakeholder, cross-boundary programme to reduce vulnerability to climate change through building improved transboundary water and biodiversity governance and management of the Olifants Basin through the adoption of science-based strategies that enhance the resilience of its people and ecosystems through systemic and social learning approaches. The programme has been running for four years and is being implemented by AWARD (The Association for Water and Rural Development) with funding from USAID.

The [Agricultural Support Initiative \(AgriSI\)](#) was initiated as a sub-grant process within the larger programme towards the end of 2016. This initiative works specifically with climate change adaptation processes with smallholder communities in the lower Olifants River basin. It is being implemented jointly by [Mahlathini Development Foundation](#) and [AWARD](#).

The Agricultural Support Initiative (AgriSI) addresses two of the RESILIM-O program objectives directly:

- To institutionalize systemic, collaborative planning and action for resilience of ecosystems and associated livelihoods through enhancing the capacity of stakeholders to sustainably manage natural resources of the Olifants River Basin under different scenarios.
- To reduce vulnerability to climate change and other factors by supporting collective action, informed adaptation strategies and practices and tenable institutional arrangements.

AgriSI works in 7-8 villages using a systemic social learning approach, exploring the questions:

- i. What have you learned about the socio-economic and biophysical characteristics of your environment?*
- ii. How is your environment changing?*
- iii. How are you able to respond to the changes?*

Activities are broadly focussed on:

- Improved soil and water conservation and agro-ecological practices for increased food security;
- Livelihood diversification and supplementation through alternative climate resistant production;
- Increased community empowerment as a result of self-organisation and collective action.

Climate Smart Agriculture practices introduced in the AgriSI learning groups in the lower Olifants River basin.

Soil and Water Conservation

- Cut off drains - ditches across a contour at top of garden/catchment.
- Contours - measured with line level.
- Diversion ditches - carry water to the garden.
- Stone lines/bunds- made on contour.
- Banana pits.
- Improved furrows and ridges - made on contour with mulching and plantings.



Field cropping

- Conservation agriculture; close spacing and inclusion of lime and bone meal with manure.
- Diversified crops; maize, millet sorghum, sugar beans, cowpeas.
- Intercropping.





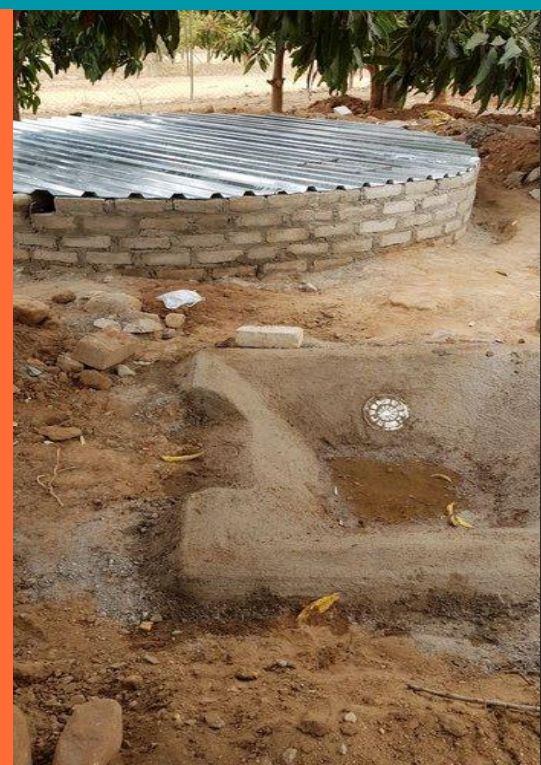
Gardening practices

- Dedicated paths and beds.
- Mixed cropping; companion planting.
- Mulching.
- Trench beds.
- Shallow trenches - an easier version of trenches incorporating manure and OM in a 30cm ditch or line, covering and planting on and next to trench.
- Eco-circles- combines double digging with bottle irrigation.
- Incorporation of manure- large quantities.
- Making improved manure- composting manure with grass and OM and inclusion of urine fraction from kraaling.
- Making compost.
- Liquid manures.
- Pest control brews: Chilli-soap derivatives, onion-paraffin derivatives.
- Planting of herbs (mixed in vegg beds, incl. coriander, parsley, fennel, chives, lemon balm, lavender, rosemary).
- Seed successions; seed beds with a range of seed (diversification) planted in succession for continual supply of seedlings, incl. okra, brinjal, green peppers, Amaranthus, mustard spinach, Chinese cabbage, kale, leeks, spring onions, broccoli, cauliflower, among others).
- Seed saving and cropping calendars.



Associated practices

- Greywater management and use; ash, tower gardens.
- Greywater bucket filter.
- Dripkits.
- Small nurseries; propagation of fruit and indigenous crops and trees.
- Tunnels.
- RWH storage tanks (underground).
- Soil erosion control; check dams, stone packs.
- Fodder production for livestock...





2 Problem statement

A key vulnerability which was identified during Phase I of this program is the potential for increasing food insecurity under climate changing conditions, especially for the people in the communal tenure areas. Poor land-use practices are also impacting on production and ecological and these impacts are likely to be greatly exacerbated under the hotter and more erratic rainfall conditions that are predicted for the Lowveld as a result of climate change. For example, with a 2°C increase maize farming and livestock production is likely to become marginal whilst with a 4°C increase both will be untenable (AWARD; internal reports 2016).

Small-scale farming is widely evident throughout communal lands ranging in scale from small, so-called ‘backyard’ gardens to larger plots of between 0.5 and 2 ha. All of these are individually farmed. These form an important component of livelihood security and in particular, offer important safety-nets in times of crises.

With knowledge about the potential impacts of climate change included in the learning journey, farmers can make purposeful decisions around their practices in gardening, field cropping, livestock management and natural resource management. This approach supports livelihood diversification - also fundamental for increased resilience - through ‘value-added’ associated activities.

3 Methodology

The methodology of this project involves working with groups of interested farmers (**learning groups**) in selected villages by building a local picture of risk and resilience (**socio-ecological**) using a systems approach (**vision and principles**), scenario planning (**farm design processes**) and a spiral model of implementation (**action and learning**). Participants try out new ideas (**farmer level experimentation**) individually and jointly and through a process of reflection and adaptation of these ideas enhance their adaptive capacity.

Emphasis is being placed on methodologies and approaches for improved soil and water conservation strategies, livelihood diversification (increased and diversified production of vegetables, fruit and field crops and integration of small livestock) and value adds (such as entrepreneurial opportunities and diversification of income options).

Monitoring is important and in addition to monitoring being conducted by the facilitators (both trainers and local champions/facilitators) a local framework for self and peer assessment and monitoring of progress is employed using the ‘**Five Fingers**’ principles (developed by AWARD) for on farm practices. Local criteria for assessment of each ‘finger’ (things we are doing and changing) are developed alongside an easy scoring process to track implementation and progress.



Each finger represents a principle as follows:

- **Water Management:** Manage water movement by reducing the speed of the water, thereby reducing erosion and enhancing infiltration.
- **Soil management:** Manage soil movement to limit erosion and soil loss.
- **Soil health:** Manage soil to maintain or improve soil health (nutrients and structure).
- **Plant (Crop) Management:** Manage plants and crops to ensure plants are appropriate for the area and to meet the demand.
- **Looking after indigenous plants:** Enhance practices that maintain and protect indigenous fauna and flora and the health of the ecosystem in the area.

A key component of building adaptive capacity (resilience building) is strengthening peoples' ability to self-organise, to learn together and to act collectively.

Aspects included in the design process are:

- The collaborative identification of champions in each village to act as local facilitators and motivators for change;
- Working with learning groups within and between villages;
- Networking and meeting with others (within group and external);
- Building locally appropriate collaborative activities (such as seedling production, small nurseries, village level savings groups, joint work parties, sharing resources and joint input supply and marketing processes)

Learning and innovation workshops are held covering a range of themes within soil and water conservation, grey water management, intensive gardening techniques, micro climate management (tunnels) and improved irrigation practices.

The feasibility of implementation of new practices at a local level with available resources has been an important consideration. Thus, kits are provided for the tunnels, grey water filtration and drip irrigation that are constructed locally. For the underground storage tanks, support has been provided in terms of technical advice and materials, while the construction itself is done by local teams and individuals.

Learning group members grappling with how to construct a drip irrigation kit



Local facilitators from Willows & Lepelle discussing garden monitoring processes

Learning and review session including members from all learning groups





About 40% of the participants are able to produce enough food from their gardens to eat on average 2 different types of vegetables twice a week.

In addition, 46% of participants are making supplementary incomes from their vegetable production ranging between R80 - R2 400 per month. (The average income from their vegetable production are R700 per month).

For 2017-2018, *Diagram 1* gives an indication of the uptake of new ideas and innovations, as well as local good practices in climate smart farming.

4 Outcomes and achievements

In the past year 105 participant smallholders have been involved in the Climate Smart Agriculture intervention through 6 learning groups. In the coming 18 months further support is to be provided to these learning groups and new groups are to be brought on board.

Individual farmer experimentation is the main learning tool of the process. Here farmers try out new ideas and compare it to their normal practice to gauge the success and the impact of the new practices.

5 Future planning

Activities included in this process:

- Learning sessions in the various villages, including refresher mini-workshops to include the new participants and bring everyone up to speed. Local facilitators play an important role here.
- Expansion of diversified cropping ideas,
- Local facilitators visit all participants to support and mentor them and also monitor their progress with implementation of the innovative practices.
- Further training for local facilitators and youth in facilitation and project management skills,
- Continued support with kit- based provision of tunnels and drip kits,
- Inclusion of new learning and implementation topics such as fodder production, seed saving, crop calendars with new varieties and planting times suitable for a changing climate, nutrition, poultry production and fruit production,
- Inclusion also of livelihoods diversification discussions and options; for example; value adding through processing, sale of fresh produce and herbs, nurseries for multi-purpose plants and fruit trees,
- Introduction of local savings and loan associations alongside learning in small business development and budgeting and
- Collaborative activities in local level resource and water management

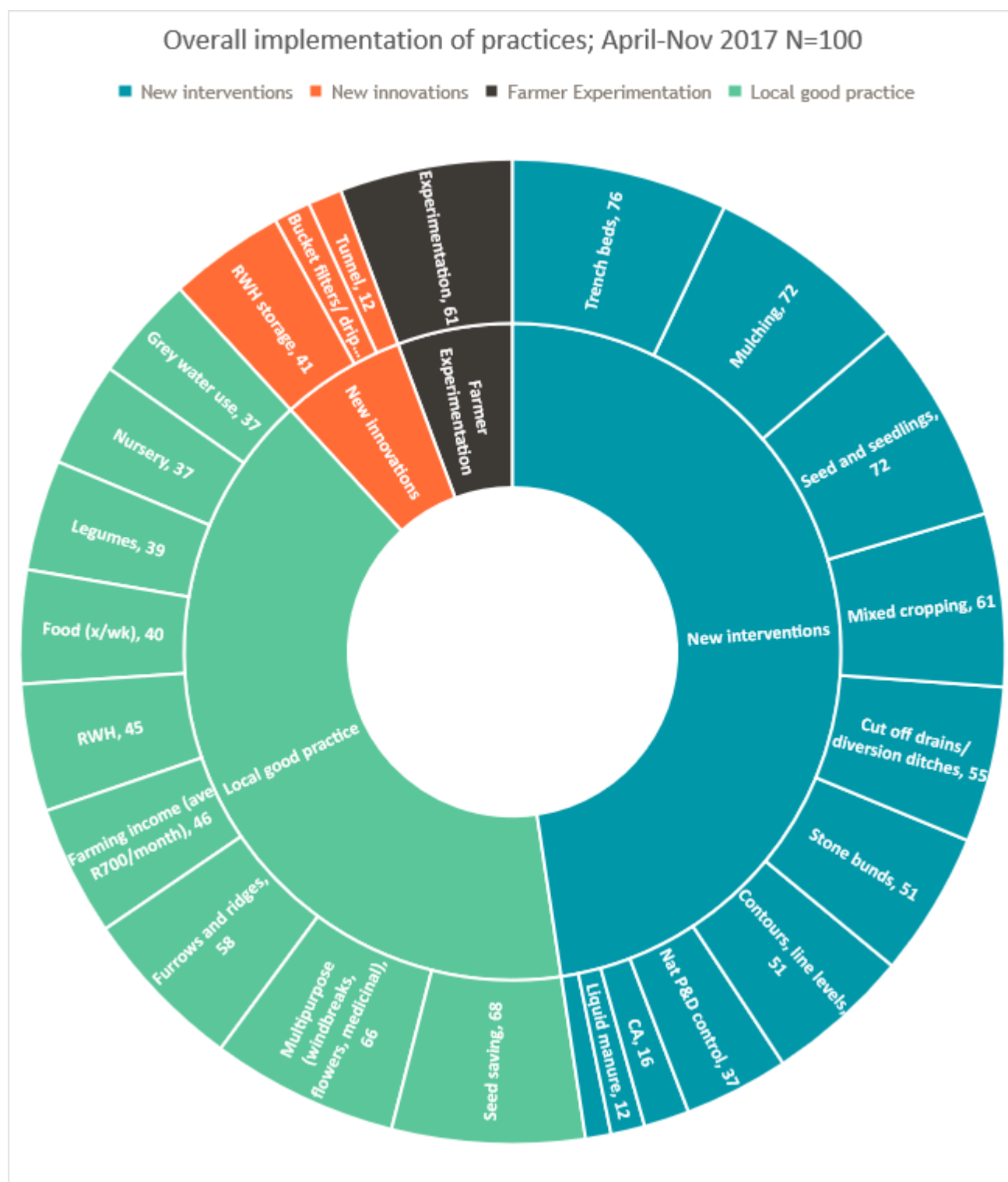


Diagram 1: Overall implementation of practices

The Association for Water & Rural Development [AWARD]

AWARD is a non-profit organisation specializing in participatory, research-based project implementation. Their work addresses issues of sustainability, inequity and poverty by building natural-resource management competence and supporting sustainable livelihoods. One of their current projects, supported by USAID, focuses on the Olifants River and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems to sustain livelihoods and resilient economic development in the catchment.

P O Box 1919, Hoedspruit 1380, Limpopo, South Africa

T 015-793 0503 Waward.org.za

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About USAID RESILIM-O

USAID: RESILIM-O focuses on the Olifants River Basin and the way in which people living in South Africa and Mozambique depend on the Olifants and its contributing waterways. It aims to improve water security and resource management in support of the healthy ecosystems that support livelihoods and resilient economic development in the catchment. The 5-year program, involving the South African and Mozambican portions of the Olifants catchment, is being implemented by the Association for Water and Rural Development (AWARD) and is funded by USAID Southern Africa.



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