Submission Document

Format for submitting a project proposal

Basin Development Challenges of the CPWF

April 2010

PROJECT SUBMISSION DOCUMENT (Volta/Limpopo BDC)
Introduction

Building on the Proposal Development Workshop that you have just attended as well as the EOI your project team submitted, CPWF is now asking you to complete a formal project proposal as one of five projects that make up the Volta/Limpopo BDC. Background information on the BDC, the CPWF in general, the EOI and this related commissioning process as well as contracting requirements and deadlines, can all be found on https://sites.google.com/site/cpwfbdceoi.

General guidance

Please fill in the text boxes and tables to complete this submission. Only information provided in the text boxes and tables will be sent to the reviewers.

Text must be in Calibri 12, Arial 11 or Times New Roman 12 pt; do not change the page setup: margins top and bottom 2.5cm; right and left 3.2 cm. Not adhering to these requirements may lead to a request for resubmission and delays in contracting.

Do not exceed the maximum length of parts A and B of this submission. Any pages exceeding the length will not be sent to the reviewers. Annexes are not counted towards the length of the submission.

The CPWF supports research for development that is underpinned by the core values of capacity building, interdisciplinary research, partnership, pro-active consideration of gender-and-diversity issues and adaptive management. Throughout the proposal indicate, where appropriate, how you will be guided by them. Proposals will be evaluated on this.

BDC Research and Research Projects

Please insert the relevant information into Box 1 below:

The Volta BDC research program is on:
“Integrated management of rainwater and small reservoirs for multiple uses”
Research on the Volta BDC is structured into the following five projects:
V1 - Targeting and scaling out
V2 - Integrated management of rainwater for crop-livestock agroecosystems
V3 - Integrated management of small reservoirs for multiple uses
V4 - Sub-basin management and governance of rainwater and small reservoirs
V5 - Coordination and learning for adaptive management and change (coordination and change project)

The Limpopo BDC research program is on:
“Integrated management of rainwater to improve smallholder productivity and livelihoods and reduce risk”
Research on the Limpopo BDC is structured into the following five projects:
L1 - on targeting and scaling out
L2 - on small-scale infrastructure
L3 - on farm systems and risk management
L4 - on water governance
L5 - on learning for innovation and adaptive management (coordination project)

**Tables**
Please fill out the Excel table provided together with this form. Note that the table has seven tabs (worksheets): Title; Gantt; Budget; Comments; Time Allocation; $ by Output; $ by Institution. Please read carefully the instructions in each worksheet before filling the form.

**Annexes to your proposal submission**
A: Team leader and team member c.v.’s.
B: Gantt Chart (Annex 4 to the Draft Award Letter)
C: Budget (Annex 6 to the Draft Award Letter)

**Attachments to this document**
(you may wish to share these with your legal/financial department)
1: Draft Award Letter.

**Deadline**
Submission deadline for your proposal is 28 May 2010. Please send your proposal by email to cpwfssecretariat@cgiar.org.

**PART A: SUMMARY (Maximum 1 page)**

1. **Project Data**
   BDC: Limpopo
   Project Title: Project L3 - Farm systems and risk management
   Project Lead Organization: ICRISAT
   Consortium partners (who receive budget): ICRISAT
   Project Leader (name and contact details): Dr John Dimes
   Duration: 40 Months
   Target start date: August 2010
   Finish date: November 2013
   Maximum budget requested from CPWF (in US$): 1,400,000
   Any matching funds offered (provide brief explanation):

2. **Project Summary**
   This project seeks to define the interplay between market access, crop and livestock technologies, and investment risks in water- and market-scarce environments that leads to technology adoption by farm families, enabling them to enhance food security and incomes through more efficient water use. Three main work areas will contribute to this objective.
Water efficient farm enterprises and climate risk management
Innovation Platforms will be established at project sites to bring together all role players necessary to increase investments in farm management strategies to improve productivity of crop and livestock systems through improved fodder production. Outputs of the other two work areas will feed into the innovation platform process. The important outcome here is the development of an understanding that increased investments at farm level will have beneficial returns at the market place that compensate for climate-related production risks.

Investment choices matched to farmer capacities and climatic risk environment
Understanding how the capacity of farmers and their ability to make use of new opportunities is affected by their wealth status, investment priorities and variable climate will assist in the design of new and more target-specific crop-livestock management strategies. Through participatory modeling and scenario analysis we can learn together what the impacts of specific interventions are, which farmers can make use of them, and who may adopt them. On-farm testing will substantiate the efficacy of the technologies and the potential for out-scaling.

Market-led technologies for smallholder farmers developed and tested
The project will use market access as the driver of crop and livestock technology uptake. Market development initiatives such as contract farming, voucher-based input distribution schemes for seed and fertilizer and innovative fertilizer marketing strategies will be implemented by project partners, technically supported by research and extension and monitored for impacts across the value chain.

In so doing, farmers will further their understanding of markets for both crops and livestock as well as the options available to increase on-farm production of food and feed crops and better manage climate and market risks. In addition, market intermediaries will facilitate input supply and increase their own profits through greater exposure to the large number of small-scale producers in the basin. Through this process, households will use their water resources more efficiently and become more resilient.

PART B: PROJECT DESCRIPTION (Section 3 - 10: maximum 10 pages)

3. BDC Goals to which the project will contribute

Briefly list the BDC Goals that have been developed during the project development workshop and how the project will contribute to their achievement.

The BDC Goal:

Improving governance and management of rainwater and small water infrastructure in the Limpopo Basin to raise productivity, reduce poverty, and improve livelihood resilience

Improved governance and management of rainwater and small water infrastructure
L3 will contribute to this goal by evaluating management options that increase the returns to water from crop and fodder production taking into account seasonal rainfall
variability in rainfed systems and water supply constraints from small reservoirs. Model evaluation and analysis will augment formulation of technical recommendations for grain and fodder production beyond site-specific conditions. Economic analysis of returns from alternative uses of water will inform the process of formulating governance policies.

**Increasing productivity**
L3’s partnership with fertilizer companies and evaluation of fertilizer marketing strategies better suited to the needs of resource-poor farmers aims to increase the use of fertilizer by smallholder farmers. No other technology intervention can contribute more to sustained increase in productivity of land, labor and water in these nutrient-scarce systems.

**Reducing poverty**
Technology development with a focus on fodder production is more aligned to the primary income generating enterprise of mixed farming systems in the Basin, namely sale of livestock products. Fodder production also exhibits higher resilience to rainfall and water supply constraints than grain production. L3’s technology focus will contribute to reducing poverty through more sustainable increases in income from livestock production.

**Resilience**
L3 aims to link smallholder farmers to output and input markets to provide the increased incentives and capabilities for farm families to further invest in farm management strategies. Improved market linkages will lead to sustainable productivity gains and thereby improve livelihood resilience of smallholder farming systems.

### 4. Research questions and methodologies

Describe here what is the problem this project is aiming to address. CPWF has suggested sample questions for each BDC project (available from https://sites.google.com/site/cpwfbdceoi). Describe how your research will address these research questions and/or additional research questions you consider important. Give a brief description of the research methodologies you will use.

The Limpopo Basin is a water-scarce environment in which recurring drought and floods cause devastating impacts on the livelihoods of small-scale, subsistence farmers. However, the more pressing development challenge in these farming systems is the unproductive use of water in the more normal rainfall seasons which are much more prevalent. The perennial low investment in improved crop and livestock technologies by resource-poor landholders is a primary cause of chronic poverty and land degradation in these rural communities.

Livestock production constitutes the main income source in these mixed farming systems. It offers the most established form of market engagement by smallholders and is the more resilient production system under highly variably rainfall patterns. However, crop production for food is widely pursued by smallholder farmers under these dry conditions, even in regions receiving as little as 350mm of rainfall.
This raises an important technical question: would small-scale farmers achieve higher levels of food security, income and water productivity if resources were devoted more to fodder production in the dry conditions of the Limpopo Basin, especially as fodder is a more resilient production system, than grain? Further, from a systems perspective: what farm management practices can be employed by farmers based on their particular skill and resource levels in a specific environment, and how can we use current drivers of change to facilitate the adoption of these management practices? Lastly, gender (women headed vs male headed households) is an important variable when it comes to adoption of innovative technological practices. We note that profiling of farmers and overlaying this on agro-ecological zones is key because the selected research sites are not homogeneous in terms of livestock ownership, rainfall regime, and market access. This will be important in setting options because no one size will fits all.

Methodologies
Innovation Platforms: The main entry point for the project will be the Innovation Platform (IP), which brings together the various sub-sector participants (value chain participants: input suppliers, farmers, traders, processors etc.) and provides them with a shared forum to voice their challenges and opportunities. Using this information, the IP proposes site-specific solutions to align production and market requirements typically surrounding issues related to food and cash crop production, dry season feed, animal heath, and poor market performance. This will ultimately ensure better prices for smallholder producers which serve as the incentive for increased investment in improved production systems.

The project will deal specifically with the interface of farm level production, input supply and access to output markets. Where applicable the project will deal with livestock production (primarily small stock as this involves women, the poorer sector of communities, and deals with real market opportunities), improved crop production (both cereal and legume production for food security and nutrition), and dry season feed production for livestock.

A modeling approach: This will build on ICRISAT’s experiences with models and scenario analysis testing interventions using several criteria: production, water use efficiency, environmental sustainability and impacts of climate variability and change. Developing scenarios based on known knowledge, and testing these with farmers will direct on-farm participatory trials, model testing and scenarios for out-scaling. This is a very powerful tool which allows scientists to incorporate farmers’ ideas and options before field testing commences. A deliberate attempt will be made to expose the partners to key elements of the modeling with a view to increasing their awareness to modeling utility. For example, it has the potential to evaluate management options in relation to seasonal climate forecasts provided annually by the National Meteorological Services in Basin countries.

Technology interventions linked to market development: This project specifically targets partnership with private sector, NGO and CBO agents to bring about market-related changes for smallholder farmer. In South Africa, Progress Milling is about to embark on a new contract farming initiative with smallholder farmers based on
groundnut production. This project will support the development initiative with technical inputs on improved groundnut production, climate risk and market potential analysis using crop modelling and participatory on-farm evaluation trials under irrigated and rainfed conditions. Further, Sasol Nitro has agreed to provide a range of fertilizer pack sizes for distribution in community-based retail outlets. Farmer purchase preferences and use in farming enterprises will be monitored and a postulated list of determinants of purchase preferences such as asset ownership, disposable income, gender of household head, etc. will be established and investigated.

In Zimbabwe, World Vision International is embarking on a voucher-based input (seed and fertilizer) distribution scheme for smallholder farmers in Insiza and Matobo districts. The Zimbabwe Fertilizer Company will provide a range of fertilizer pack sizes to the relief agency distribution programs. The project plans to build on and expand the IP operated by the Rural District Council at Gwanda South to Matobo and Insiza districts. This IP links goat keepers to livestock auction and input supply systems. The project will provide technical support on efficient use of inputs in these systems by evaluating food and fodder production options under irrigated and rainfed conditions. This will take place at test sites linked to the marketing initiatives.

5. Links to previous and ongoing work

What – if anything – has been done to address the problems in the past (by your partners, other researchers and in CPWF Phase one projects) that is relevant to implementing this project? What are the key lessons learnt that you will consider in the present project? (Include in Section 16 a carefully selected list of relevant bibliographic references).

In semi-arid regions farmers perceive livestock as being of higher value and a more consistent return on investment than crops (Ryan and Spencer, 2001). While crops contribute to food security, livestock are the most important source of cash income and insurance, and therefore farmers preferentially invest in livestock (Rohrbach an Alumira, 2002). ICRISATs most recent studies indicate that farmers actually purchase more staples, than self-produced, and cover immediate needs such as food and education through selling livestock, particularly goats. The number of goats is also increasing, while cattle populations are stagnant (FAO, 2005).

In southern Zimbabwe, most farmers (93%) experience severe dry season feed shortages and use locally available feed resources to supplement feeding during the dry season - 83% of farmers used crop residues (Homann and van Rooyen, 2007). Studies also found that of all the animals that leave a flock, almost half (45%) die, 24% are sold and 14% slaughtered for household consumption. Most goats die during the dry season (August to December) due to inadequate availability and quality of feed resources. In order to capture the benefits from livestock in semi-arid mixed farming systems, and sustain a growing number of livestock, there is a real need to improve feed systems.

Conservation Agriculture was widely evaluated in CPWF Phase I under the ‘Crop Water Productivity Improvement’ theme (Humphreys and Bayot, 2009). In general, there was inconclusive evidence of yield benefits associated with improved soil
water balance, infiltration rates, soil organic carbon levels and weed suppression observed with the CA interventions. When the CA technology components were disaggregated however, there was clear evidence that crop water productivity was strongly responsive to fertility inputs (Kihara et al., 2009, Twomlow et al., 2009). In summarizing the Theme results, a key recommendation of Humphreys et al. (2009) was that institution and policy changes are needed ‘that enable the tremendous potential for fertilizer to greatly increase production in sub-Saharan Africa’.

A case for widespread re-introduction of fertilizer subsidies in Africa has been made to help smallholder farmers’ access fertilizer (Morris et al., 2007). ICRISAT has been involved with research on increasing access and affordability of fertilizer for smallholders on two additional fronts - fertilizer options (eg. smaller doses) tailored to the investment capacity of farmers and rainfall risks in drier regions (Twomlow et al., 2010) and fertilizer marketing strategies that improve availability (community-based outlets) and accessibility (small packs) for farmers (Tarisia et al., 2008 ). This project will continue to emphasize the role of fertilizer in raising water productivity and production of farming systems, entering into partnerships with private sector and NGO agents to expand fertilizer markets to smallholder farmers (Laker-Ojok, 2009, Simpungwe et al., 2008).

A further recommendation of Humphreys et al. (2009) was the application of crop modelling to better evaluate and formulate technology recommendations and domains for the varied environmental and socioeconomic conditions of smallholder farmers. This project will pursue participatory modelling (Carberry et al., 2004, Dimes, 2002) as an entry point to farmer-based evaluation of technology options for fodder and food production. The APSIM model (Keating et al., 2002) is well tested for cropping systems in the Basin (Ncube et al, 2008, Dimes and du Toit, 2009), and can simulate fodder crop and livestock responses. A modeling approach enhances technology development by including analysis of climate-induced production risk, an important, yet over-looked issue determining technology adoption by farmers (Marra et al., 2002, Dimes, 2007).

6. Links to other BDC projects
Please fill out the following table.

<table>
<thead>
<tr>
<th>Research outputs</th>
<th>Dependencies on other BDC projects to produce it</th>
<th>Use of research output by other BDC projects</th>
<th>Risks and assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water efficient farm enterprises and climate risk management options for dry regions developed</td>
<td>L4 establishes an IP that facilitates community participation in market and technology</td>
<td>L4 and L2 interventions benefit from more entrepreneurial farmers</td>
<td>If activities at Lambani by L2, L3 and L4 become un-coordinated, it could create community and</td>
</tr>
</tbody>
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2
A-1
B-3
C-6
<table>
<thead>
<tr>
<th>Investment choices to improve water use efficiency in crop-livestock systems, matched to socioeconomic factors, farmer capacities and climatic risk environment developed and tested</th>
<th>rehabilitation of water infrastructure by WP2 (of L2) at Lambani and Insiza will provide test sites for evaluating food and fodder options under irrigation and WP4 (of L2) will provide water harvesting technologies for rainfed production at these same sites</th>
<th>Feed production technologies for WP2 in Botswana Profitable and water efficient production options for sustainable operations of L2 irrigation schemes</th>
<th>WP2 (of L2) will share 50% of costs for irrigation trials at Lambani and Insiza sites and WP4 (of L2) will do likewise for rainfed trials.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market-led technologies for smallholder farmers developed and tested through farmer-public-private partnership</td>
<td>The L2/L4 Lambani site has market potential to attract Progress Milling and Sasol Nitro investments.</td>
<td>Local market developments that ensure sustainable performance of L2 irrigation schemes</td>
<td>Lambani site proves suitable for Progress Milling to establish a community depot</td>
</tr>
</tbody>
</table>

**7. Suggested sites**

**Zimbabwe:** Study sites are Matobo, Insiza and Gwanda South. These sites form an agro-ecological and market infrastructure transect: Matobo having the higher cropping potential and market population proximity compared to Gwanda South, which has a more extensive, livestock dominated mixed farming system. At Insiza, L3 will work with L2 to evaluate water efficient and profitable food and fodder cropping options for rehabilitated irrigation infrastructure. The productivity and climate risk of the food and fodder options under dryland conditions will be evaluated with water conservation techniques at all three locations. Community-based input and output market
developments for cropping and livestock production will be explored and tested with project partners, World Vision and Rural Development Councils (RDCs). World Vision is embarking on voucher-based, seed and fertilizer input supply distribution for small-scale farmers in Insiza and Matobo, and ICRISAT has an established IP operating with the RDC at Gwanda South to link farmers to livestock auction and input supply systems.

South Africa: In Sekhukune, the project will provide technology support for Progress Milling’s contract farming initiatives on groundnut production with small-scale farmers. This will include evaluation of groundnut management options under irrigated and rainfed conditions. In Lambani, L3 will work with L2 and L4 to evaluate water efficient and profitable food and fodder cropping options for rehabilitated irrigation infrastructure. The productivity and climate risk of the food and fodder options will also be evaluated under dryland conditions testing rainwater harvesting techniques. Community-based input (small fertilizer packs) and output (grain purchase and exchange trade) market developments will be explored and tested with project partners, Sasol Nitro and Progress Milling.

Botswana: Lotsane - Since there are no cropping activities in Lotsane, L3 will focus on climate risk analysis for livestock production and will provide technical support to other projects and local partners on improved feed production. Taking into account sites mentioned in the description of the BDC research program, and the need to work together with other projects, where will this project work?

8. Project Outcome Pathways
How do you intend to carry out this project? Please describe in the table below how the research outputs and strategies are expected to influence key targeted actors in your project (i.e., achieve outcomes). For a worked example see https://sites.google.com/site/cpwfbdceoi/proposal-development-workshop-preparatory-information.

<table>
<thead>
<tr>
<th>Outcome pathway 1</th>
<th>Actor(s) who will change in the same way</th>
<th>Change in actor Practice / Behavior</th>
<th>Change in Knowledge, Attitude and/or Skills in actor(s) required to achieve Practice change</th>
<th>Project’s strategies for achieving these changes in KAS* and Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Farmers</td>
<td>Expand fodder production activities</td>
<td>Farmers understand and invest in improved fodder production through use of improved varieties and soil fertility</td>
<td>Use an Innovative platform approach to identify relevant issues and needed partners to facilitate iterative process of identifying the challenges in the system, design and implement interventions to improve the overall efficiency of the farm market system</td>
</tr>
<tr>
<td>Market agents</td>
<td><strong>Broaden fertility and variety recommendations to include livestock feed production</strong>&lt;br&gt;Input market actors expand distribution networks and marketing strategies to service smallholder needs</td>
<td><strong>management; farmers know how to harvest, store and add value to crop residues</strong>&lt;br&gt;Extension officers are attuned to and enabled to provide support services</td>
<td>Market actors are aware of the potential of drier areas for market expansion, and develop market strategies suited to smallholder farming resource capacity</td>
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<tr>
<td><strong>Narrative 1</strong></td>
<td><strong>Water efficient farm enterprises and climate risk management options for dry regions developed</strong>&lt;br&gt;Through an innovation process, the project will involve all stakeholders (i.e. value chain)</td>
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</tbody>
</table>
players) to increase investments in farm management strategies, including crop and fodder production. This outcome will be achieved partially through the inputs/activities of the outcome pathways listed below. Outcomes from the other two work areas will feed into the innovation platform process where it will be incorporated in the activities and outputs of this work area. The most important process here involves the development of an understanding of producers that increased investments at farm level will have highly beneficial returns at the market place.

<table>
<thead>
<tr>
<th>Outcome pathway 2</th>
<th>Farmers, community</th>
<th>Farmers respond to market and understand</th>
<th>Participatory modeling of crop-livestock systems to</th>
</tr>
</thead>
</table>
|                   |                    |                                        | 2
|                   |                    |                                        | A-1
|                   |                    |                                        | B-3
|                   |                    |                                        | C-6
| Narrative 2 | Investment choices developed to improve water use efficiency in crop-livestock system, matched to socioeconomic factors, farmer capacities and seasonal forecasts and rainfall conditions. Adoption of systems analysis in evaluating technology and market interventions. Adoption of water use efficient technologies that increase production of rainfall variability and associated risk in crop and fodder production, sources and extent of market price variability and management responses for a range of seasonal climate forecasts. For R&D agents, as above, plus a better understanding of how farm resources, climate and market risks influence farmer decision making and technology choices. | assess management options in terms of productivity/risk/sustainability tradeoffs Seasonal forecast analysis and information sharing |
climatic risk environment

Understanding how the capacity of farmers and their ability to make use of new opportunities is affected by their wealth status, gender of the household head and other characteristics may assist in the design of new and more target-specific crop-livestock management strategies. This will improve targeting and the development of strategies to increase production that deal with variable climate. Through participatory modeling and scenario analysis we can learn together what the impacts of potential interventions are, who can make use of
them, and who may adopt them. Subsequent on-farm testing can shed further light on the efficiency of certain technologies and the potential to out-scale.

<table>
<thead>
<tr>
<th>Outcome pathway 3</th>
<th>Farmers, NGO and commercial market actors, policy makers, research and extension</th>
<th>More entrepreneurial farm management by smallholder farmers</th>
<th>Farmers understand that more efficient farm practices are rewarded in the market and will encourage higher crop and livestock investments</th>
<th>Sharing information at the IP for improved market functioning. Increased participation of input market players at output markets, (supplying inputs such as fertilizers, animal feed supplements etc.). NGO development activities utilized to provide input/output market functions in less developed regions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrative 3</td>
<td>Market-led technologies for smallholder farmers developed and tested</td>
<td>Facilitating the development of more efficient markets through the innovation platforms, facilitating the flow of market information to farmers and market intermediaries, local markets</td>
<td></td>
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</tr>
<tr>
<td>PROJECT IMPACT NARRATIVE</td>
<td>Through agricultural innovation systems and participatory testing and evaluation of improved crop-livestock management strategies, farmers will increase their understanding of the options available to increase on-farm production of food and feed crops, reduce climate and market risks, and will become more attractive to farmers. Once markets reward producers for quality, investments in increased production of better quality products will foster the input-output linkages and result in sustainable technology adoption by those who are inclined to react to market signals.</td>
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</table>

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improve their overall understanding of markets for both crops and livestock. In addition, market intermediaries will facilitate input supply and increase their own profits through greater exposure to the large number of small-scale producers in the Basin. Through this process, households will use their water resources more efficiently to produce for household consumption needs and for sale and hence increasing their incomes and at the same time becoming more resilient.

* KAS: knowledge, attitudes and skills

9. Activities and Implementation Plan
In the form of a Gantt chart, constructed as an Excel spreadsheet, please provide a tabular description of the activities leading to outputs (both research and communication) and uptake that your team will undertake. A Gantt chart is a ‘timeline’ that shows the sequence of activities leading to outputs and uptake and constructing it helps ensure that the sequence of activities you propose is feasible. Construct it in monthly segments over the life span of your proposed work. The Gantt Chart does not contribute to the word count. BE AWARE THAT THE GANTT CHART IS INDICATIVE and need not be too detailed because if successful your project implementation plans will be coordinated and finalized during the Inception Workshop.

Send the Gantt chart as a separate document called Annex B - Project Gantt Chart.
10. Communications
Briefly describe your communications plan.
Within project sites:
The innovation platform will serve as the main communication vehicle between CG and NARS scientists, NGOs and other support services, and the producer communities. While input suppliers and market intermediaries will participate in this forum, project scientists will communicate directly with these parties to ensure their understanding and participation in project activities.

Between projects:
Activities and learning with the respective Limpopo Basin projects will be facilitated through shared planning meetings and annual stakeholder meetings, exchanging of reports of these meetings and contributions to Basin level reflection meetings and the Challenge Program’s International Forum on Water and Food.

Beyond Projects
Part of the adoption strategy for L3 is the inclusion of the right mix of partners to ensure sustainable market developments that serves the needs of smallholder farmers in terms of technology access and product marketing. To facilitate communication to a wider audience the project will produce flyers aimed at communicating technical interventions as well as market information to target communities, as well as other communities. Lessons and experience on market-led technology development will be documented and published as annual reports, case studies, reviews, and peer review journals.

PART C: CONSORTIUM DETAILS, INDICATIVE BUDGET AND REFERENCES (Section 11-13)

11. Consortium Details
The quality and experience of your project team will help ensure the delivery of quality outputs. Please fill in the table below to describe the project team members. Indicate in particular who has responsibility for communications, M&E, knowledge sharing and gender analysis. These will be people who will normally be funded at least partly by the project. You will be requested to enter into a Memorandum of Understanding with them if successful. Attach a full c.v. for the project leader and a one page c.v. for each team member in Annex A.

<table>
<thead>
<tr>
<th>Names of team members</th>
<th>Professional discipline</th>
<th>Institutional affiliation and address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr John Dimes</td>
<td>Soil Fertility and Systems Modelling</td>
<td>ICRISAT-Bulawayo</td>
</tr>
<tr>
<td>Dr Isaac Minde</td>
<td>Production Economist and Gender analyst</td>
<td>ICRISAT-Bulawayo</td>
</tr>
<tr>
<td>Dr André van Rooyen</td>
<td>Ecologist, Crop-</td>
<td>ICRISAT-Bulawayo</td>
</tr>
</tbody>
</table>
Provide a brief text statement on why the lead institution is well-placed to lead the group.

In the last 5 years ICRISAT-Bulawayo has played a leading role in project development and implementation related to innovation systems, linking smallholder farmers to crop and livestock markets, climate risk analysis and climate change, integration of crop-livestock systems, and improved crop and soil management technologies, including evaluation of conservation agriculture in drier environments. ICRISAT has been active in the region for more than 20 years, and our multidisciplinary team has extensive experience in working with national systems, the NGO community and policy makers.

Provide brief text statements on why the proposed partner institutions are qualified to carry out the proposed research.

**Institution 1: World Vision International**
WVI has been an active partner with ICRISAT in disseminating the microdosing and planting basin technologies in Zimbabwe and has experience in developing voucher-based schemes for input supplies through agro-dealerships and community fairs for selling crop and livestock products. WVI has an extensive network of operations throughout eastern and southern Africa and is high potential spill-over partner for project outputs.

**Institution 2: Zimbabwe Fertiliser Company**
ZFC was a partner with ICRISAT in testing and disseminating the microdosing technology and augmented the development activities with supplies of smaller fertilizer packs for sale in rural outlets and is high potential spill-over partner for project outputs.

**Institution 3: AGRITEX**
AGRITEX have a technology dissemination responsibility and have agents based at the community level to assist as entry agents to farm communities and technology evaluation with farmers.

**Institution 4: RDC Gwanda**
RDC Gwanda has taken on the lead organization role for the Innovation Platform
established by ICRISAT. It provides information on market preferences to farmers and organizes auction markets for sale of livestock. It will therefore be an important partner in establishing similar IPs at Insiza and Matobo sites.

**Institution 5: Progress Milling**
Progress Milling has a track record of responding to the market needs of smallholder farmers in Limpopo Province through its Community Development Program. It has more than 100 community-based retail outlets in the Province. It has been approached by FairTrade UK to establish contract farming arrangements with small-scale farmers for groundnut production and is high potential spill-over partner for project outputs.

**Institution 6: Sasol Nitro**
Sasol Nitro has been an active partner in testing the microdosing technology and also providing financial support for its provincial agronomist to complete a Master’s Degree on the subject matter. At the same time, it also registered and provided small packs of fertilizer for sale through Progress Milling outlets and is high potential spill-over partner for project outputs.

**Institution 7: Limpopo Department of Agriculture**
LDA has a technology dissemination responsibility and have agents based at the community level to assist as entry agents to farm communities and technology evaluation with farmers. It is also developing in-house capacity for spatial and temporal analysis of production systems using remote-sensing, GIS and crop modeling tools.

**Institution 8: ARC**
ARC-ISCW is the custodian of long-term climate data in South Africa (a prerequisite for climate risk analysis) and has good technical skills in the area of soil and water management. It also has a national mandate allowing them to operate in all four provinces of the Limpopo basin in South Africa.

**12. Indicative breakdown of budget**
This is part of the project workbook

**13. Bibliography**
Please list up to 10 references and key documents


Ryan, J.G. and Spencer, D.C. 2001. Future challenges and opportunities for agricultural R&D in the semi-arid tropics. ICRISAT, Patancheru


