

FINNISH FIELD WORK GRANTS IN RURAL DEVELOPMENT

ANNEX 1 - STUDY REQUEST BY THE PROGRAMME FOR LUAPULA AGRICULTURAL AND RURAL DEVELOPMENT (PLARD)

Study title: Production of small-livestock feed based on on-farm feed resources

Nature of Grant: Support to Partner country (Zambian) research student

1. Description of the programme

Finland has provided support to the development of the agricultural sector in Luapula Province of Zambia since the early nineteen eighties. The Program for Luapula Agricultural and Rural Development started in 2006 with the first phase (PLARD I) which ran until the end of 2010. The overall objective of PLARD is *to contribute to the development of the efficient, competitive and sustainable agricultural and rural sector, which ensures increased income and food security for the people of Luapula Province*. The program encompasses five components: agribusiness, agriculture, capture fisheries, aquaculture and institution and organization development; and cross cutting issues for enhancement of a supportive policy, regulatory and institutional environment. The second phase (PLARD II) will be implemented in a duration of 4 years, from 2011 to end of 2014.

2. The proposed study

a) Background

PLARD is promoting an integrated crop-livestock-fish farming approach to enhance farm incomes and diversify food sources for the people of Luapula Province. The conditions in Luapula favour this mode of production, including a long tradition of crop production, plenty of land, wetlands and other water resources and near extinction of tsetse flies transmitting *tripanosomiasis* disease to domesticated livestock. In the past farmers concentrated only on growing traditional crops especially cassava, sweet potato, groundnuts, sorghum, millet, beans and more recently maize etc. The situation has changed significantly in recent years, with the introduction of small livestock including poultry (chicken, ducks, guinea fowl etc.), goat, sheep, pork, rabbits and fish farming.

In the integrated system, the usual practice is to grow crops both for human consumption and also to feed the livestock. The animals then will provide products both for subsistence and for sale like milk, meat, hide and skins, draught power, etc. In many cases this leads to value addition both in nutritional and economical terms. Compared to the one-sided crop system, an integrated system will even out and increase farm income over the years plus enhancing nutritional status and food security. Additionally, fish fits in very well within the integrated approach as it benefits from the local feed resources, manure, crop residue and animal waste. Another positive aspect is that the fish pond water is nutrient-rich and very useful for home garden irrigation and watering animals.

Despite the potential importance of livestock in Luapula, there has been far less attention to development of the sector. PLARD is supporting over 533 community study groups (CSGs), however only 5% of them are small livestock CSGs (keeping poultry and goats) while the rest are

crop-based CSGs. A recent comprehensive CSG study showed a strong demand from the members to include small livestock and fish farming as integrated components in crop production. They were particularly keen to be trained on how to produce and prepare feed from local crops, to mix the right quantities of needed nutrition and to apply proper feeding practices.

The optimal nutritional quality needed in feed is well defined by research and practical experience on domestic animals in Zambia at different stages of growth. If the animal care is good this quality feed standard can promote maximum animal performance. Commercial feed of good quality will normally achieve that task. However, this might be an aim but it is hardly a realistic feature in the outback of Luapula where farmers depend only on local feed resources of various quantities and qualities. The common feeding practice leaves animals to find their own feed to large extent through foraging, browsing, scraping, scavenging, and feeding on left-overs and even rubbish. Instead, proper feeding practices must be geared towards meeting animal demands and avoiding deficiencies that will restrict animal health, growth and development. Most animals can do well with well-planned use of local feed.

A key issue is availability and costs of needed complementary feed. A bit slower growth can be compensated by less costly feed improving both the rate of return and profit. The cash strapped smallholder farming sector in out-laying areas will hardly manage to develop the desired animal production sector on bought commercial animal feed resources. Indeed, the only sound economical and realistic way forward will have to be based mainly on the existing local on-farm resources. There are plenty of raw materials for animal feed production in Luapula and a main question is knowledge and skill to develop feed formula and utilise them in a proper way for enhancing sustainable productive animal husbandry development for increased income and food security for local populations.

The aim of this study will be to develop nutritive low-cost livestock feed formulation based on on-farm resources for different age groups and types of livestock including goat, sheep, pigs, poultry, ducks and rabbit. The activities will include; Development of appropriate feed mix alternatives, feed preparation and feed trials; and preparation of simple guidelines and training material on feed preparation and feeding practices to be used by Camp Staff to train farmers.

3. Objective

The objective of the study is to develop nutritive low-cost livestock feed formulation from local farm-based material.

Specifically the research student will;

- Identify nutrient rich farm-based materials with high potential as livestock feed
- Prepare different formulations of livestock feed from local farm-based materials
- Conduct farm-based testing of different formulations of livestock feed
- Assist to compile “how to” manuals on livestock feed preparation from on-farm materials

4. Proposed research questions and their relevance from the programme viewpoint and proposal for study level (BSc/MSc/PhD)

The research questions include the following;

- Which locally available on-farm materials are nutrient-rich and high potential as livestock feed?
- What combinations, and in what proportion, of local on-farm materials are appropriate formulation of livestock feed? How are the materials prepared to make quality and palatable livestock feed?
- How do different feed formulations perform in terms of livestock growth rate?
- What information do farmers need to prepare livestock feed locally? How should such information be packaged for best adoption?

5. *Duration of the study and proposed fieldwork*

The field work will last for about 3 months, of which 15 days will be spent with the Provincial Livestock Officers in Mansa for preliminary work on livestock feed formulation and literature review. The remaining time will be spent on the field working with livestock farmers in 2 districts, namely Mwense and Samfya.

6. *Academic field*

This grant should support field work research for MSc. Degree study. The study should be submitted as partial fulfilment of the student’s studies and can be part of the thesis/dissertation. The candidate should therefore already be in possession of BSc. Degree preferably in the field of Animal Nutrition, Livestock Production, Veterinary, Agriculture, or related disciplines. He/she should presently be registered as MSc student with a recognized university in Zambia and be in a position to start field work in Luapula Province soon after the grant is awarded.

7. *Proposed schedule and duration*

The study is expected to start in March 2013 and be completed by July, 2013. At the end of fieldwork the student will be expected to produce a final fieldwork report. This must be submitted within 2 months from the end of fieldwork.

8. *Indication of the cost level in the field, such as accommodation, meals, interpretation services, travel*

The estimated budget is as follows;

	Unit	No. of units	Unit cost (Kwacha rebased)	Total	
				ZMW	Euro
Accommodation	Days	90	110	9,900	1,650
Meals	Days	90	110	9,900	1,650
Travel	Lumpsum			6,000	1,000
Total				25,800	4,300

9. Description of the logistical and other support the project is able to offer (mentoring, transportation, etc)

The project will offer mentoring and field supervisory support through the Senior Livestock Officer and the Agriculture and Agribusiness Advisor. The student will work closely with ongoing integrated crop-livestock-fish activities in the districts, which may sometimes allow him/her to benefit from local transport arrangement. However, this is not guaranteed due to possible mismatch on timing of activities.

The student will have access to a number of technical reports and background literature relevant to the study, which are available at the programme office and the Department of Livestock offices in Mansa. Some of this documentation can be sent to the student in electronic format before arrival, to enable him/her prepare the research proposal. The program will also assist the student with letters of introduction and contacts to local authorities and other stakeholders. The student will need to bring along a personal computer which needs to have good battery backup due to intermittent or non-existent electricity supply in the field areas. The student budget includes provision for modest accommodation which should enable him/her to afford some of the lodges in the areas of study. If necessary the programme can assist the student to identify some of the possible accommodation places.

10. Field station

The student will be based in Luapula Province, initially in Mansa at the Department of Livestock for 15 days then operate from the district headquarters in Mwense and Samfya for the remaining time working with livestock farmers.

11. Tutor's name, title and contact details

The student will identify one supervisor within the same University Department who will be officially assigned by the University as his/her Principle Supervisor. The Supervisor's name, title and contact details must be included in the Research Proposal to be submitted by the candidate.

The programme has identified the Provincial Veterinary Officer to act as the local tutor for the student. The details are;

Name: Dr. Japhet Nyekele
Title: Provincial Veterinary Officer
Contact:

12. Home Office Coordinator's name and contact details

Name: Riikka Otsamo
Title: Project Director
Contact: FCG, Helsinki, Finland

13. Deadline for research proposal submission

Interested candidates should submit research proposals by 5th February, 2013.