

Design of a community-based llama breeding program in Peru: A multi-stakeholder process

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Abstract

The Peruvian llama population counts about 1 million animals and the sale of meat and breeding animals is of economic importance for many smallholders. Nevertheless, there are a number of factors hindering a higher productivity, one of them are well established breeding programs. The llamas of the central highlands (Department of Junin and Pasco) are well-known by llama producers as these animals are very tall and heavy and breeding stock is sold every year to other regions of Peru. Farmers raised their concern of losing potentially good genetics, when there is no concerted breeding management in place. Therefore the aim of this study was the design of a community-based breeding program and a multi-stakeholder consultation process was started. This involved personal interviews with farmers, but also a series of workshops with farmers, representatives of local government, an NGO and universities. These platforms were used to distribute information on breeding programs, but also to discuss and agree on level of involvement, roles and responsibilities of different stakeholders in a breeding program. In a first step, 70 farmers of 20 communities agreed to form a breeders association. At the same time a phenotypic characterisation of the llama population was performed. In addition, a preliminary market analysis was carried out to get a better understanding of the complete value chain of llama meat. Alternative breeding strategies, such as central versus dispersed nucleus, were presented and discussed with farmers. This participatory approach with the involvement of different actors ensures commitment and ownership of all parties which is a pre-requisite for the long-term sustainability of a breeding program.

Resumen

La población de llamas en Perú es aproximadamente 1 millón de animales, y la venta de carne y animales para reproducción es de importancia económica para muchos pequeños criadores. Sin embargo, existen muchos factores que dificultan el logro de una alta productividad, uno de ellos es la falta de un apropiado programa de mejora genética. Las llamas de la sierra central del Perú (Departamentos de Junín y Pasco) son reconocidas por los criadores de llamas como animales muy altos y pesados; muchos animales son vendidos como reproductores a otras regiones del Perú cada año. Los criadores han manifestado su preocupación por la potencial pérdida de buena genética, especialmente cuando un programa concertado de mejora genética no ha sido implementado. Por tanto, el objetivo del presente estudio fue diseñar un programa comunitario de mejoramiento genético; así un proceso de consulta entre todos los actores involucrados ha sido iniciado. Este proceso consistió en

entrevistas personales con los criadores, pero también la realización de una serie de talleres con los criadores, representantes del gobierno local, ONG y universidades. Esta plataforma fue usada para diseminar información acerca de los programas de mejoramiento genético, también para la discusión y toma de acuerdos en el nivel de involucramiento, roles y responsabilidades de las diferentes partes interesadas en el programa de mejora. En un primer paso, 70 criadores de 20 comunidades acordaron formar una asociación de criadores. Al mismo tiempo, la caracterización fenotípica de la población fue realizada. Adicionalmente, un análisis preliminar del mercado fue realizado para tener un mejor conocimiento de la cadena de valor de la carne de llama. Diferentes alternativas de estrategias de mejora genética, como núcleo central versus núcleo disperso, fueron presentadas y discutidas con los criadores. Este enfoque participativo con el involucramiento de diferentes actores asegura el compromiso y la apropiación de todas las partes, el cual es un pre-requisito para lograr la sostenibilidad a largo plazo del programa de mejoramiento genético.

Key words: llamas, breeding program, multi-stakeholder process, Peru

Introduction

Genetic improvement is usually viewed as a complex task that needs a high level of organisation and sophistication. In Europe, animal breeding has been traditionally supported by the state and large national breeding programmes are the rule rather than the exception. Transfer of this approach to developing countries has been unsuccessful. Centralized breeding schemes, entirely managed and controlled by governments with minimal, if any, participation of farmers, were developed as an alternative and implemented in many developing countries through a nucleus breeding unit limited to a central station, usually run by a governmental organisation.

These plans were entirely managed and developed without the active involvement of the community of farmers who played a passive role in the collection of information or allowing government staff to collect data on the basis of a contractual agreement. Thus the centralized schemes designed and managed by governments, failed to provide improved males continuously and also failed to engage the participation of the end users in the process. Furthermore the schemes were effective only when the funding was available and while R&D's priorities did not shift towards short-term developments.

Establishment of small, local breeding programmes by communities is sometimes advocated but very few cases of such programmes have been documented (Mueller, 1990; 1996; 1999; 2003; Mueller and Taddeo, 1993; Mueller et al., 2002; Taddeo and Mueller, 2000; Taddeo et al, 2001; 2002; Abad et al. 2002). Sölkner et al. (1998) tried to analyse causes for success or failure of such community (village) breeding programmes, but they were unsuccessful due to the lack of documented cases.

A few decentralized nucleus schemes handled by small resource producers or their organizations have been successfully applied to small ruminants, in particular in Argentina, Peru (Mueller et al. 2002; Mueller, 2003) and Morocco (Iñiguez, 2005; 2006). These programs have taken into account, from inception, the farmers' decisions and participation which were determinant for their success.

Nevertheless, community-based breeding programs that are managed mostly by farmers themselves need support from various stakeholders. This dimension of involvement of various stakeholders has been widely neglected during the planning and implementation of locally organised breeding programs, but needs more attention to ensure sustainability in the long-term perspective.

This paper aims to describe different multi-stakeholder processes for the implementation of breeding programs for llamas in the central Highlands of Peru.

Material and Methods

Two study sites in the central Andes have been selected for this study. In the region of Junin only farmers the community Marcapomacocha participates, whereas in the region of Pasco a total number of 70 farmers from 20 different communities jointly work together.

A multi-stakeholder consultation process in each study region was the starting point for the design of community-based breeding programs.

During this initial phase a survey with personal interviews with 126 farmers was carried out. A questionnaire covering various topics (herd management, socio-economic data of farmers, main challenges and problems, production and reproduction data) was used for data collection. Details about breeding practices and local strategies of exchange of breeding animals were collected to get a first insight into the social networks of the smallholders in the region. Additionally, 3 cooperatives in the Pasco region were included in the sample as they have larger llama herds and might be important for the establishment of breeding strategies.

All information was entered in a database and analysed using SAS-software (SAS, 2009).

In addition, a series of workshops with farmers, representatives of local government, the head of Alpacas and Llamas Genealogy Registry in Pasco Region of the Regional Department of Agriculture, an NGO and universities were held. These platforms were used to distribute information on breeding programs, but also to discuss and agree on level of involvement, roles and responsibilities of different stakeholders in a breeding program.

Repeated field visits were needed to explain the main objective of a breeding program. It was made clear that a breeding program can only be successful if there is a long-term commitment and interest from different actors. There were also discussions held to explain that breeding activities should also be accompanied by supporting actions (e.g. veterinary service, pasture improvement).

The field visits were also used to perform a phenotypic characterisation of the llama population. Therefore, different body measurements and body weight were taken.

Another component of the project was training for farmers. Based on the expressed needs and interests different topics were covered in the training program.

The different methods (individual interviews, workshops, field visits) were used to triangulate and validate information.

Results and discussion

Production system

The production system can be described as a low-input low-output production system. Farmers usually rear llamas, alpacas and sheep. The survey data shows that farmers have a strong interest in llama rearing, but invest little in improving management practices. All farmers stated that llamas are mainly kept for meat production. The sale of breeding males within the region, but also to other regions of Peru is an additional source of income as they get good prices at animal shows. Further details of the survey can be found in Gutierrez et al (2012) and Wolfinger (2012).

Stakeholders

First workshops were used to identify different stakeholders that are important in the llama meat value chain.

After the first workshops with farmers it was clear that the initial idea of having only one joint breeding program for both study regions would not work out due to different factors. The long distance between sites, location in different political departments and involvement of different stakeholders in both regions led to the decision of developing different strategies.

In a next step development and research organisations were invited to participate in the workshops.

The local NGO FODESA is only active in the Pasco region by supporting farmers in management improvement. This NGO has also started with a small nucleus herd which could be included in the breeding strategy. The local university UNDAC has a mandate for working in Pasco region and is therefore not involved in activities in Junin.

Other stakeholders like the Ministry of Agriculture play a role in both regions as it has a national mandate. The main task of the Ministry is the registration of breeding animals.

During the initial phase it was not possible for the project team to engage more in a formal discussion with traders. Farmers repeatedly complained about the dominant role of the traders as they can dictate at the moment the price for llamas. In a next phase more emphasis has to be given to discuss collaboration options. One argument could be that traders could get a permanent supply of young llamas. As not all young males are suitable as breeding stock, they could be sold for meat production.

Organisation of breeding programs

Different breeding strategies were developed as the number of involved parties varied between study sites. In Marcapomacocha the community assembly agreed that decisions on the breeding program are made by the members of the assembly. This resulted in a delay in getting an agreement with farmers. In this community the term of the president and his team ended and after the elections a new team is now leading the community. Therefore the project team had to re-start discussions and explanations with the new leaders. Finally, they were convinced that they would like to continue with the collaboration. This strategy might be reassessed in the future as it makes the technical cooperation more dependent on the political will of the community leaders. It might be more suitable to go for a breeders association in the long run.

In the first workshop in Pasco farmers agreed to form an organization committee to organize follow-up meetings to discuss the formation of an Association of llama keepers. The representative of the Ministry of Agriculture was member of the committee in order to ensure links to the official policies of the country. After a longer consultation process all interested farmers agreed to form a local breeders association called PROLLAMA. The association has a set of by-laws. A governance structure with a steering committee composed by a president, vice-president, treasurer and two more committee members has been established.

This association is officially recognised by local institutions. This legal status is important as it gives the association the negotiation power to discuss with the local government possible support actions. It can also be part of the “participatory budgeting process”. This means representatives of civil society can co-decide on the expenditures of the regional government on development projects.

Simple data recording routines were agreed with farmers. A database has been developed and is hosted by UNALM-University. A logical next step is the establishment of a routine for evaluation of breeding values. This can be done centrally for both breeding programs.

Accompanying activities

As breeding activities are long-term investments and first results can be only obtained after a longer period, it is essential to have accompanying measurements. Therefore the project team

developed based on the farmers needs training components. One topic was the genetic improvement of livestock with emphasis on llamas, and another topic was parasitic diseases in alpacas and llamas. Also, farmers asked to organize field demonstrations regarding topics addressed in the short course. One activity was to demonstrate physical appraisal of animals. This activity helps farmers to get a common understanding on the selection of breeding stock. The other activity was a training of feces collecting methods for parasitology analysis.

Conclusions

It is essential and a key feature of a community based-breeding program to focus on farmers in the set-up, but nevertheless other relevant stakeholders should not be ignored and an open communication has to be ensured.

All relevant stakeholders should be included right from the initiation of breeding strategies and workshops should provide enough time for discussion. There is no blue-print for the development of breeding strategies. They have to be adapted to the local situation taking into account local structures and available organisations. One should also note that structures can change over time and can evolve with the further development of the breeding program.

Acknowledgements

The author would like to thank KEF-Commission for Development Research at OeAD-GmbH, the Austrian Agency for International Cooperation in Education and Research for financial support. The authors are also grateful for the cooperation with the farmers in the study regions, who are dedicated to their llamas.

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Introduction



- Large, national breeding programs have often failed in tropical regions.
- Community-based breeding programs have been promoted as a possible alternative.
- Livestock keepers have been put in the centre of interest, often ignoring other relevant stakeholders.

Objective



Document the process of stakeholder involvement in
setting up community-based breeding programs
in two different locations in the Central Andes of Peru

Study regions

- Zone 1: Districts of Simón Bolívar ,
Santa Ana de Tusi and Ninacaca in
Pasco
- Zone 2: Marcapomacocha , Junín.
 - Altitude: 4000-4800 msnm
 - Precipitation: 700-1200 mm
 - Temperature: -6-25°C



Material and Methods



- Survey with 126 individual interviews
 - Socio-economic data, management practices

- Series of workshops with farmers
 - Identification of selection criteria and breeding goals
 - Identification of stakeholders
 - Information and training on animal breeding

- Series of workshops with farmers and different stakeholders
 - Identification of possible breeding strategies
- Triangulation of information through different approaches

Results – Stakeholder analysis



| Stakeholders | Zone 1 – Pasco | Zone 2 – Junin |
|------------------------------------|----------------------|--------------------|
| Farmers | Association PROLLAMA | Individual farmers |
| Ministry of Agriculture | X | X |
| Regional Department of Agriculture | X | |
| UNALM | X | X |
| BOKU | X | X |
| Local university - UNDAC | X | |
| NGO | X | |

Results – Organisation of breeding programs

| Characteristics | Zone 1 – Pasco | Zone 2 - Junin |
|----------------------------|--------------------------|-------------------|
| Number of farmers involved | 100-200 | 15-20 |
| Type of nucleus | Dispersed | Central |
| Location of nucleus | NGO, University, farmers | cooperative |
| Number of femles in base | 3000 | 600 |
| Decision process | PROLLAMA | Community Council |

Results



- Formation of officially recognised organistion increases the negotiation power and therefore new financial sources can be accessed.
- Simple data recording routines were agreed with farmers and data will be transferred to database at UNALM.
- Continous training on different managment practices helps also to keep farmers interested and ensures interaction of farmers, technicians and researchers.

Conclusions



- A stakeholder analysis at the beginning of a breeding program is important.
 - Stakeholder involvement needs time and good facilitation of the communication process.
 - There is no blue-print for the development of breeding strategies and engagement of stakeholders.
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Acknowledgement



- KEF-Commission for Development Research, Austria
 - FAO
 - All participating farmers for their collaboration
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Thank you for your attention!
