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## Design of a Village Breeding Programme for a Llama Population in the High Andes of Bolivia

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### Abstract

Llama husbandry is of high importance for the Bolivian high Andean agro-ecosystem and its inhabitants. Due to their unique adaptation to high altitude conditions, llamas are traditionally a cornerstone of the Andean farming system. Despite the harsh environment, they provide the household with fibre, meat and dung and males are used as pack animals. Although llamas contribute to a large extent to the income of many Bolivian households, there is no national breeding programme in place. Initiatives for genetic improvement are rarely found and are usually carried out by NGOs or research stations. Farmers in the Province of Ayopaya in the Department of Cochabamba formed an organisation with the aim of improving agricultural production and especially llama husbandry. In this study a detailed outline of a breeding programme with a focus on organisational and technical details is described. Facing constraints like illiteracy of farmers, bad infrastructure and lack of finances a simple breeding programme is set up. All calculations are carried out with the computer programme ZPLAN, which is based on a deterministic approach. The breeding goal is a higher fleece weight while keeping the fleece quality at the current high level. Greasy fleece weight and fibre diameter are identified as main selection criteria. Mass selection of males is based on own performance. Selected males are either exchanged between farmers and used in the herds or are kept in a central mating centre owned by the breeders' organisation during the mating season. Different scenarios with only intra-herd use, only using the central mating centre or different combinations are compared in terms of genetic gain and expected increase of inbreeding.

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