

Smallholder dairy farmers in the Peruvian Andes fulfilling the role of extension agents

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Introduction

The Andes in Peru support >85% of the livestock population, providing the livelihoods to 1.4 M smallholder families.

Over the last 3 decades, dairy cattle farming has grown dramatically, whereas farming of creole cattle and sheep, and camelids have become marginal.

Compared to other livestock systems, there is no locally developed knowledge on dairying, and extension support is ill. So, given this void, smallholders are receptive of knowledge suitable for the intensive feedlot dairy farming systems, which is inappropriate.

The dairying system

The prevailing dairy genetics (specialised, of large body size) contrasts with the Andean abiotic and biotic constraints to dairy farming and climate change (CC), resulting in poor system efficiency and high environmental footprint.

Dairying is based on feedlot principles. Concentrates and forage crops feeding are favoured, whereas management of pastures and grazing are neglected.

Calving is around the year, hence herd feed demand is constant across the year; having a large contrast with seasonal pasture growth. Summer excess pasture is not conserved, but oats are grown for hay, harvested at full maturity.

Seasonal home-grown feed supply and unaffordability of imported feeds result in poor body condition of animals. Consequently, key performance indicators are undesirable.

Cows are housed overnight (~18 h). Sheds are rarely cleaned, implying a huge environmental impact and loss of soil fertility. Cow sheds also compromise animal health and milk quality.

Encroachment of pastures into native grasslands (subsidised by government), without grazing management support results in poor persistence of pastures; hence, huge environmental impact (loss of soil organic carbon and erosion).

Agricultural extension weakness

Addressing issues that Andean dairying is facing requires harmonizing synergies between mitigation and adaptation to CC, productivity, food security, animal welfare and general health. For this, on farm validation of husbandry practices and mass extension of this knowledge is critical. Mass extension is needed given the large number of dispersed smallholders.

R&E policy addressing smallholder agriculture is lacking. The national system of agricultural innovation (SNIA; 2019) remains to be implemented, but the likelihood of success is bleak due to: (1) bureaucracy-dependent, subject to political instability; (2) not accessible to smallholders (user-pay); (3) based on industrial agriculture principles, with no respect to the cultural heritage and indigenous knowledge; (4) funding is of short-term, it targets components not the whole; (5) lack of education on agricultural extension; predominance of lecturing rather than facilitation (e.g., AGRORURAL); (6) technology transfer, the predominant form of extension service is deep rooted, hence unfit to tackle complex system issues; (7) Extrapolation of FAO 'field schools'-crop-based extension to livestock is arguable.

The F2F extension approach promoted the adoption of the best pastoral dairy husbandry practices, aiming at 'harvesting first the low hanging fruits' that have little or no cost, and rapid and large impact on productivity and reduction of environmental footprint. This approach contrasts with the introduction of exotic high value dairy genetics that often have negative consequences.



- Animal genetics (fit), facilities, mechanisation
- Pasture renewal (diverse pastures), Seasonal milking (match feed demand and offer) Farm Subdivisions, Milk quality
- Need for knowledge and skills**
- Simpler, best husbandry practices first**
- Records keeping
- Permanent water allocation
- Pasture fertilization
- Grazing management, pasture/feed allowance
- Management of body condition
- Young stock management
- Feed and financial budgeting
- Pasture conservation, reduction feed imports
- Animal health, extended grazing hours
- Skills development by doing**



Over the ~30 months of field activities, 760 field events were conducted, with >25,000 farmers attending (38% women and 75% Quechua-speakers). More than 430 farmers were trained in 2019 alone (25% women and 73% Quechua-speakers). Before Covid19 there were ~4,000 farmers applying improved dairying practices and most of them reporting improved profit. Women-only extension events and use of Quechua were strong means of empowering women farmers.

Farmer to farmer (F2F) extension

The New Zealand Peru Dairy Support Project (NZPDSP, 2016-2020) aimed to increase net income of smallholder Andean dairy farmers through the adoption of improved husbandry practices, supported by effective R&E. For this, the project was set to rely on trained officials of extension. Given that commitments from these officials were poor, the project had to train farmers to fulfil the extension role (F2F) (Hellin, 2012). During the field days, farmers with key interpersonal skills were identified, trained, and mentored until they felt fully confident.

Farmers preferred to attend capacity building events in the field rather than in a classroom. Farmers facilitated the process of learning in the field (doing things). Farmers observing other farmers showing/demonstrating what they have already done were fully engaged in the process of learning. Key characteristics of farmers fulfilling the role of extension included: having a young family with a clear will to change, fluency in the local language, dairying as the main activity, and an ongoing commitment to practice change.

Conclusions

The F2F extension approach proved to be a powerful and cost-effective means of promoting sustainable pastoral dairying in the Andes. It filled the void left by the lack of institutionalised extension service and it continues throughout the Covid pandemic. Nevertheless, the F2F extension approach to be sustainable requires institutional support and resourcing, and accreditation of the farmers fulfilling the role.

References

Hellin, J. (2012). *J. Agr. Educ. Ext.*, 18(2):141-159; SINIA (2019) Instituto Nacional de Innovación Agraria, Lima, Peru; NZPDSP (2020). *New Zealand Peru Dairy Support Project: Activity Completion Report*. The Agribusiness Group, Lincoln, New Zealand.

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