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(World Society for the
Protection of Animals)

A case study of triple wins in milk and beef production in Colombia

This case study reveals one such solution: silvopastoral beef and dairy production.

In Colombia, cattle ranching has traditionally relied on extensive systems, with few animals per hectare raised on grass. While it has a range of benefits, this type of cattle ranching provides limited feed quality. It also often suffers from challenges during seasonal extremes of temperature and drought, due to limited shade, poor soil quality and access to water.

The world is facing major challenges developing sustainable livestock production systems that can deliver against growing demands for meat and milk production. These systems must also demonstrate environmental stewardship and ensure essential aspects of sustainability, including animal welfare and livelihoods, are properly respected.

Intensive silvopastoral systems have the potential to deliver much more feed from the land, through the planting of protein and mineral rich grasses and shrubs such as *Leucaena* (legume bushes). By growing plants, shrubs and trees, a three-dimensional feed source is created.

The quality and quantity of the feed source delivered in situ is greater. The additional plant matter, plus root density, and biodegradable material can increase soil quality and water retention, as well as increasing carbon retention in the soil.

By using animal breeds well adapted to tropical environments, the intensive silvopastoral system has the potential to achieve high levels of production from local feed sources in pasture-based environments. This maintains good health, natural behaviour and ease of animal management.

This project aimed to bring together measures of productivity, economics (and the potential for livestock-based livelihoods), environmental stewardship and animal welfare in one integrated assessment. It aimed to test the potential of a system, and its development over time to achieve sustainable livestock production.

The assessment was delivered as a partnership project. Partners included Colombian Cattle Ranching Association (FEDEGAN-FNG); the Centre for Research on Sustainable Agricultural Production Systems (CIPAV); global assessment network agri benchmark of the Thünen Institute of Farm Economics and World Animal Protection.

The farms assessed are pioneers in establishing intensive silvopastoral systems, delivered with the technical and scientific support of CIPAV. This has proved crucial for the development and dissemination of the systems.

The knowledge developed in these farms is used by the project Colombia Mainstreaming Biodiversity into Sustainable Cattle Ranching led by FEDEGAN-FNG in partnership with CIPAV research institute, The Nature Conservancy and Fondo Acción. The project is administered by the World Bank with funding from the Global Environment Facility and the United Kingdom's Department of Energy and Climate Change (DECC).

Delivering productivity gains through silvopastoral farming: a stepwise process

The analysis of the production system, productivity and economics, used the tools, methods and expertise of the global, non-profit agri benchmark Beef and Sheep Network.

For each of the farms, we first defined a reference situation (baseline) representing the status of the farm before introduction of intensive silvopastoral systems. Then, assisted by advisors and producers, the detailed, realistic pathway of introducing intensive silvopastoral systems and their implications on productivity, management and economics was assessed and modelled for 10 years. The introduction of the system is typically done step by step over 5-10 years.

Establishing silvopastoral systems involves investment in fence installation water lines and troughs, the seeding of grass (Guinea, star grass), Leucaena and, in the case of La Luisa, Eucalypt trees. Table 1 shows the investment and maintenance costs per ha for each of the farms.

More feed and more animals, profitability improved

The main impacts of intensive silvopastoral systems on productivity are:

- higher feed quantity and better quality (digestibility, nutrient contents)
- higher milk yields in cows, higher daily weight gains in finishing cattle, allowing the reduction of finishing periods and increasing the cattle numbers
- higher stocking rates and higher land productivity.

The results of this case study showed that:

- Intensive silvopastoral systems are more productive and profitable than cattle ranching systems. Their success is based on good management, extension and access to capital that builds farmers' long-term capacity to deliver efficient and increasingly productive beef and dairy production.
- Intensive silvopastoral systems deliver productivity that goes hand in hand with animal welfare.
- Intensive silvopastoral systems provide a clear investment in sustainable environmental management, with potential climate mitigation benefits.

