



# Sustainable livestock production

# I. Sustainable livestock production

Livestock is a very important sector socially and politically. The livelihoods of half the 768 million people living in poverty worldwide depend directly on it (ILRI, 2008; Robinson et al, 2011; World Bank, 2013). Livestock provides 14% of the total calories and 33% of the protein in people's diet at global level (FAOStat, 2013), making a very important contribution to food security by providing people with essential vitamins and minerals.

Growing populations and incomes, along with changes in food consumption and preference patterns, are rapidly increasing the demand for livestock products, and globalization is boosting the trade of livestock inputs and products. Global production of meat is projected to more than double by 2050 (especially for beef and sheep) (OECD & FAO, 2018); and that increase in production is causing concern because of the negative impact that current livestock management practices have over the natural environment.

Livestock is by far the single largest anthropogenic user of land, with up to 26% of terrestrial areas dedicated to rangelands and about 33% of croplands for fodder production (FAO; 2009; FAO-AGAL, 2016). Expansion of livestock production is a key driver of deforestation, especially in some regions of Latin America. About 20% of the world's pastures and rangelands, with 73% of rangelands in dry areas, are degraded to some extent, mostly from overgrazing, and soil compaction and erosion caused by livestock (FAO, 2006).

The sector also uses large amounts of water, not only for drinking and servicing the animals, but also for irrigating feed crops and forage, and during the processing of animal products and can contribute to water pollution through discharge of wastes, especially surpluses of nitrogen and phosphorus (FAO-AGAL, 2016). Additionally, livestock make a significant contribution to climate change, being responsible for 14.5% of human induced GHG emissions (Gerber et al., 2013).

Understanding that the positive or negative impact of livestock over the environment depends directly on the production intensity, the specific production practices, the species bred, and the local ecological condition; SAN's approach to the sustainability of livestock relies on practices that:

- improve productivity and input use by implementing a multi-level system for feed resources and an associated management plan;
- minimize potential negative impacts on natural resources and ecosystems by halting the destruction of natural ecosystems, optimizing water and land use, and treating of residual waters;
- reduce GHG emissions and improve the systems' capacity as carbon sinks;
- ensure animal welfare, meaning that animals are healthy, comfortable, well-fed, safe, can behave naturally, and are not subject to pain, fear, and stress;
- minimize food safety risks through sanitary protocols and animal health monitoring;

- implement mechanisms for the verification of the animal's origin and breeding process throughout the supply chain; and
- fully respect the rights of livestock operations' workers (better working conditions) and local communities, especially those related to land and natural resource use.

### I.1. Sustainability goal: Animal and animal by-products traceability

Outcomes	ID	Performance Indicators /Best practices
Verification of animal origin and breeding process is enabled throughout the supply chain.	I101	Operations implement an individual animal identification system, including: <ul style="list-style-type: none"> <li>- ear tags</li> <li>- microchips</li> <li>- tattoos</li> <li>- ruminal boluses</li> </ul>
	I102	Operations keep animal life records associated to their individual identification with: <ul style="list-style-type: none"> <li>- dates of birth/purchase and sale/death;</li> <li>- animals' origin: if born within the operations management, information about parental lines; if bough from third parties, origin's farm; and</li> <li>- management practices: disease treatment, sanitary controls, and productivity records.</li> </ul>
	I103	Operations maintain each animal record for at least one year after sale or death for traceability purposes
	I104	Operations do not breed transgenic nor cloned animals.

## I.2. Sustainability goal: Animal's health and welfare

Outcomes	ID	Performance Indicators /Best practices
Animals are healthy, comfortable, well-fed, safe, can behave naturally and are not subject to pain, fear, and stress.	I201	Operations raise livestock in systems that provide sufficient space, proper facilities and company that allow animals to express normal behavior: – stall housing and nomadic production systems are not practiced; and – feedlots are only used if animals have the opportunity for movement and exposure to sunlight in outdoor ranging areas, and if feedlots are used only during the final fattening stage of the animals.
	I202	Operations implement actions related to genetic selection to balance productivity needs with the animals' health and welfare (both in the short and the long term).
	I203	Operations do not withhold treatment to preserve an animal's eligibility for the market.
	I204	Operations do not use chemical substances (such as potash) and hot iron methods for branding; nor practice penis-deviation.
	I205	Animals do not present any signs of abuse, neglect, or cruelty: poor body condition, noticeable trauma, lack of food and malnutrition symptoms, lack of sanitation; and/or severe pest infestations.
	I206	Operations ensure that all animal handling and treatment activities are conducted by trained personnel, and that personnel do not hit or molest animals to induce movement.
	I207	Operations feed animals according to the nutritional needs of their life stages: – newborn animals are fed with colostrum; and – young ruminant animals are fed with milk or milk substitutes until their development allows for digestion of fodder.
	I208	Operations do not feed their animals with human excrement, animal by-products, or animal feed containing such components.
	I209	Operations provide animals with safe and clean water in sufficient quantities to avoid dehydration. Water quality is constantly monitored and avoids any negative health effects for the animals.
	I210	Operations castrate animals before two months of age and only by surgical methods or emasculation. If castration needs to be done after two months, operations apply pain relief medication during and after castration.
I211	Operations dehorn animals before two months of age, and do not use hot iron nor excision processes. After two months of age, only tipping is permitted.	
Animals are healthy, comfortable, well-	I212	Operations develop and implement a herd health system focused on pest prevention methods and endorsed by a trained technician.

Outcomes	ID	Performance Indicators /Best practices
fed, safe, can behave naturally and are not subject to pain, fear, and stress.	I213	Operations implement preventative actions to minimize the risk of entry and spread of diseases within their facilities.
	I214	Operations implement an animal health monitoring system that is supervised by competent professionals in veterinary science.
	I215	Operations demonstrate that treatment of diseases is according to the recommendation of a veterinarian or legally authorized professional; and apply all medications and vaccines according to the label instructions or recommendation of a veterinarian or legally authorized professional.
	I216	Operations administrate antibiotics only as a remediation measure and never as a prevention measure to avoid developing resistance.
	I217	Operations reserve euthanasia for animals with incurable or terminal diseases; and demonstrate that chosen euthanasia methods are swift and painless.
	I218	Operations implement a protocol compliant with applicable legislation to handle diseased animals that represent contagious and infectious risks.
	I219	Operations milk dairy and double purpose dams regularly, to prevent any negative health impacts and/or conditions.
	I220	Operations train workers and producers within their scope in welfare and animal management practices, to reduce animals' pain, stress, and injury.
	I221	Workers and producers have received training about welfare and animal management practices and demonstrate that the practices they carry out reduce animals' pain, stress, and injury.
	I222	Operations keep infrastructure for livestock management clean and control disease vectors. Provided infrastructure allows animals: <ul style="list-style-type: none"> <li>- sufficient and clean bedding;</li> <li>- natural light;</li> <li>- ventilation; and</li> <li>- protection from extreme weather conditions and events.</li> </ul>
	I223	Operations design, build and maintain chutes, alleys, and other restraining equipment and facilities to reduce animals' stress and injury. There is no evidence of hazards such as pointy ends, broken platforms, nor steep slopes.
	I224	Operations design and designate areas for the isolation and treatment of injured or sick animals.
	Animals are healthy, comfortable, well-fed, safe, can	I225

Outcomes	ID	Performance Indicators /Best practices
behave naturally and are not subject to pain, fear, and stress.	I226	During transportation, operations assure compliance with applicable legislation and take actions to avoid animals being contained in a vehicle for more than 24 continuous hours.
	I227	Operations do not transport animals that are sick, severely injured or have open wounds, nor dams that are in the last month of pregnancy, or that have recently given birth; except for emergencies and veterinary treatment purposes.

### I.3. Sustainability goal: Improved productivity

Outcomes	ID	Performance Indicators /Best practices
Productivity is improved and input use is optimized.	I301	Operations document reproduction periods and activities to reduce inbreeding and improve herd genetics.
	I302	Operations implement a multistrata system for feed resources production.
	I303	Operations implement a pasture and forage management system that includes: <ul style="list-style-type: none"> <li>– selection of pasture/forage species considering agroecological conditions, production rates, nutritional value, non-invasiveness, resistance to pests, and climatic variability;</li> <li>– periodic evaluation of pasture/forage condition;</li> <li>– assessment of weed infestation levels and pest control actions;</li> <li>– fertilization methods; and</li> <li>– actions to avoid overgrazing and pasture degradation.</li> </ul>
	I304	Operations improve their grazing management through grazing rotation arrangements.
	I305	Operations improve their feed resources, through the establishment of protein banks, the use of locally adapted and highly nutritional pastures, the establishment of agroforestry systems, and/or the elaboration of silage.

#### I.4. Sustainability goal: Mitigation of environmental impacts

Outcomes	ID	Performance Indicators /Best practices
Potential negative impacts of productive systems on natural resources and ecosystems are minimized and GHG emissions are reduced.	I401	Operations do not destroy any natural ecosystems from the date of initial engagement with SAN programs onwards. Past no-destruction periods can be defined for each operation based on risk conditions.
	I402	Operations provide livestock with water and feed within pasture lots to avoid degradation in areas not designated for animal transit.
	I403	Operations prevent the entry of livestock animals into natural ecosystems and protected areas to prevent their degradation.
	I404	Operations select and manage routes where animals cross aquatic ecosystems to reduce degradation.
	I405	Operations control propagation of invasive plant species caused by the movement of animals through the farms.
	I406	Operations manage the herd size and age structure to prevent over-grazing and soil compaction, based on calculations of animal units per hectare according to pasture characteristics.
	I407	Operations implement additional actions for soil management and reduce erosion and compaction, through re-vegetation of steep areas, designation of specific areas for animal transit, terracing, sediment control basins, and/or minimization of herbicide use.
	I408	Operations collect manure from stables and enclosures; and compost it or treat it through anaerobic treatment, compacting and/or covering to reduce pathogens and methane gas emissions.
	I409	Operations monitor the use of veterinary products for pest control and disease treatment to prevent soil, water, or ecosystem contamination.
	I410	Operations only use medications and vaccines registered in the country and approved by local animal health authorities.
	I411	Operations do not administrate any of the following substances to their animals: <ul style="list-style-type: none"> <li>- Organochlorinated substances;</li> <li>- Anabolics to promote muscle mass increase;</li> <li>- Hormones to stimulate higher production;</li> <li>- Non-therapeutic antibiotics (preventive medication or promotion of higher production).</li> <li>- Clenbuterol, Diethylstilbestrol (DES), Dimetridazole, Glicopeptids, Ipronidazole;</li> <li>- Chloramphenicol, Fluoroquinolones, Furazolidone; and</li> <li>- Diclofenac and Aceclofenac.</li> </ul>
	I412	Operations store safely all medications, according to the label instructions.
	I413	Operations train workers and producers within their scope on best management practices to reduce negative impacts of the productive systems on the environment.

## I.5. Sustainability goal: Mitigation of sanitary risks

Outcomes	ID	Performance Indicators /Best practices
Food safety risks are minimized by the implementation of sanitary protocols.	I501	Operations respect the withdrawal periods of veterinary products for animals and sub products (such as dairy) according to the instructions of the applied product's label.
	I502	Operations keep milking infrastructure clean and free of waste, and all equipment free from excrement and in good operating condition.
	I503	Operations implement a sanitation protocol for milking equipment and personnel: <ul style="list-style-type: none"> <li>– utensils and equipment are sterilized or disinfected; and</li> <li>– hands are washed or disinfected with non-irritating substances before each dam is milked.</li> </ul>
	I504	Operations minimize and reduce the risk of zoonotic diseases.
	I505	Operations handle animals' carcasses with sanitary and infectious issues according to the protocols established by applicable legislation.