



# Methods for estimating livestock production and productivity

**Better livestock data for more effective public policies**





# What is livestock production and productivity?

As defined by the World Programme for the Census of Agriculture 2020, the term “**livestock**” refers to all animals, birds and insects kept or reared by agricultural holdings mainly for agricultural purposes.

**Livestock production** can be defined as the study of the animal production raised and bred by agricultural holdings and of animal products, such as milk, eggs, meat and skins.

**Livestock productivity** analyses the relationship between the livestock production and the resources used to obtain it.

## Livestock:

INCLUDES	EXCLUDES
Cattle, buffaloes, horses and other equine animals, camels, sheep, goats and pigs, poultry, bees, silkworms, etc.  (Scope varies among countries depending on national priorities)	Aquatic animals  Domestic animals such as cats and dogs, unless they are raised for food or other agricultural purposes

## What do statistics on livestock production and productivity cover?

- Livestock number and herd dynamics
- Livestock production (meat, milk, eggs, etc.)
- Animal health
- Inputs and production costs (feed, water, etc.)
- Import and export
- Prices
- Food safety and security

## The need for good livestock production and productivity statistics

The livestock sector contributes 40 percent of the global value of agricultural output (United Nations General Assembly, 2017). It is considered crucial to fully achieve the Sustainable Development Goal (SDG) agenda. Six out of the seventeen SDGs adopted have a livestock component: SDG 1 (no poverty), SDG 2 (zero hunger), SDG 12 (responsible consumption and production), SDG 13 (climate action), SDG 15 (life and land) and SDG 17 (partnerships).

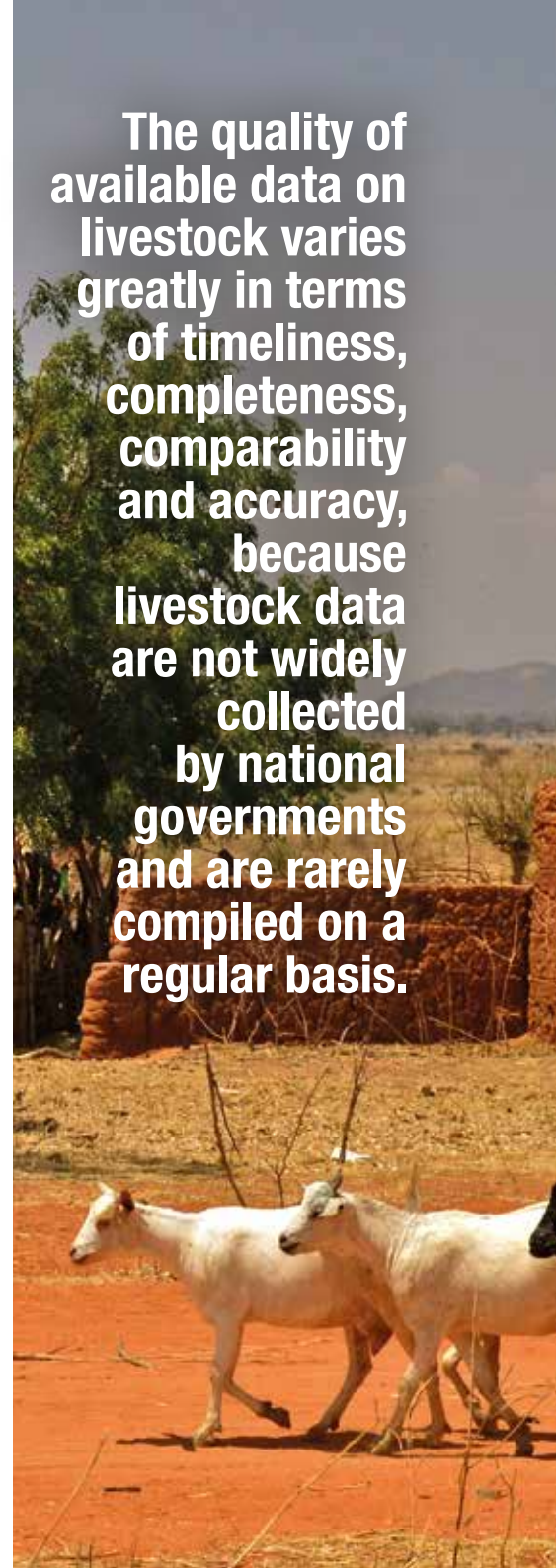
### The livestock subsector interacts with many other sectors:

- Water and soil management
- Land use and greenhouse gas management
- Food and financial security
- Public health (animal diseases, animal products consumed by humans)

### With better livestock production and productivity statistics, more efficient action can be taken when:

- Developing and implementing food security, food safety and animal health programs
- Developing, promoting and monitoring economic growth, agricultural development and poverty reduction
- Developing livestock-sector investment strategies
- Making efficient use of international funds for livestock
- Improving greenhouse gas emissions inventories and mitigation plans
- Establishing a mechanism to protect breeds at risk of extinction

The quality of available data on livestock varies greatly in terms of timeliness, completeness, comparability and accuracy, because livestock data are not widely collected by national governments and are rarely compiled on a regular basis.



# What information should statistical programs on livestock production and productivity collect?



## LIVESTOCK STOCKS

**Herd structure:** number of animals by type, broken down into groups by breed, age, sex, etc.

**Herd dynamics:** entries and exits of animals from the herd for a given reference period



## MEAT PRODUCTION

**Meat production on hoof:** annual growth in livestock live weight

**Meat production from slaughtered animals:** carcass weight of all slaughtered animals, irrespective of origin, for a given reference period and share of on-farm slaughtering

**Meat utilization:** meat sold, meat for own consumption, meat given as gift, etc



## MILK PRODUCTION

**Total milk production:** production of milk from milking animals (cows, sheep, goats, camels, etc.)

**Milk utilization:** fresh milk sold, fresh milk for own consumption, fresh milk used for animal feed, fresh milk used for processing on the farms, etc.



## EGG PRODUCTION

**Number of poultry:** chickens, turkeys, ducks, ostriches, quails, etc.

**Total egg production:** production of eggs per species

**Egg utilization:** eggs sold, eggs for own consumption, eggs for reproduction (hatching), etc.



## ANIMAL HEALTH

**Use of veterinary services:** treatment of diseases, surgical procedures, vaccination, treatment against external parasites, etc.

**Causes of death or disappearance:** diseases, parasites, accidents, predators, drought, etc.



## FEEDING AND WATERING PRACTICES

**Feed available:** production of fodder crops, feed purchased, total grazing area.

**Watering practices:** main sources of water for watering the animals, problems encountered during the reference period, solutions implemented



## LIVESTOCK ECONOMICS

**Cost of production:** value of all inputs – purchased or nonpurchased, fixed or variable – used in the process of livestock production

**Producer prices:** prices received by farmers at the farm-gate level for livestock and livestock products

## What are the basic indicators to compile?

The compilation of the following basic indicators is recommended for designing, implementing, monitoring and evaluating socially desirable interventions aimed at benefitting livestock keepers and consumers:

- **Fertility rate by type of animal:**
  - ▶ Number of births by number of female reproductive animals (cows, ewes, female goats, etc.)
- **Off-take rate:**
  - ▶ Total number of animals slaughtered, sold or otherwise disposed of over the total number of animals in the herd, or the average number of the herd or type of animal, for a given reference period
- **Growth rate:**
  - ▶ Variation in animal stock (difference between stock at the end and stock at the beginning) during the reference period, over the stock at the beginning
- **Value of livestock production:**
  - ▶ Value of animals sold and value of animals consumed on the farm minus the value of purchased animals
  - ▶ Other disposals and acquisitions of livestock, such as donations and payments in kind, are included if significant to the country
- **Gross Indigenous Product:**
  - ▶ Total slaughtering regardless of origin and slaughtering point (slaughterhouse, farm or other) + Export of live animals (regardless of future utilization) – Import of live animals (regardless of future utilization)
- **Productivity:**
  - ▶ Average milk production per milking animal (cow, ewe, goat, etc.) per lactation
  - ▶ Dressing percentage per livestock type equal to carcass weight divided by live weight multiplied by one hundred
  - ▶ Average egg production per hen per year



The complete list of livestock indicators to be compiled depends on the data users' needs. Therefore, statistical services involved in the production of livestock statistics should consult their users on a regular basis.

# Collecting basic data on livestock production and productivity

**Agricultural censuses and surveys** are the most common data sources used to produce livestock statistics at the national level.

If well-organized, **other sources (such as administrative reporting systems)** can also be used to estimate accurate statistics.

**Different data collection methods can be chosen depending on the available budget, the desired scope and the timeliness, accuracy and precision required:**

- Face-to-face interviews with the holders/farmers
- Direct measurement in the field
- Self-administrated surveys (also called reporting)

**Two sectors must be taken into account:**

- The household sector, as smallholders (sedentary, nomadic and semi-nomadic)
- The non-household sector, as large specialized livestock farms

**Some important considerations when designing a livestock production and productivity statistical survey:**

- The reference day and reference period
- The survey frequency: the seasonality of products must be taken into account
- The point of survey: where to find the livestock keepers
- Localizing and enumerating nomadic and semi-nomadic livestock are the main challenges



# Finding and enumerating nomadic and semi-nomadic livestock

Nomadic and semi-nomadic livestock are characterized by the mobility of the livestock and livestock keepers. These forms of livestock are common in arid and semi-arid areas.

It is difficult to collect data on nomadic and semi-nomadic livestock because they are highly mobile, while sedentary livestock are permanently located in one place.

The main challenges are (i) to find and (ii) to enumerate the population of animals under the nomadic and semi-nomadic systems. There are two main methods or approaches to the enumeration of nomadic or semi-nomadic livestock:

## GROUND SURVEYS

The livestock can be estimated through:

### 1. The observation of enumeration points:

- Watering points
- Stock routes
- Dip tanks
- Vaccination posts
- Livestock markets
- Other specific enumeration points

### 2. Interviews targeting specific ethnic groups or clans

## AERIAL SURVEYS

**New technologies** can be used to enumerate the livestock:

1. Low-level aerial surveys with low-flying aircraft (300 feet to 1 000 feet)
2. Counting livestock from specially taken aerial photographs
3. Drones and micro-drones
4. Satellite imagery



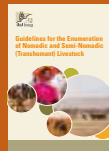


Statistics Division (ESS)  
Food and Agriculture Organization of the United Nations  
Viale delle Terme di Caracalla, 00153 Rome, Italy

[www.gsars.org](http://www.gsars.org)



**Guidelines on methods  
for estimating livestock  
production and productivity  
(EN-FR)**



**Guidelines for the Enumeration  
of Nomadic and Semi-nomadic  
(Transhumant) Livestock  
(EN-FR)**



**Training Course on Livestock  
Production and Productivity  
(EN-FR)**



**Training course on Nomadic &  
Semi-Nomadic Livestock  
(EN-FR)**

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