FAO Global Conference on
Sustainable Livestock Transformation
25-27 September 2023

Plenary Session 4: Better Environment

Balancing livestock production and sustainability of natural resources

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Science for resilient livelihoods in dry areas

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INITIATIVE ON
Livestock and Climate

Quick facts

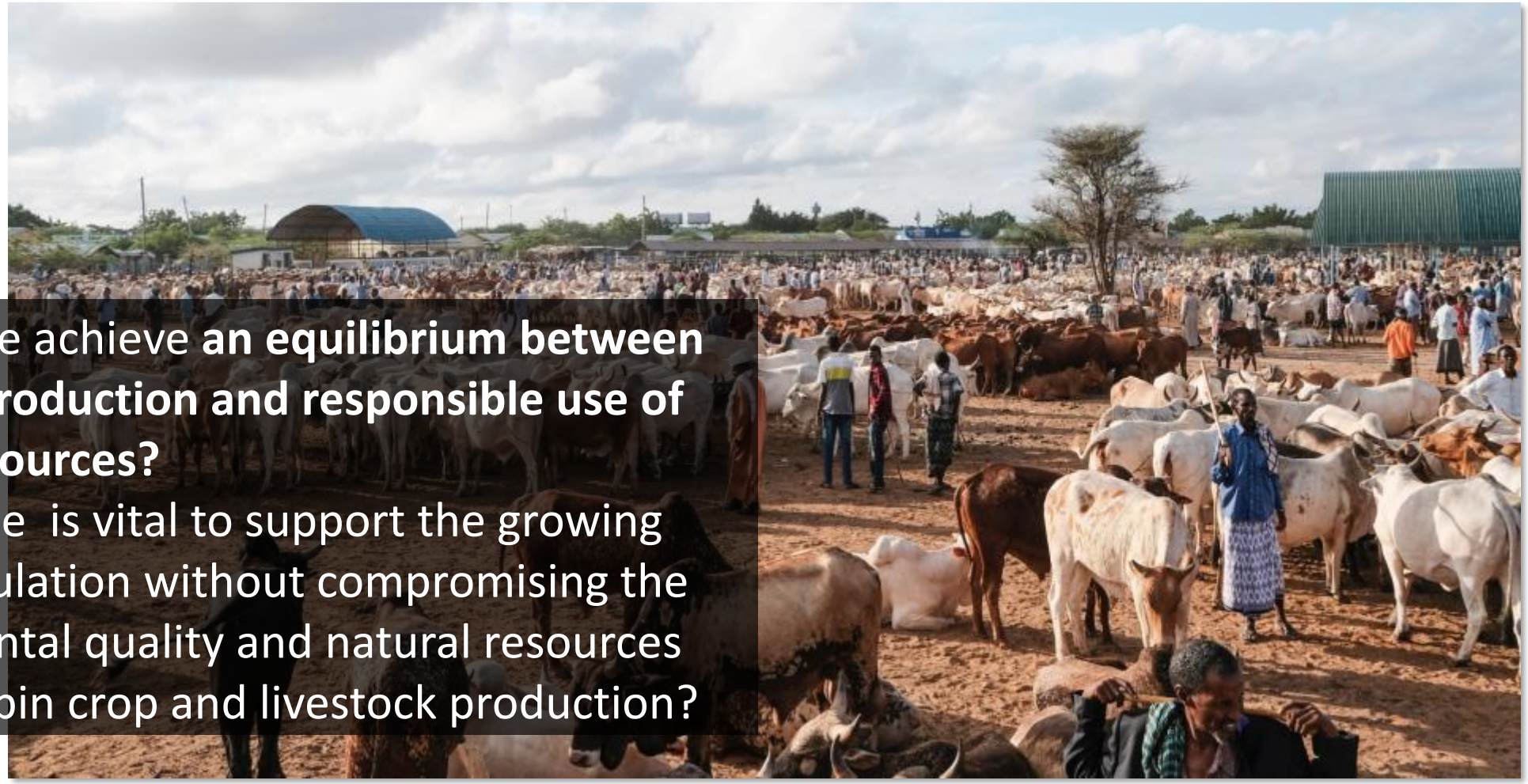
- **More than 1 billion people depend on livestock** for livelihoods and nutrition
- **Rangelands** cover **54%** of global terrestrial surface. Characterized by **high degradation** and **underinvestment**.
- About **33% of arable land** is allocated to animal **feed production**
- **Livestock's multifaceted role extends to:**
  - Its ability to convert inedible vegetation (by humans) into **nutrition-rich products**
  - Its contribution to **healthy ecosystem** when proper grazing management is implemented

Photo ILRI/Stevie Mann

Photo ILRI/Zerihun Sewunet

Did you know that livestock are a climate solution?
In low- and middle-income countries they are a source of income, nutrition security and climate resilience.

The challenge: balancing livestock production and sustaining natural resource base



How can we achieve **an equilibrium between livestock production and responsible use of natural resources?**

This balance is vital to support the growing global population without compromising the environmental quality and natural resources that underpin crop and livestock production?

Photo ILRI/Kabir Dhanji

Livestock production and water

- Livestock production is a **major consumer** of fresh water.
- It is estimated that **42% of the total agricultural water use** is used for the production of livestock feed.
- **90% of the water used by livestock** is through the effects of **grazing** and **producing feed**.
- The fraction of **drinking water** accounts for less than **10%** of the total.
- Global livestock **feed production** relies on **94% green water** and **6% blue water**

Feedlot in an industrial production system

Photo Beef Cattle Research Council

Grazing livestock at a natural water source

Photo ICARDA/Mounir Louhaichi

Livestock production and **soil health**

- **Soil** is the foundation of life.
- However, soils face considerable threats, especially from **unsustainable intensive land use** and **climate change**, which can result in **soil degradation** and a reduction in their ability to provide **ecosystem services**.
- **Livestock activities** influence soil health both positively and negatively:
  - Livestock manure
  - Livestock grazing

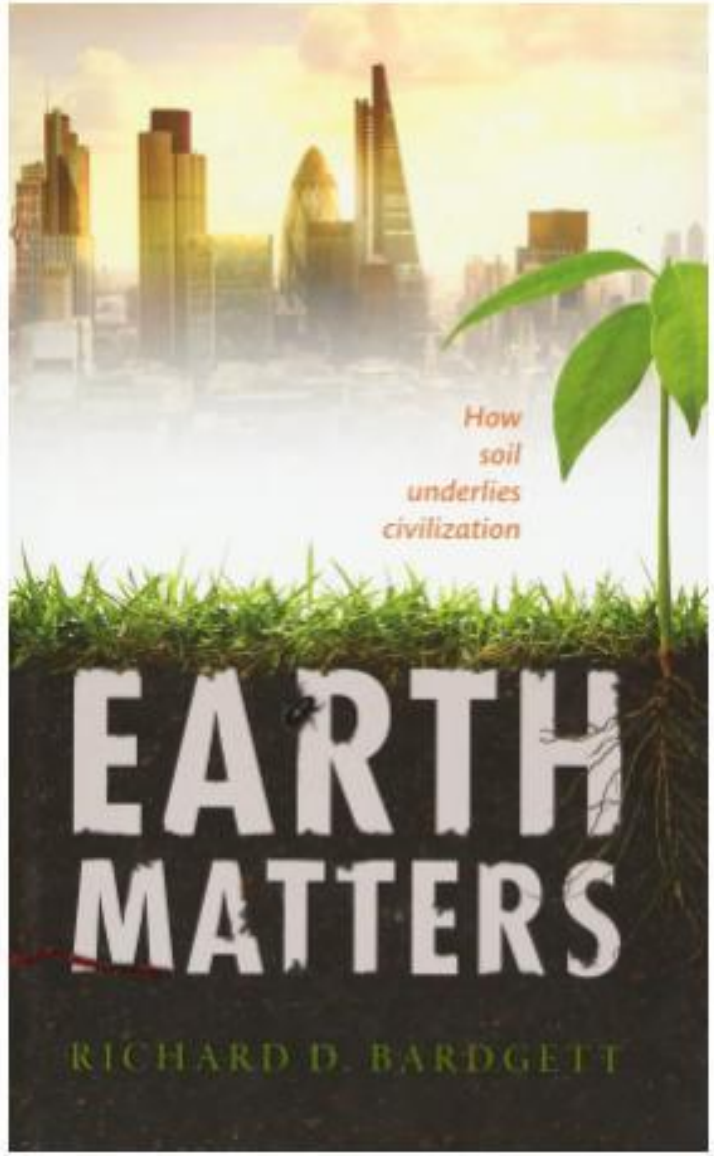


Photo: Oxford University Press/Richard D. Bardgett

Land-use change, degradation and restoration

Global indirect drivers + Direct drivers Unsustainable land use ➡ Impact on our ecosystem

- Climate change
- Population growth
- Evolving consumption patterns
- **Land use change**

- Intensive agricultural uses
- **More land converted to produce feed**
- Unbalanced grazing
- Poor NR governance & policies

- Important contributor to climate change
- Accelerated land degradation & soil erosion;
- Reduced ES: biodiversity loss, shrub encroachment
- Pollution of water streams & soils

Photo ICARDA/Mounir Louhaichi

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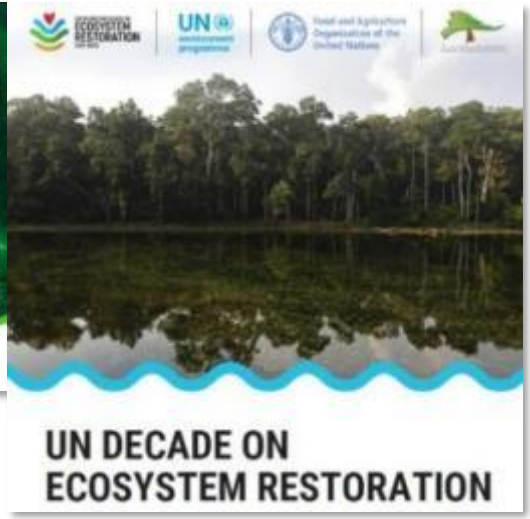
Photo ICARDA/Mounir Louhaichi

Photo Reuters/Leonardo Benassatto

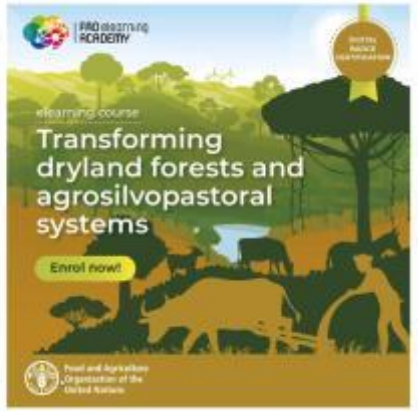
Best practices/technologies

To alleviate the impact of livestock on our environment, special attention should be paid to:

- animal feeding: feed composition, feed water requirements (TWW, forage breeding), and feed origin
- animal husbandry including improved manure management
- animal breeding and animal health (one health)
- **land restoration** (site specific) coupled with **proper grazing management**
- use of ICT, big data, RS/GIS, precision grazing (virtual fencing), GPS collars (behavior/activities), EWS, etc.
- innovations: breeding for low emission forages and animals



Overview of the FAO elearning course on sustainable dryland management
Fidaa F. Haddad



Participatory rangeland managment toolkit for Kenya

Livestock grazing is an effective management tool

Rangelands conditions rely on frequent herbivore, animal movement, and rotational grazing.

However,

- The **absence or disruption of livestock mobility**, whether due to settlement, sedentarization, or the obstruction of transhumance and migratory routes has, historically, led to rangeland degradation.
- **Unbalanced grazing** (overgrazing or undergrazing) should be avoided, as they can result in land degradation, shrub encroachment, invasive species invasion, and biodiversity loss.

Photo ICARDA/Mounir Louhaichi

Photo ICARDA/Mounir Louhaichi

IT'S NOT THE COW, IT'S THE HOW[10]

The right management of grasslands and silvopastures boosts ecological health. The wrong management rapidly degrades it. In both cases, cows are the main agents.

Condition of the soil surface is the key

Where do we stand now?

- Our natural resource base is degrading at an alarming rate: **cost of inaction is high**
- An **integrated & balanced approach** (based on agro-ecological principles) **is needed to transform livestock production systems** to make them more sustainable.
- **Change in behavior**: education, training, awareness campaign, etc.
  - Better integration (working together) using a system approach
  - Long term-protection or exclusion of livestock can be detrimental
  - Livestock is part of the solution (grazing is a tool)
  - Ban on rangeland cultivation
- Special attention must be given to the successful implementation of the **SDGs** into specific and targeted **national policy action**.
- **Research & innovation**: unfortunately, only a fraction of **climate investment** is allocated to **livestock systems research for development**.

Photo: Wolfgang Bayer

Photo ICARDA Central Asia/Rischkowsky Barbara

International Year of Rangelands & Pastoralists (IYRP)

IYRP 2026 INTERNATIONAL YEAR OF RANGELANDS AND PASTORALISTS

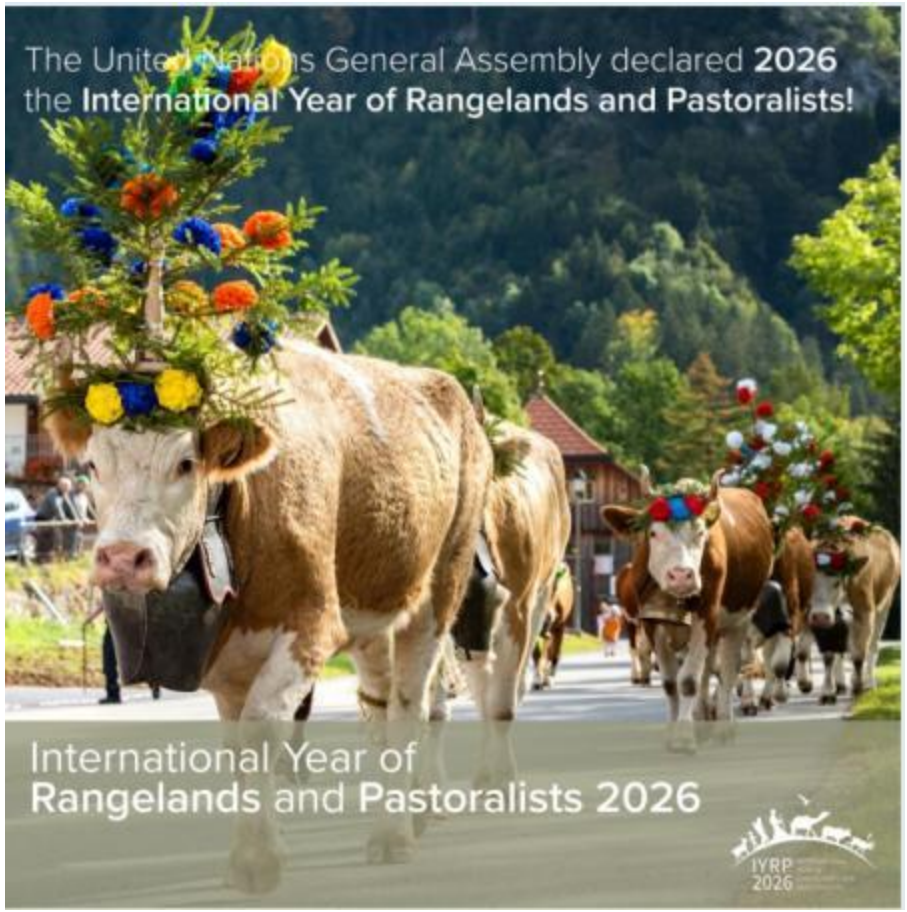
The FAO-led 2026 IYRP Resolution has been approved by the UN General Assembly

102 countries and 339 organisations support the IYRP

IYRP is ready to assist the FAO in achieving its vision of sustainable livestock transformation

Anyone attending this conference can join the IYRP coalition, simply visit the IYRP webpage

https://iyrp.info/



CGIAR INITIATIVE ON Livestock and Climate

ICARDA Science for resilient livelihoods in dry areas

The **CGIAR Research Initiative on Livestock and Climate** is designed to address the challenges that climate change poses to livestock production, providing livestock-keeping communities with the support they need without accelerating greenhouse gas emissions or degrading land, water, and biodiversity. It forms part of CGIAR's Research Portfolio, delivering science and innovation to transform food, land, and water systems in a climate crisis.

This presentation was produced as part of the CGIAR research initiative on Livestock and Climate, which is supported by contributors to the CGIAR Trust Fund. cgiar.org/funders