ONE WELFARE: LOOKING FOR SUSTAINABLE ANIMAL PRODUCTION SYSTEMS

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PRESENTATION

• Background

• Sustainable production: challenges

• Sustainability indicators including animal welfare: study case in Yucatan

• Work ahead
PER CAPITA CONSUMPTION OF LIVESTOCK PRODUCTS (FAO)

Graphic showing the historical and projected consumption of livestock products per capita (Kcal/person/day) from 1962 to 2050. The graph compares different regions:
- **Países industrializados** (Industrialized Countries)
- **Países en transición** (Transition Countries)
- **América Latina y el Caribe** (Latin America and the Caribbean)
- **Este de Asia** (East Asia)
- **Este y norte de África** (East and North Africa)
- **Sur de Asia** (Southern Asia)
- **Sub Sahara África** (Sub-Saharan Africa)

The consumption trends are depicted with different colored lines, indicating an increase over time.
Challenges...
ANIMAL WELFARE

‘The state of the animal as regards its attempts to cope with its environment’ ...

- Refers to the biological condition of the animal
- Based on science
SCIENTIFIC ASSESSMENT: BIOINDICATORS

Response to the environment:

- Stress and pain
- Mental state
- Behaviour

Animal
More challenges…
ENVIRONMENTAL IMPACT AND LOSS OF ECOSYSTEM SERVICES

• Deforestation and biodiversity loss - 60% of ecosystem coverage transformed

• Greenhouse gases (GHG) and climate change
SOCIAL WELFARE

- Poverty
- Malnutrition
- Diseases
WHAT TO DO?

• Intensify production systems reducing adverse effects on community, animal welfare, and the environment

• Reorient pastoral systems to the provision of environmental services and to improve animal welfare
SUSTAINABLE LIVESTOCK PRODUCTION: CHALLENGES, SYNERGIES AND TRADE-OFFS

PRODUCER

ANIMAL WELFARE

CONSUMER

ENVIRONMENTAL SERVICES
One welfare and sustainable livestock production

A system is sustainable when it is environmentally sound, economically viable, and socially responsible

Allen, 1991
Measurements:

- Landscape structure
- Animal welfare and productivity
- Biodiversity and disease
- Greenhouse Gases (GHG)
SYNERGIES AND TRADE-OFFS
Sustainability indicators

• Animal welfare
• Environment
• Social needs
• Economics
Production units

Monoculture  Intensive silvopastoral  Native silvopastoral
Animal welfare indicators:

Animal behaviour
Foraging behaviour

- Monoculture
- Silvopastoral

Proportion of heifers foraging against Time of the day and Temperature °C
Social behaviour

Non-agonistic interactions (30,000 leucaenas/ha) (P<0.05) in Mn and Sspi
Social behaviour

Non-agonistic interactions (10,000 leucaenas/ha) ($P<0.05$) in Mn and Sspi

![Graphs showing social behaviour in different conditions](image-url)
Human-animal interactions:

More tree coverage – shorter flight distance
Animal welfare indicators:

Physiology
Thermography

Skin temperature

![Bar chart showing skin temperature comparison between Lluvias and Secas conditions.](chart.png)
THERMOGRAPHY - PADDOCK

MONOCULTIVO

SILVOPASTORAL
THERMOGRAPHY - PEN

MONOCULTIVO

SILVOPASTORAL
Respiratory rate (Holstein x Zebu), in SSP y SM, rainy and dry seasons.
Environmental services:

Biodiversity
Biodiversity: wildlife

Species richness

Local production systems

Monoculture  Intensive silvopastoral  Native silvopastoral

Birds  Bats  Rodents

*p < 0.05

Species richness graph comparing biodiversity in different local production systems: Monoculture, Intensive silvopastoral, and Native silvopastoral. The graph shows the diversity of different wildlife species, including birds, bats, and rodents, across these systems.
Disease and species diversity

West Nile V (Ezenwa et al 2006)

Hantavirus (Mills 2006; Suzán et al 2009)
Environmental services:

Gases (GHG)
Biodiversidad and C Storage

(R= 0.9, P<0.05)
Work ahead

• Animal welfare must be considered a criteria for sustainability

• Synergies and trade offs between sustainability criteria must be assessed at a system level

• Scientific research is needed to develop new policies integrating sustainability criteria
Gracias

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