Which animal do farmers need for tropical mixed farming systems ?

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WHICH ANIMAL DO FARMERS NEED FOR TROPICAL MIXED FARMING SYSTEMS?

TOWARDS FARM AUTOMOMY IN THE HUMID TROPICS

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EAAP 2016 . 67th Annual Meeting of the European Federation of Animal Science.

Belfast UK, 29 Aug – 2 Sept 2016

Context

Major issues of agriculture in the Global South

World population of 9 billions by 2050 (+50% in Global South)

Decreased land availability for crop and livestock production /inhab

Global climate and energy crises

Crucial need of increased agriculture efficiency to reach food sovereignty

Importance of agroecological approach to meet efficiency and sustainability

Key role of animal in the food chain

to cover protein needs,
to add value to non-usable land for crops production,
and to enhance the biological recycling processes.

Based on the observation and the evaluation of mixed farming systems (MFS) in the Caribbean, **3 principles for efficient livestock production in the tropics** must be prioritized:

1 Give priority to Food on Feed

1. Optimize a human food system in which the animal protein is *only* one component
2. Choose plant resources adapted to the agro-pedo-climatic environment of the farm


Traditionnal creole garden - © INRA


Coproducts and non conventional plants user guides - © INRA

3. Match the animal (poly /mono gastrics) to the plant resources available on the territory
4. Promote domestication of natural process through smart and robust technologies

These guidelines lead research in animal sciences on **3 functions** at the animal (A) and farming system (S) scales:

- **Adaptation**: genetic and physiological characterization of an A/S in equilibrium with the environment
- **Resilience**: characterization and design of the A/S able to make/ allow the right compromise under stresses
- **Efficiency**: multicriteria evaluation and optimization at the A/plant/S scales

2 Promote the Right Animal at the Right Place

1. Prioritize low-input local adapted species and breeds
   - Optimize responses laws (production and adaptation) of conventional livestock
   - Exploit the potential provided by the non-conventional animals


Mixed grazing system - © INRA/M.Mahieu


Agroforestry - © INRA

2. Increase diversity within the flock (animals with complementary requirements/potentials) to enhance the existing diversity of the system
3. Develop genetic for low input systems/ balanced animals

3 Favour Farmers' Wills and Skills

1. Design a system consistent with farmer's wills and skills
   - Improve integration of productions in the MFS
   - Combine biotechnical and organizational innovations (smart agriculture)


Creole pigs - © INRA/M.Moutoussamy


Creole goat breeding - © INRA/M.Gunia

2. Organize an area for hybridization of research knowledge and traditional know-how
3. Adapt public policies and transform the consumer as consum'actor

Participatory research, Communication and Knowledge Sharing…

…to promote these 3 principles as levers to raise the self-sufficiency and the quality of life in tropical mixed farming systems.

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