How Agro–ecological transition could help to re–design goat keeping in pastoral systems

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Introduction

Since 50 years, the dominant paradigm of agriculture has been based on specialization and intensification of production systems by maximizing the issue of production factors.

- higher yields
- higher inputs
- higher dependance to food industry

**Positive effects:**
more food safety

**Negative effects:**
Environmental impacts
Decreasing number of farmers
Agro - ecology

Agro – ecology has been defined by several authors (Altieri, Gliessmann, etc...) mainly for agriculture.
Until recently, it has been little developed in Animal production and still less for pastoralism

« The application of ecological principles to design and manage sustainable agro – systems by considering agri – cultural practices with an optimum use of their ecological potentialities »
Agro - ecology

2 types of application of agro – ecology:

1. **Ecological intensification**
   It means that each not environmentally friendly practice could be substituted as efficiently by practices involving ecological processes.

   *For example, natural treatment against parasites, not hormonal synchronization methods, use of organic fertilizers, rotations, use of electronic devices to control better inputs, controlled irrigation etc.*

   *Includes organic agriculture and could be applied in controlled farming systems*
Agro - ecology

2 types of application of agro – ecology:

2. Bio - diversity based ecologically intensive agriculture and livestock
It is based on the huge propects openned to articulate production objectives with the social role of livestock with sustainable development vision
Multi disciplinary approaches to optimize the ecological properties of farming systems.
An important paradigm change about the vision of development un cambiamiento importante de paradigma sobre la visión del desarrollo and the expected performances. It implies to favor the complementarity and symbiosis between livestock and agriculture.
Agro - ecology

2 types of application of agro – ecology:

2. Bio - diversity based ecologically intensive agriculture and livestock
It is based also on the sharing of expert knowledge and actors/community knowledge

The expected results will be the redesign of production systems including technical, organizational innovations but also mobilizing local practices
A Method to organize the agro – ecological transition

Five principles of agro –ecology for livestock (Dumont et al., (2013)):
- The integrated management of animal health
- The reduction of inputs by using ecological processes
- The reduction of pollutions by controlling the biological cycles
- The use of diversity in production systems to increase their resilience
- The preservation of bio –diversity (of pasture, of landscapes, of local populations) by adapting practices
A Method to organize the agro – ecological transition

Participatory approach proposed (Duru et al. (2015)) in 5 steps:
(i) analyze the current functioning of local agriculture,
(ii) identify future exogenous changes that may determine its future (drivers)
(iii) design local organization of the expected territorial biodiversity-based agriculture (forecasting)
(iv) design the major steps of the transition from the current situation to this new form of local agriculture (back casting)
(v) design governance structures and management strategies adapted to guide the transition.
To define the Agro-ecological characteristics of a system

1. Animal nutrition
2. Sustainable pasture management
3. Crops and forage practices
4. Disease prevention
5. Breeds and reproduction
6. Animal welfare
7. Food safety and hygiene
8. Marketing and management
9. Conditions of social and economic sustainability
10. Environmental sustainability and societal contribution
To define the Agro – ecological characteristics of a system

<table>
<thead>
<tr>
<th>Score (%)</th>
<th>Indicator</th>
<th>Weighing factor</th>
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<tr>
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<tr>
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<td>Society</td>
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To define the Agro– ecological characteristics of a system
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