Animal and farming system crossed approaches to reveal the goat production resilience in Guadeloupe

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Goat farming in Guadeloupe

- Meat production
- 30 000 does in Guadeloupe
- Pasture management
- Flocks: 30 does
- Pure Creole and crossbred

- Creole goat
- origin: Europe, Africa, Asia
- Well adapted: resistant to strongyles

Proportion of farming systems (%)

- 100% Créole
- Creole>=50%
- industrial crossbreeding
- Crossbred >50%
- 100% crossbred
Goat farming in Guadeloupe

In the tropics, animals and farming systems are submitted to biotic and abiotic constraints (climatic, pathological, nutritional, socio-economic...).

In absence of extension directives / organisation, they were naturally driven to develop specific abilities to face these constraints = resilience.
Crossed perception of resilience at 2 levels

**Animal**

  - **Selection of alleles** of adaptation
  - The ability to *maintain its production* under pathological, climatic ... stresses

**Farming Systems**

- The traditional systems are *inherited from a past colonial period*. Food-producing farming origins.
  - **Combination of cultural and breeding activities**
  - The ability to *face disturbances and to mobilize resources* to reconfigure
Crossed perception of resilience at 2 levels

Animal
• Resilience = linked to genetic variability of traits (adaptation, reproduction, production...)

Farming system
• Resilience = linked with multiplicity of productive and non productive activities

Genetic Variability of traits
Variability of activities
➢ room to manœuvre in adverse conditions
➢ Resilience
Research issue

• How to improve the goat production in Guadeloupe without decreasing this variability in animals and farming systems?

• Approach

  • Which animal for which systems?
  
  • And NOT Which system for which animal?
A participative action

Creole Goat Breeding Program

Farmers

Technicians

Vets

Researchers

INRA

CABRICOOP

Cooperative Agricole des Producteurs
Caprins de la Guadeloupe
The goat sector: Low intensity animal production

Surveys of 70 and 42 goat farms (Gau et al 2000; Gunia et al, 2010):

- **Familial**: low herd size
- **Extensive**: free ranging animals
- **Traditional**: tethered animals, local medicines
- **Intensive Specialised**: technological package
- **Intensive Diversified**: + cattle + sugar cane

> 60% lowly artificialised systems
A balanced animal for diverse breeding systems

An original production/adaptation breeding goal

Annual genetic progress (% of mean of the trait)

- Fertility
- Live weight
- PCV
- Dressing percent.
- FEC

4.5% 4.5%
1.1%
0.2%
-0.1%

(Gunia et al, 2013)
Implications on resilience traits of Creole goats

Genetic variability of resilience traits in Creole goats

<table>
<thead>
<tr>
<th>Traits</th>
<th>(NBT_{\text{does}})</th>
<th>(FEC_{11m})</th>
<th>(PCV_{11m})</th>
</tr>
</thead>
<tbody>
<tr>
<td>(NBT_{\text{does}})</td>
<td>0.16 ± 0.09</td>
<td>-0.03 ± 0.12</td>
<td>-0.27 ± 0.24</td>
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<tr>
<td>(FEC_{11m})</td>
<td></td>
<td>0.19 ± 0.04</td>
<td>-0.20 ± 0.15</td>
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<tr>
<td>(PCV_{11m})</td>
<td></td>
<td></td>
<td>0.14 ± 0.02</td>
</tr>
</tbody>
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(Tesfamicael et al., 2012)

Moderate genetic variability was assessed on resilience criteria in Creole goats.

The actual breeding scheme in Creole goats (Gunia et al., 2013) will lead to favorably correlated responses on resilience traits.
NUCLEUS SELECTION FLOCKS

Creole bucks (Recognized breeder)  
Creole does (Recognized breeder)

Creole kids

Non selected Creole kids (50%)  
Selected Creole kids (50%)

Turn over (upper x%)

BUTCHER

USER FLOCKS

Boers bucks

Creole does (recognized breeder)  
Improved Creole bucks

kids

Industrial crossbreeding

Fattening

BUTCHER

Non identified meat

BUTCHER

Creole meat label
Conclusion

• It is **possible to improve** goat production in Guadeloupe
  – Exploiting the local breed for traditional FS or more intensive ones,
  – Preserving the resilience of both (animal and FS)

• There is **emergency** in every species!!
  – Things are quickly moving in a non sustainable way,
  – Even if researchers are sending the ‘good’ message
Thank you for your attention!