Participatory identification of breeding objective traits for two goat breeds of Ethiopia

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Introduction

- Goats have a significant role for Ethiopian smallholder farmers
- Goat genetic improvement programs are undeveloped
- A few attempts of goat genetic improvement through upgrading of local breeds with exotic breeds
- Local genotypes are more adaptive and suitable for the existing environment
• Need of designing appropriate breeding program for sustainable genetic improvement

• Community based breeding program for low input system

• Community participation at all stages of the breeding program is the peculiar feature of community based breeding program

• Designing of breeding programs should consider the trait preferences of the farmers
Objective

• Identify the breeding objective traits of two indigenous goat breeds for designing of community based breeding programs
Study sites

Site one (Metema)

Altitude: 550 to 1608 m  
Temperature: 22 to 28°C  
Location: 900 km northwest of Addis Ababa  
Rainfall: 850 to 1100 mm  
Agro ecological zone: Sub moist low land

Site two (Abergelle)

Altitude: 1340 to 2200 m  
Temperature: 16 to 27°C  
Location: 720 km north of Addis Ababa  
Rainfall: 350 - 700 mm  
Agro ecology: Dry mid altitude
Production system

- Traditional mixed farming system
- In Metema crop production is more dominant
- In Abergelle goat production is more dominant
- Average flock size
  - In Metema 10 goats per household
  - In Abergelle 50 goats per household
Method

• **Own flock ranking experiment**
  - 60 households from Metema and 30 households from Abergelle areas were visited
  - They were asked to rank their three best and the worst breeding does with in their flock
  - The reasons of ranking and life history of the ranked animals were inquired and recorded
Data analysis

• Frequency procedure of SAS
  - For the relative importance of the preferred traits

• glm procedure of SAS
  - For the traits provided as life history and live weight of the ranked animals
Results: List of preferred traits identified by farmers

- Milk yield
- Body size
- Drought resistance
- Kids growth
- Twinning
- Kidding interval
- Mothering ability
- Weight of kids at birth
- Temperament
- Beauty/Color
- Body length
- Tail length
- Others

Western lowland
Abergelle
**Results**: Means of the traits for Abergelle does

<table>
<thead>
<tr>
<th>Trait</th>
<th>Rank</th>
<th>1&lt;sup&gt;st&lt;/sup&gt;</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt;</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt;</th>
<th>Worst</th>
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</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td>6.3&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.9&lt;sup&gt;cb&lt;/sup&gt;</td>
<td>5.9&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>4.7&lt;sup&gt;c&lt;/sup&gt;</td>
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<tr>
<td>Body weight (kg)</td>
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<td>32.3&lt;sup&gt;a&lt;/sup&gt;</td>
<td>30.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>30.4&lt;sup&gt;b&lt;/sup&gt;</td>
<td>25.5&lt;sup&gt;b&lt;/sup&gt;</td>
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<tr>
<td>Kidding</td>
<td></td>
<td>5.4&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.7&lt;sup&gt;cb&lt;/sup&gt;</td>
<td>4.4&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.1&lt;sup&gt;c&lt;/sup&gt;</td>
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<tr>
<td>Kids born</td>
<td></td>
<td>6.7&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.6&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.1&lt;sup&gt;c&lt;/sup&gt;</td>
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<tr>
<td>Kids weaned</td>
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<td>6.4&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.9&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.9&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.3&lt;sup&gt;c&lt;/sup&gt;</td>
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<td>Twinning rate</td>
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<td>1.2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.0&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.9&lt;sup&gt;c&lt;/sup&gt;</td>
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<tr>
<td>Milk yield (l)</td>
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<td>0.5&lt;sup&gt;ba&lt;/sup&gt;</td>
<td>0.4&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.2&lt;sup&gt;c&lt;/sup&gt;</td>
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**RESULTS**: Means of the traits for Western lowland does

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<td>3.9&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2.9&lt;sup&gt;c&lt;/sup&gt;</td>
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Conclusions

• Diverse attributes as selection criteria were identified

• Variations in the relative importance of breeding objective traits between the different production system

• This method can serve as a tool in identification of breeding objective traits in the areas no recording scheme is developed
Acknowledgements

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• Participant farmers in the study

Thank you for your attention!!