Newly funded project

‘Uganda pig genetics’

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Stakeholder meeting on Ugandan pigs
Entebbe, Uganda, 14th March 2017
Background – motivation to project

During the varied assessments, many stakeholders expressed interest in:

- an evidence base on the most appropriate pig breed-type for the local production systems / environments

- access to breeding pigs of known breed-type, high genetic quality
Background – current state of knowledge

Limited data on pig productivity exists

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Type of data - 2015</th>
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<tbody>
<tr>
<td>NAGRC&amp;DB</td>
<td>Data on Camborough herd for last 2-3 years. Herd comprises 30-40 sows (Camborough 22), 6 boars (PIC terminal sire line).</td>
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<tr>
<td>KCCA</td>
<td>Data on LW/LR crossbreeding herd for last 2 years. Herd comprises 20 sows (LW), 4 boars (LR)</td>
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No data on local breeds; no data on pig performance on-farm
Background – pig genetic diversity in Uganda

Large White  Landrace  PIC Camborough 22  Local

Synthetic LW, LR, White Duroc

Plus structured & unstructured crossing between these

Duroc?  Pietran?  Saddleback?

Cross-bred descendants of Duroc?  Cross-bred descendants of Pietran?

Other?
This project

Sustainable intensification of the pig value chain in Uganda – for improved rural livelihoods and enhanced food security

| Partners                      | ➢ International Livestock Research Institute  
|                              | ➢ National Animal Genetic Resources Centre & Databank (NAGRC & DB), Uganda  
|                              | ➢ University of Natural Resources and Life Sciences (BOKU), Austria  
| Duration                     | July 2017 to July 2020  
| Donors                       | Austrian Development Agency  
|                             | Livestock CRP  
| Objective                    | To increase the productivity and profitability of the Ugandan smallholder pig enterprises, through use of the most appropriate pig genetics  

Activity 1: Evaluate the profitability and productivity of different household pig production systems in Uganda

- To create an evidence base for informed decision making by pig keepers

- Approach:
  - Monitoring 150+ pig keeping households, 400+ pigs, in for at least a 14 month period
  - Considering productivity (following through to slaughter); cost-benefit (intra-household)
  - Pig breed-type assignment by a genomic approach
Genomic approach to breed assignment

PIG of unknown breed composition

DNA

Illumina PorcineSNP60 (64,000 SNPs)

Genomic analysis

Compare genotypes of pig of unknown breed to pigs of known breed-type (reference populations)

Breed A

Breed B

Breed C

50% breed A
50% breed B
Example result from a similar study in dairy cattle in Senegal

**8.0 fold difference**

- **Indigenous Zebu**
- **Indigenous Zebu by Guzerat**
- **Indigenous Zebu by Bos Taurus**

**2.4 fold difference**

- **Indigenous Zebu**
- **Indigenous Zebu by Guzerat**
- **Indigenous Zebu by Bos Taurus**
- **High Bos Taurus**
Activity 2: Design, with stakeholders, a genetic improvement strategy for the smallhold pig sector

➢ To produce pigs which meet the needs and preferences of their women and men keepers and other value chain actors, as well as market demand
Approach to breeding program design

1) derive the breeding goal;
2) assess the state of current breeding strategies, capacities and infrastructure;
3) prepare the breeding plan, with attention to supportive institutional arrangements, public and private sector involvement, and sustainability;
4) plan implementation and ongoing monitoring and refinement.

From: http://extension.missouri.edu/p/G2311
Activity 3: Develop, with stakeholders, a scheme for registration of suppliers of pigs of known breed-type

➤ To allow pig-keepers to confidently access the breed-types they desire

➤ Approach:
  - Registration scheme will be developed and pilot-tested
  - Led by NAGRC&DB - mandated via the Animal Breeding Act of 2001 to register and certify all animal breeds, breeders and breeding centers
Activity 4: Capacity building of women and men pig keepers, as well as other stakeholders

- **Capacity building activities:**
  - Training workshops for smallhold pig keepers and other stakeholder such as village boar keepers, artificial insemination service providers, and extension agents
  - PhD student enrolled in BOKU and based locally

- **Further dissemination activities:**
  - Media, including newspaper and radio
  - The existing multi-stakeholder platforms
  - Policy briefs and discussions.
Thank-you

The most appropriate pig genetics for improved productivity and profitability of the Ugandan smallholder pig enterprises
better lives through livestock

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