

Laboratory colonization of field *Aedes aegypti* and *Culex rubinotus* from Uganda

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Introduction

- Mosquito colonies are vital for investigations of both vector biology and control.
- Many mosquito arbovirus vectors have been described in Uganda
- Arboviruses, including Rift Valley fever virus are endemic in Uganda.
- Successive waves of RVF in Uganda call for better understanding of its vector biology
- No RVF competent vector colonies are being reared in Uganda.
- To this end, an insectary was established at NaLIRRI with the purpose of rearing mosquitoes
- This will improve surveillance of emerging mosquito-borne arboviruses.

Objectives

- (1) To characterize laboratory rearing conditions for field colonies of *A. aegypti* and *C. rubinotus*
- (2) To obtain mosquito eggs needed for RVF infection experiments at FLI
- (3) To identify mosquito species collected from the field that are potential vectors of RVF

Methodology

- *A. aegypti* and *C. rubinotus* larvae from Wakiso, Hoima, Tororo, Kampala, Mbarara, Budaka, Butebo, Napak, Isingiro, Lyantonde, Kagadi & Rwampara were collected and incubated.
- Emerging F0 adults were offered 10% glucose solution in cotton wool for at least 4 days.
- Mosquito blood diets were drawn in EDTA from the jugular and brachial vein of a bull and hen, respectively.
- The glucose solution was withdrawn 24 hours before a blood meal.
- Blood was provided in a mosquito glass feeder or sheathed blood in collagen sausage casing.
- For the F1 of *Cx. rubinotus* bovine blood was spiked with glucose and fed in a glass feeder.
- Morphological identification of mosquitoes collected from RVF high risk and low risk areas is ongoing.



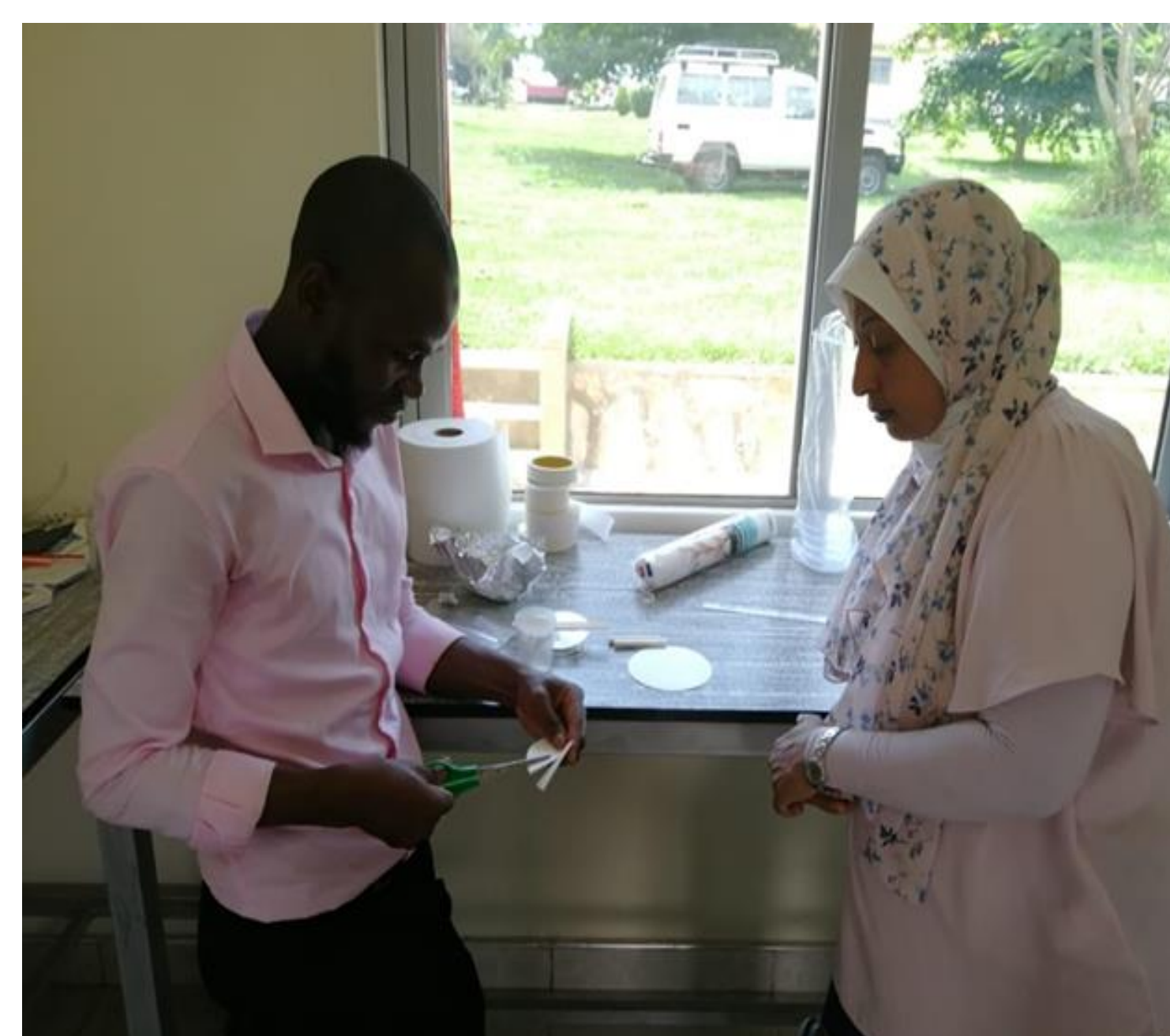
The insectary established at NaLIRRI



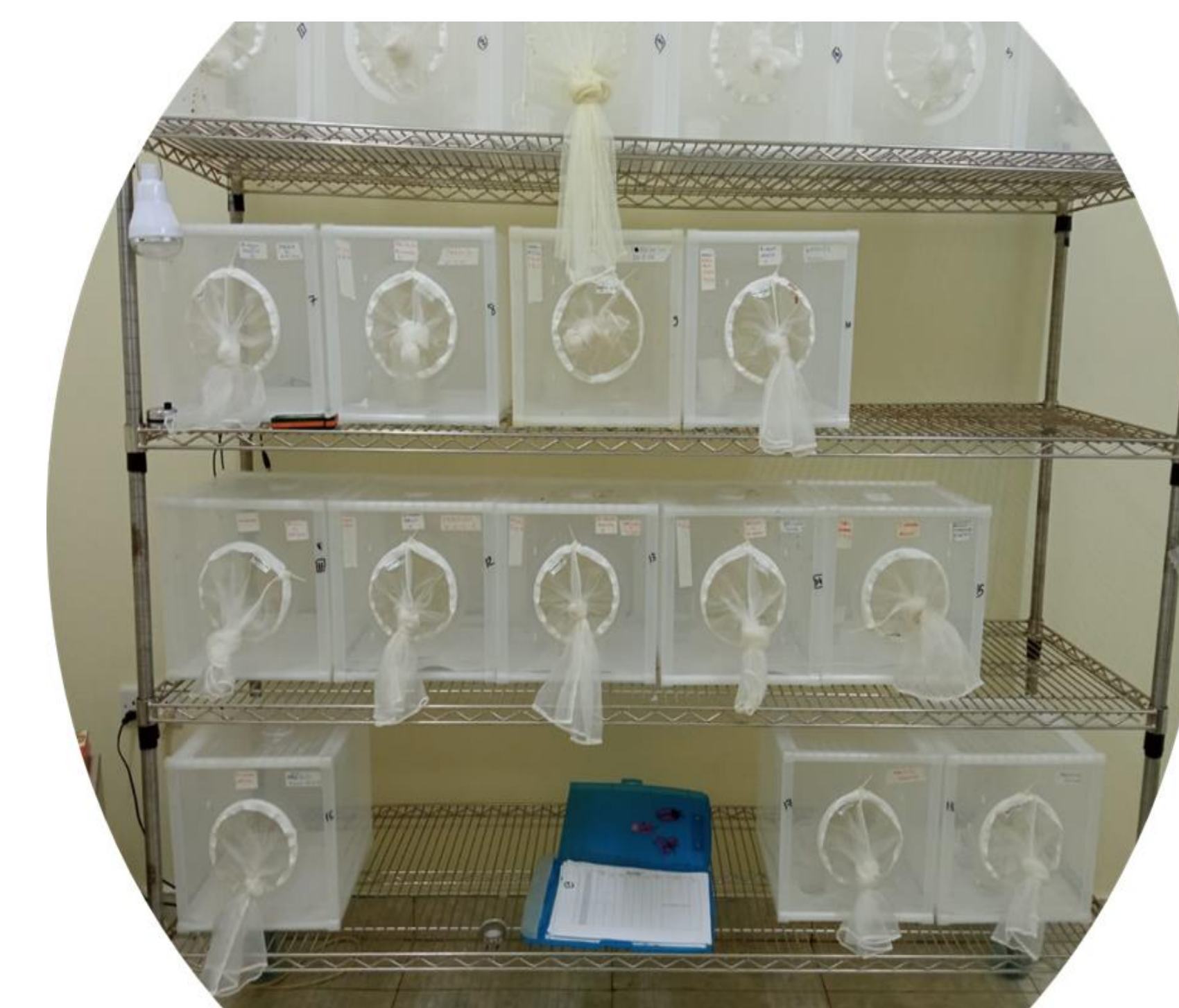
Biogent trap setup in Mbarara



Mosquito larvae collection in Mbarara



Training of the team at NaLIRRI



Mosquito rearing cage at NaLIRRI

Results

- *Ae. aegypti* successfully fed on both blood feeder and sausage casing while F0 of *Cx. rubinotus* only responded to sheathed chicken blood.
- F1 of *Cx. rubinotus* were able to feed on glucose spiked bovine blood in the glass feeder
- 38 filter papers with eggs of (F1= 27; F2= 7 and F3= 4) of *Ae. aegypti* from Hoima, Wakiso/Nakyesasa, Kampala and Tororo have been collected
- One colony of *Cx. rubinotus* from Mbarara is being reared and has reached F4
- All colonies from Rwampara, Budaka, Butebo, Napak, Isingiro, Kagadi and Lyantode died (the lab was still finetuning the rearing protocol)
- Morphological identification of mosquitoes from the field is ongoing

Conclusions

- Colonization of *Cx. rubinotus* and possibly other *Culex* spp. from the field requires adjusting rearing conditions
- Nascent, local Ugandan colonies of *Ae. aegypti* and *Cx. rubinotus* for use in arbovirus transmission studies were established.

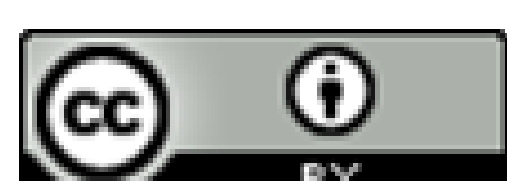
Contribution to Uganda's livestock development agenda

Mosquito colonies will improve the understanding of the vector biology of the mosquito vectors of Arboviruses in Uganda.

Next steps

- Screening of the mosquito colonies for RVF virus before shipping their eggs to Germany.
- Vector competence studies using Ugandan mosquitoes at FLI.
- Develop a rearing protocol for other potential mosquito vectors of RVF like *Mansonia uniformis*
- Establish host preference of field RVF mosquito vectors.
- Determine the prevalence of RVF virus in field mosquitoes

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