

# EVALUATION OF THE INSECTICIDAL ACTIVITY OF dsRNA IN FIELD-COLLECTED AFRICAN SWEETPOTATO WEEVILS *CYLAS PUNCTICOLLIS*

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## 1. Introduction

- The African sweetpotato weevil *Cylas puncticollis* (SPW) is considered as one of the major threats of sweetpotato production in Sub-Saharan Africa (SSA).
- RNA interference (RNAi) can add genetic resistance against SPW in sweetpotato. We previously reported that orally delivered dsRNA targeting *snf7* (dsSnf7) can elicit a significant toxicity in *Cylas puncticollis*.
- **Objective:** Study the potential variation of the RNAi toxicity among populations of SPW by comparing the insecticidal effects of dsSnf7 after oral feeding between a laboratory colony, originally from Namulonge, Uganda, and field-collected populations from Kenya.



Figure 1. Root damage by *Cylas puncticollis* (SPW)

## 2. Material & Methods

- dsRNA targeting the gene *Snf7* and *GFP* (control) was produced in *E. coli* strain HT115 (DE3) and mixed with artificial diets before solidification at a concentration of 30 µg ml<sup>-1</sup>. Fifty 2<sup>nd</sup> instar larvae were placed in each treatment.
- SPW populations were collected from the field in Kakamega (1), Busia (2), Siaya (3) and Dienya (4) in Kenya and compared with the laboratory colony from Namulonge, Uganda.

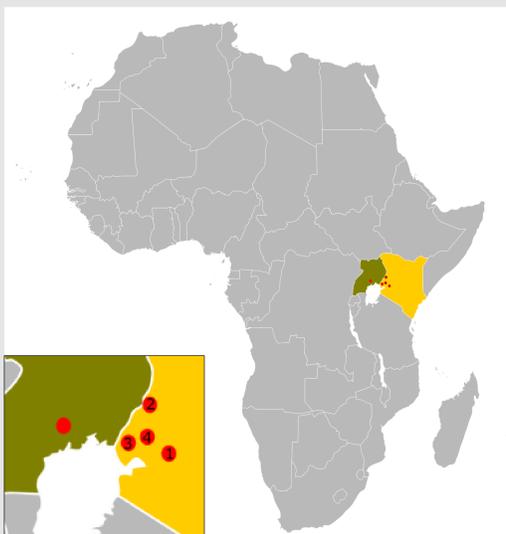


Figure 2. Areas of field collected

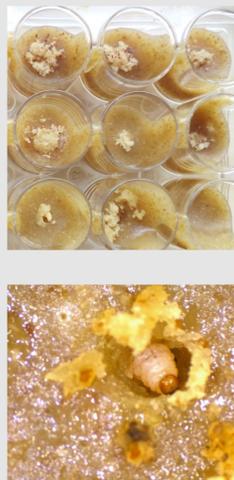


Figure 3. Artificial diet of 2<sup>nd</sup> instar SPW populations

## 3. Results

- Toxicity effects after 14 days were statistically significant ( $P < 0.01$ ) among corresponding controls and treatments.
- No significant difference in toxicity was observed between laboratory colony (Snf7-Lab) and the three Kenyan populations Snf7 Ke1, Ke2 and Ke3, while the toxicity between the group Snf7-Lab and the Kenyan group 4 (Snf7-Ke4) was significantly different.

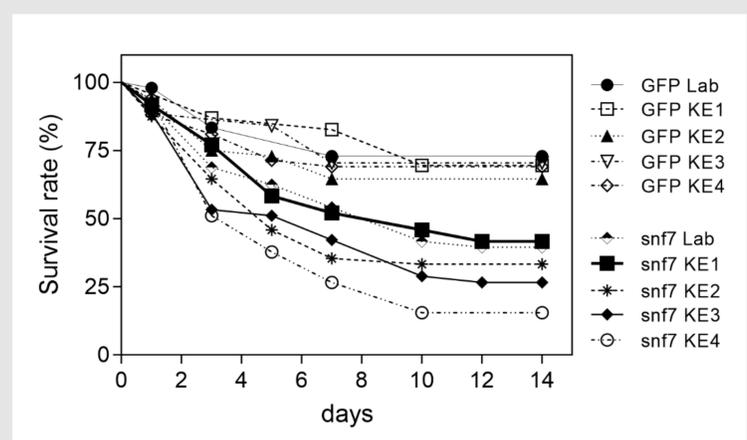


Figure 4. Survival analysis of ds-GFP- (control) and dsSnf7-treated populations. Statistical analysis was performed by Log-Rank test and Gehan-Breslow-Wilcoxon test ( $P < 0.01$ ).

## 4. Discussion

- RNAi efficiency of the field collected SPW populations from Kenya was similar or higher than the previously collected population from Uganda.
- To extend the variation effects of RNAi in SPW, other field populations will be added in the assay.

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