Sources of Cowpea Resistance to Aphid in the Uganda Environment

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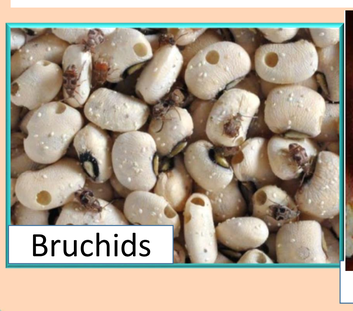
BACKGROUND

- Cowpea is cultivated by many subsistence farmers for grain and vegetables.
- 3rd most important legume food crop of Uganda, after beans and groundnuts.
- Yield is reduced by biotic & abiotic stresses.
- Insect pests are a major cause of losses


Bruchids


Flower Thrips


Aphids

Aphids cause damage directly through toxic saliva & indirectly through virus transmission

Resistance to aphid attack is characterized by a lower and isolated insect population density or fewer damage symptoms on a plant.

There are many identified aphid-resistant cowpea lines in the world especially at IITA.

However, resistance-breaking biotypes or new aphid biotypes occurred in several plant–aphid systems have been reported in different locations.

There's a need to identify sources of resistance in each cowpea growing environment for development of host resistant genotypes

METHODOLOGIES

Aphids were collected from 3 different agro ecological zones in Uganda

Beakers had perforated lids and a dump cotton wool at the base soaked in glucose water

Infested with 5 aphids per plant at 7 days after emergence using a camel brush.

- 12 Genotypes used
- Screen house study
- Data on counts collected at 5, 9, 13 & 17 days after infestation (DAI)
- Data analyzed using Genstat 18th edition

Aphid damage scored on a scale of 1-10 at 17 DAI

RESULTS

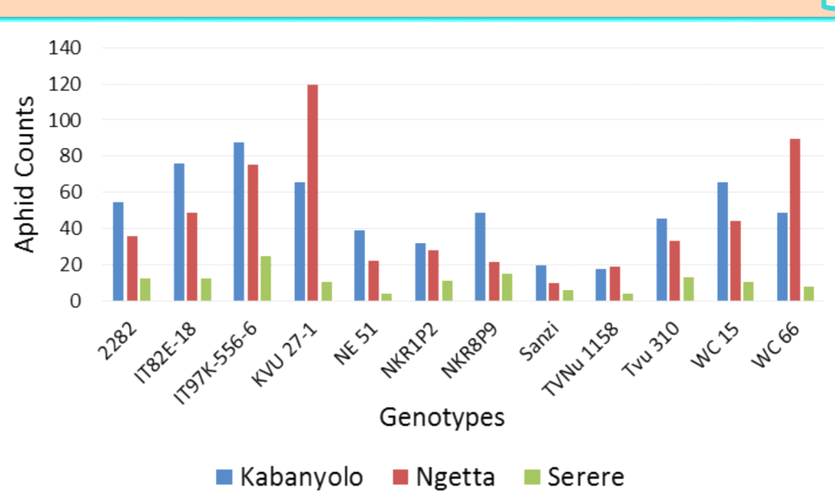


Figure 1: Aphid counts across locations

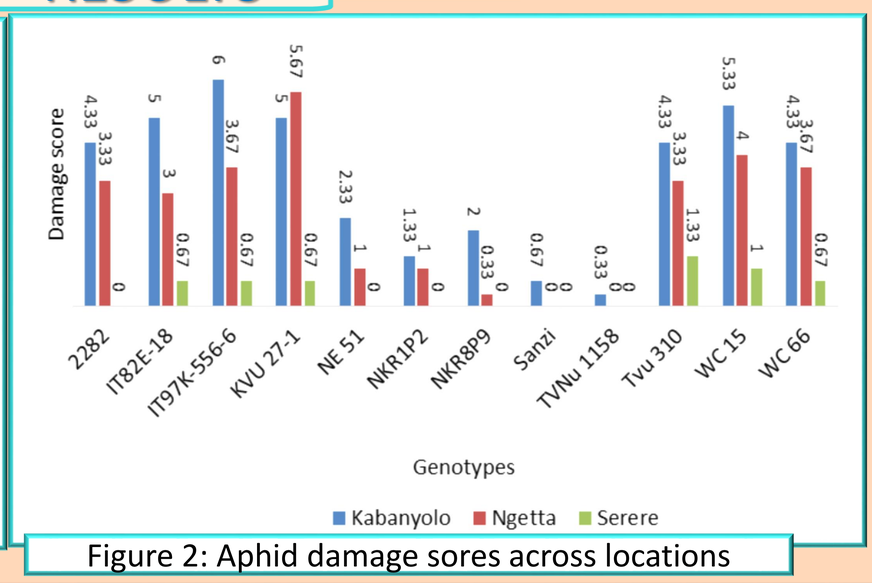


Figure 2: Aphid damage sores across locations

For Kabanyolo and Serere collected aphids, TVNu 1158 had the lowest aphid counts with no damage, while IT97K-556-6 had the highest aphid with high damage

For Ngetta aphids, Sanzi had lowest counts with no damage while KVU 27-1 had the highest.

Serere had lowest damage due to low survival of pest

DISCUSSIONS & CONCLUSIONS

There was no significant difference in the response of genotypes to aphids collected from the three locations in Uganda indicating consistency of genotype response to aphid strains from the three locations. Sanzi and TVNu 1158 showed high level of resistance to aphids and these can be used to introgress resistance into cowpea lines. Genotypes IT97K-556-6 and Tvu-310 from IITA known to be resistant were found to be susceptible to Uganda aphid strain and therefore cannot be used as a source of resistance in Uganda.

References

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