



Introducing aphid resistance into elite cowpea varieties in Zimbabwe using marker assisted backcrossing



Edmore Gasura (New KT-PI)

**Department of Plant Production Sciences and Technologies
University of Zimbabwe**

Background

- Cowpea aphid is a major problem in Zimbabwe



Specific objectives

1. Selection of suitable donor lines for use as sources of host resistance to the cowpea aphid
2. To introgress aphid resistance into farmer preferred cowpea varieties (CBC6 and CBC4)
3. To release and make available to the farmers the improved versions of CBC6 and CBC4
4. Build capacity and research collaborations in marker assisted breeding for cowpeas

Materials and methods





CBC6

- . **Biofortified** (Iron 91.3 & Zinc 37ppm)
- .
- . **Yield ~2 t/ha, and stable**
- . **Medium size seeds**



CBC4

- . **Yield ~4 t/ha, and stable**
- . **Large speckled seeds**

Five Donors Lines for aphid resistance

- 1. Kirkhouse**
- 2. Wangkae**
- 3. Zaa/556/SARC P6R4**
- 4. SARC 1- 57-2**

- 5. IT97K556-6**

Cowpea varieties infested with aphids



A closer look at plants in pots



Plants will show their reaction to aphid infestation in the near days to allow phenotyping

DNA was extracted

Lane 1-16

Ladder

CBC2

CBC3

CBC4

CBC5

CBC6

CBC7

Kirkhouse

Wangkae

Zaa/556/SARC P6R4. SARC 1-
57-2 IT97K556-6

Landrace 1

Landrace 2

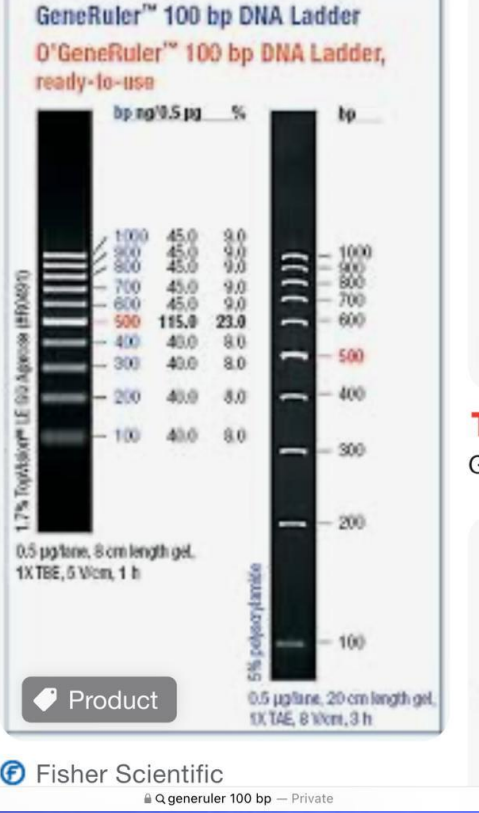
Landrace 3



Marker Selection

Pair	Forward	Alternative for forward	Reverse	Alternative for reverse
1	2_32753F		2-32753R1	2_327553R ₂
3	SNP1_0912F1	SNF1_09912F ₂	SNP1_0912R	
4	CP172-SARI_Kusi		CP171-SARI-Kusi	
5	CP171 Erik-Ohlson		CP172-Erik-Ohlson	

CP171/CP172 SARI_Kusi PCR Results



200bp →
100bp →

- ladder
- CBC 2
- CBC 3
- CBC 4
- CBC 5
- CBC 6
- CBC 7
- Kirkhouse
- Wangkae
- Zaa/556/SARC P6R4
- SARC 1- 57-2
- IT97K556-6
- Landrace 2
- Landrace 2
- Landrace 3
- ladder

Expected band size 176bp

Conclusion and way forward

1. Optimize further the PCR conditions for all five markers
2. Finish screening for variety reaction to aphids
3. Confirm the matching of the marker genotypes and phenotype
4. Generate F1 crosses soonest, and proceed to F2, then BC1 using MAB

Alectra Vogelii ?



Acknowledgements

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in the biological sciences

