PHYLLOXERA SURVEY RESULTS

43rd SASEV Conference
14 September 2023

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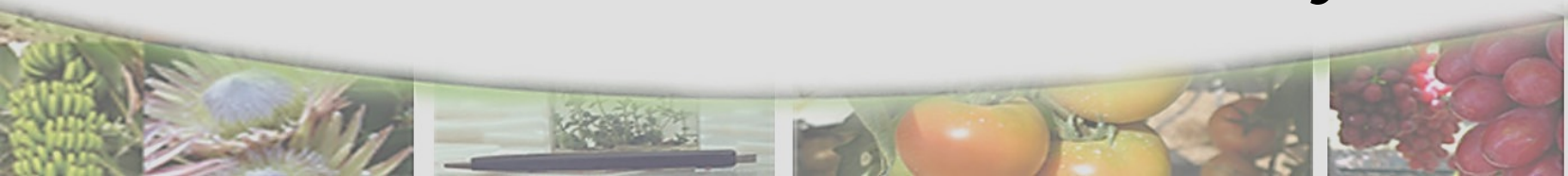
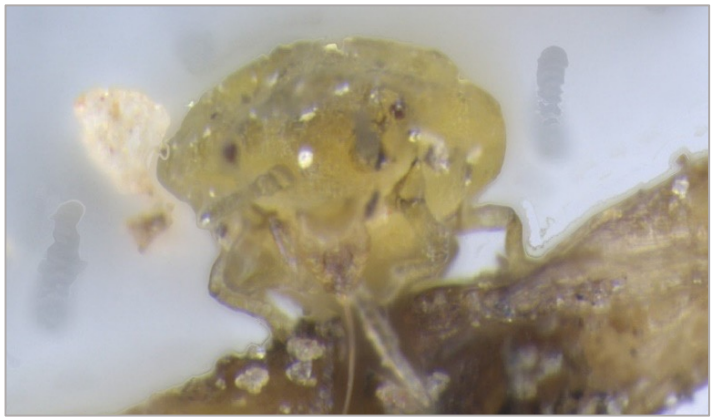
ARC Infruitec-Nietvoorbij



BACKGROUND



Daktulosphaira vitifoliae
Hemiptera: Phylloxeridae

Type of aphid with sucking mouthparts that feeds exclusively on *Vitis* species

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BACKGROUND

- Originates from indigenous *Vitis* spp. in South-Eastern USA
- Between 1854 and 1860 accidentally introduced into Europe with American vines imported for resistance to oidium
- Spread rapidly and decimated susceptible European grapevine species
- Introduced to South Africa via planting material in 1886 – nearly destroyed the wine industry
- Industries saved only by grafting susceptible scion cultivars onto resistant rootstocks

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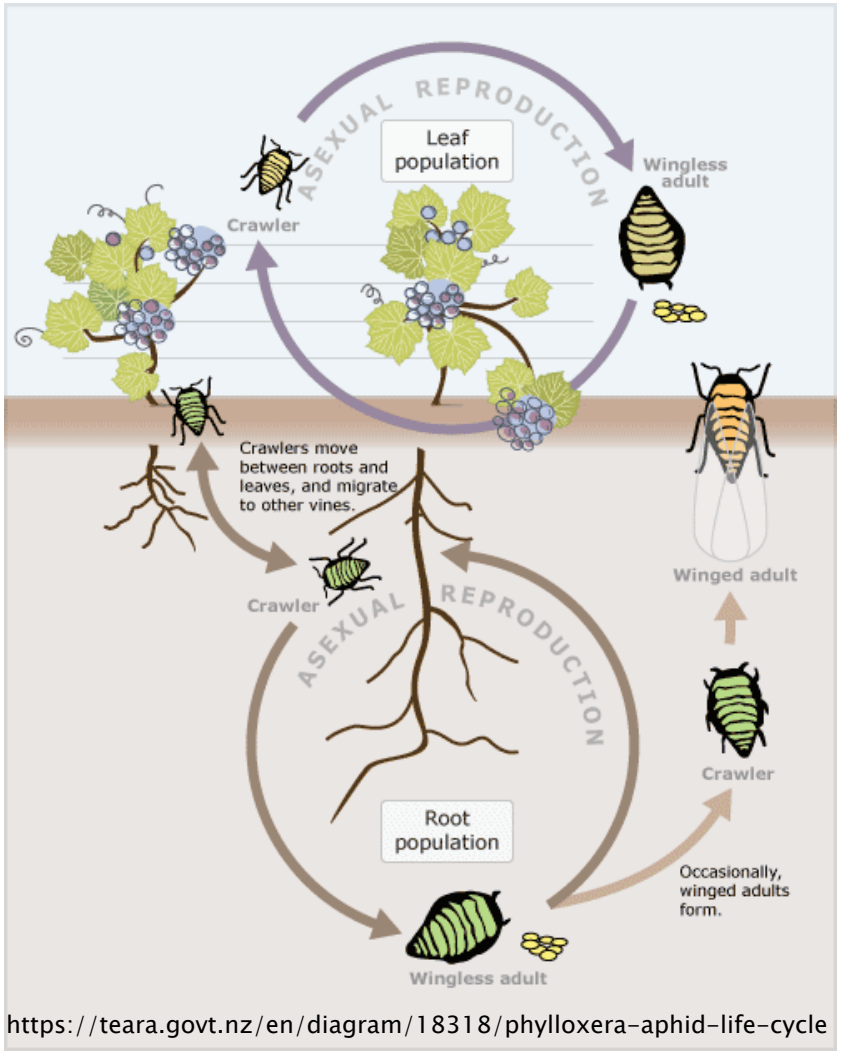
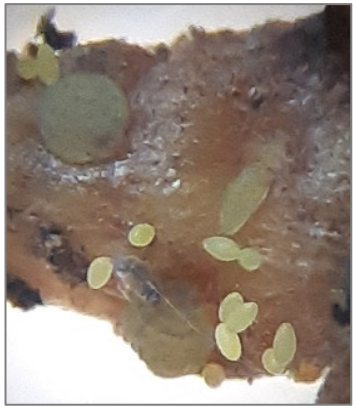
BACKGROUND



https://teara.govt.nz/en/diagram/18318/phylloxera-aphid-life-cycle



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BACKGROUND

- Overwinters as minute hibernating larvae on roots, occasionally aboveground under loose bark on shoots and canes
- According to literature, only about 10% of the hibernating population survives during winter
- However, due to high rate of reproduction populations increase rapidly when temperatures increase and active root growth resumes in spring

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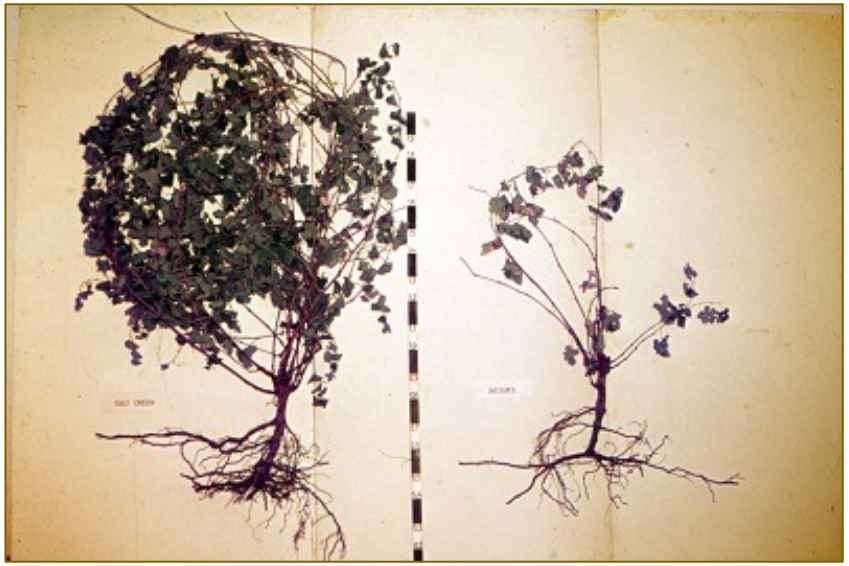
BACKGROUND



- Feeding causes formation of nodosities or galls on fine roots
- Plants are weakened and can die because roots don't function properly

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BACKGROUND

HOW DOES PHYLLOXERA SPREAD?

- Active crawlers spread from vine to vine
- Infested plant material – primary means of spread, especially to new regions and farms
- Phylloxera prefers soil with a heavier texture – can spread between vineyards and farms via infested soil clinging to implements, vehicle tyres or shoes
- Winged forms not common in South Africa – not a significant method of distribution here

BACKGROUND

RESISTANCE LEVEL OF COMMON ROOTSTOCKS TO PHYLLOXERA

Resistant	99 Richter
	110 Richer
Moderately resistant	Ramsey
	143-B
	Paulsen
	US 8-7
	101-14 Mgt

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BACKGROUND

WE HAVE RESISTANT ROOTSTOCKS, WHY IS PHYLLOXERA STILL OF CONCERN?

- Rootstock resistance to phylloxera not absolute – affected by rootstock vigour
- Phylloxera can survive on resistant rootstocks
- Sub-optimal growing conditions (water logging, water or heat stress, other pests like nematodes) reduce rootstock vigour
- When rootstock vigour is reduced, resistance weakens and phylloxera proliferates to damaging levels
- Highly tolerant perhaps more accurate term than resistant

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METHODOLOGY

INCREASING REPORTS OF PHYLLOXERA IN VINEYARDS ⇒ SURVEY

(1) How widespread is phylloxera in main table and raisin grape regions?

(2) Does the presence of phylloxera in vineyards have any discernible effect on grapevine performance

Fine root samples collected from 5 grapevines in 82 table and dried grape vineyards between 2020 and 2022

Dried grapes: Olifants- and Orange River Valleys

Table grapes: Hex, Olifants, Orange and Berg River Valleys, including Piketberg

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R E S U L T S

- Phylloxera was found in all the major regions in the Western and Northern Cape where table and raisin grapes are grown
- Galls were more numerous on grapevines grown on own roots
- Small numbers of live phylloxera and galls were also present on resistant (R99, R110) and moderately resistant rootstocks (US 8-7, 143B, Ramsey, Paulsen)
- No significant impact on growth and yield that could be ascribed to phylloxera

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CONCLUSIONS

- Phylloxera is present in all the table and dried grape production areas, but most growers are unaware of its presence
- Phylloxera numbers are currently low with no economic impact, but if rootstocks grow poorly, phylloxera could overcome resistance and proliferate to damaging levels
- Soil infested with phylloxera can cause problems when replanted with a susceptible rootstock

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RECOMMENDATIONS

1. Risk awareness

Nurseries and growers should be aware of the potential risks posed by phylloxera – every effort should be made to ensure that planting material is free from phylloxera since phylloxera spread via plant material and infested soil (implements, shoes)

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RECOMMENDATIONS

2. Rootstock blocks and nurseries

- Control phylloxera in vineyards supplying rootstock material to nurseries and in nurseries.
- Systemic insecticides used for control of vine mealybug will also control phylloxera

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RECOMMENDATIONS

3. Vineyards earmarked for replacement

- Inspect for the presence of phylloxera.
- If present, apply a systemic insecticide after the last harvest to reduce the phylloxera population.
- After planting of new vines, apply a systemic insecticide after budding to protect the young vines from being colonized by mealybugs and any remaining phylloxera in the soil

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Survey co-funded funded by

Thank you