



Transmission of CaLsol from seed to seedlings

Emma Back, Anna Philip, Jennifer
Sjölund, Colin Jeffries, David Kenyon

EUPHRESCO B-115 PhyLib II Project Meeting

27-28 April 2017

University of Bologna, Italy

Transmission of CaLsol from seed to seedlings



Dr Emma Back, SASA

Research on carrot seed

Focus on germination

Initial Tests Can we detect CaLsol in germinated/dead carrot seed from clean and infected seed lots?

Stable Temperature Tests Is CaLsol transmission affected by germination temperature? Low germination temperatures are relevant to Scottish growing conditions.



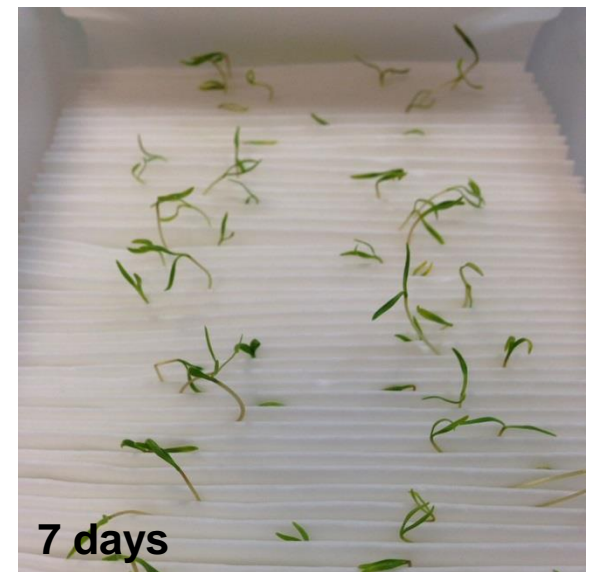
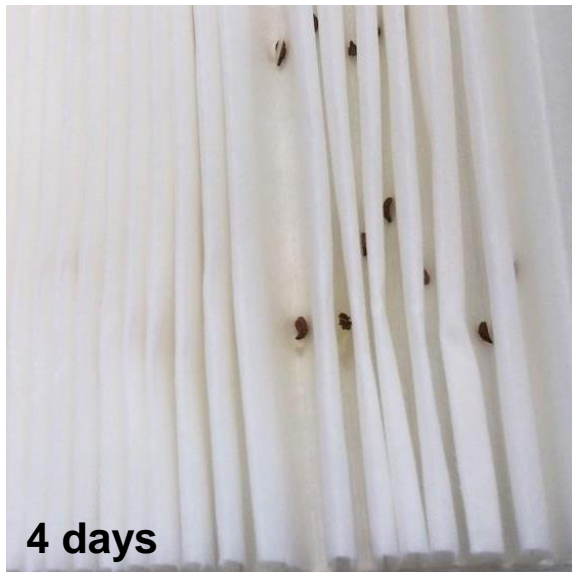
Initial Test – 200 seeds x 4 seed lots

Aim: To see if we could detect CaLsol positive seedlings

Variety: Carrot Nantaise

Performed by: Official Seed Testing Station - principle centre for seed testing and seed quality information in Scotland

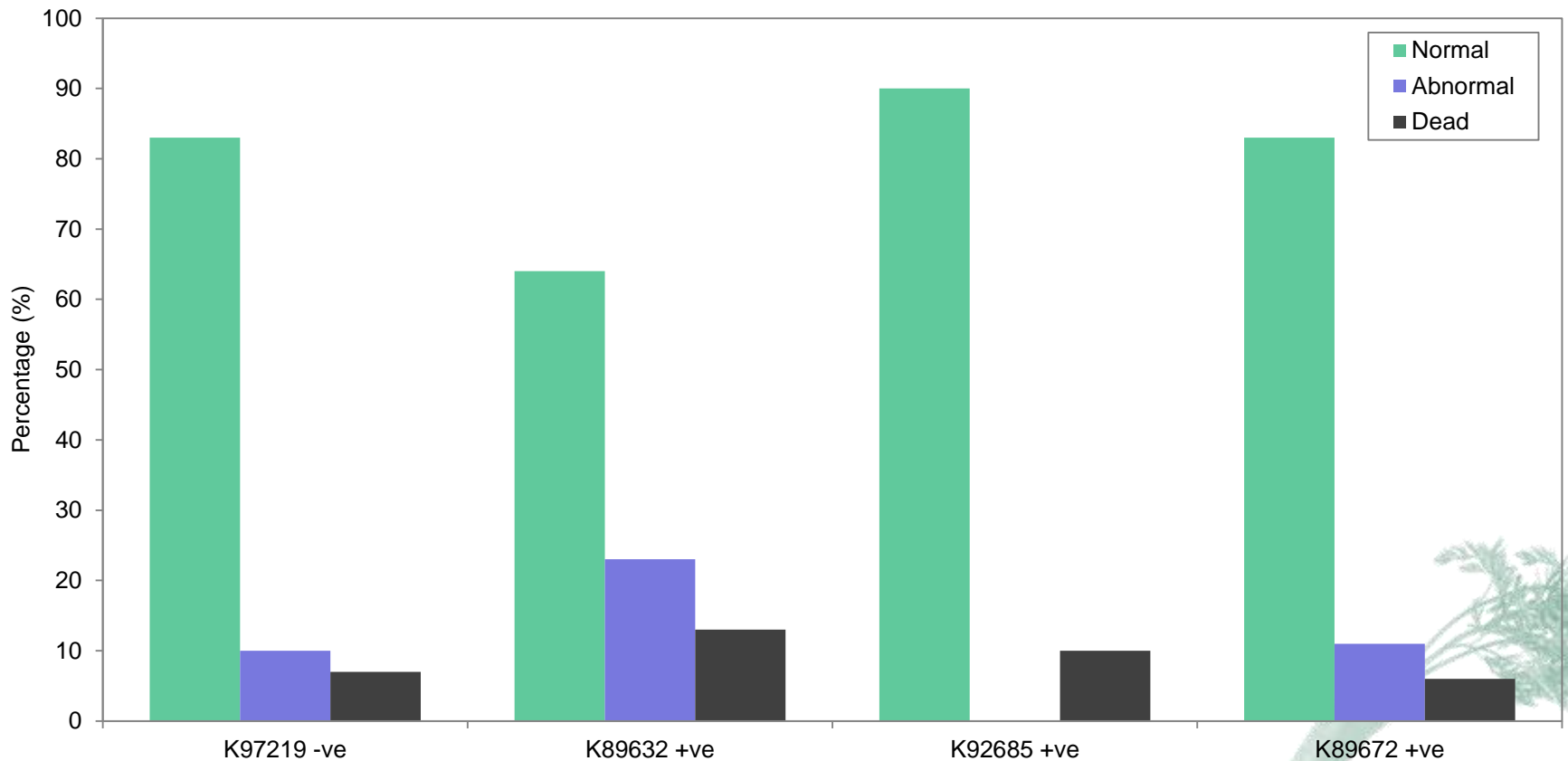
Methods: International Seed Testing Association (ISTA) methods



Initial Test – 200 seeds x 4 seed lots

Percentage germination after 7-14 days

16h dark 20°C & 8h light 30°C on pleated paper

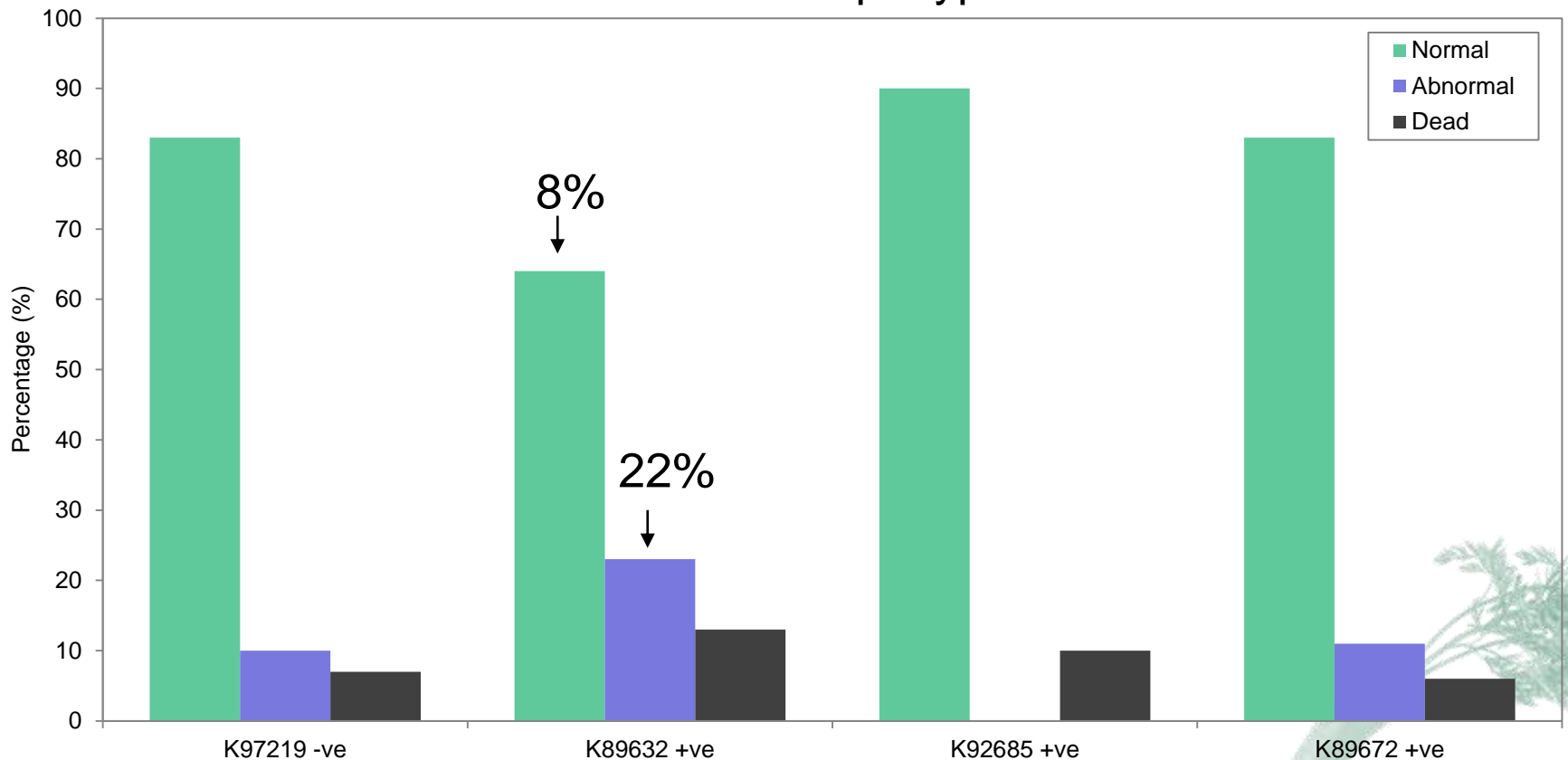


Initial Test – 200 seeds x 4 seed lots

Seedlings extracted in batches of 5 for DNA extraction

CaLsol Real-time PCR assay (Li *et al.* 2009)

16S-23S Haplotype D



Stable Temperature Test – 200 seeds x 4 seed lots

Temperature alters **speed of germination**

Percentage germination after 7-14-21 days

Low 16h dark & 8h light at 15°C

High 16h dark & 8h light at 25°C

For both temperatures:

No germinated seedlings (Normal/Abnormal) were CaLsol positive

All dead seeds were CaLsol positive



Work in progress

Test of stable higher temperature at 30°C in progress

Assess viability of CaLsol in infected seed lots with PMA
Propidium monoazide - photoreactive DNA-binding dye

Repeat initial tests and grow onto first true leaves to confirm bacterial replication in the seedling

Other seed crops



Thank you for listening

W. Monger, Y. Arnsdorf, M. Loiseau, M. Milagros Lopez.

Funding was provided by the Scottish Government (SG Psyllid Project).

