



**Plant & Food
Research**

Rangahau Ahumāra Kai



Quantifying pea seedline variability: implications for flowering and yield variability

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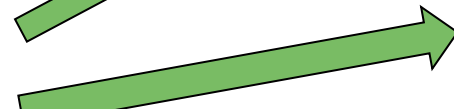
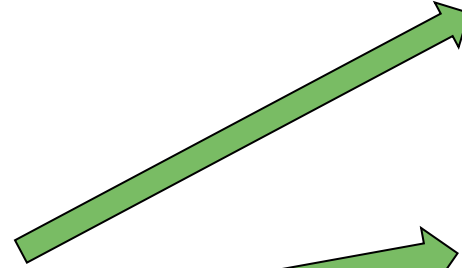
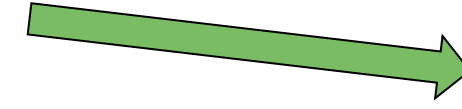
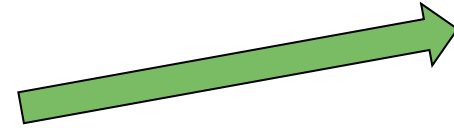
What is a seedline?



Field 1 seed crop



Seedline 1



Process crops



Field 1



Field 2



Field 3

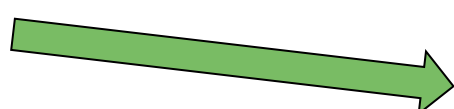
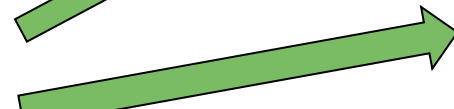


Field 4

Field 2 seed crop



Seedline 2



Seedline is seed crop of a given variety produced in different fields

Aims and next steps



Aims

1. Can seedlines of the same variety vary in their time to flowering?
2. What are the implications of seedlines varying in their time to flowering on yield if seedlines are mixed for sowing?
3. What are the implications of plant – to – plant variability?

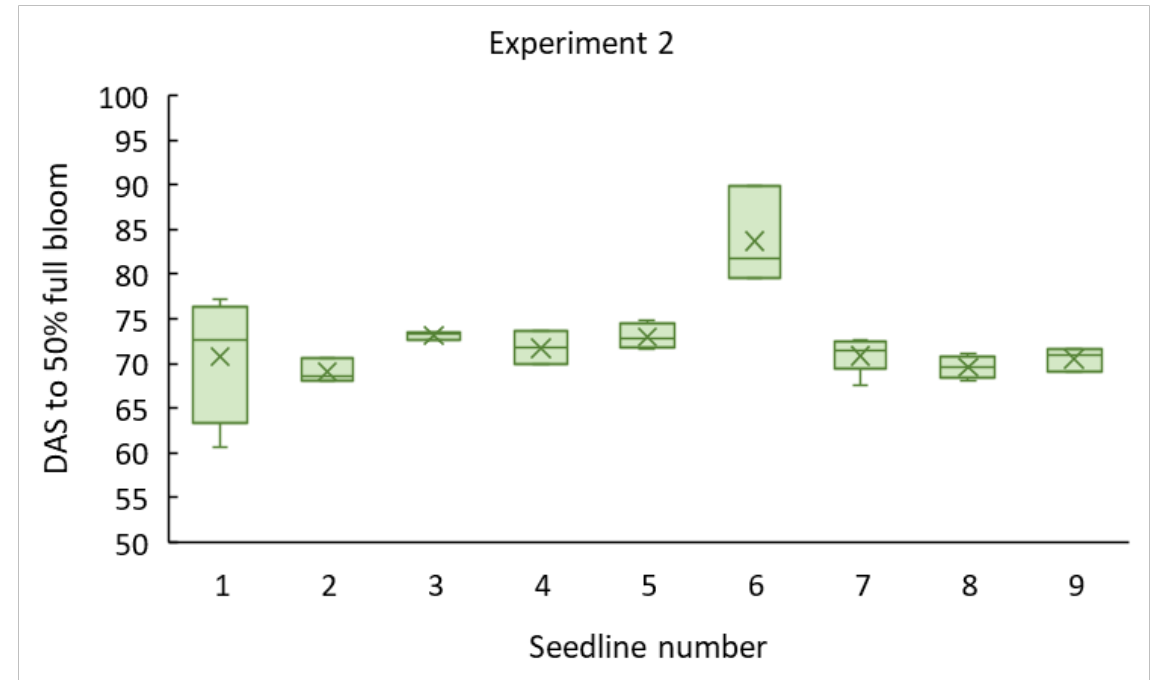
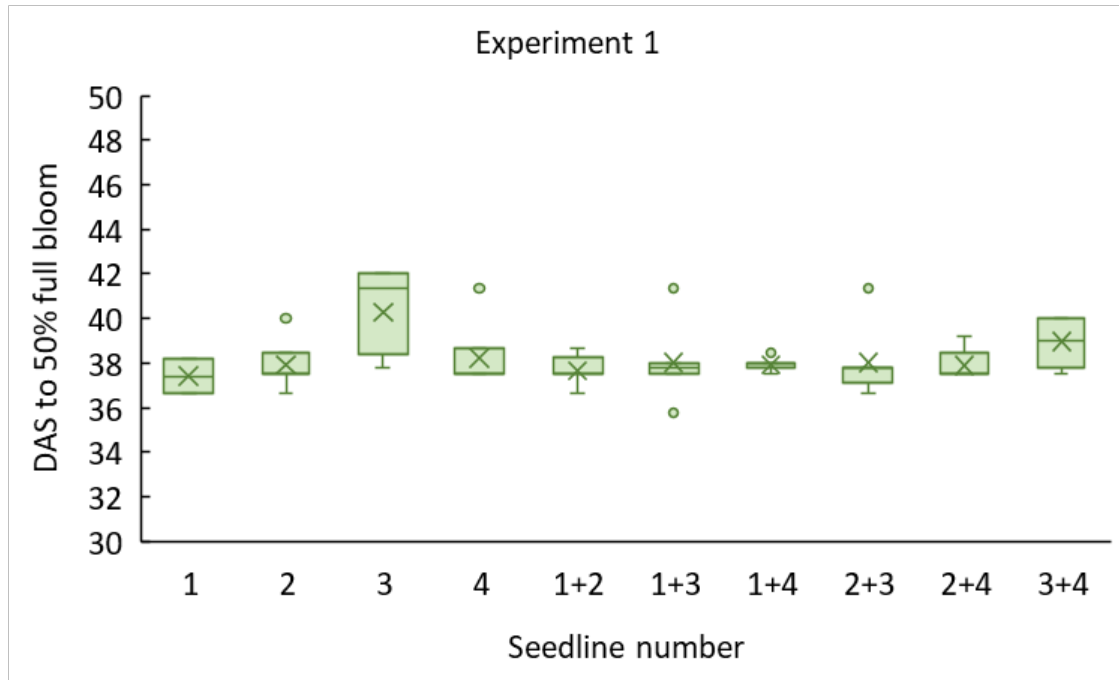
Next steps

1. Guideline discussion and Year 3 plan



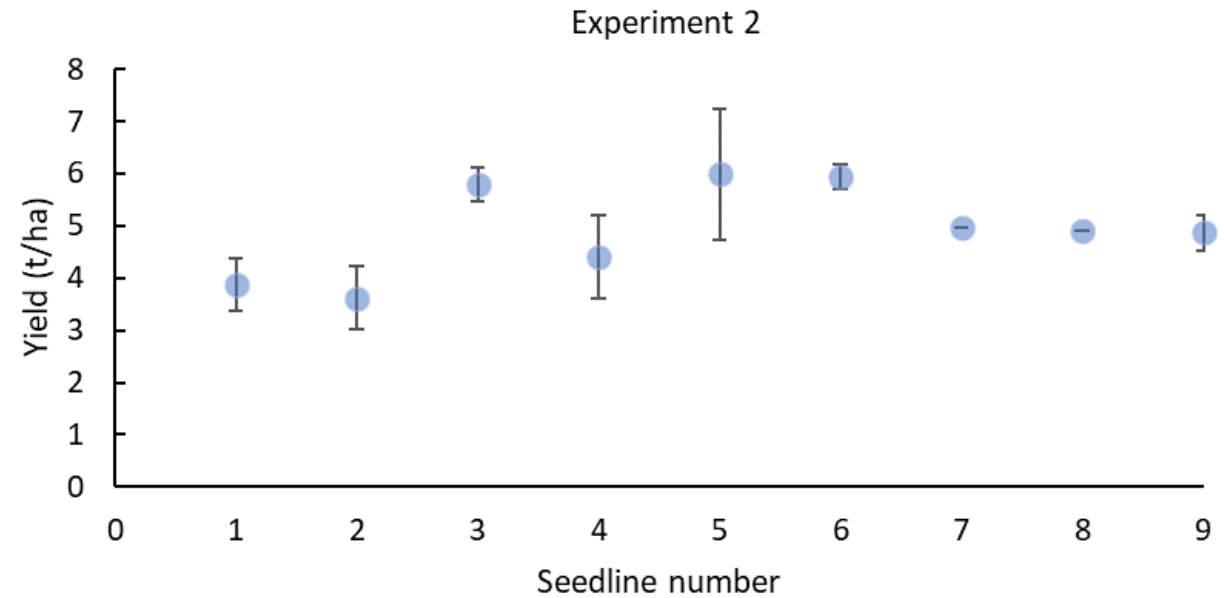
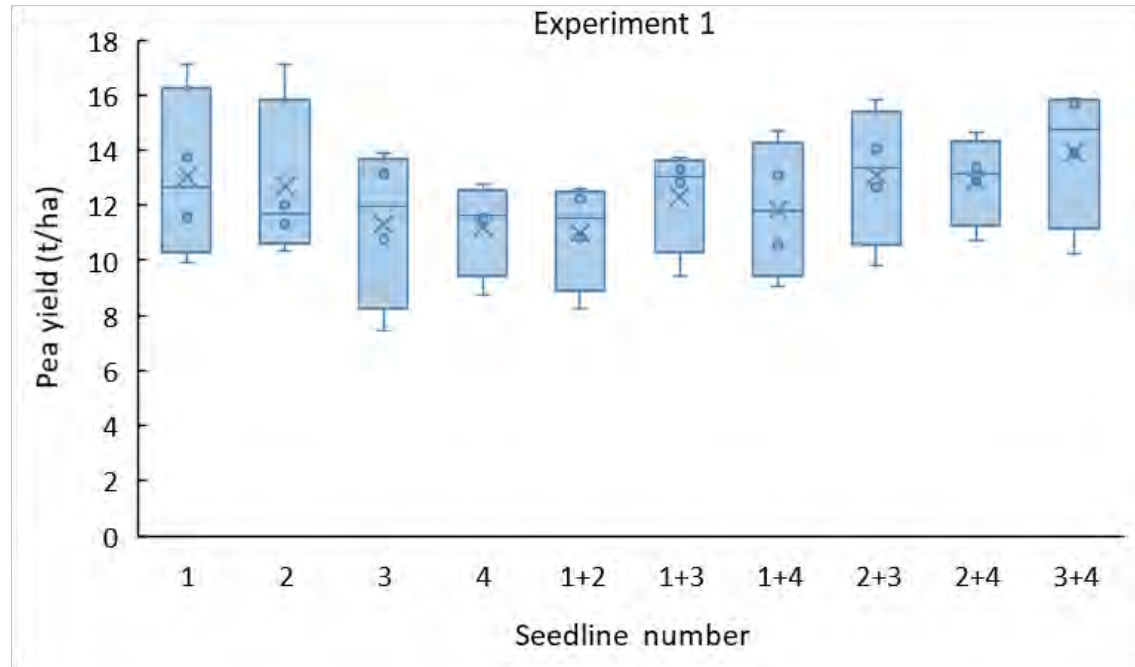


Does time of flowering vary between seedlines?



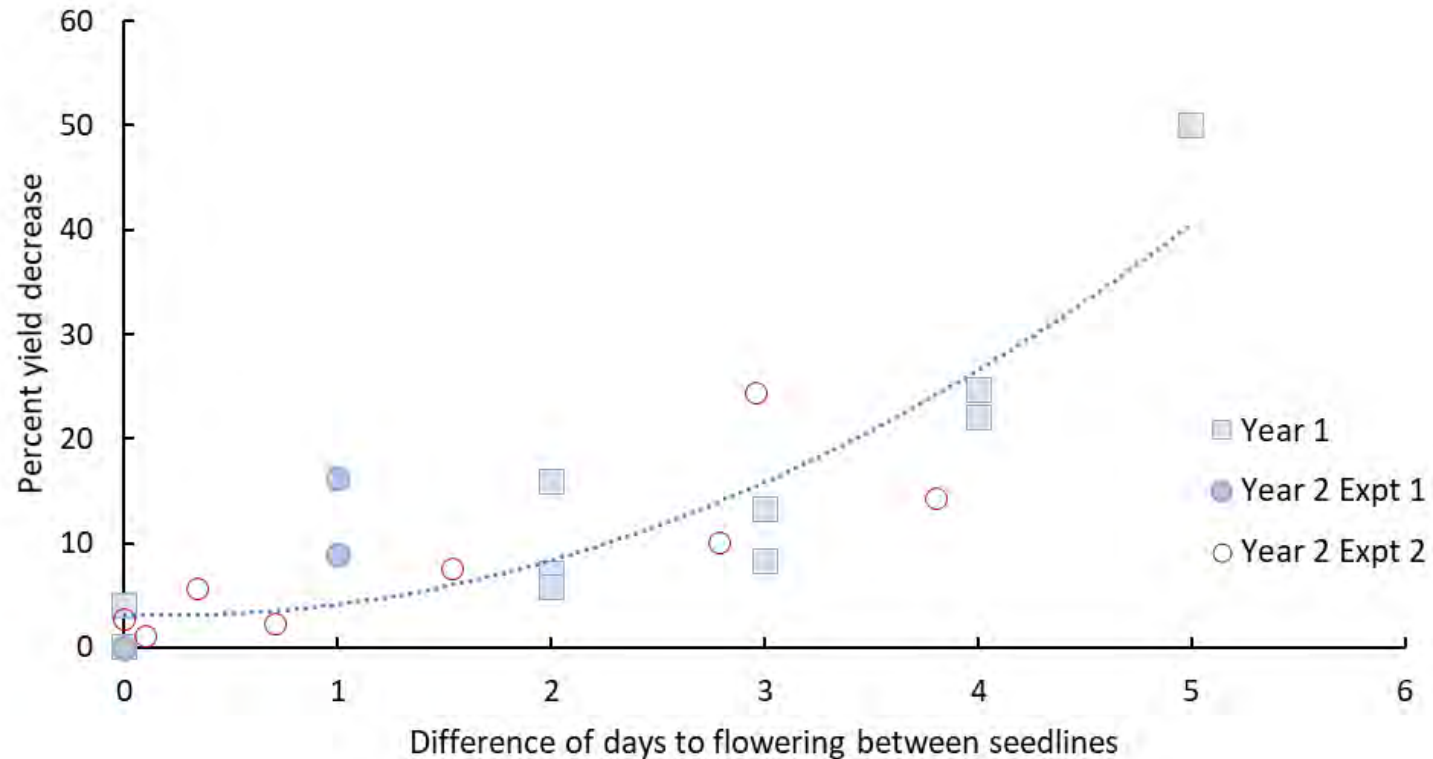
Seedlines can differ in time to flowering

Does yield vary between seedlines?



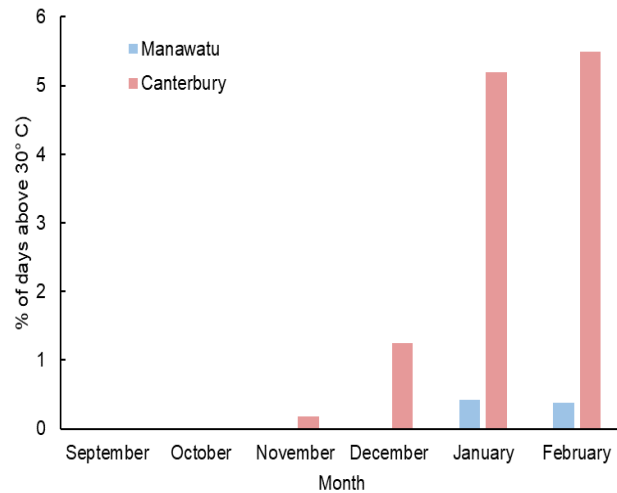
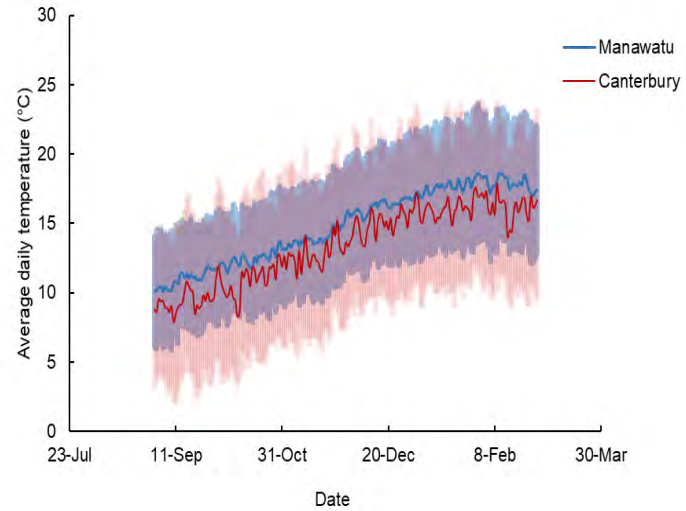
Seedlines can differ in yield

Implications of mixing seedlines for sowing



Mixing seedlines with different flowering times can significantly reduce yield

Preliminary guideline development

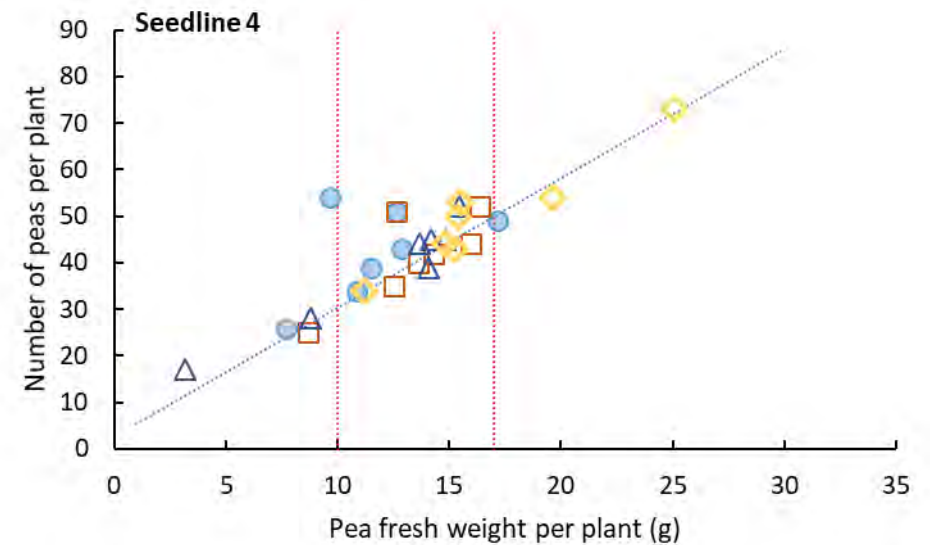
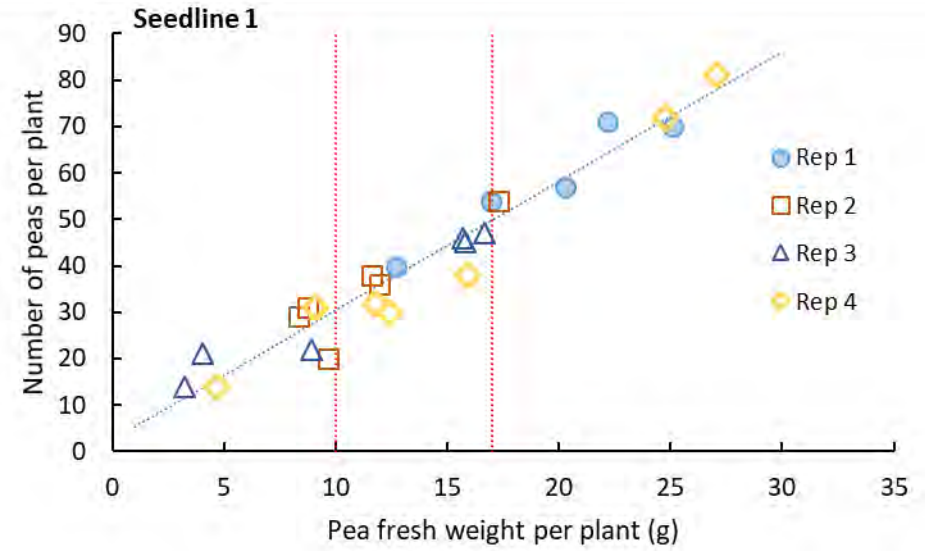
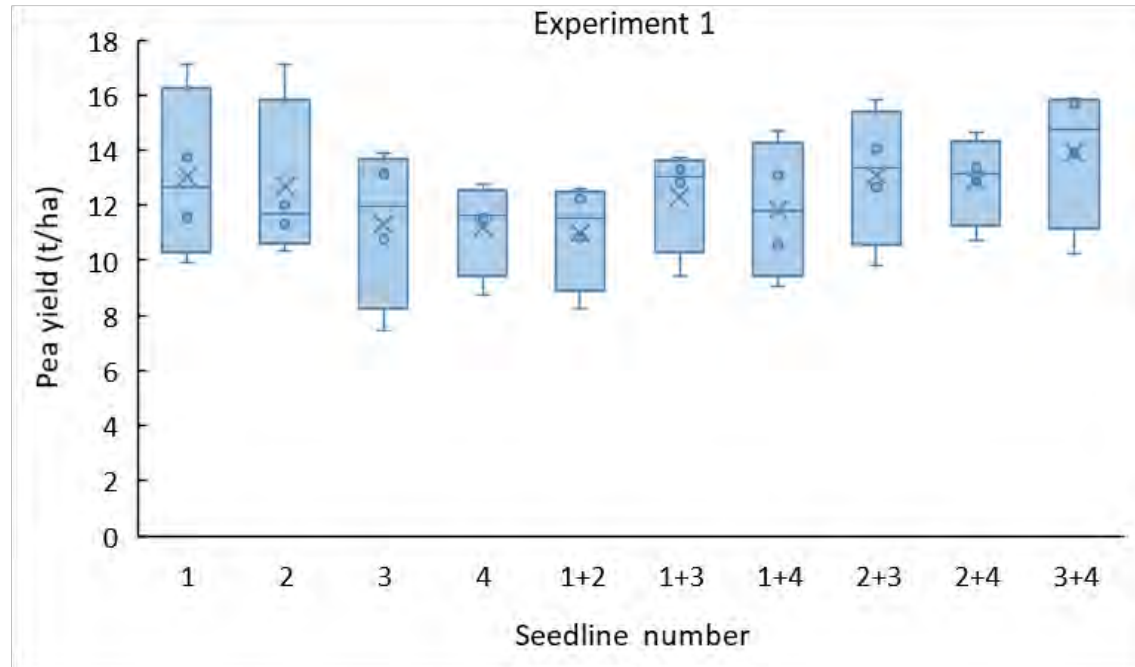


Preliminary guideline suggestion



Region	Stage of season	Preliminary guideline
Canterbury	Early	Avoid mixing with seedlines produced in other regions or stages of the season.
	Late	Mix with early produced seedlines from Manawatu. Do not mix if there have been temperature spikes above 30°C during pod fill.
Manawatu	Early	Mix with late produced seedlines from Canterbury, as long as these have not experienced temperature spikes above 30°C during pod fill.
	Late	Avoid mixing with seedlines produced in other regions or stages of the season.

Plant – to – plant variability



Year 3 plan



- » Use a minimum of four seedlines:
 - » Canterbury early season
 - » Canterbury late season
 - » Manawatu early season
 - » Manawatu late season
- » Sow seedlines individually and mixed (50:50)
- » Field trials located at PFR Lincoln and Hawke's Bay



Year 3 plan - measurements



- » Before planting – soil sample for soil borne pathogen testing, and for soil nutrient analysis.
- » Monitor soil moisture and temperature using loggers during the season.
- » Do emergence count, and after establishment a population count.
- » After plant emergence measure soil bulk density 0-15 cm and 15 – 30cm correlated with penetrometer test. Soil moisture measured in bulk density samples.
- » Monitor and count the appearance of flowers in each seed line.
- » Growth analysis of each seed line starting at first flower. Sample 0.5m² area, plant count, pod number, flower number, leaf area, fresh and dry weights of plant components. To get an idea of the partitioning effect, this will need to be carried out approximately once every 5 days, from as close to first flower set as possible.
- » Score root health at each sampling point and collect for pathogen analysis.
- » Plant nutrient analysis of whole shoot.

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