Developing tools for growers and breeders to enable the predictable manipulation of flowering

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Benefits of more predictable flowering/accurate scheduling:

- Predictable quality
- Less repeat harvests
- Lower inputs
- Reduces waste
- More crop rotations – fast cropping

Need to understand physiology affecting flowering:

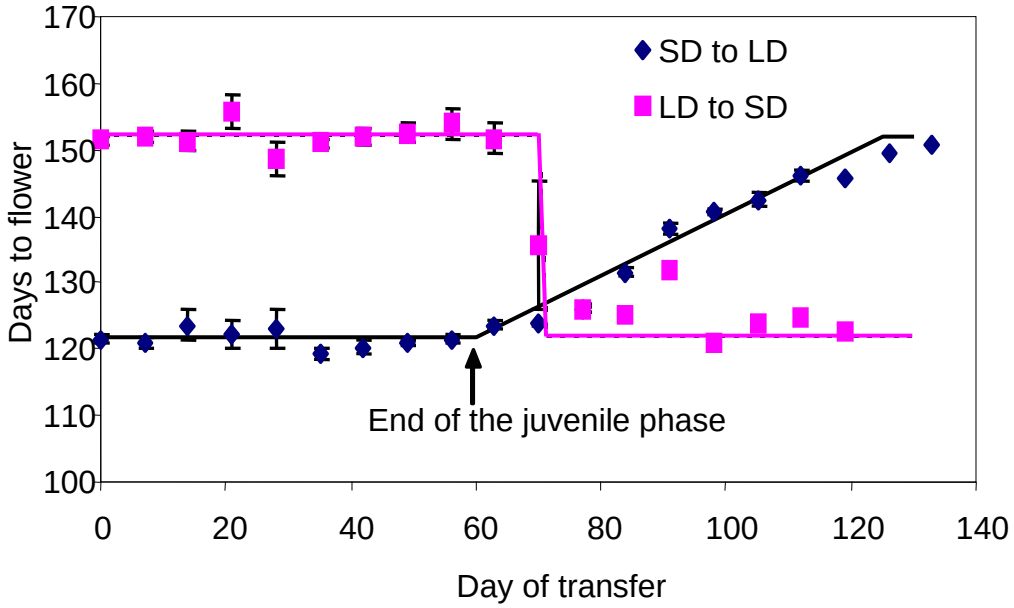
- Optimal conditions for germination
- Photoperiod requirement
- Vernalisation requirement
- How temperature affects plant development
- When a seedling is capable of responding to an inductive treatment (**Juvenility**)

Phase transitions

Vegetative → Reproductive

Juvenile → Adult

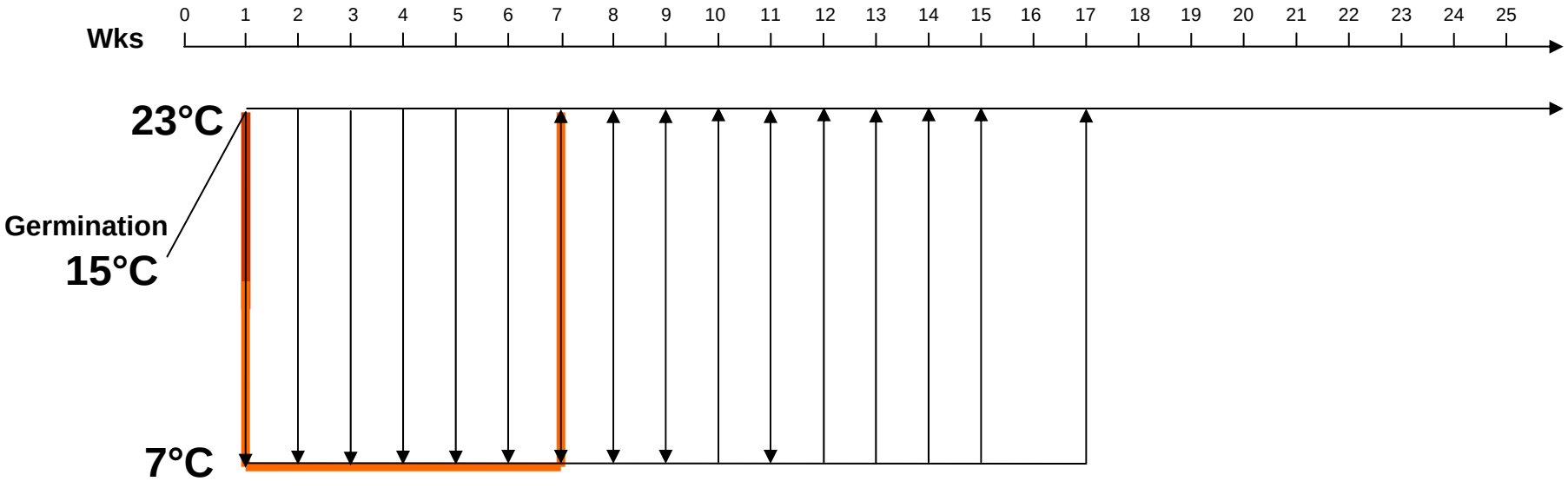
What is juvenility?



Brassica – ability to respond to a vernalisation treatment used as a measure of end of juvenility.

Established a defined assay to measure the juvenile phase
Non-inductive temp 23ºC, Induction 7ºC for 6 weeks

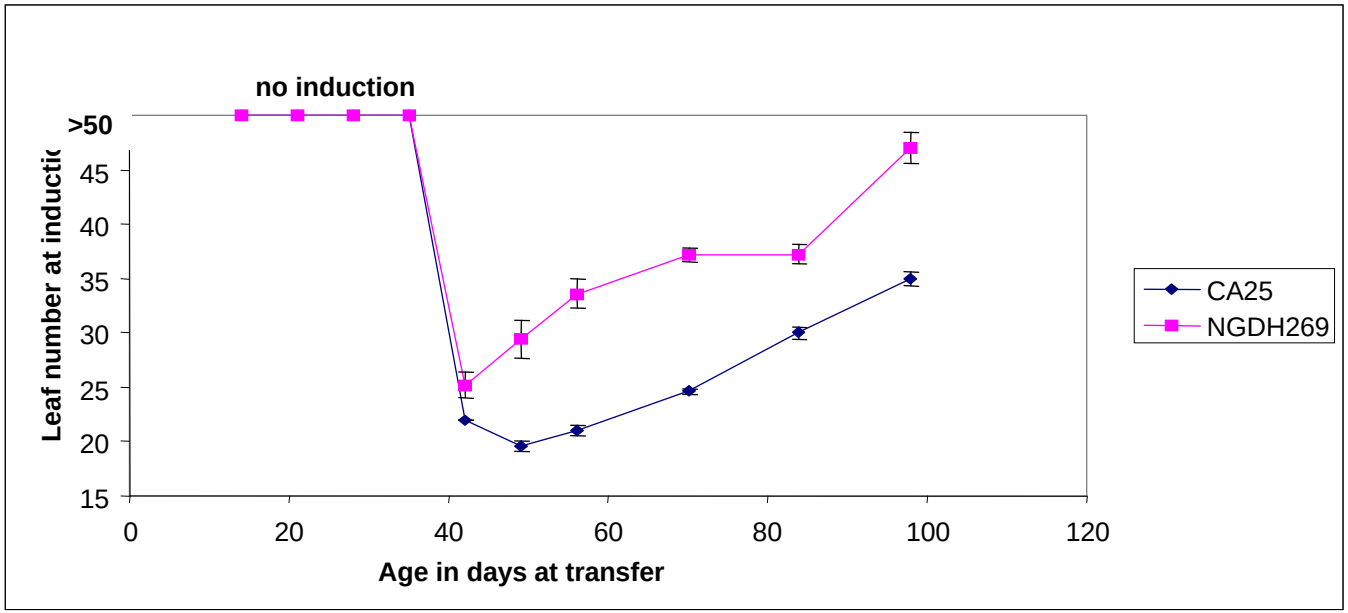
6 week vernalisation treatment given at different times



23°C for x weeks, move to 7°C for 6 weeks then back to 23°C

Analysis of parental lines of NG doubled haploid mapping population;

CA25 cauliflower parental line and
NGDH269 brussels sprout-like descendent line (due to lack of seed for AC498)



Days to flowering and leaf number data consistent

CA25 – estimate juvenility ended age **56 – 70** days

NGDH269 – estimate juvenility ended **35 – 49** days

Estimates large due to infrequency of transfers (1 per week)

Summary

- We have an assay to measure juvenile phase length in Brassica

- There is variation in juvenile phase lengths between CA25 and NGDH269

- We will now screen 68 lines of the NG doubled haploid population for variation in juvenile phase length