



Pre-bloom tipworm management strategies

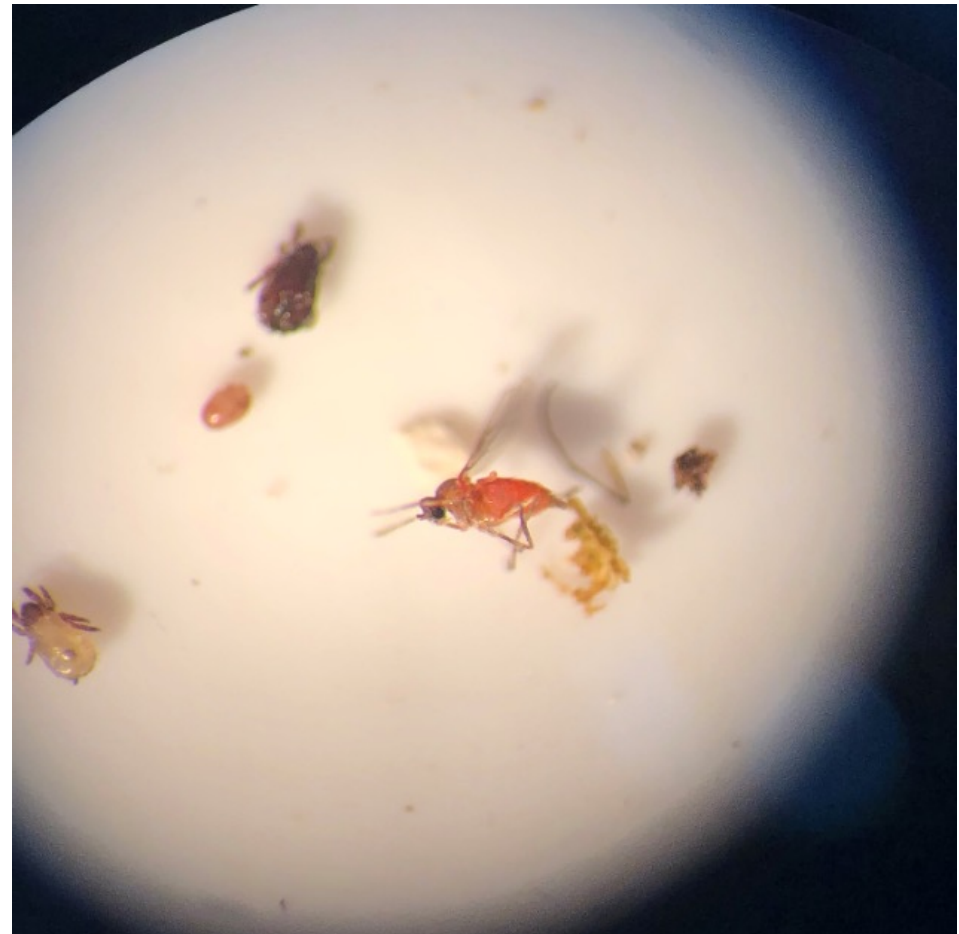
Sam Tochen

(former) Ag. Scientist-WA
Ocean Spray Cranberries

2023 Oregon Cranberry School



Everybody's favorite dipteran



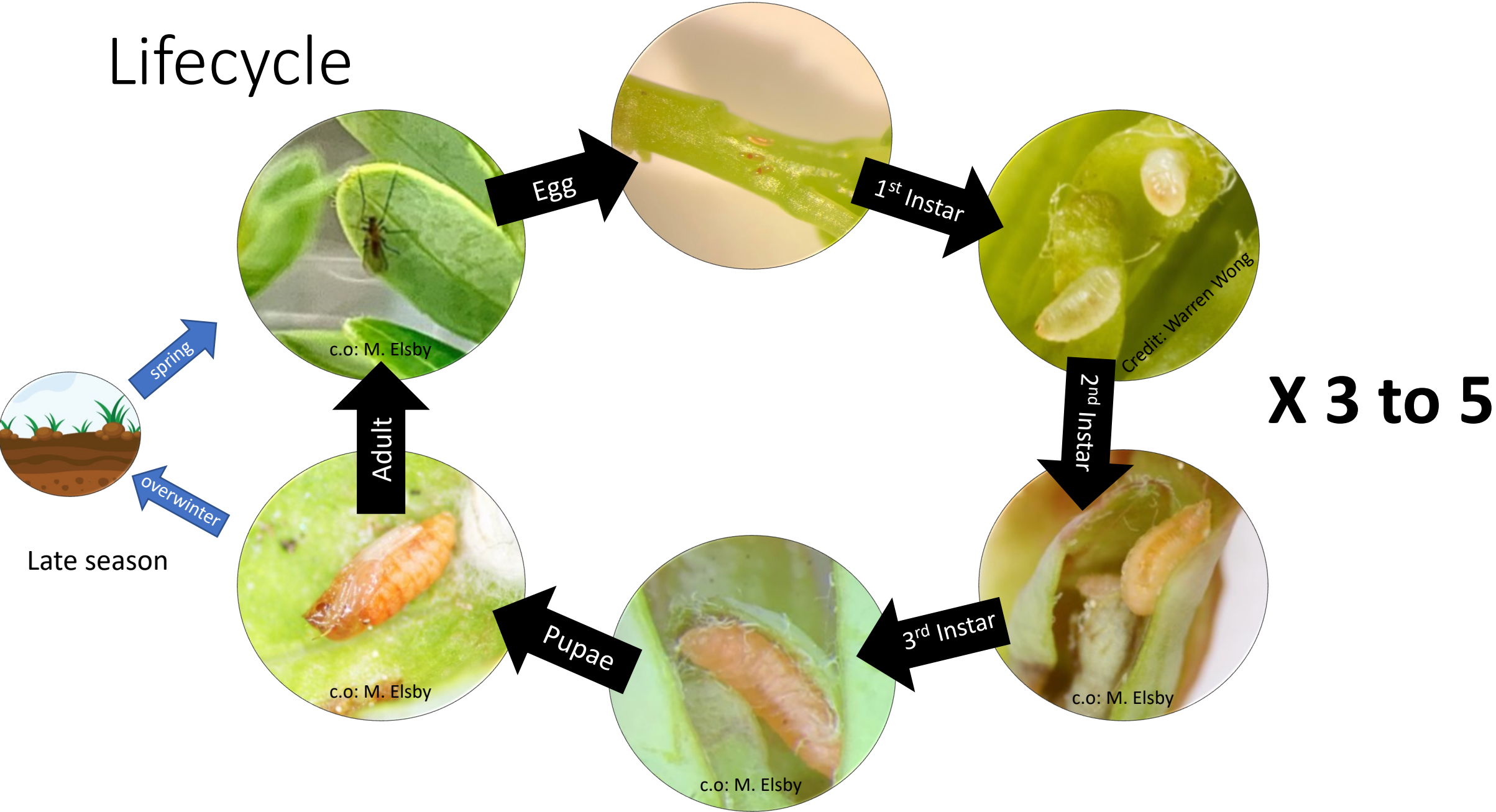
Reminder: what it is and why you should care

- A type of midge
- Only larval stage (and their feeding) leads to damage
- Feeding damage causes growing tip to die
- Can prevent floral bud set
- Branching from feeding leads to fluffy, non-productive canopies



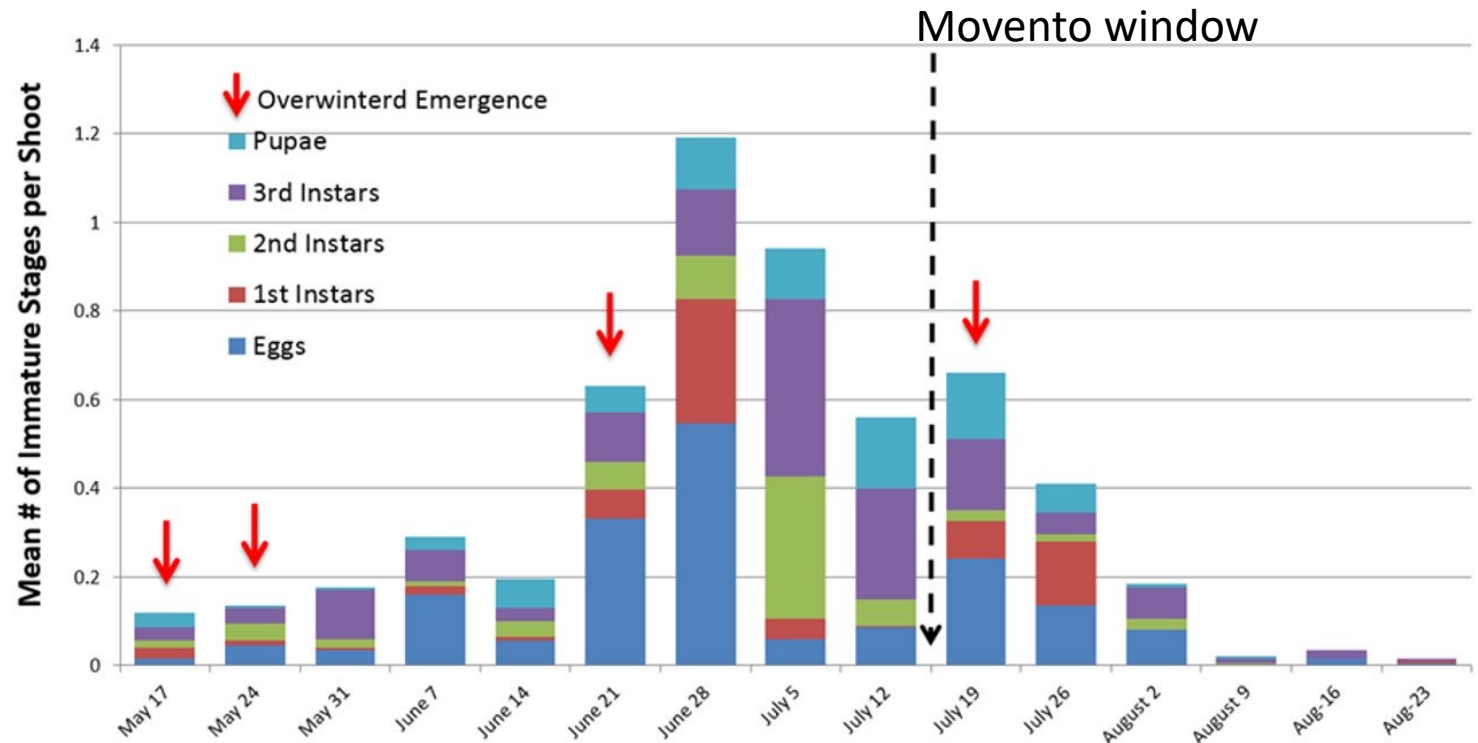
c.o: Miranda Elsby

Lifecycle



Targeting tipworm pre-bloom

- Populations are highest during the first three generations
- One well-timed early app may lead to lower populations for the season, reducing overall damage



Most promising: Pyrethroids

GROUP 3 INSECTICIDE

VALENT®

RESTRICTED USE PESTICIDE
 DUE TO TOXICITY TO FISH AND
 AQUATIC ORGANISMS.

For retail sale to and use only by
 Certified Applicators, or persons
 under their direct supervision, and
 only for those uses covered by the
 Certified Applicator's certification.



(INSECTICIDE-MITICIDE)

Active Ingredient	By Wt
Fenpropathrin*	30.9%
Other Ingredients	69.1%
Total	100.0%

*alpha-cyano-3-phenoxybenzyl 2,2,3,3-tetramethylcyclopropanecarboxylate
 Contains 2.4 pounds fenpropathrin per gallon.
 Contains Petroleum Distillates
 EPA Reg. No. 59639-35
 EPA Est. 5905-GA-1©, 39578-TX-1©
 Superscript is first letter of lot number.

RESTRICTED USE PESTICIDE
 TOXIC TO FISH AND AQUATIC ORGANISMS

FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION AND ONLY FOR THE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

Fanfare® EC **GROUP 3 INSECTICIDE**

ACTIVE INGREDIENT: % BY WT.
 Bifenthrin: (2 methyl[1,1'-biphenyl]-3-yl) methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl-cyclopropanecarboxylate* 24.0%
OTHER INGREDIENTS:** 76.0%
TOTAL: 100.0%

*Cis isomers 97% minimum, trans isomers 3% maximum.
 **Contains petroleum distillates.
 This product contains 2 pounds active ingredient per gallon.

EPA Reg. No. 66222-261
EPA Est. No. 37429-GA-001^{BT}; 37429-GA-002^{BO}
 Letter(s) in lot number correspond(s) to superscript in EPA Est. No.



Must have supplemental label!!

From last year

What about Fanfare?

- Cheaper (approx. \$9/acre)
- Promising results in the past but
 - No trials with single applications
 - Probably long season control?
 - Will be trialed this year as a single pre-bloom app

FANFARE
RESTRICTED USE PESTICIDE
fish and aquatic organisms
by certified applicators or persons under their direct supervision covered by the certified applicator's certification

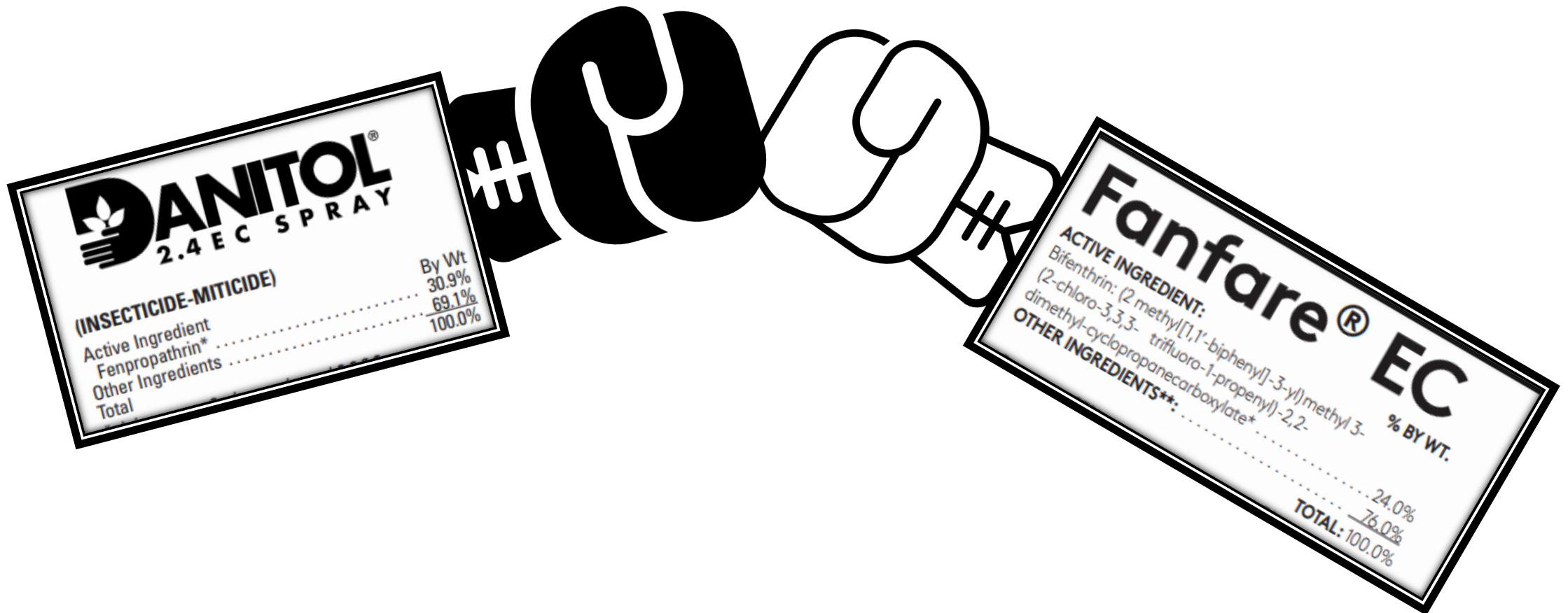
Fanfare

- Pros
 - Good efficacy early generation(s)
 - ~\$5/ac
 - Also control BHFV & BVW
- Cons
 - 2- 3 application required
 - Restricted Use
 - Pre-bloom only

Kim-2019 Oregon cranberry school



Tipworm pre-bloom control: a pyrethroid showdown



plus some softer chemistries

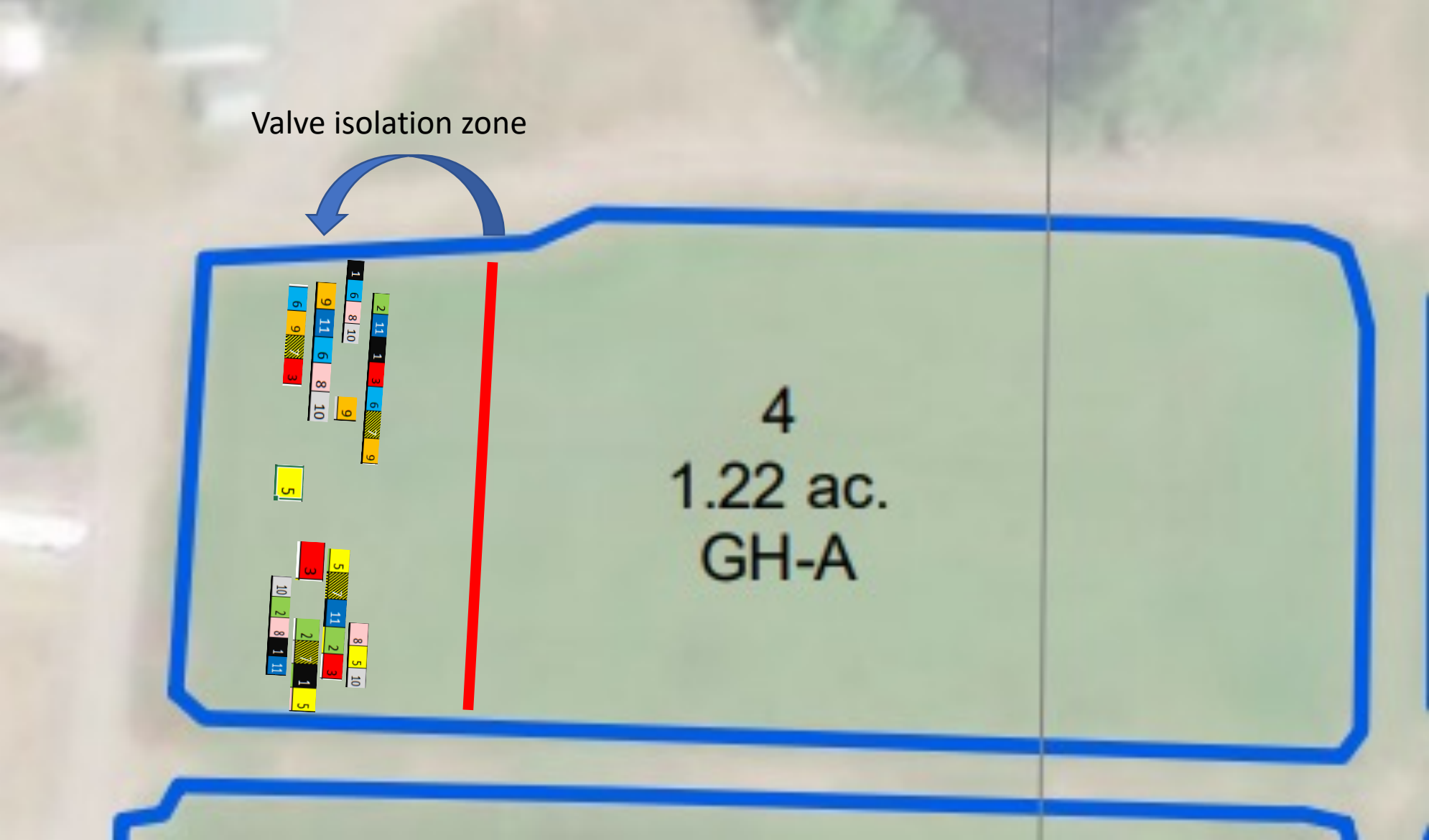
Set-up

2022 Trial (repetition from 2021)

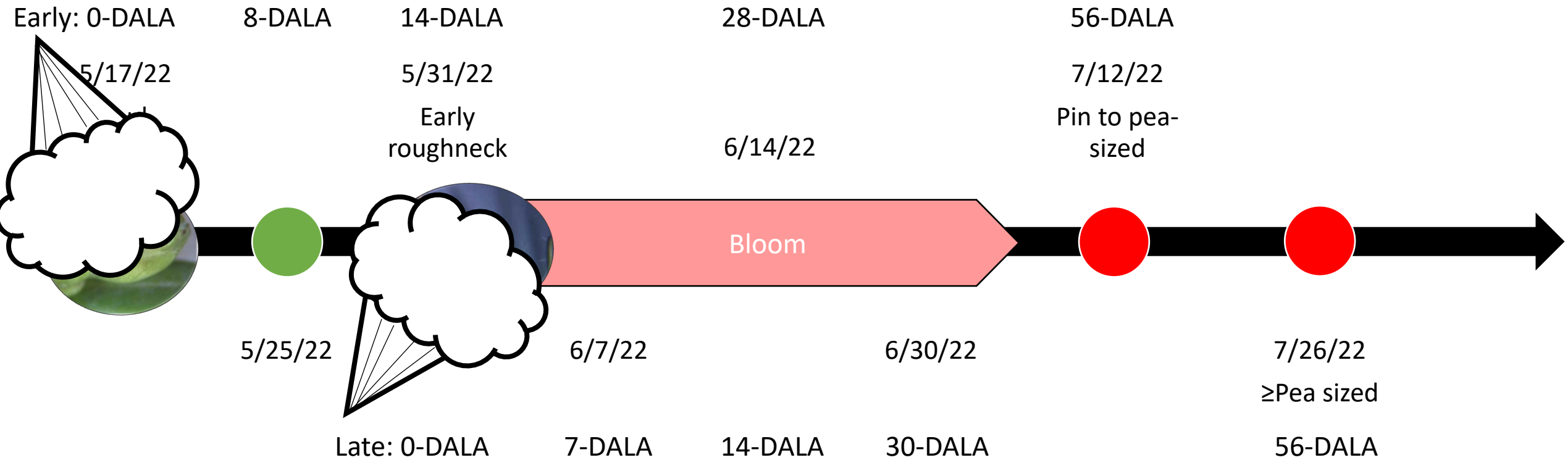
- Danitol (“low” and high rate)
- Fanfare
- Exirel
- Verdepryn (2 apps)
- “Early” and “Late” applications
 - Early=Bud elongation (May 17th)
 - Late=Roughneck/early hook (May 31st)



Map

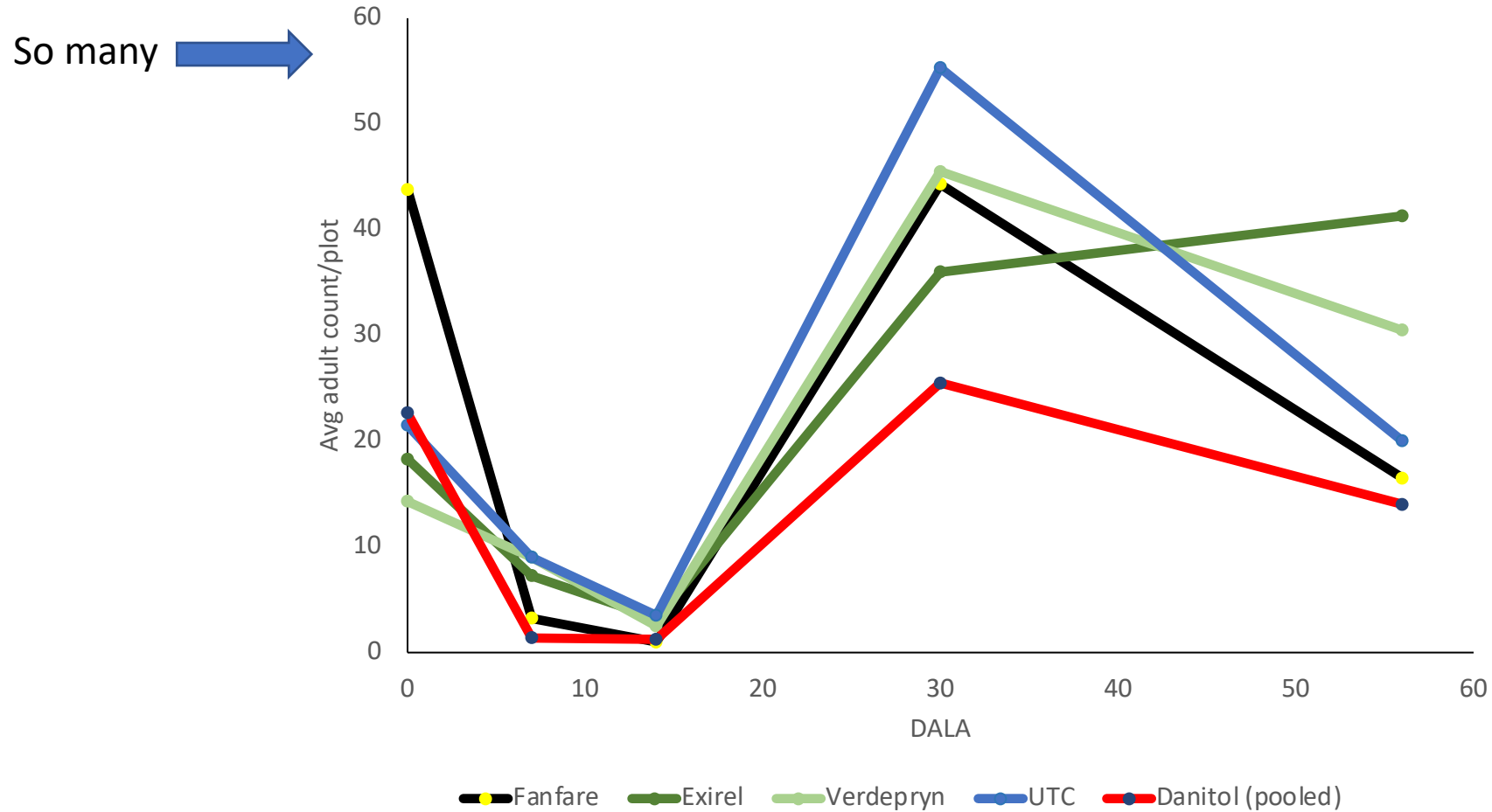


Timing of collections



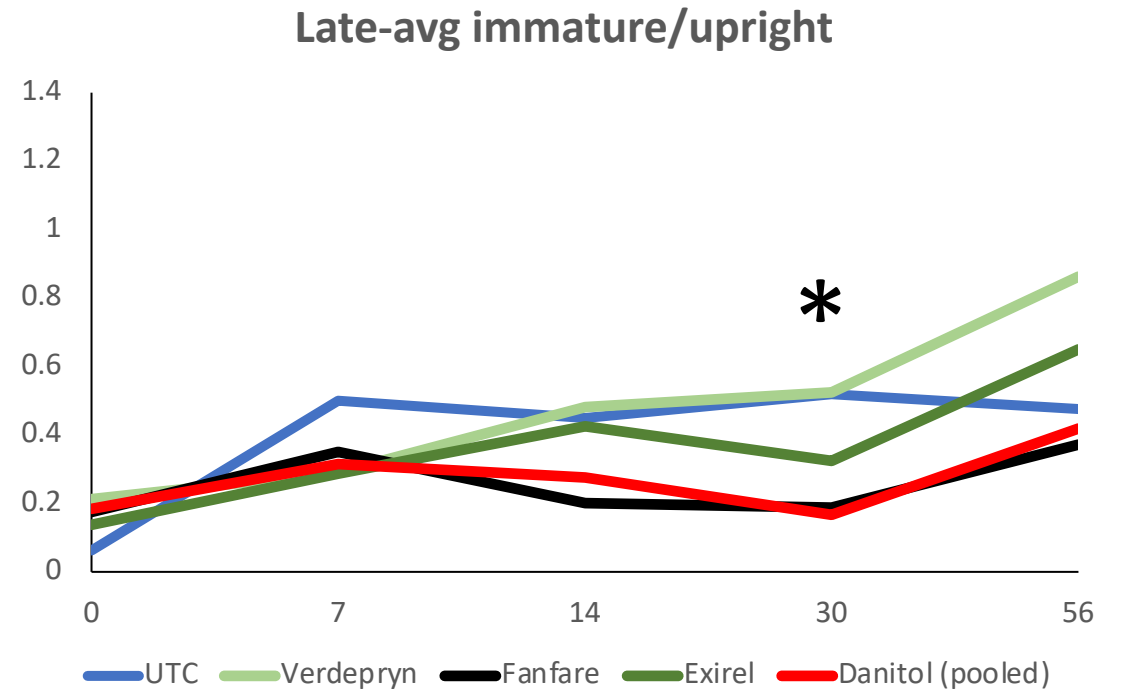
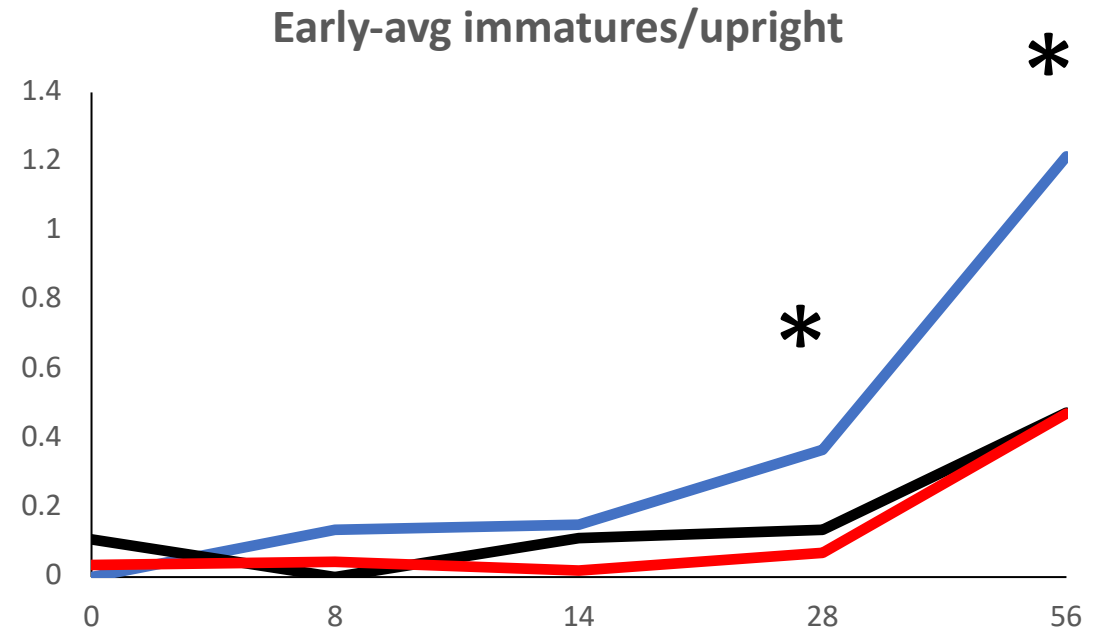
DALA=Days after last application

Results: Adults (late app only)



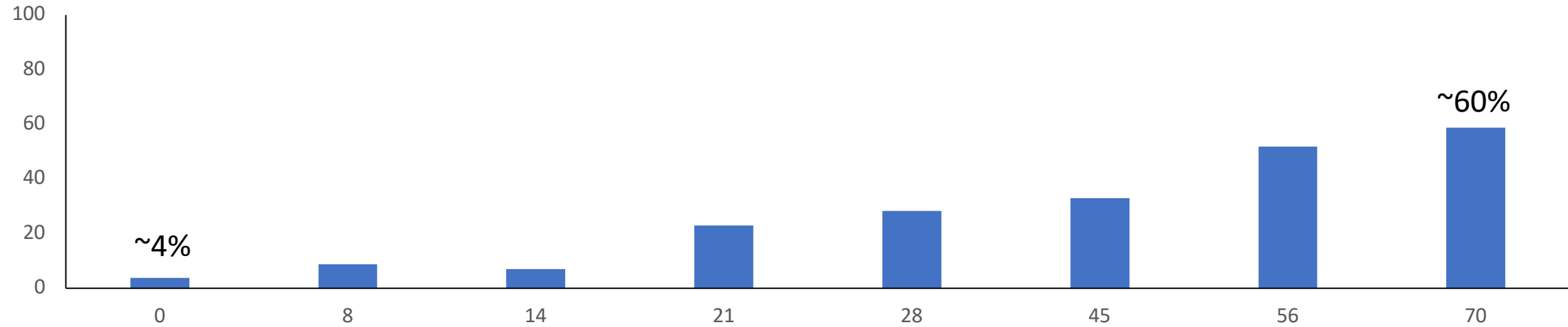
ND between treatments

Results: Immatures



Timing of curling

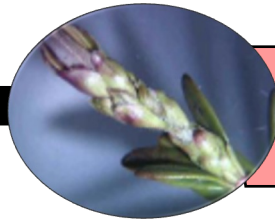
% curled uprights (UTC-pooled)



5/17/22
Bud
elongation

5/31/22
Early
roughneck

7/12/22
Pin to pea-
sized



5/25/22

6/7/22

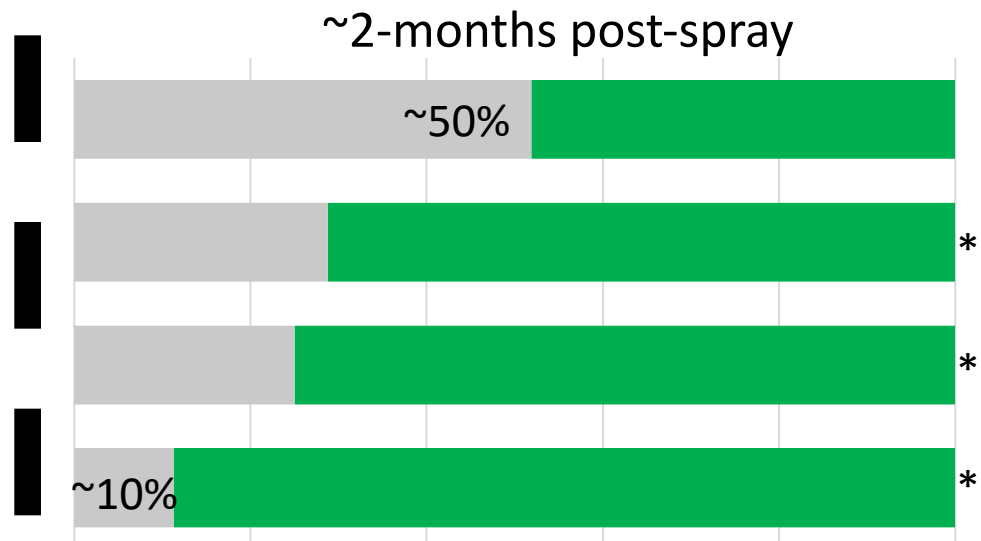
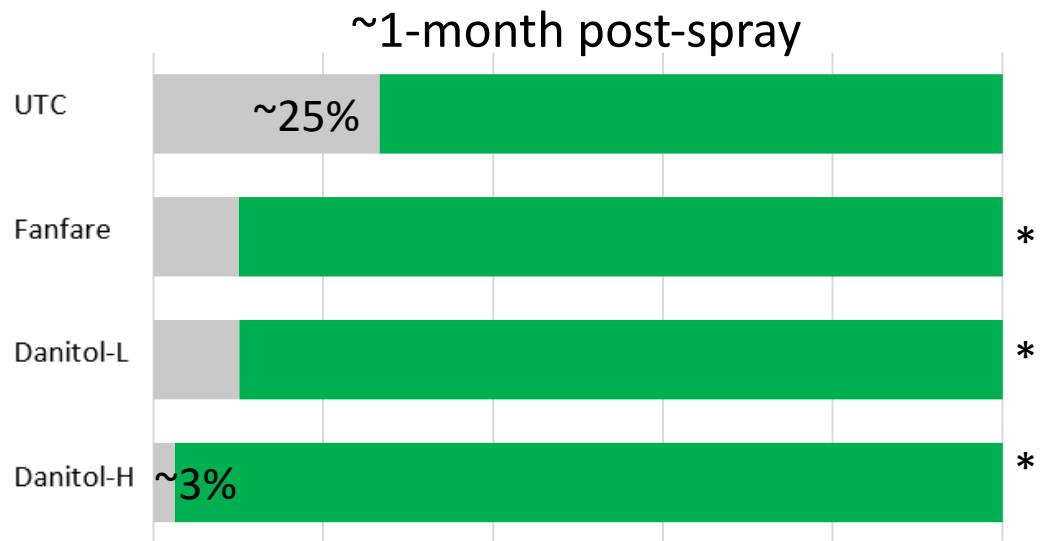
6/30/22

7/26/22

Bloom

≥Pea sized

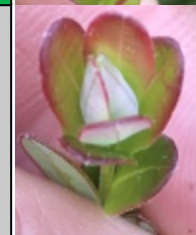
EARLY



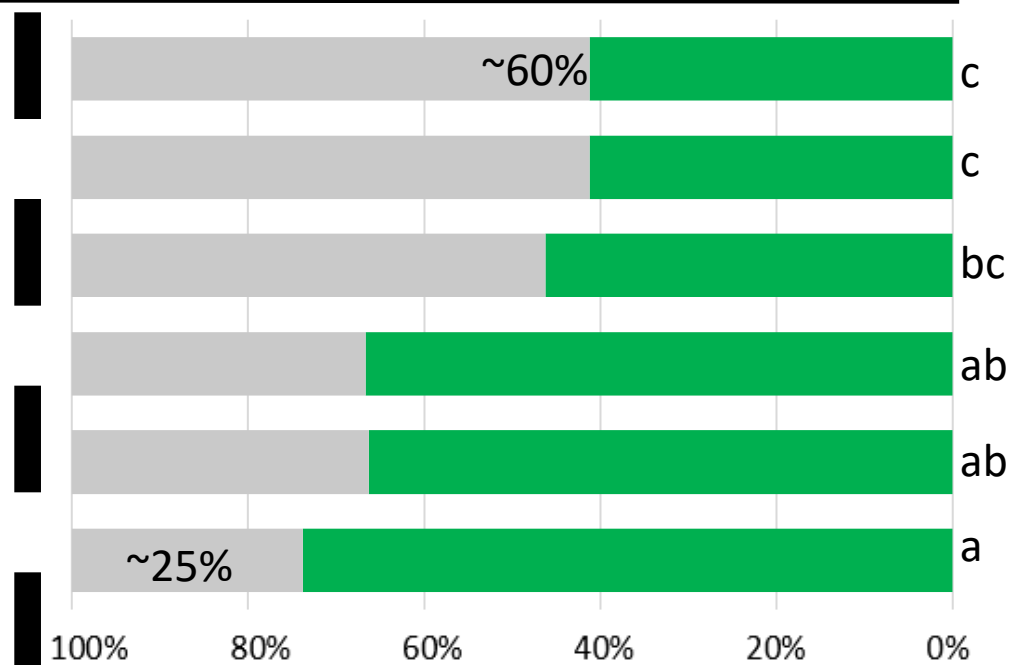
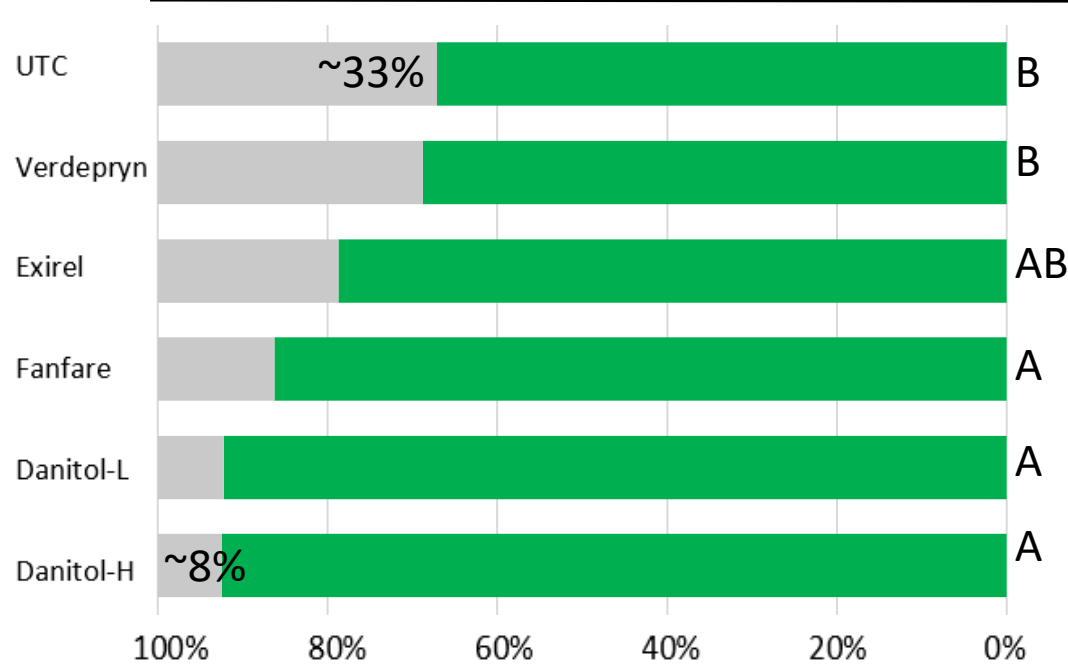
Curl rating

0

1



LATE



Proportion curled uprights

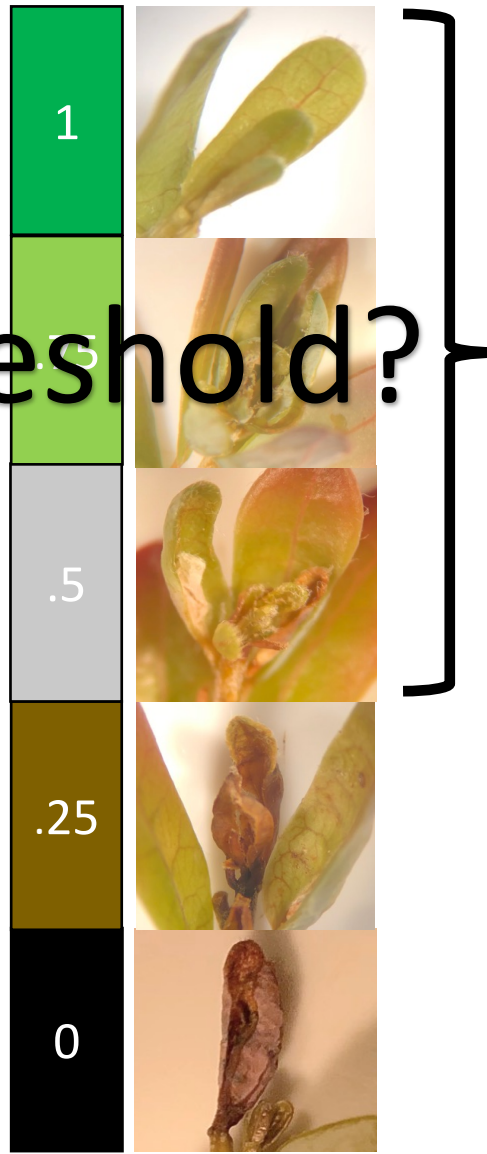
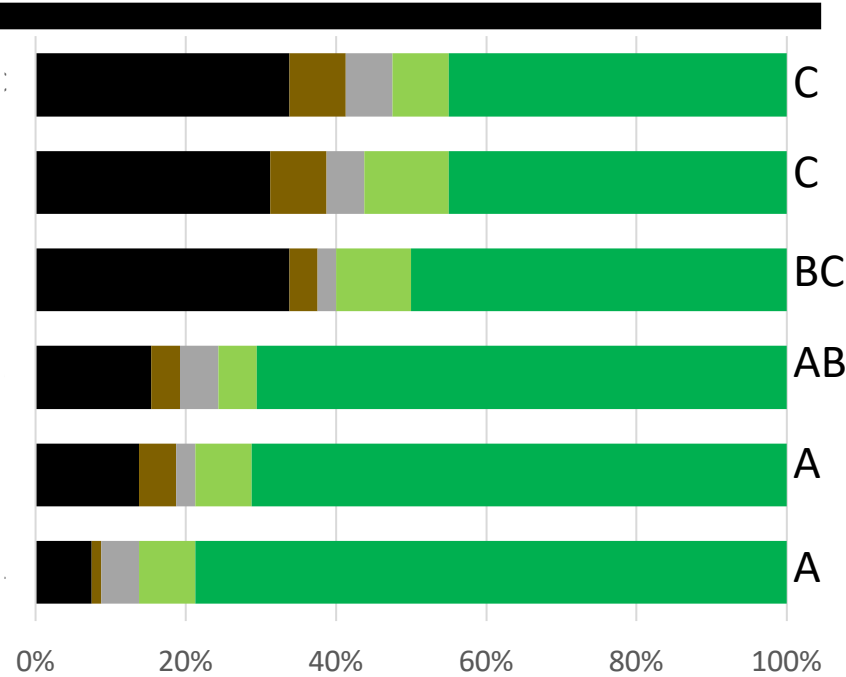
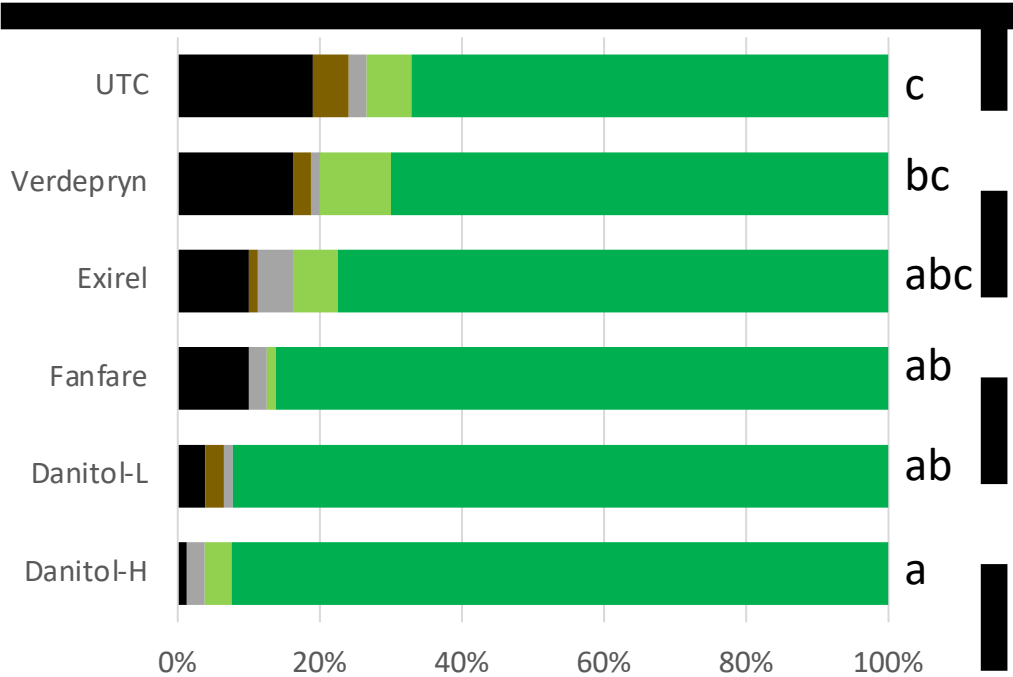
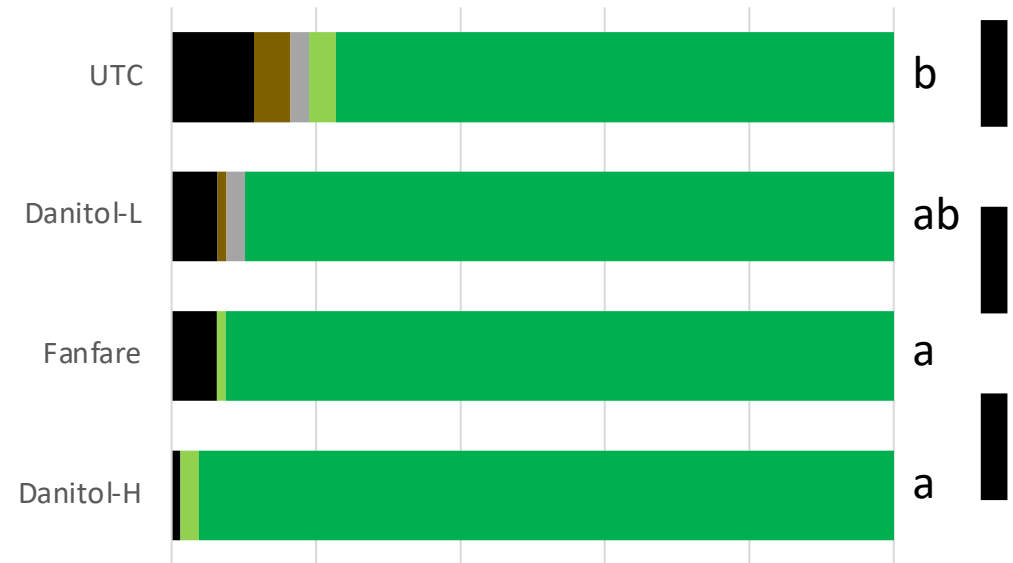
~1-month post-spray

~2-months post-spray

Meristem damage rating

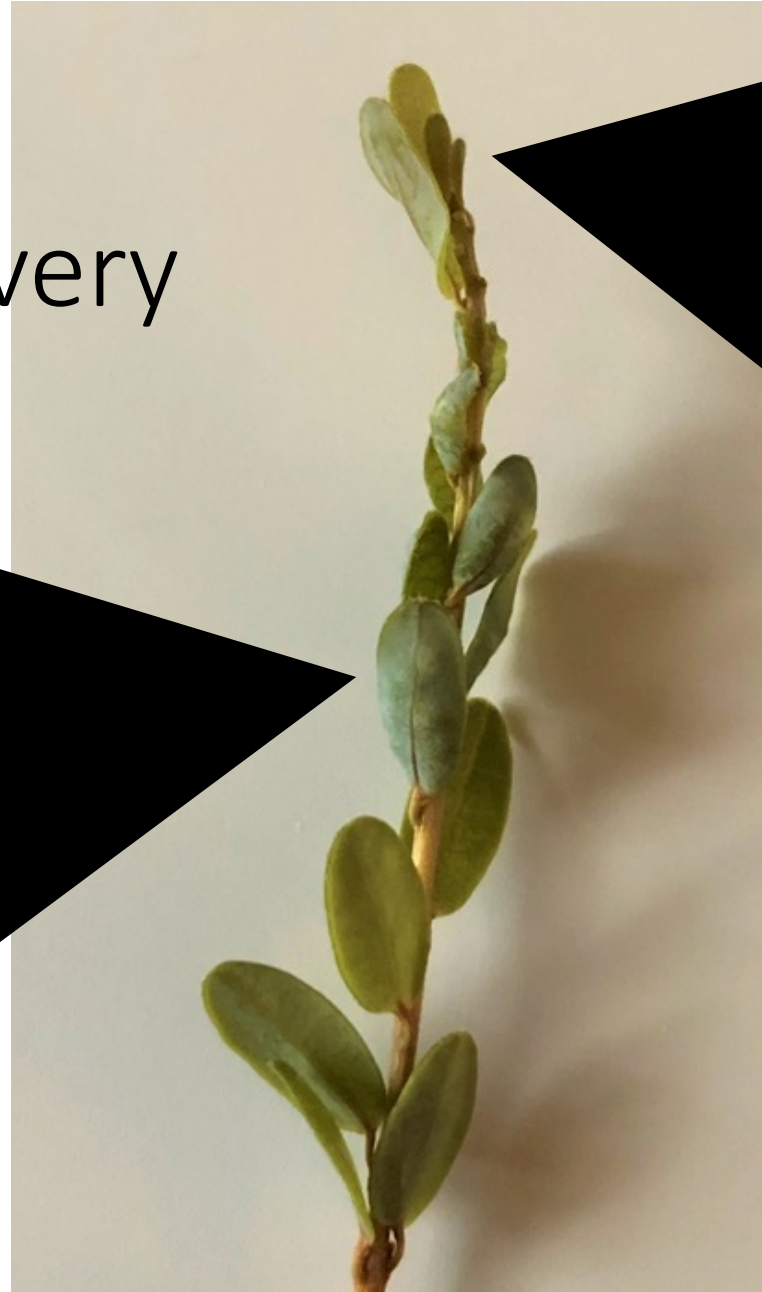
EARLY

LATE



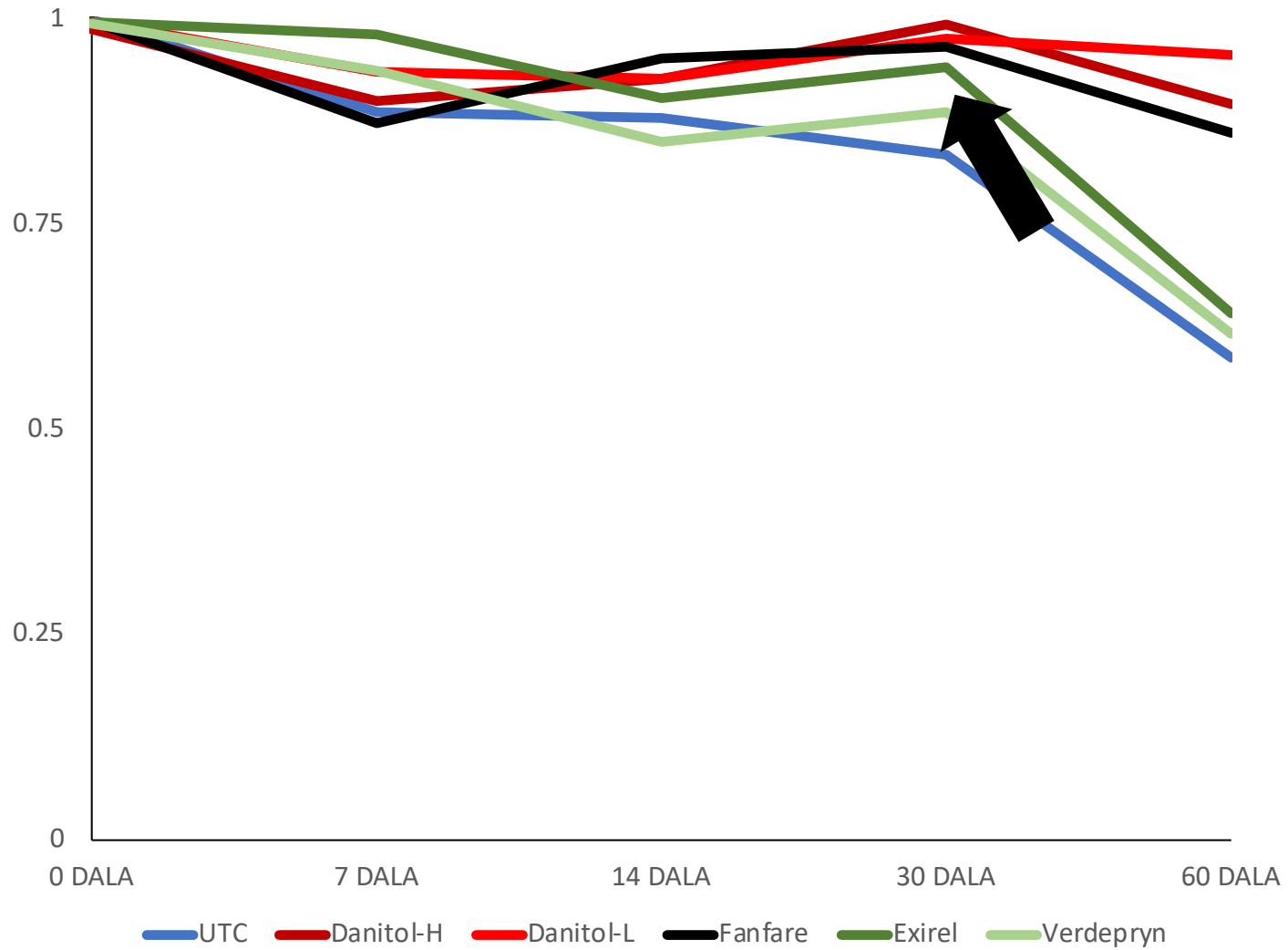
Damage threshold?

Upright recovery

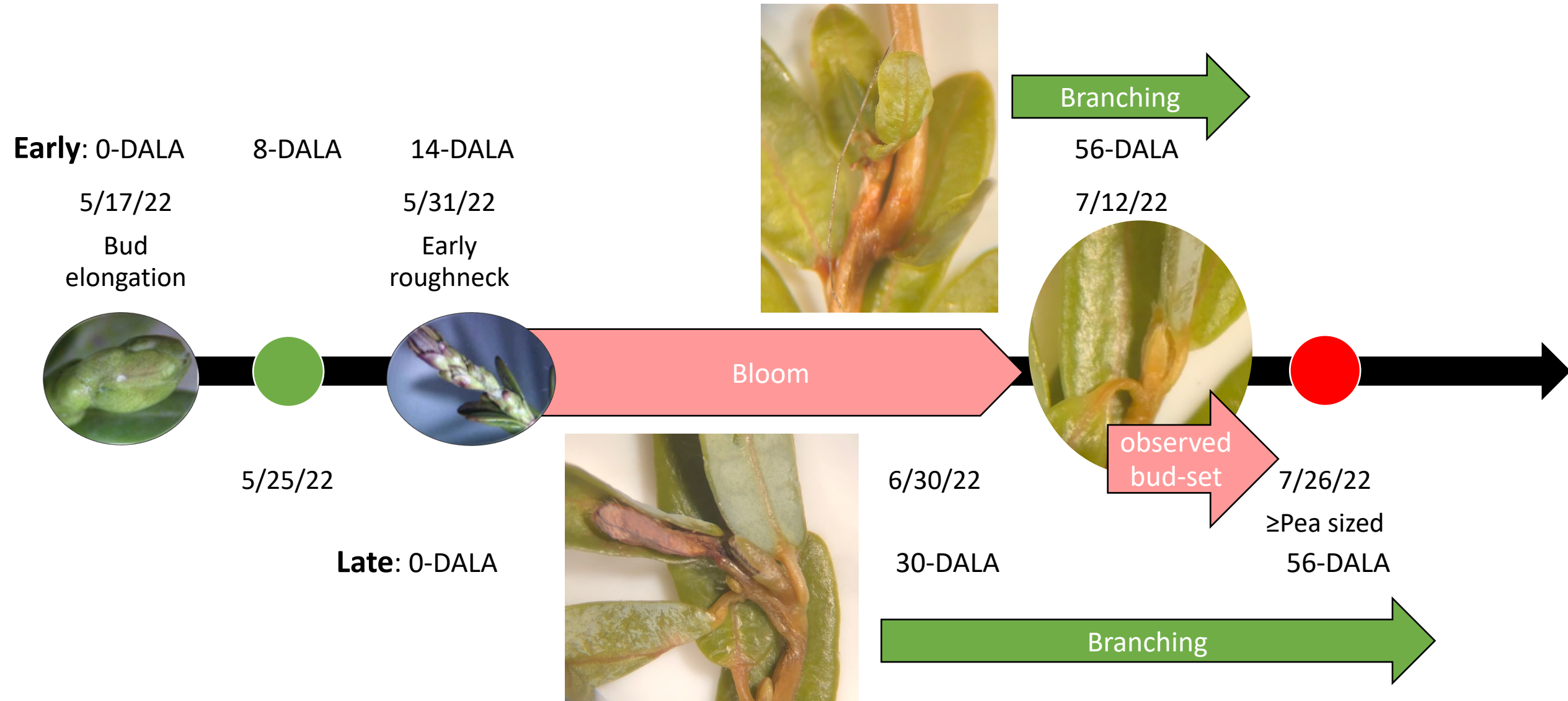




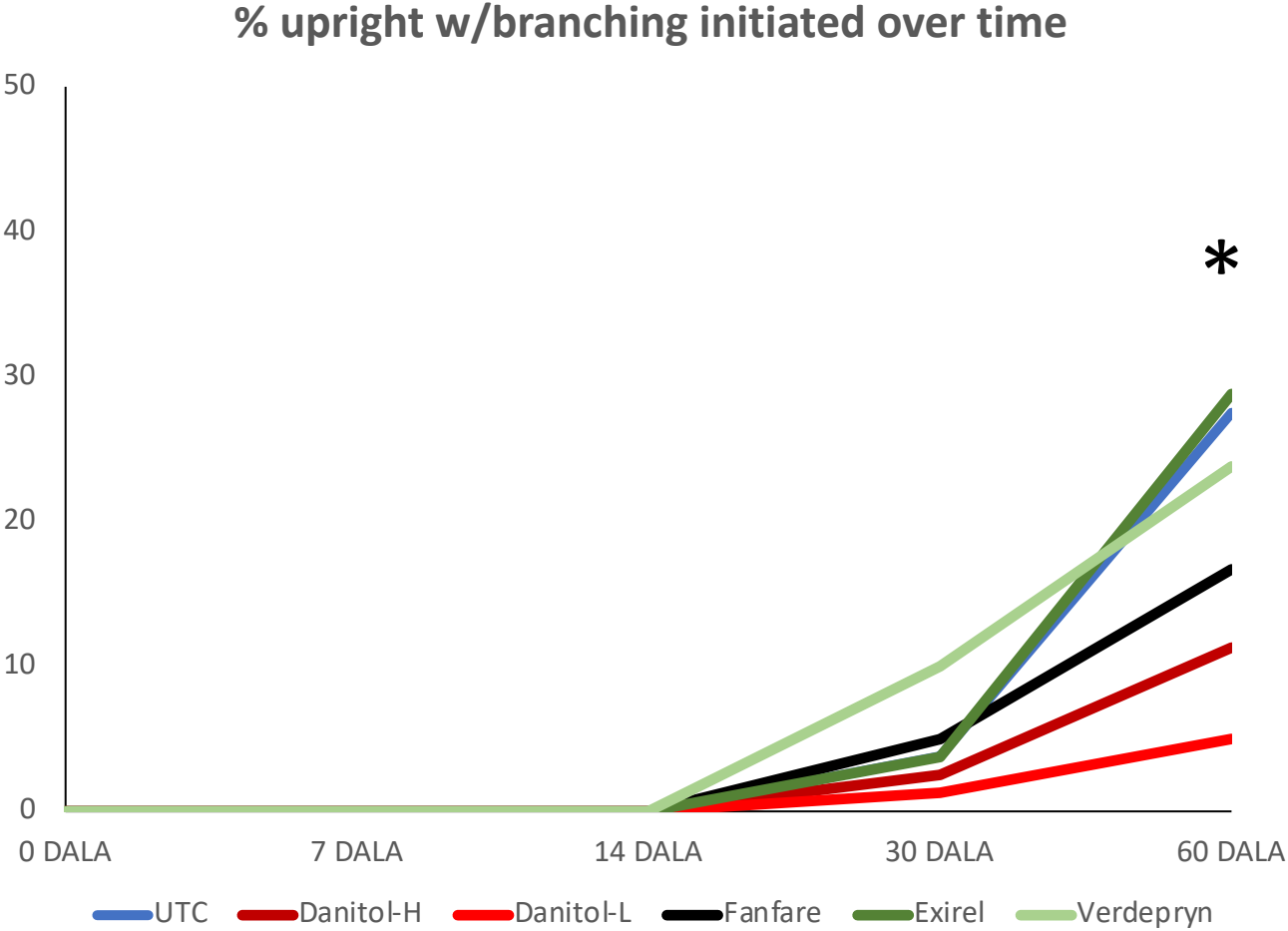
Ranked meristem damage over time



Timing of observations



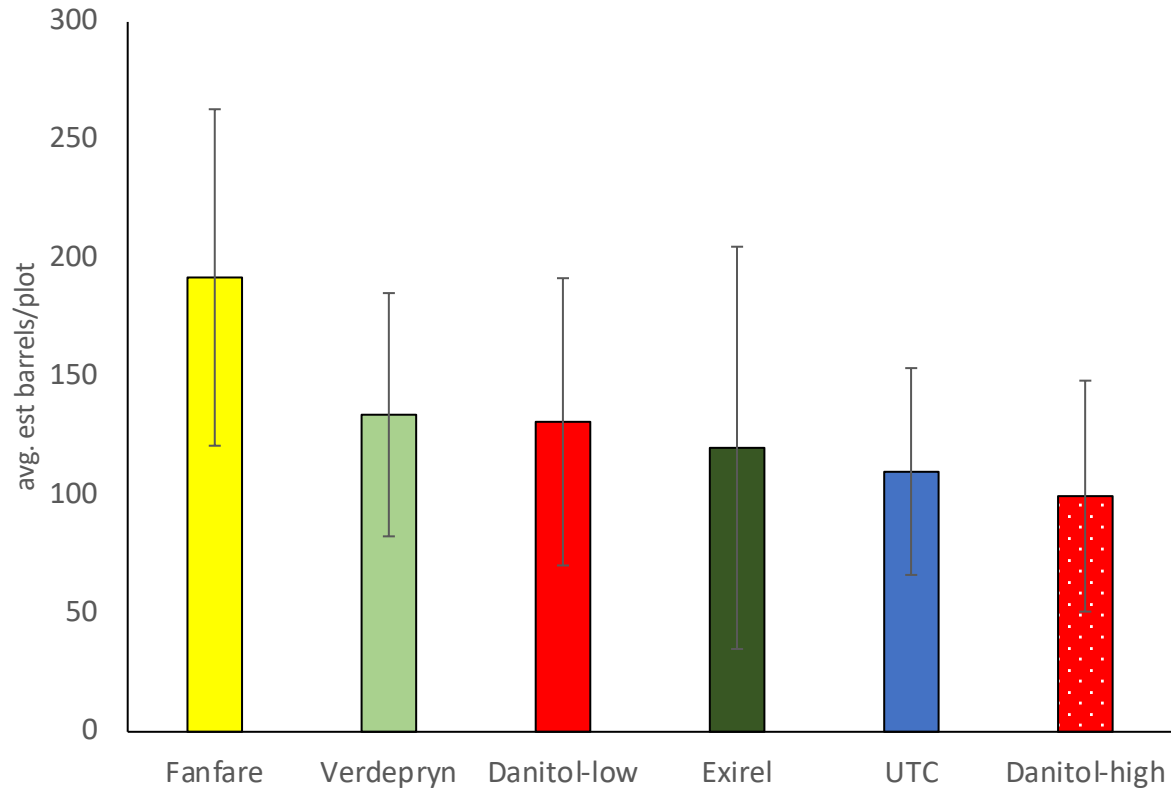
That branching issue



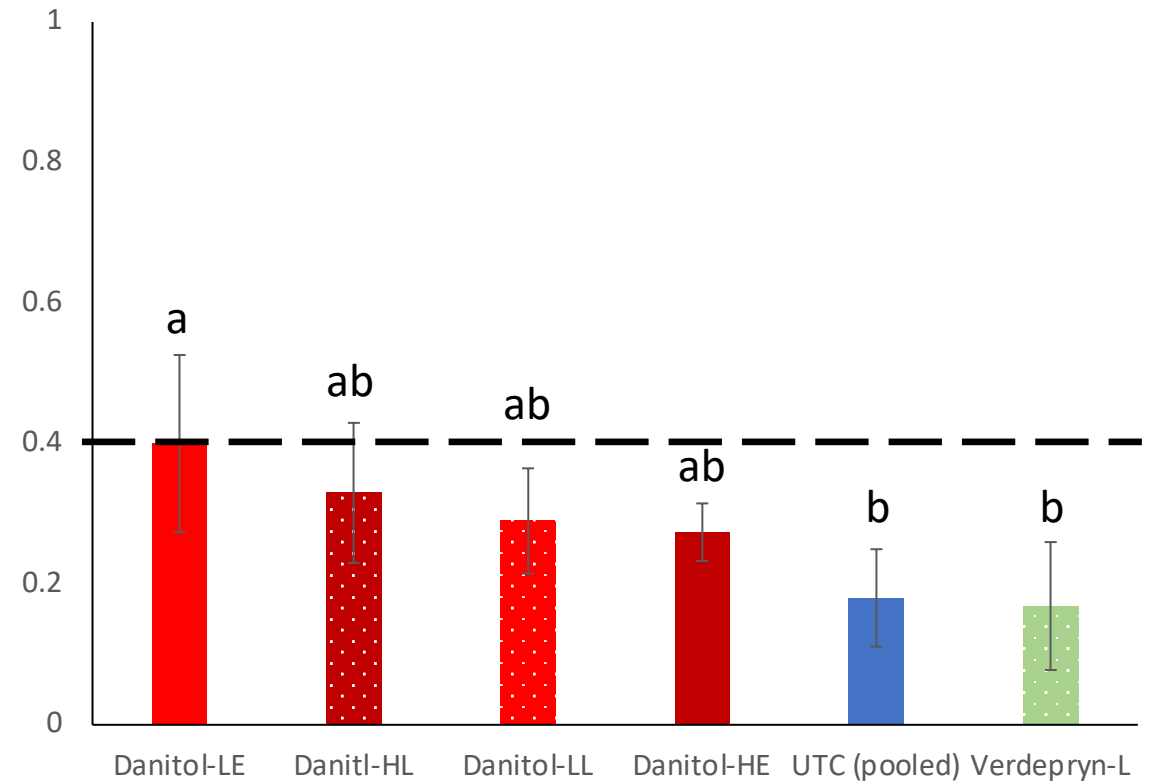
Late application only

Yield & 2021 uprights

Pooled est. barrels across treatments (2022)



% fruiting uprights (2021 treatments)



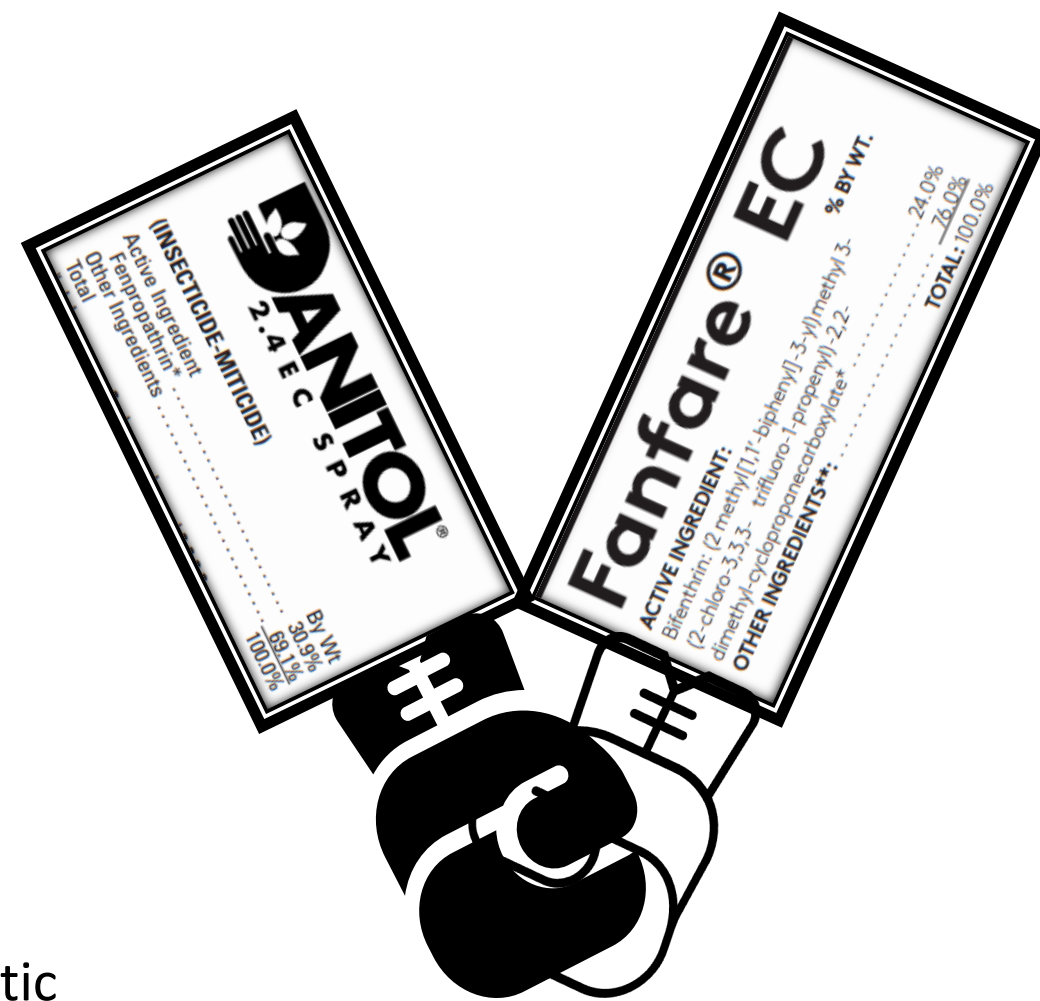
No difference in yield; early/late pooled

Take-away:

- Both pyrethroids reduced tw damage when applied pre-bloom
- Exirel surprising contender (\$\$\$)
- Considerations for use:
 - Cost
 - Handler restrictions
 - Export market (MRL thresholds)
 - # apps allowed
 - PHIs

Reminders for Fanfare and Danitol:

- Hold water 3 days post-application (both RUPs -aquatic tox!)
- Bad news for your beneficials
 - Timing is critical to minimize impacts
 - Evaluate if needed
- Rotating other chemistries is a must



Questions?



Acknowledgements
WA Grower-Cooperators