



Psa Efficacy Study, 2012

R&D Update Meeting, Te Puke

Fruitfed Supplies R&D Team

- Tayah Johnston
- Tim Herman
- Paul Hassan



- 50 field trials between us last season in a wide variety of crops
 - Psa in kiwifruit a key focus

Trial design

- Psa-free Bruno seedlings
- 10 replicates/treatment
- Treatment applications (knapsack sprayer);
 - Initial application prior to inoculation
 - Protectants 1 day prior
 - Elicitors 7 days prior
 - Repeat applications
 - Protectants re-applied prior to rain events
 - Elicitors at prescribed intervals



Product	Active ingredient	Product group
Kocide Opti	Copper hydroxide	Copper/protectant
Serenade Max	<i>Bacillus subtilis</i> QST 713	Biological control agent
Bacstar	<i>Bacillus subtilis</i> var. <i>amyloliquefaciens</i> strain D747	
Blightban A506	<i>Pseudomonas fluorescens</i> A506	
Aliette	Aluminium TRIS (O-ethyl Phosphonate)	Elicitor
Actigard	Acibenzolar-S-methyl	
BioAlexin	Plant extracts	
Kasumin	Kasugamycin	Antibiotic
Key Strepto	Streptomycin	



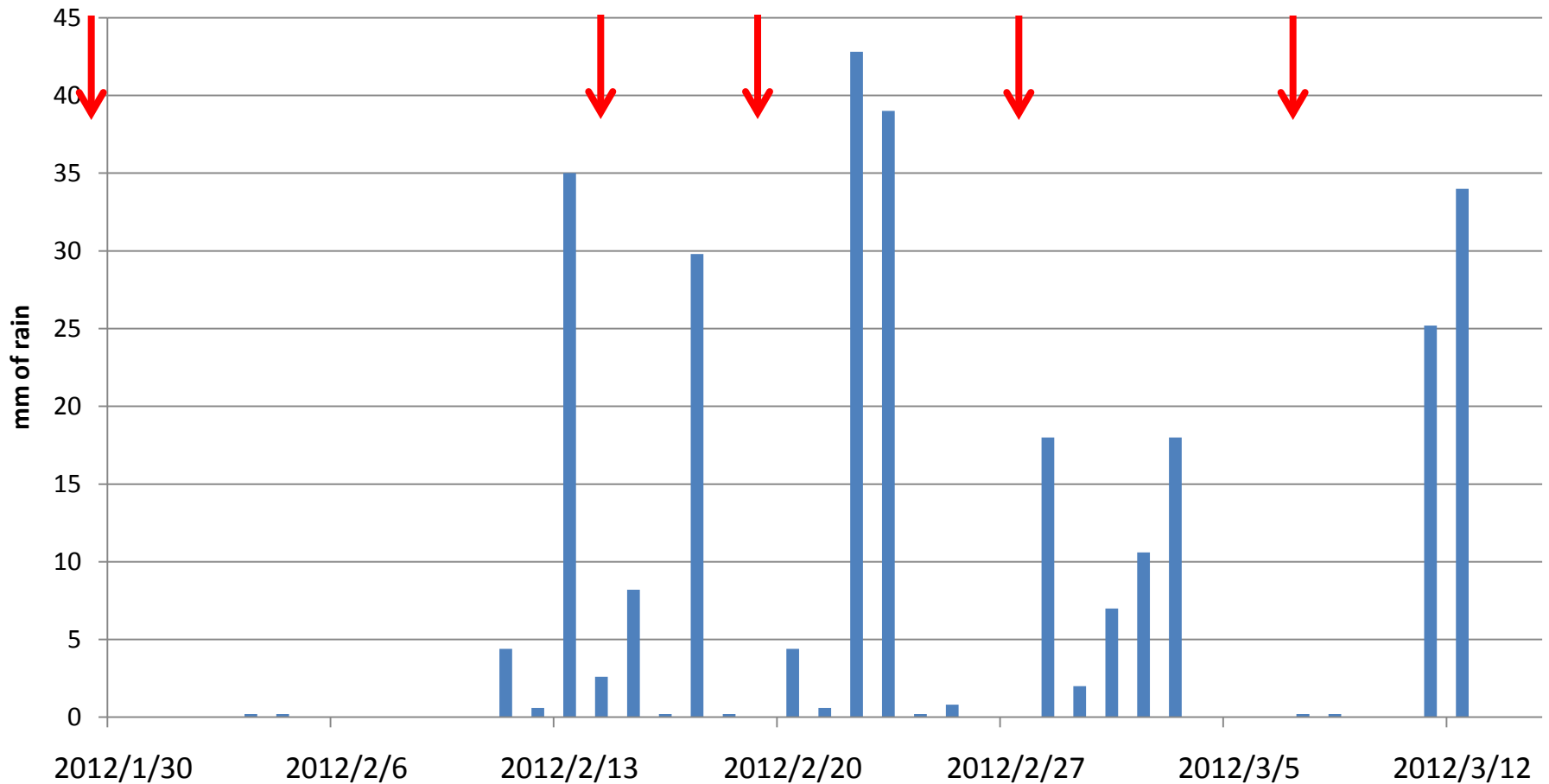
Old leaves (artificially inoculated)



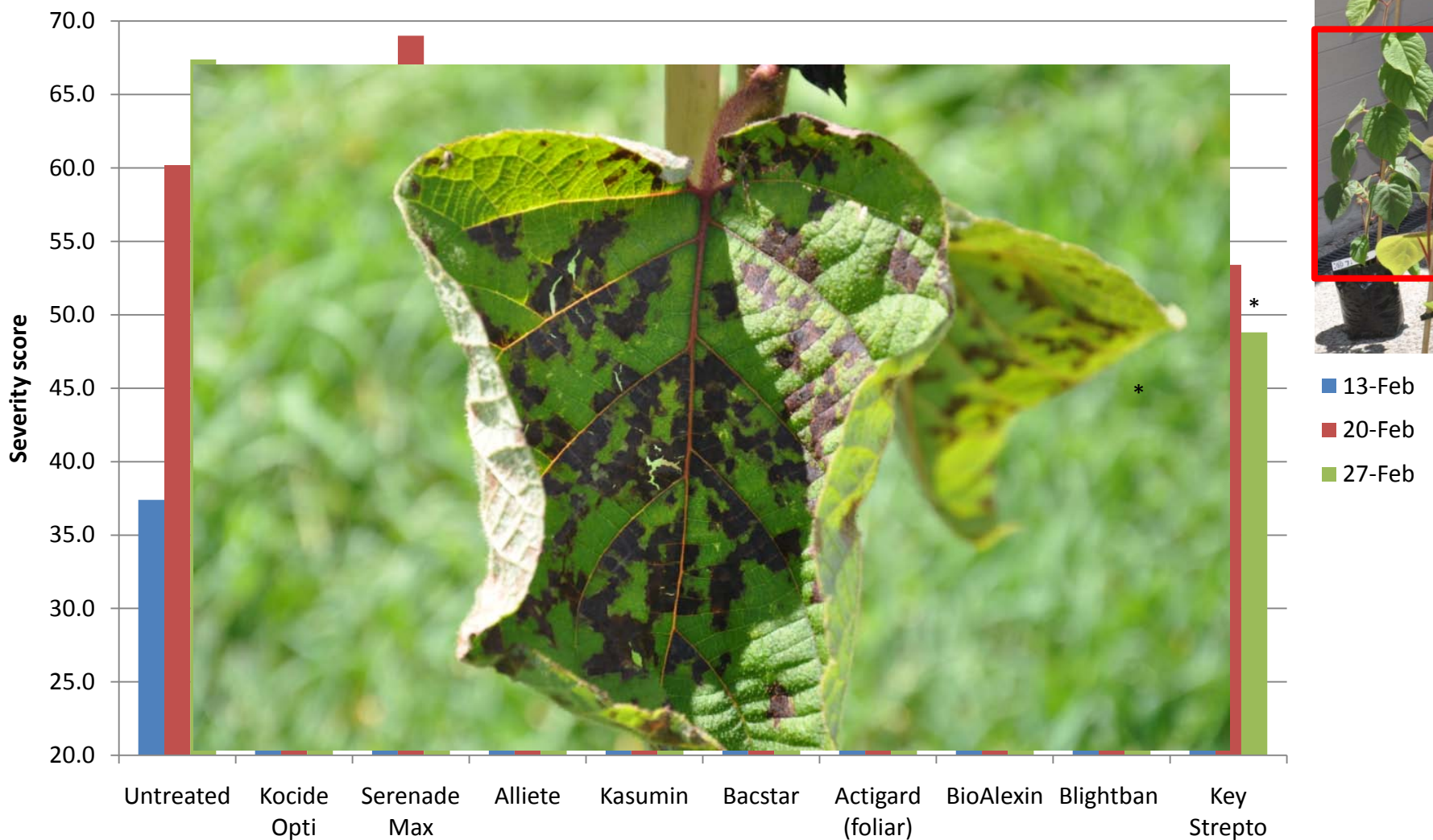
New leaves ("naturally" inoculated)

Scoring system

Rainfall and protectant sprays

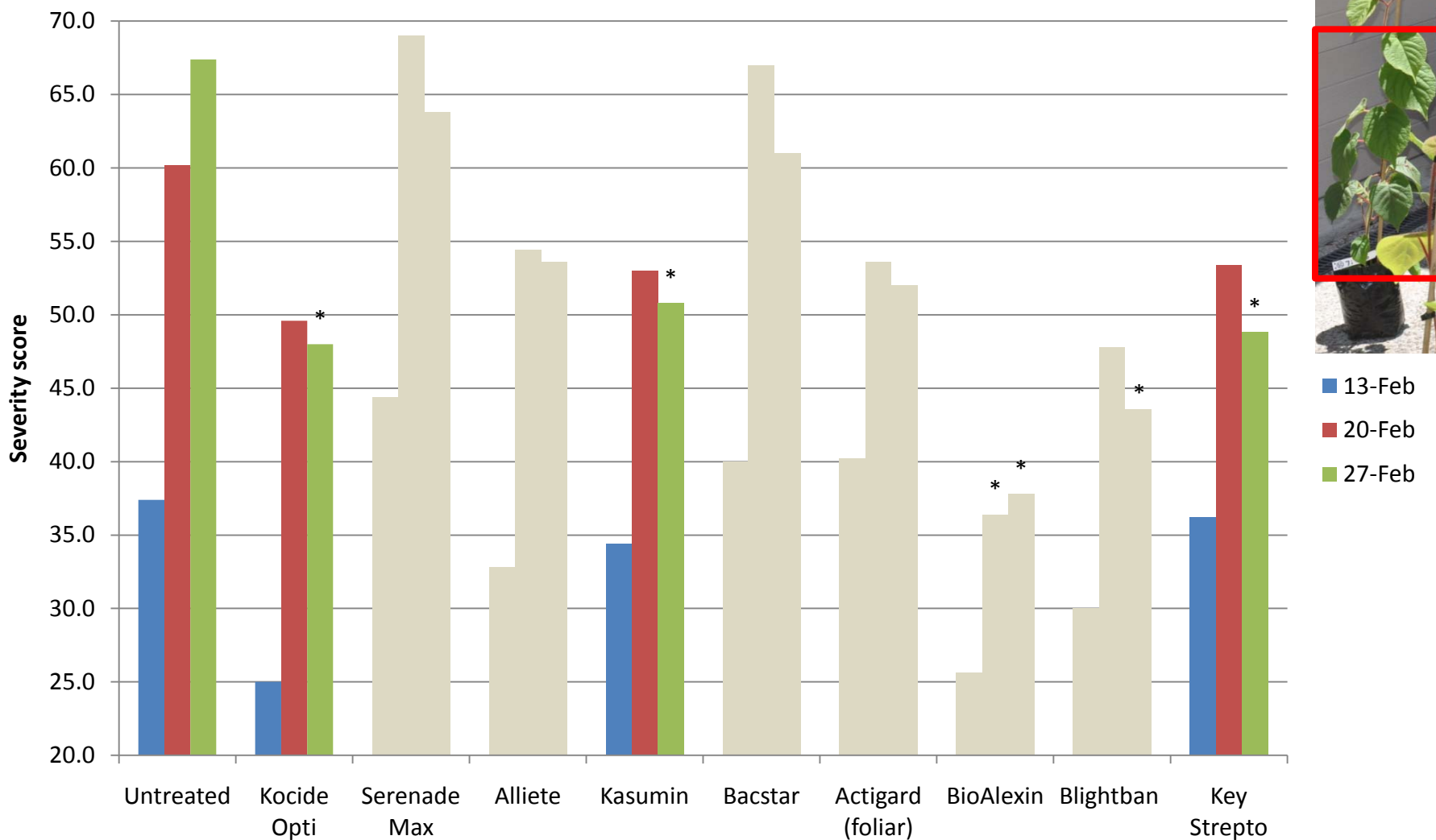


Severity of infection on "old" artificially inoculated leaves



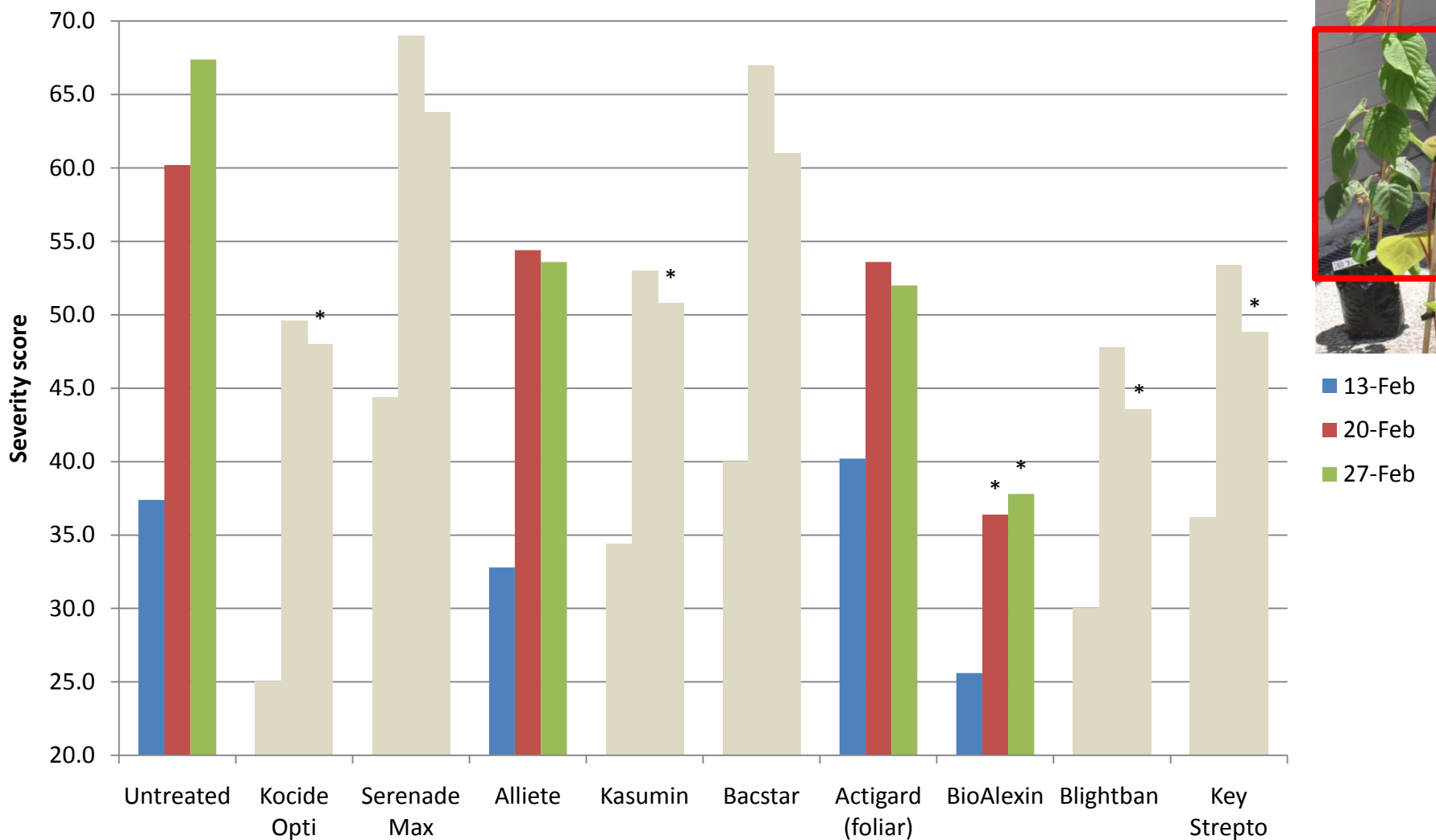
*significantly different from UNT control at p=0.05

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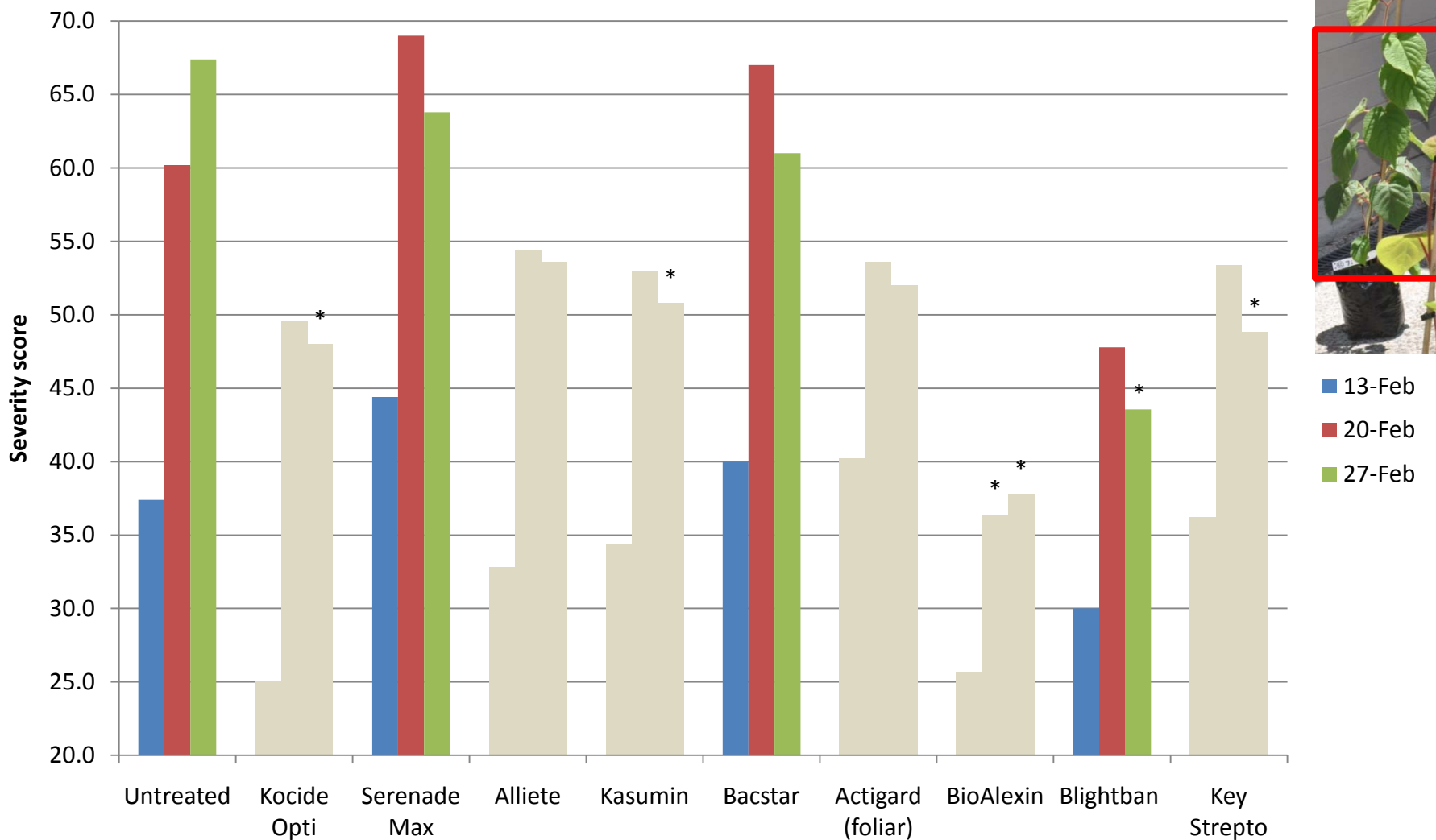


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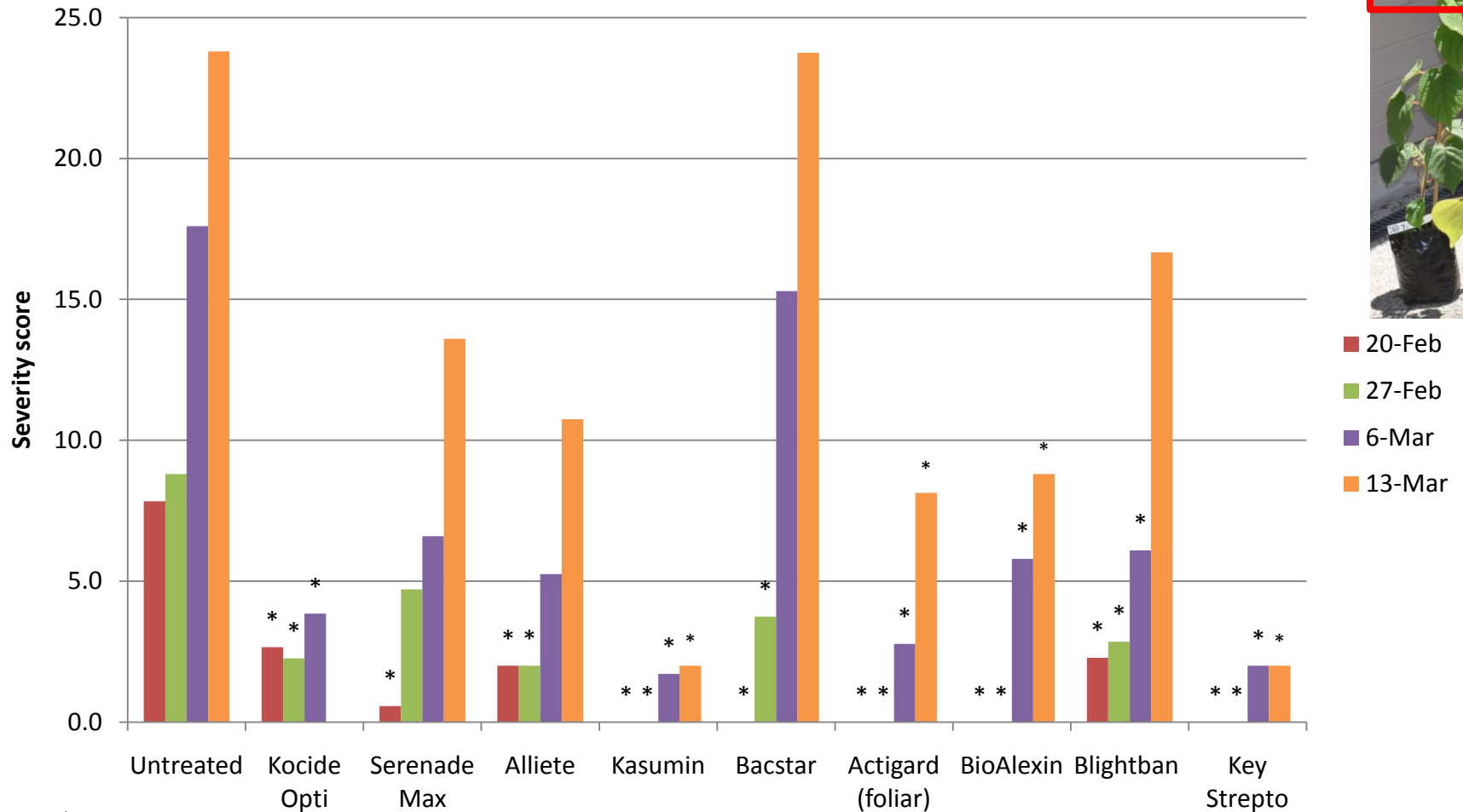
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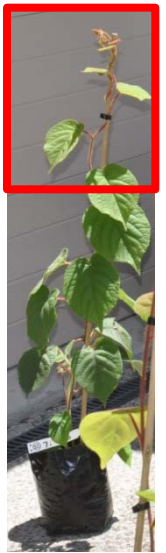
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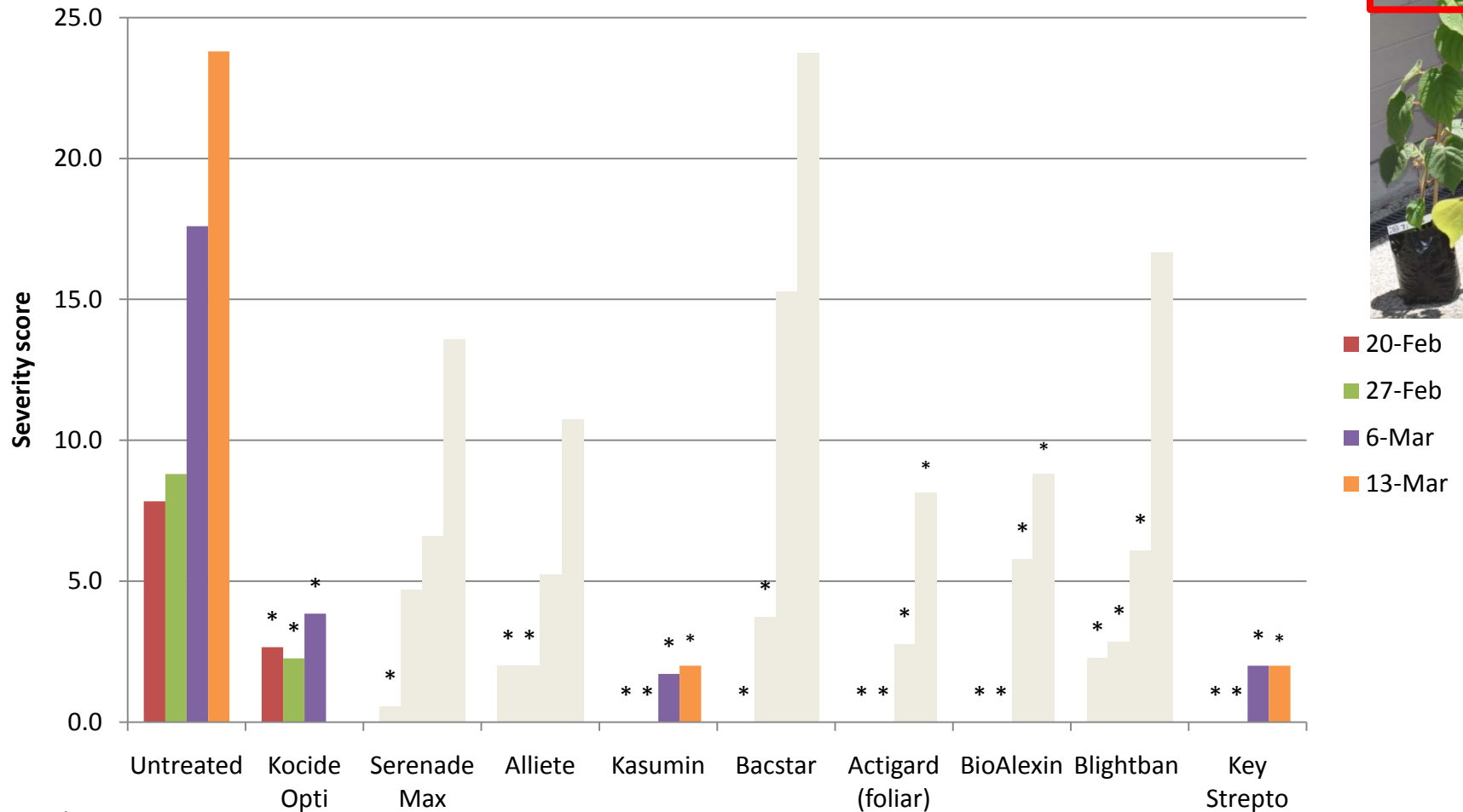
Assumptions:

- Leaf spotting observed was as a result of external inoculum.
- External inoculum pressure would be at lower levels than what was enforced by artificially inoculating.

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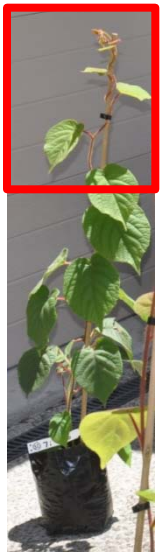
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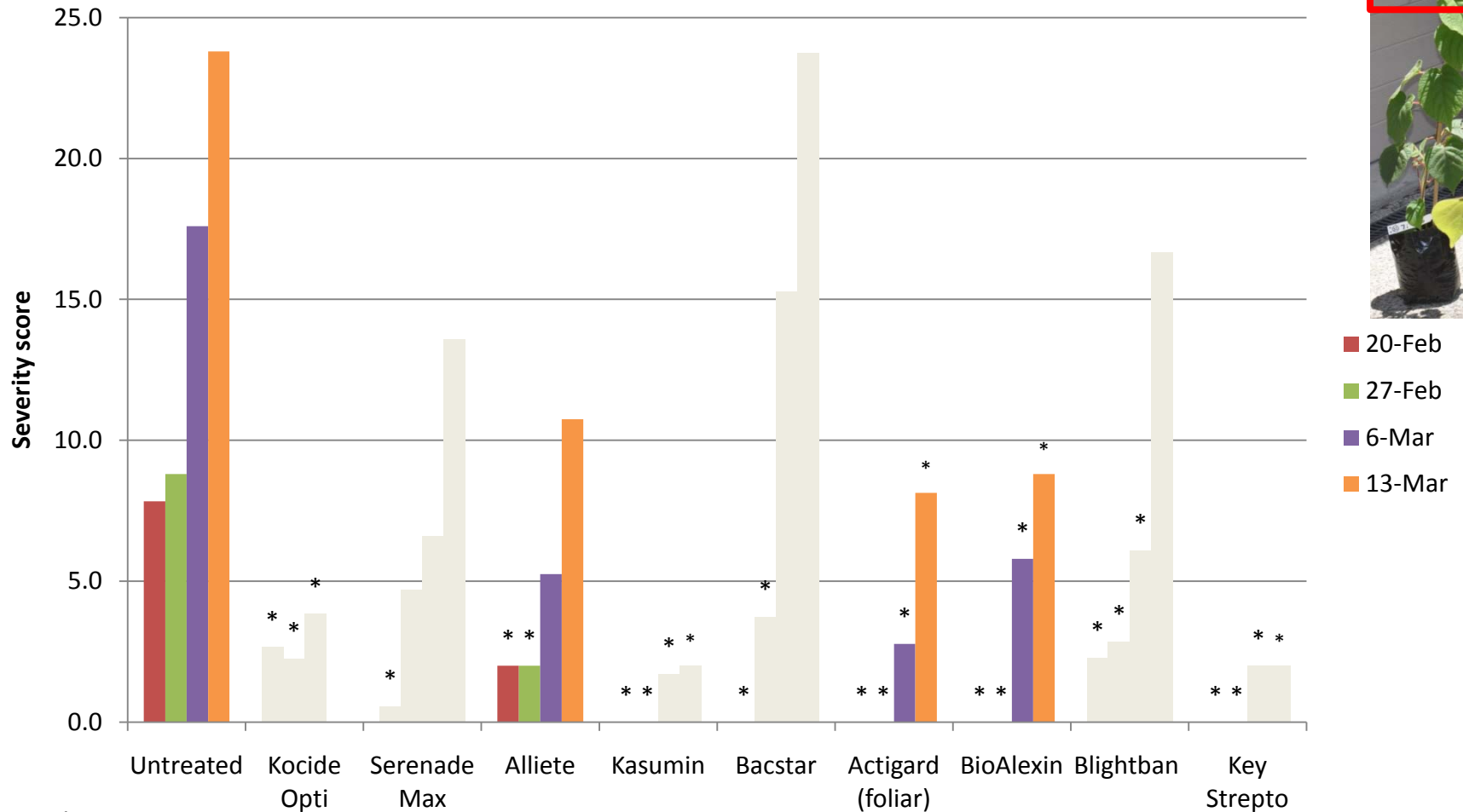
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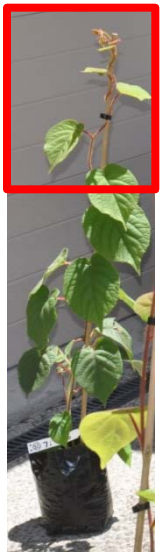
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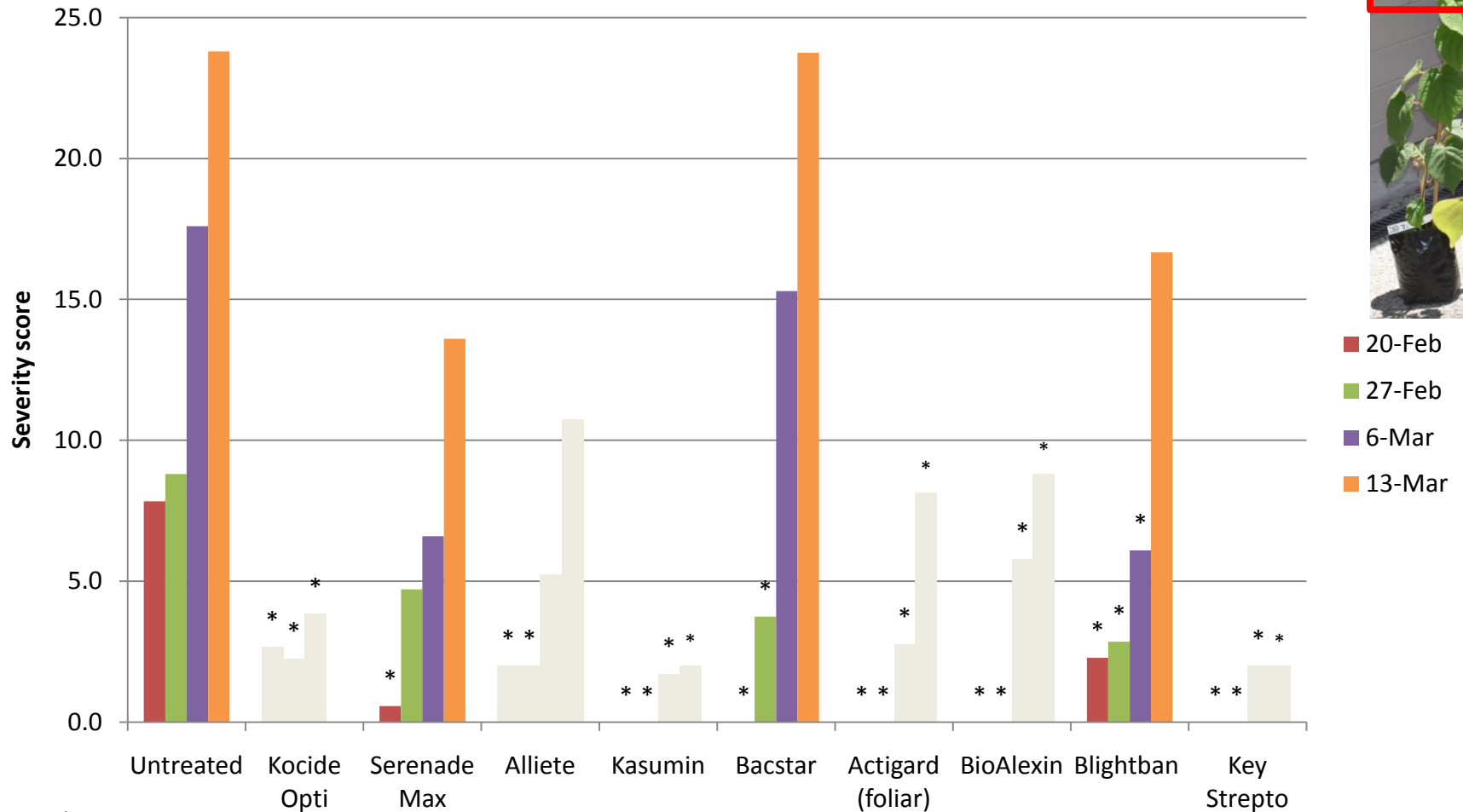
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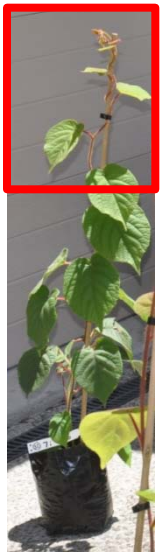
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Phytotoxicity observations

- Kocide Opti
 - Low levels of phyto after repeat applications (5 in total). Minor copper spotting, and occasional vein burn.



Conclusions/summary

- Difficult to get efficacy results under such high inoculum pressure and artificial wetting
 - But did highlight some particularly strong treatments
- Assessments under lower inoculum loads and normal field conditions
 - Sustained reduction in leaf spotting by the antibiotics (Kasumin and Key Strepto) and Kocide Opti
 - Pleasing to get some efficacy out of the “softer” biological products, but unlikely to hold up in high pressure situations