

Managing Fire Blight Infections

Pruning, Sanitation

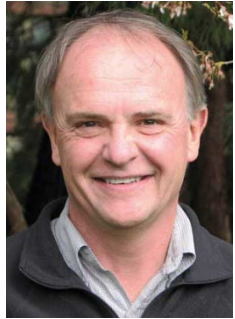


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Thank you to co-authors & Funders



Ken Johnson



Kari Peter



Aina Baro



Tianna DuPont



Misbah Munir



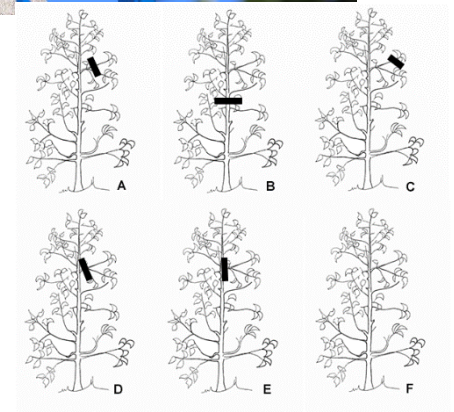
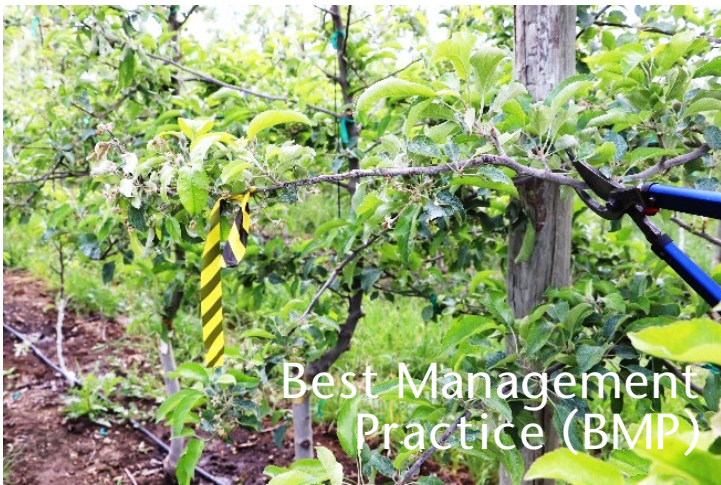
Removal of Fire Blight = Costly



In 2017 WA growers

- 2-64 hrs per acre removing blight
- \$27 to \$864 per acre (at \$13.50/ hr)







Best Management Practice

Cutting back 12-18 in into 2-year old wood + sanitizing





Aggressive

Cutting back 30 in + (76 cm) from the end of the infected area





Breaking:

Shoots were manually snapped off into 2nd year wood by hand.



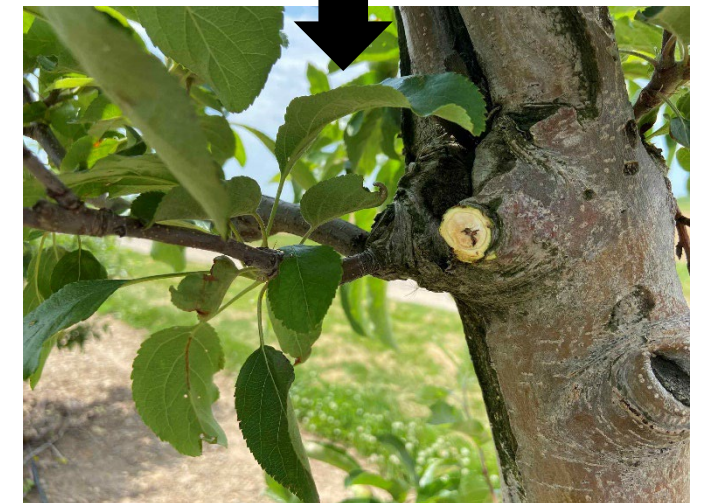


Long Stub – 5 in stub and sanitizing between cuts





Short stub/flush





No-treatment control





Trials in different vigor, variety, age.

**WA 2021 'Pink Lady' 4-yr-old on M9.337
trained to wire**



**Oregon 2020 'Gala' 3-yr-old on M9.337
Pennsylvania 2020 'Gala' 3-yr-old on M9.337
Pennsylvania 2019 'Gala' 4-yr-old on M.7**



**WA 2020 'Pink Lady'
14-yr-old on M9.337
low vigor**



**WA 2019 'Yarlington
Mill' on Red Delicious
interstem grafts**

**New York 'Ever Crisp'
4-yr-old on G.41**

**New York 'Idared' 7-yr-
old on B.9**

**New York 2021 'Ruby
Frost' 3-yr-old on G.41**

**New York 2021 'Gala'
18-yr-old on B.9**



WA 2019 'Yarlington Mill' on Red Delicious interstem grafts





WA 2020 'Pink Lady' 14-yr-old on M9.337 low vigor





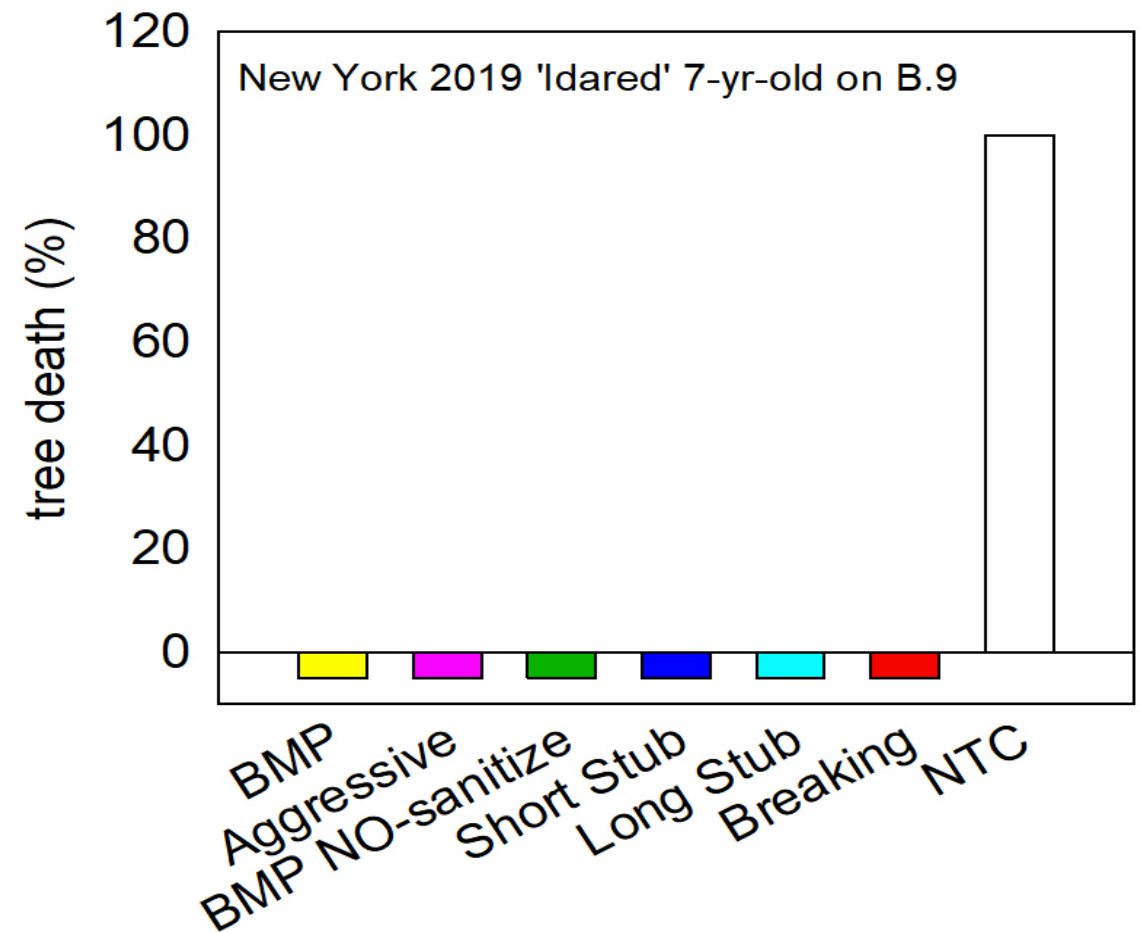
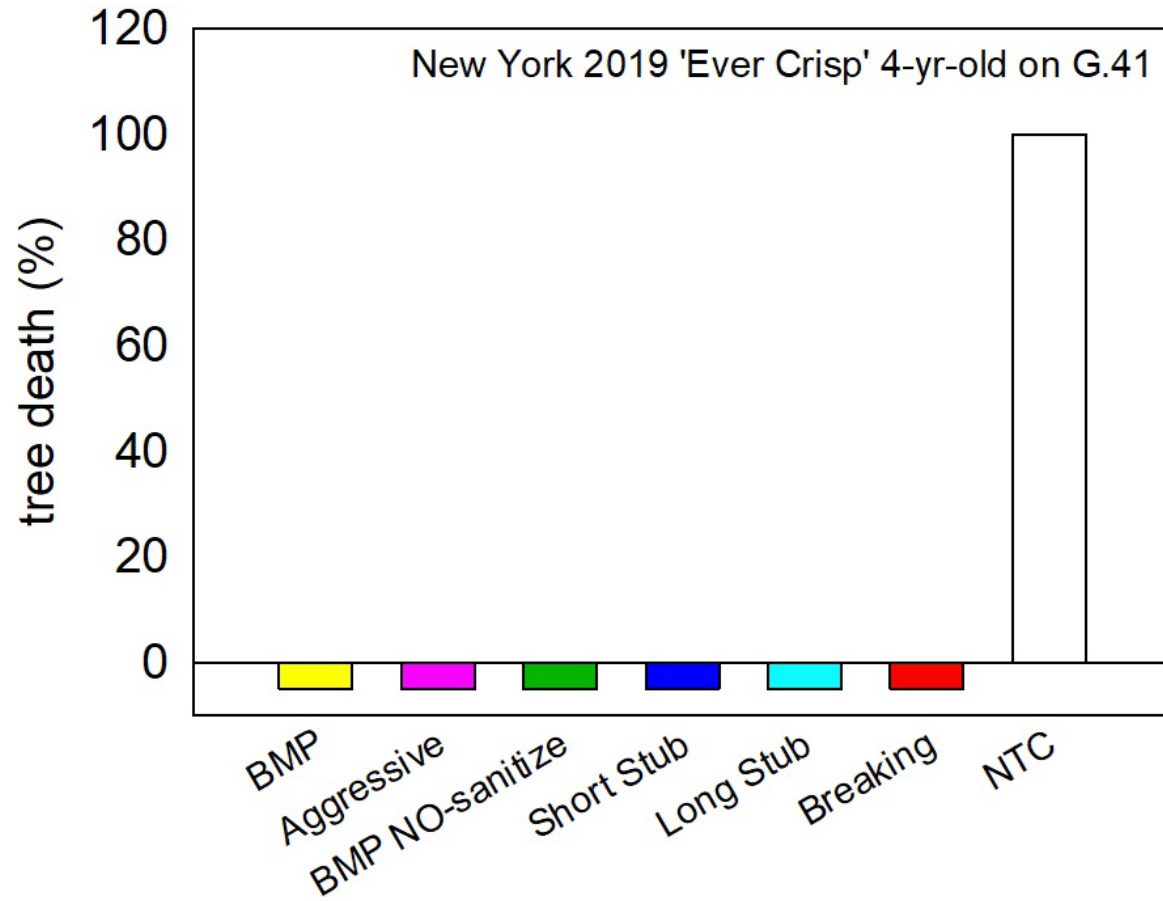
WA 2021 'Pink Lady' 4-yr-old on M9.337 trained to wire



Which removal treatments save trees?

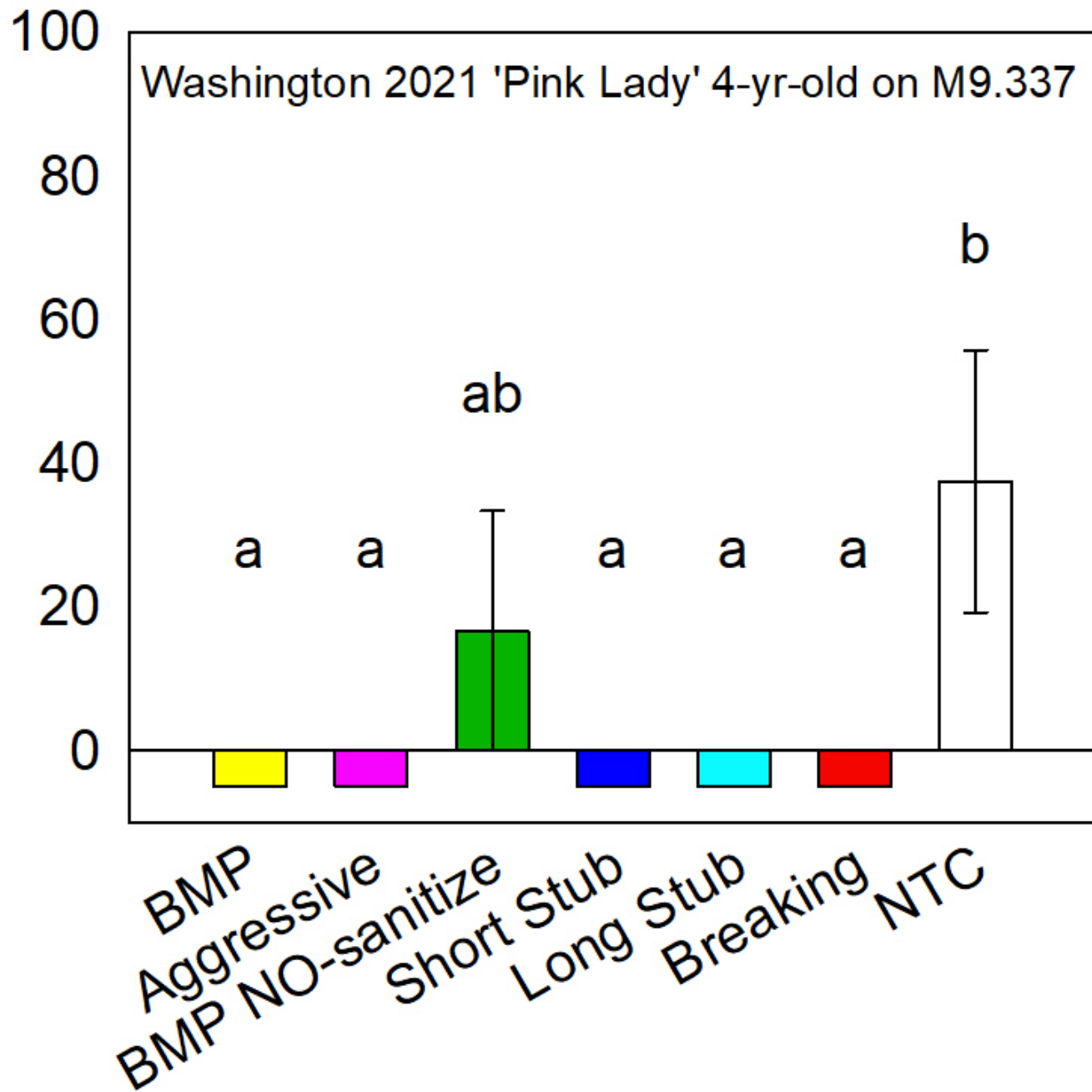


Cutting treatments significantly reduced the number of trees which died or acquired rootstock blight.





rootstock blight (%)

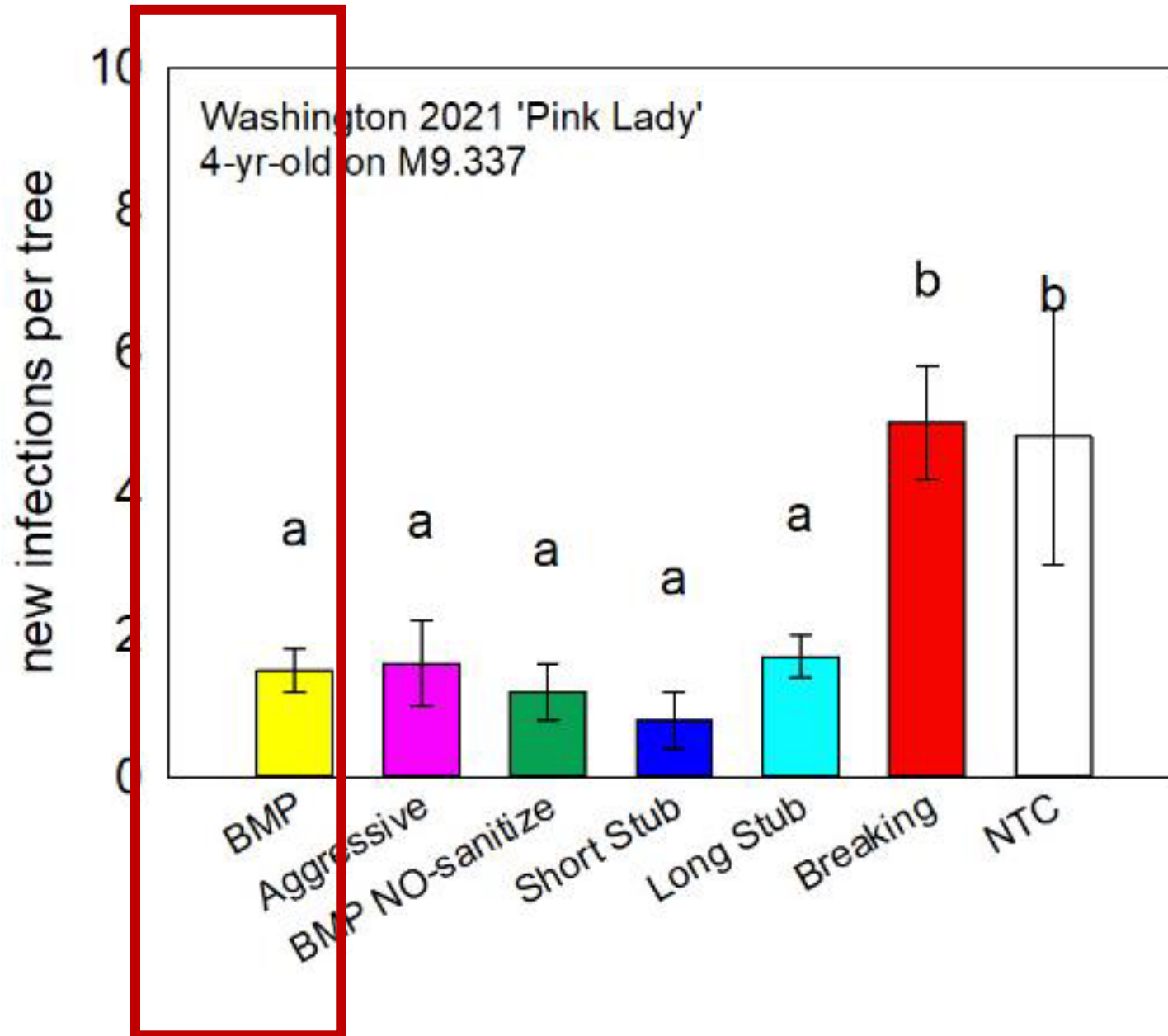


Prevention of Systemic Infections





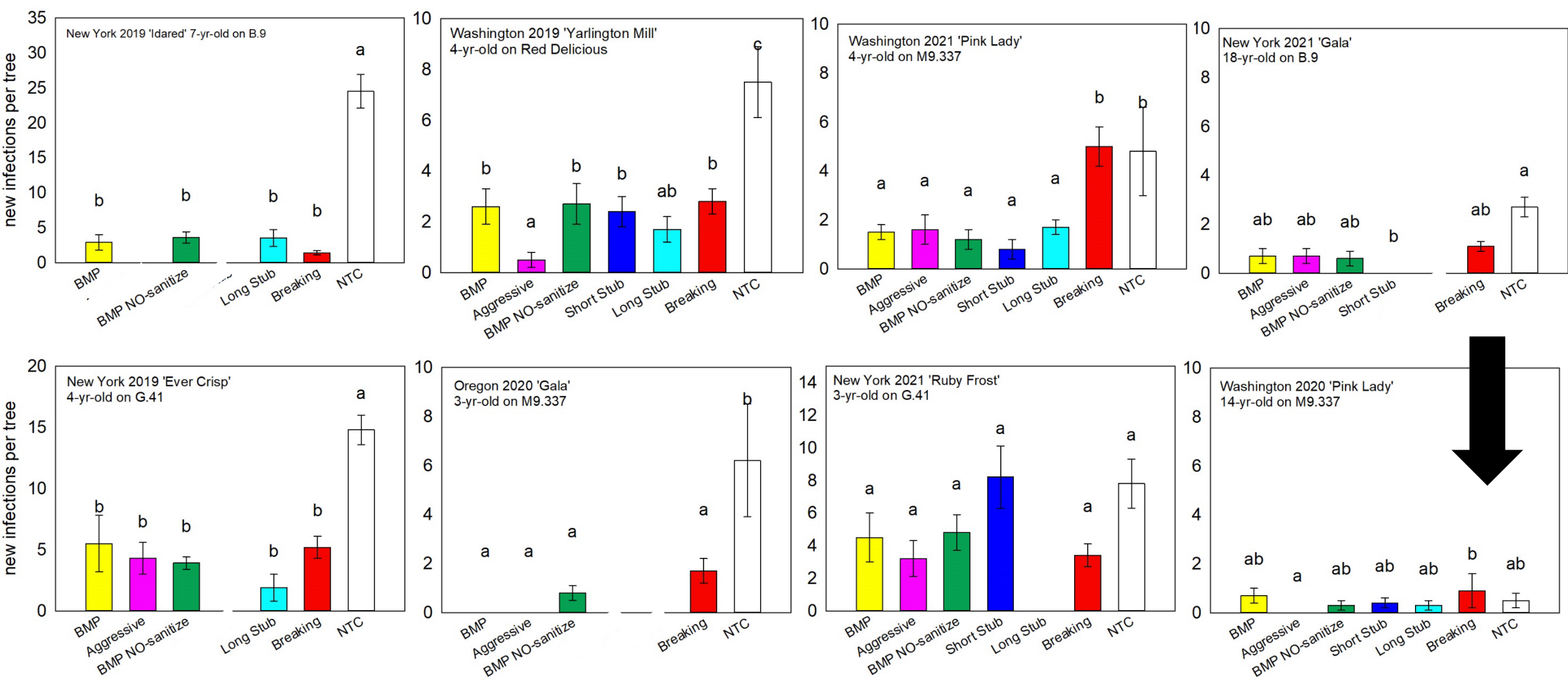




- Best management practice (BMP) = 12-18" from the symptomatic area into 2 yr old+ wood with sanitized tools.
- Reduced the number of new infections in 7 of 9 experiments.



BMP generally reduced the number of new infections

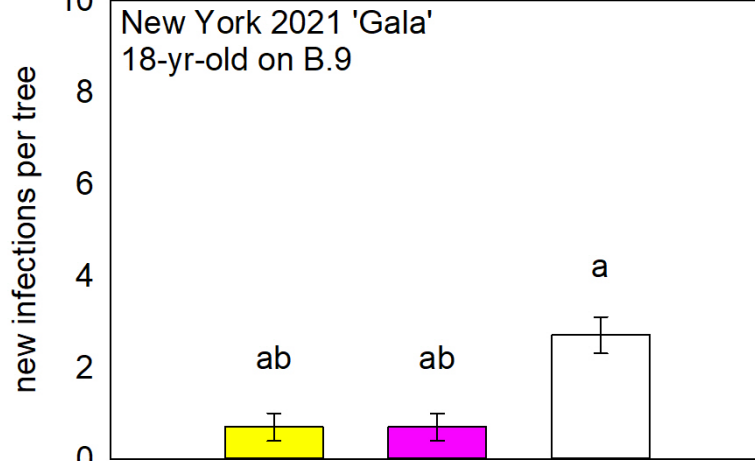
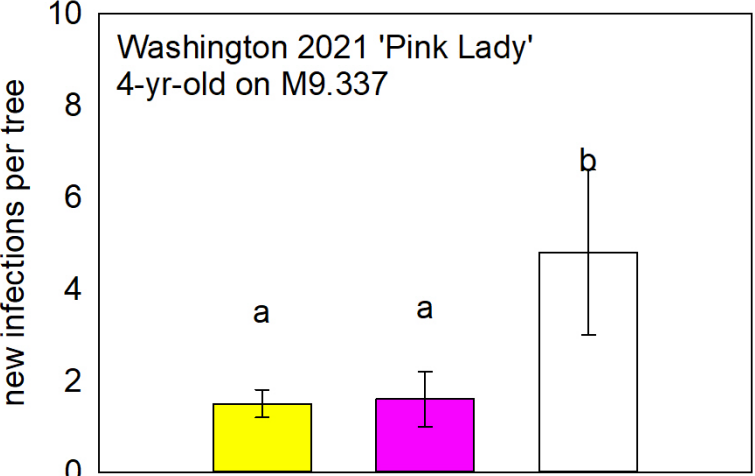
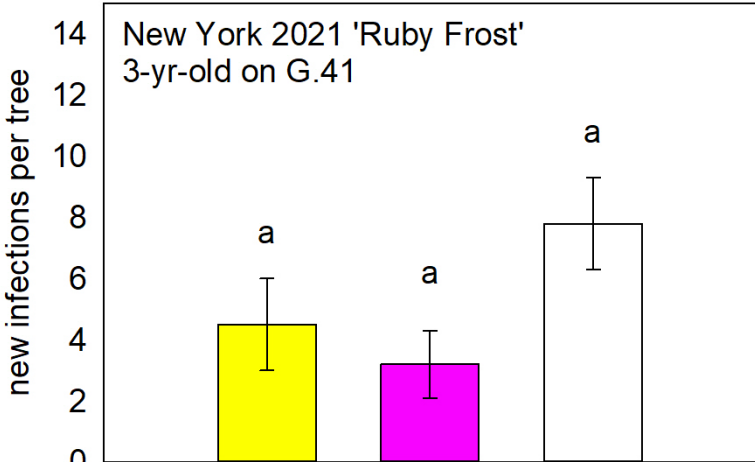
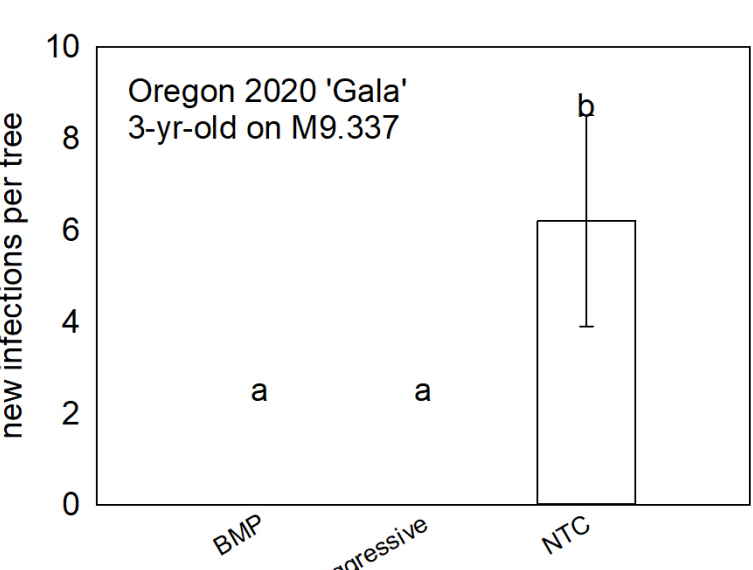
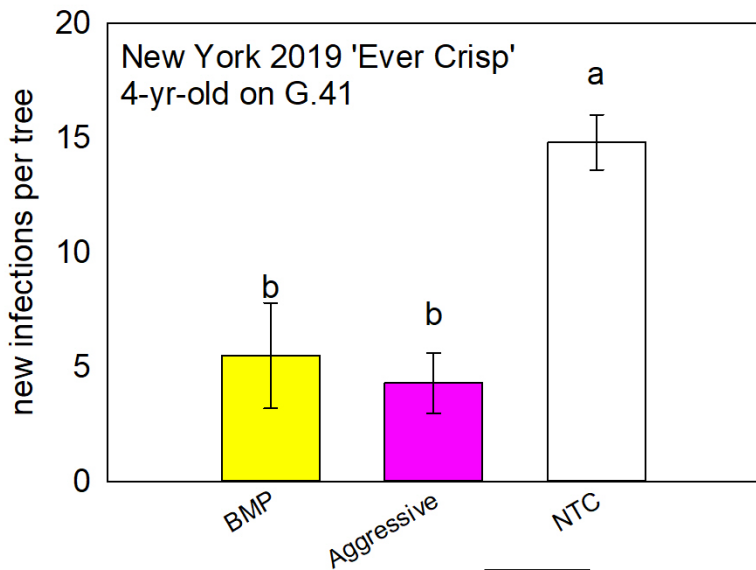
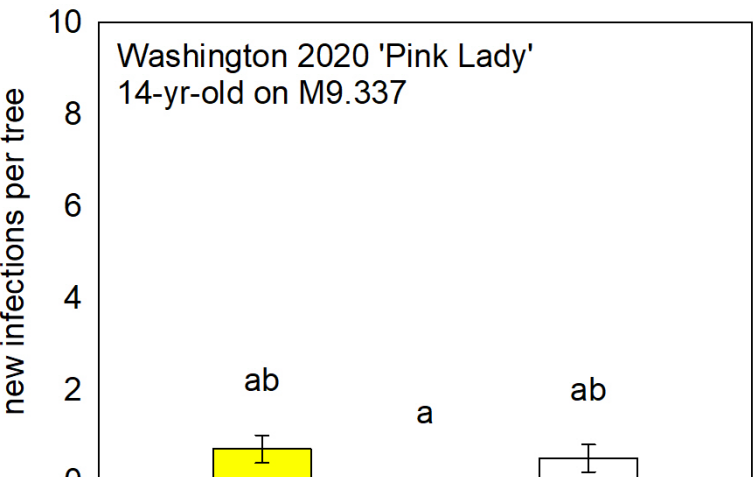
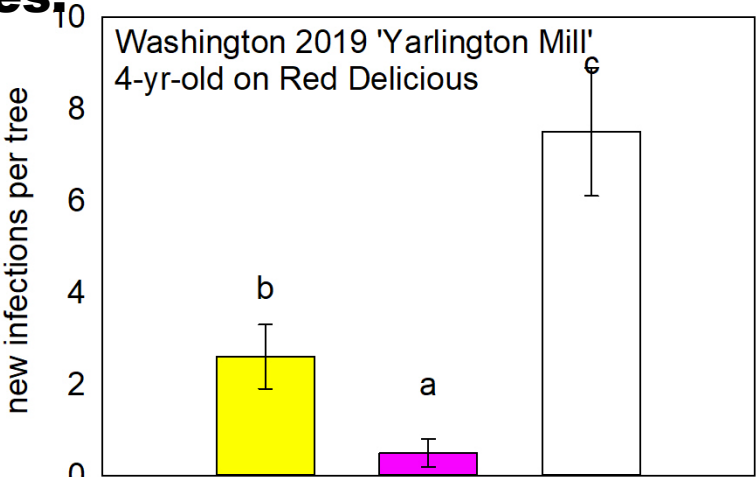


 BMP (12-18")  Aggressive (30")  No treatment

Can aggressive removal reduce systemic infections?



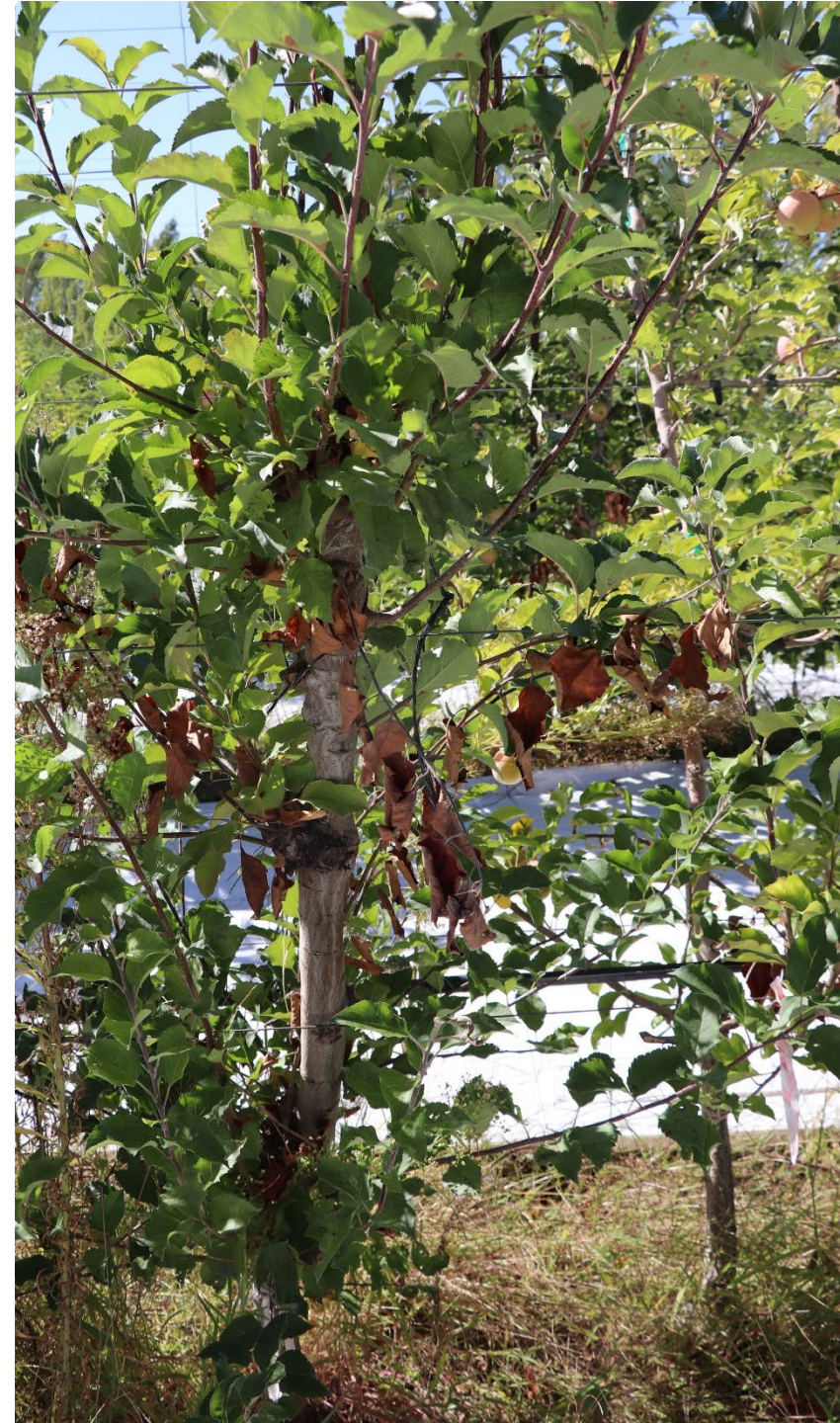
Treatment Aggressive had fewer new infections than BMP at 'Washington 2019 Yarlington Mill' but the number of new infections was not significantly different than BMP at other sites.





The aggressive treatment often stumped the trees.

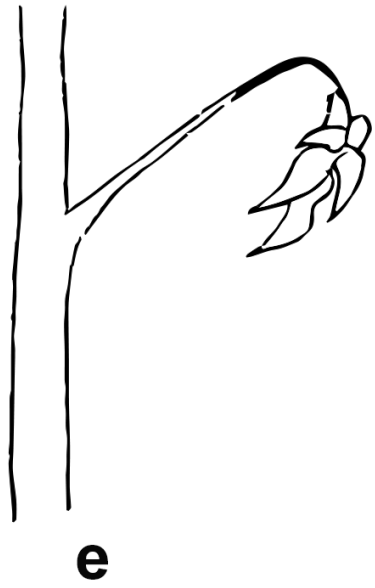
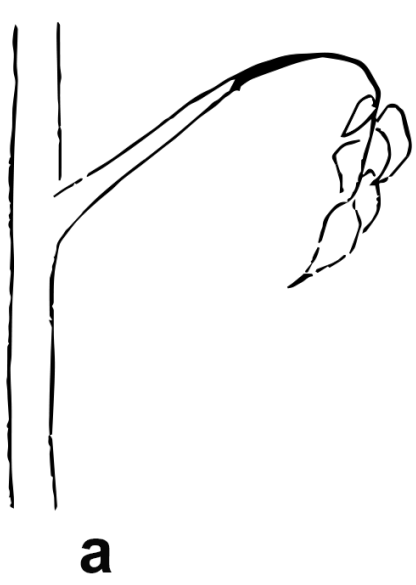
At site
'Washington
2021 Pink
Lady'
aggressive
cutting
resulted in
excessive new
growth



Can a stub cut keep cankers from reaching structural wood?









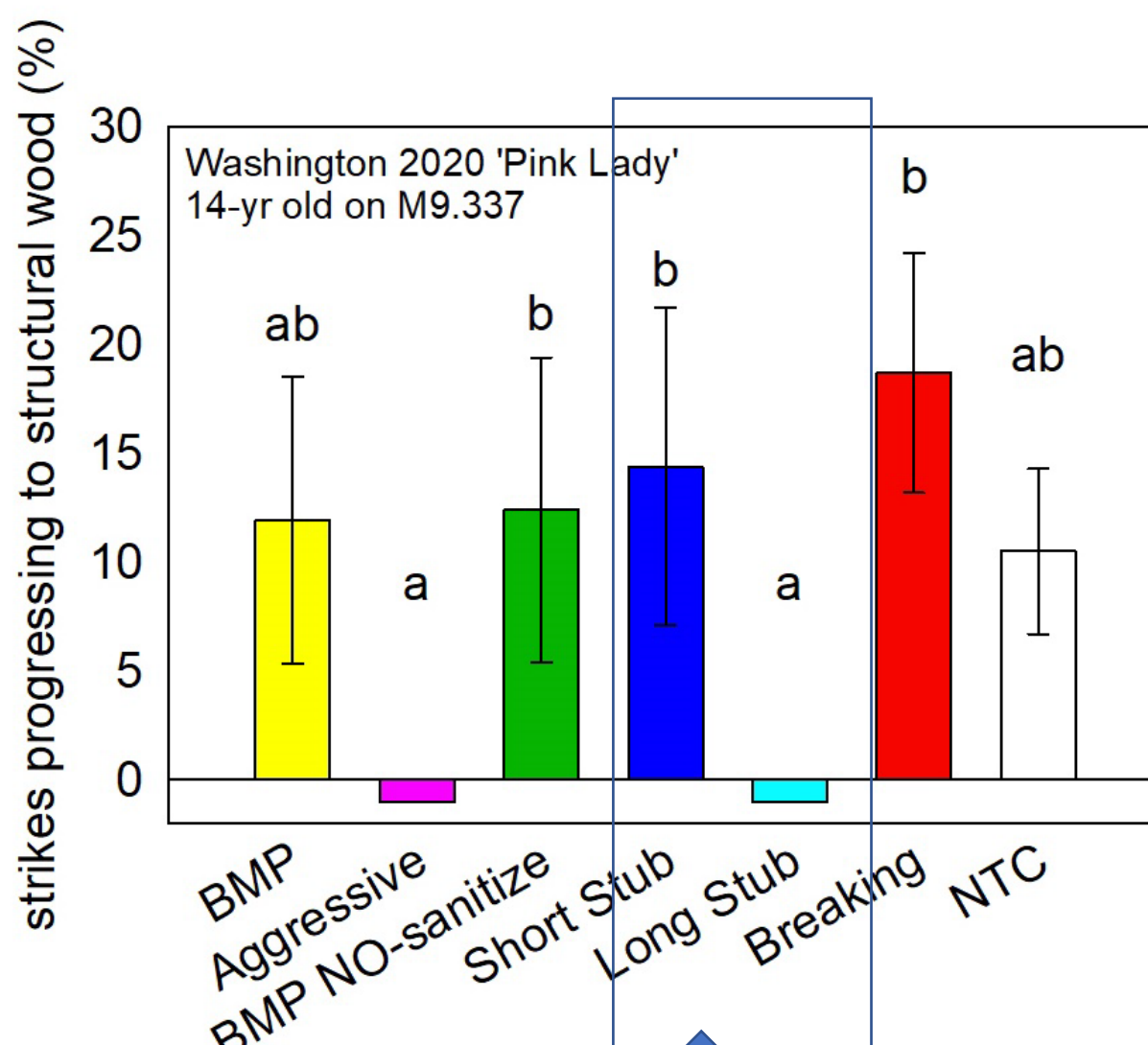
Short stub cut



Long stub cut



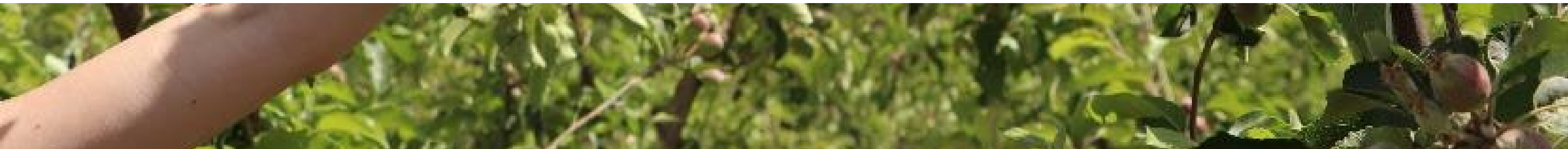
Pink Lady on M9.337 14th leaf



Long stub kept canker from progressing to structural wood.



Breaking?





Breaking



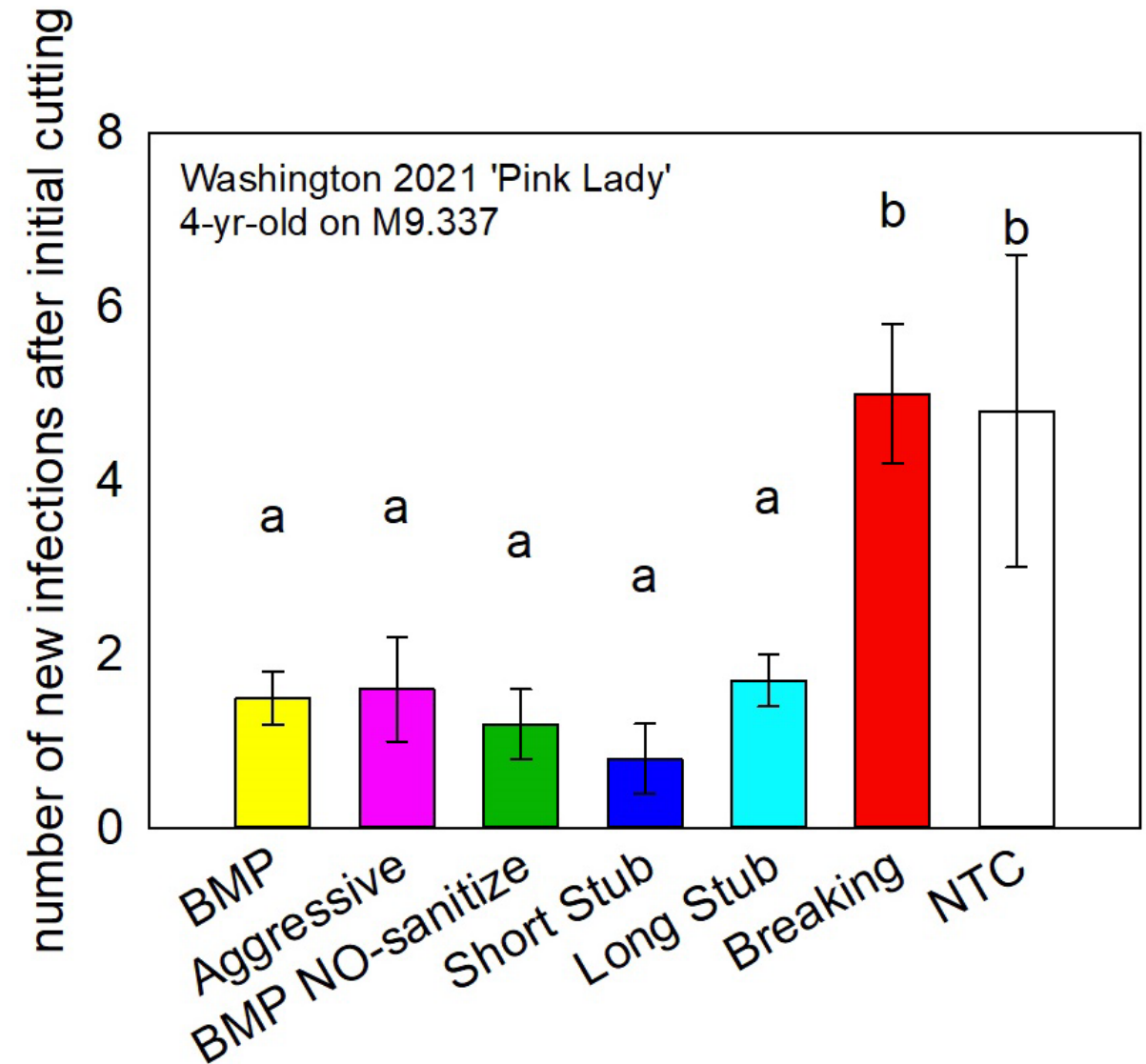




In experiment ‘Washington 2021 Pink Lady’ where 4th leaf trees were trained to the wire, treatment Breaking resulted in significantly more new infections than other cutting treatments.

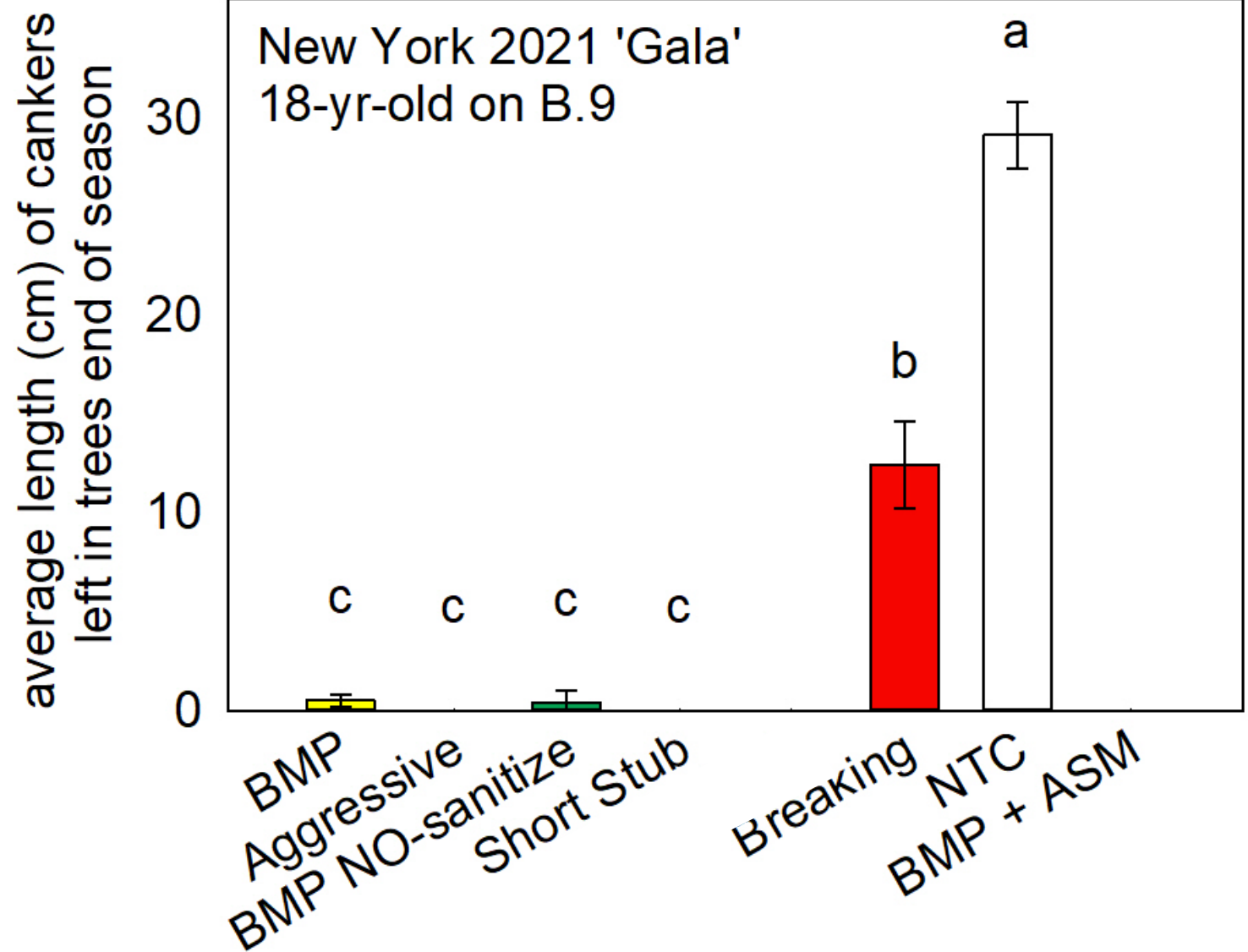
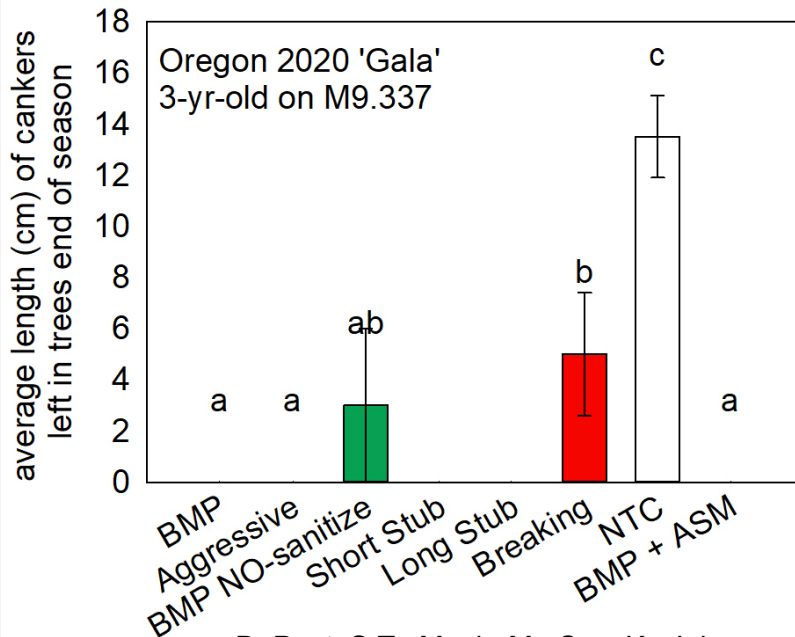
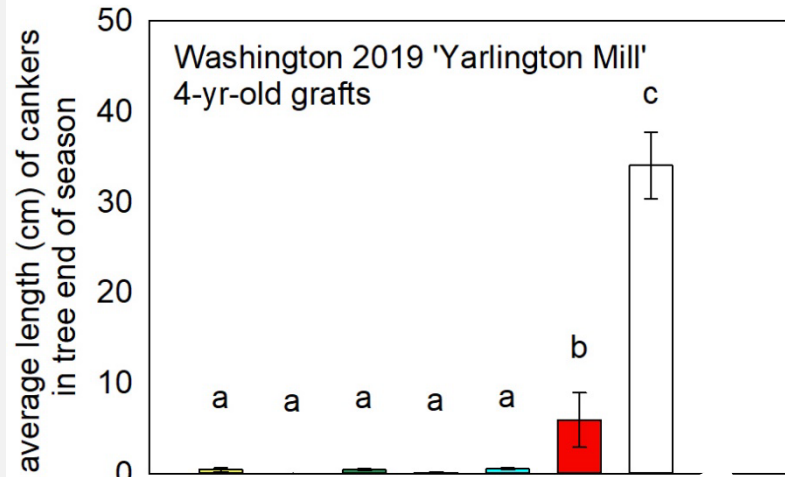


A tree treated with breaking cutting method exhibiting high number new fire blight infections. Red circles were new infection sites.



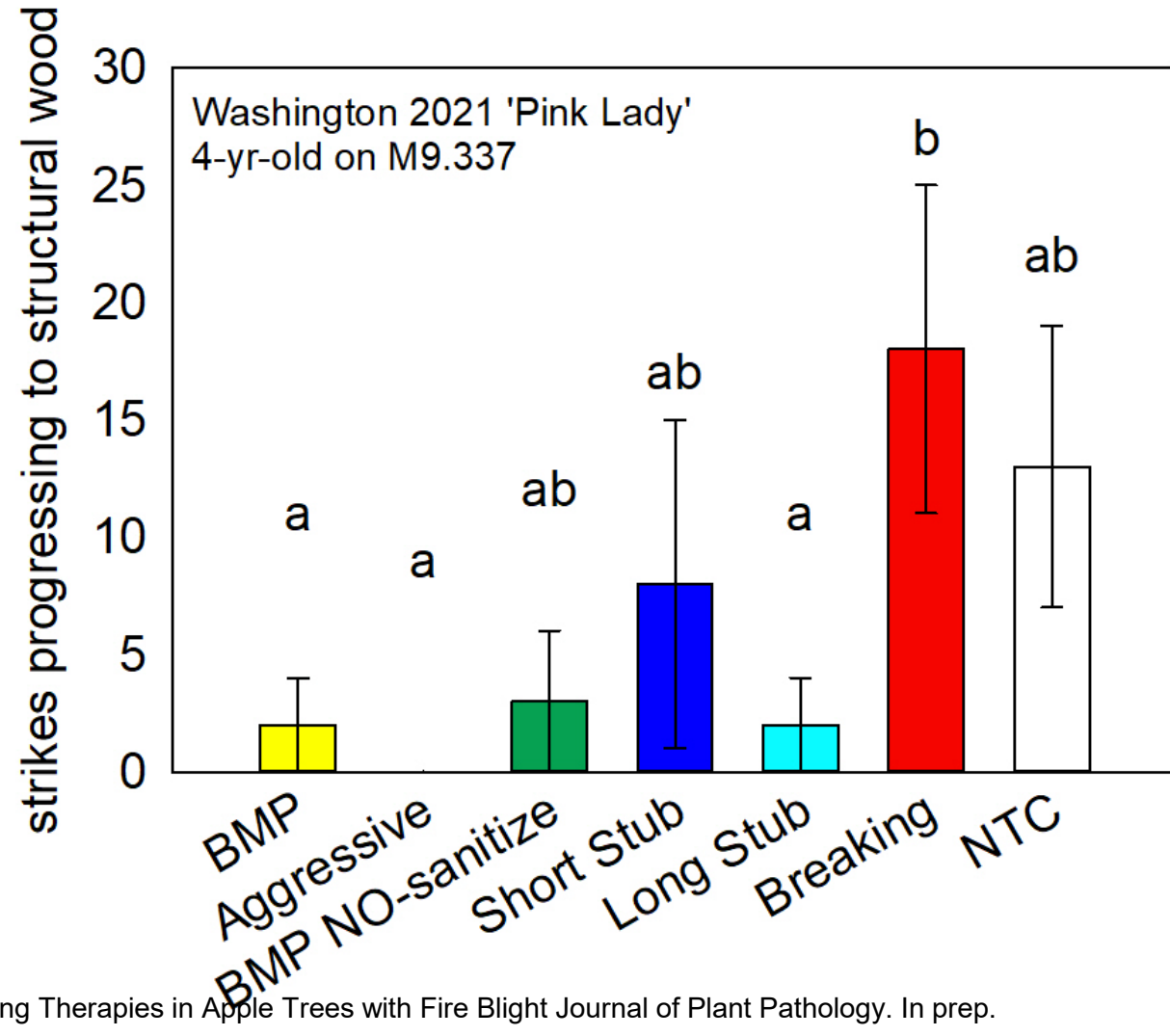


In three of ten experiments Breaking resulted in significantly more canker tissue left in the tree at the end of the season compared to BMP.





Breaking = higher numbers of cankers on structural wood than BMP





Breaking can leave cankers on structural wood and more overwintering cankers.

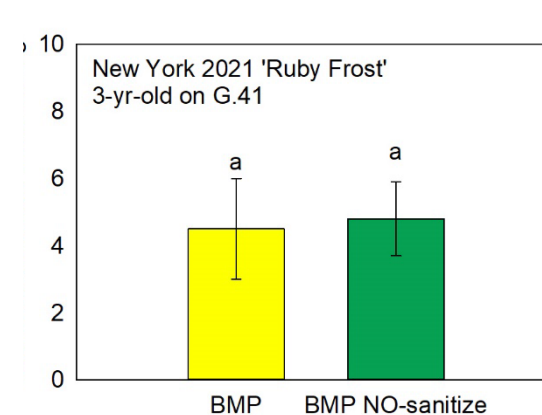
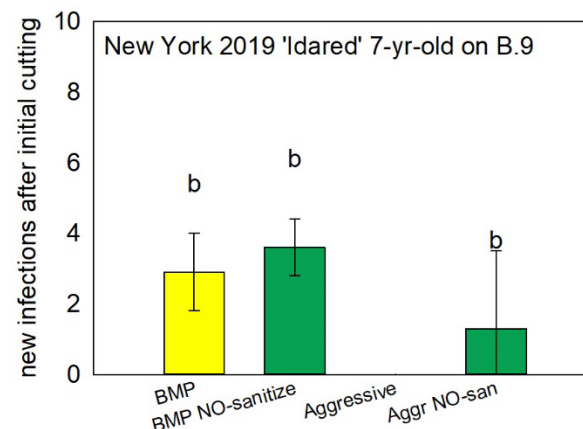
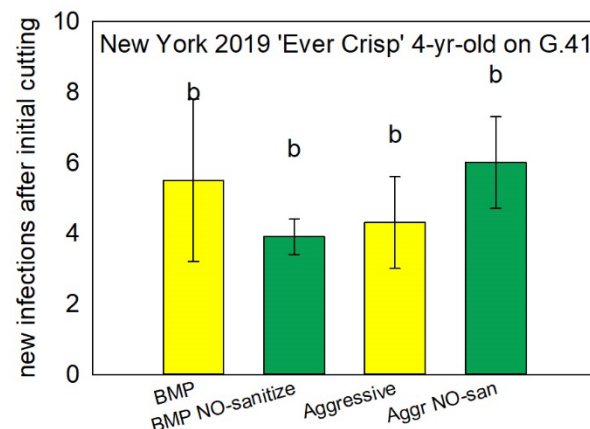
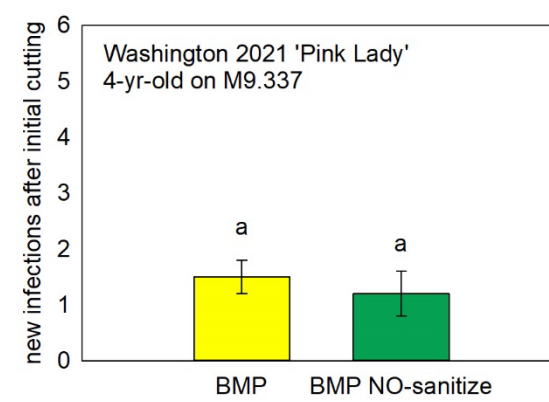
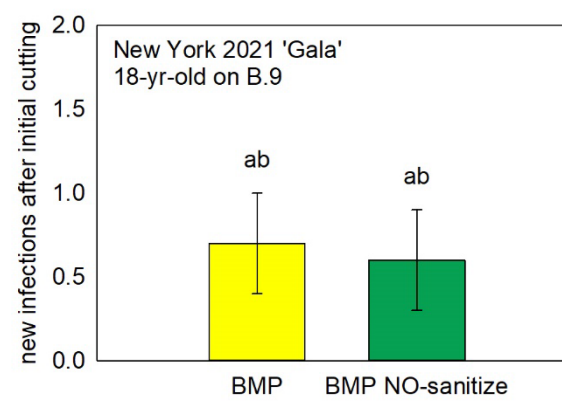
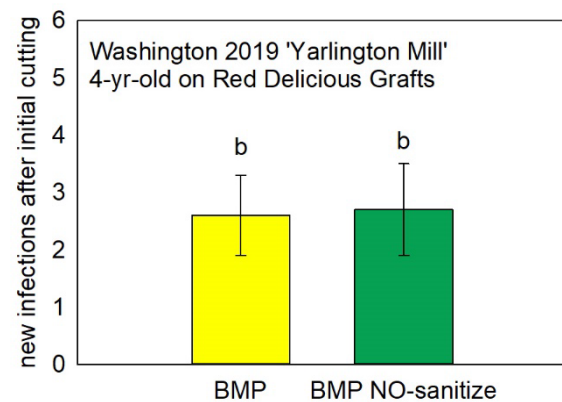
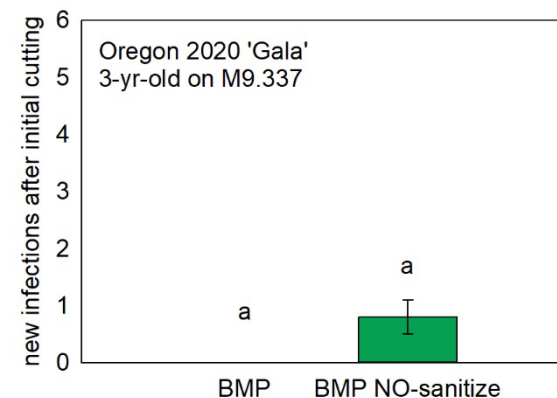
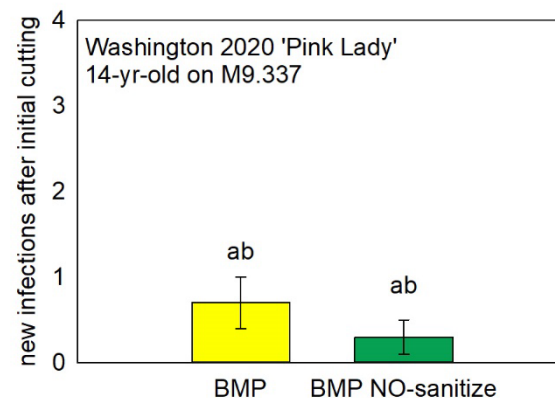
Importance of sanitizing tools?





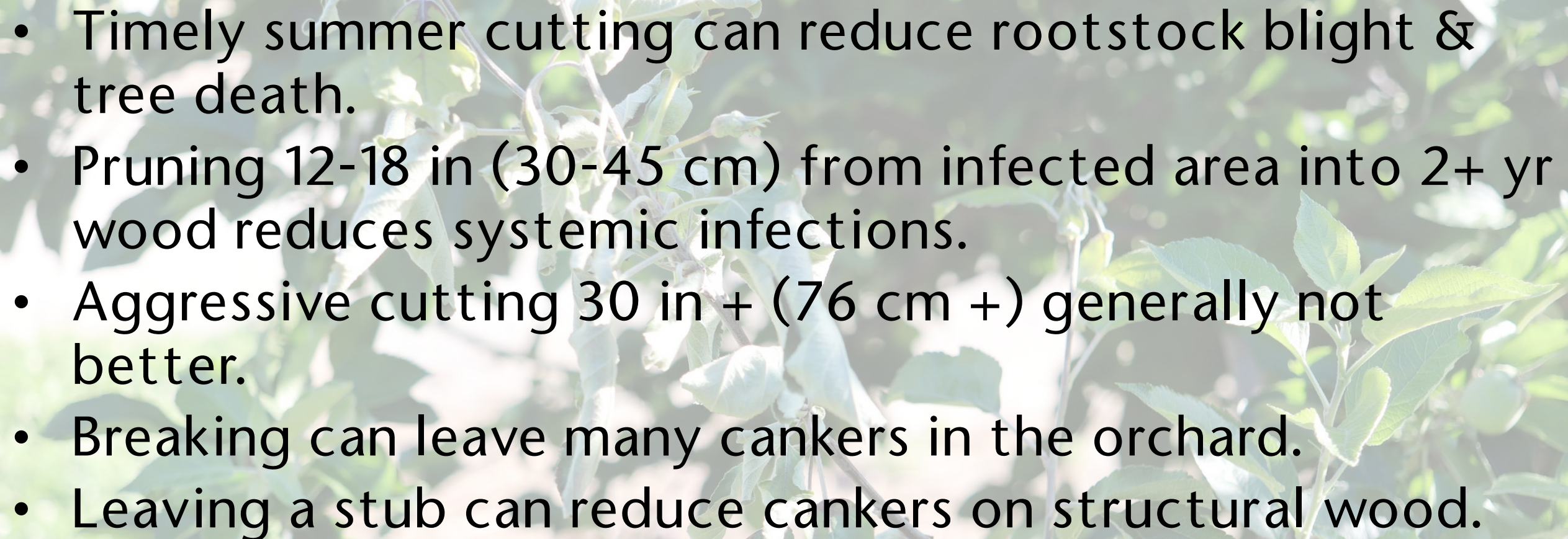
Sanitizing tools

Sanitized 
NO-sanitize 



No-
Sanitize =
Sanitized

of new
systemic
infections

- 
- Timely summer cutting can reduce rootstock blight & tree death.
 - Pruning 12-18 in (30-45 cm) from infected area into 2+ yr wood reduces systemic infections.
 - Aggressive cutting 30 in + (76 cm +) generally not better.
 - Breaking can leave many cankers in the orchard.
 - Leaving a stub can reduce cankers on structural wood.



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Sara Villani

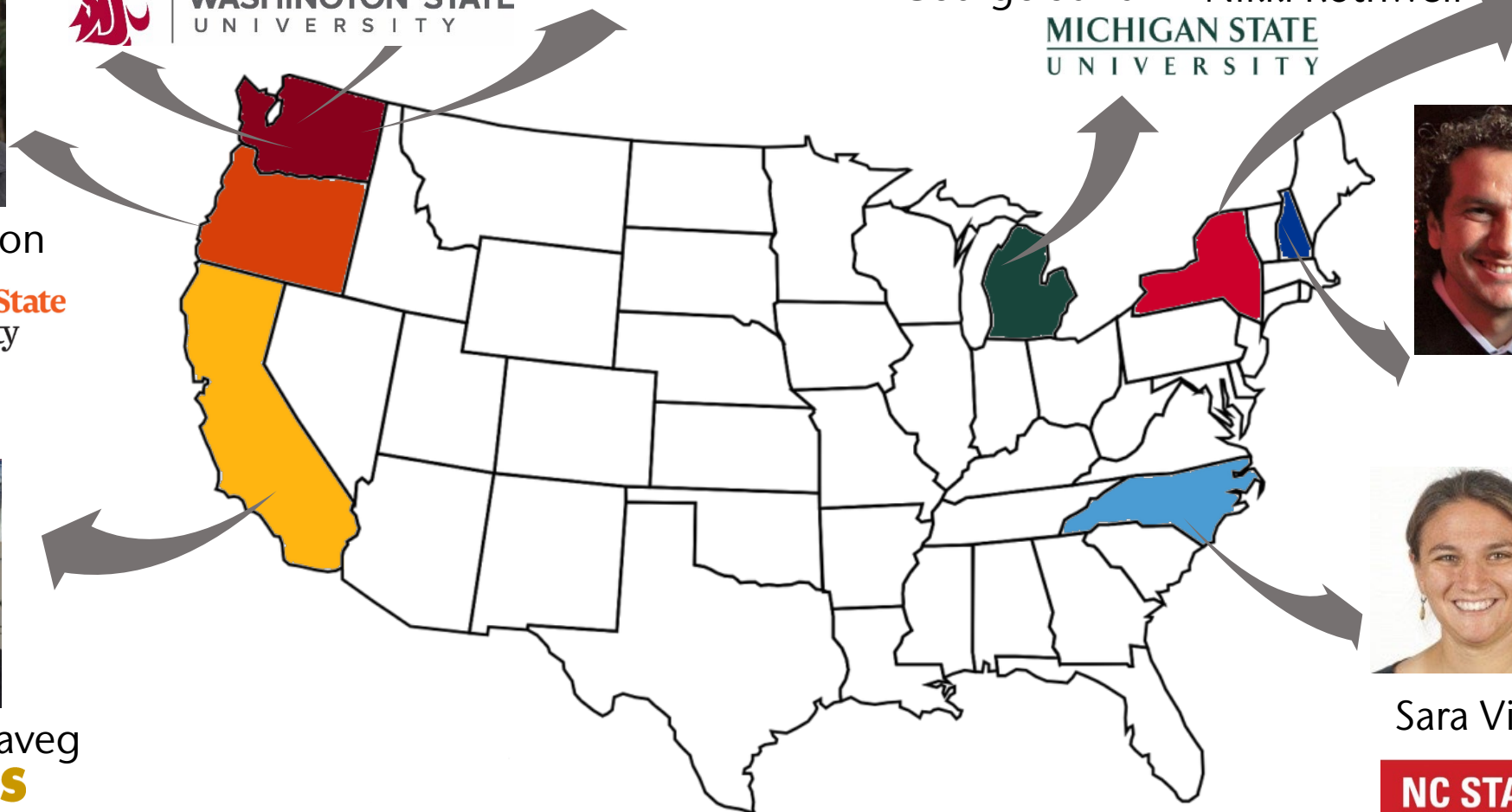
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Thank you

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