

Winter Injury Experience and Research and Recommendations in Caneberries

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History

- 1995-2006, ice storms in late winter cause damage to canes
- 2007 Easter Freeze, primary buds killed
- 2008-10 Primocane fruiting trials, fruit damage
- 2014 Cane injury and bud injury
- 2015 ? Record cold...injury to be determined

“Cold” Injury

- Cause: cold temperatures
- Time of year, different symptoms:
 - Spring, late frost: death of flower buds
 - Fall, early frost: terminate fruiting on primocane fruiting cultivars
 - Winter, very cold temperatures: kill canes, damage roots
 - Late dormant season, fluctuating winter temperatures: cane and/or bud damage

Critical temperatures

	Winter	Spring* estimates
Blackberry	+5 to -20 F	28 – 30F
Raspberry	-20 to -30 F	28 - 30F
Black raspberry	-5 to -10 F	28 – 30F
Purple raspberry	-15 to -20 F	28 – 30F
Blueberry	-20 to -30 F/0 to -10	21 – 31F
Strawberry	6-10 F	22 – 31F

Fall injury



Winter injury

Blackberry winter injury



Raspberry winter injury



Winter injury

- Will kill floricanes but not new primocanes
- Not always apparent until fruiting laterals begin to grow
- Injured vascular tissue is damaged
- Green/brown canes



Winter injury

Bud damage



Note: Primary bud black and dead, secondary bud not damaged

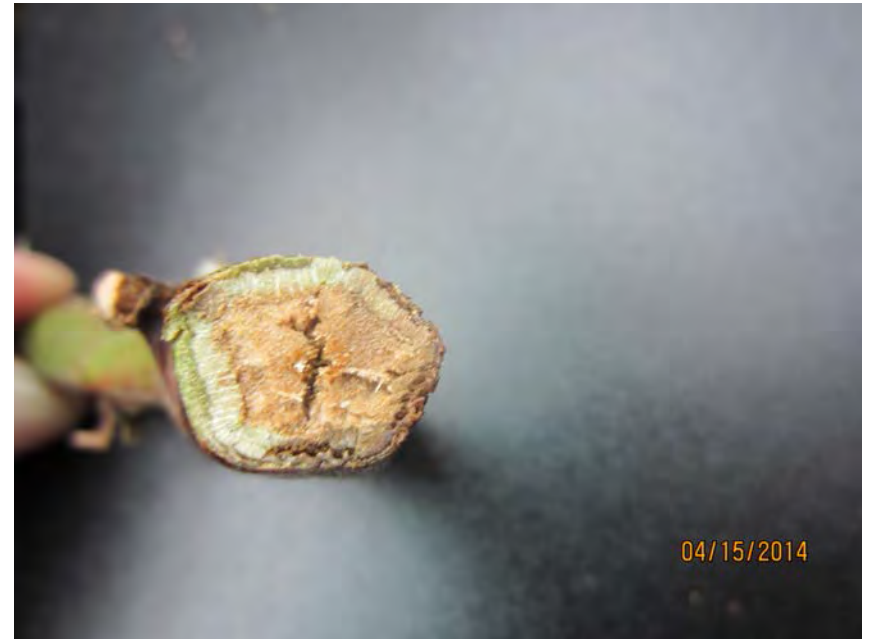
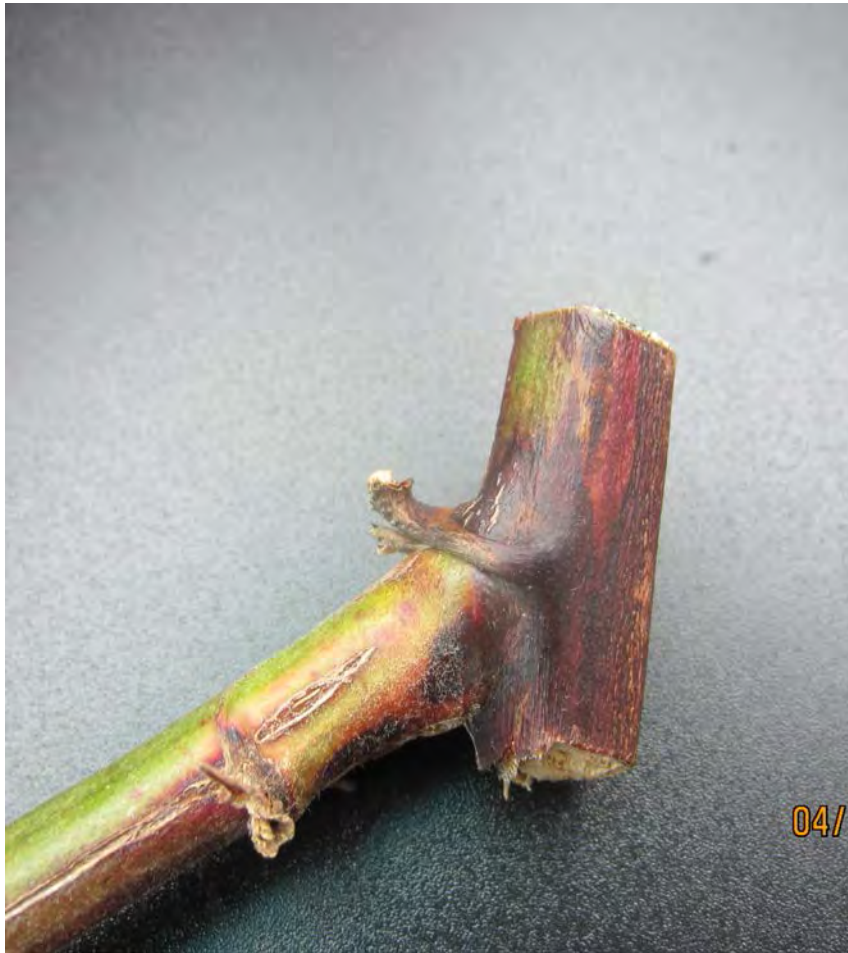
Cane damage



Note: browning just under "bark" is vascular damage

Cane Injury

Green/brown



Last week Feb 19/20, 2015
10F



Spring injury



Practices for Reducing Freeze Damage

- **Plant**
 - on north facing slopes to avoid fluctuating winter temperature effects
 - In regions where low temperatures do not go below critical temperatures
- **Pruning**
 - Delay pruning as long as possible, extremities usually more susceptible to damage
- **Row covers**
 - Rowcovers placed over RCA trellis berries will protect in midwest.





Practices for Reducing Freeze Damage

- **Avoid Cultivation**

- Cultivation in late winter and early spring tends to increase freeze damage.
- Bushes will probably stay 1 to 2 °F warmer on uncultivated soil than on cultivated soil.

- **Maintain Soil Moisture**

- By increasing the amount of water in the soil, the soil will absorb more heat during the day and conduct more heat to the surface for plant protection
- Excess water for extended periods must be avoided to prevent flooding or phytophthora root rot damage

- **Sprinkler Irrigation**

- not recommended

Resources

- Southern Region Small Fruit Consortium
 - www.smallfruits.org
 - Quarterly newsletter, chores, production guides
- Blackberry and Rapsberry Portal
 - www.rubus.ces.ncsu.edu
 - General production info, yield data, post harvest data
- Team Rubus Blog <http://teamrubus.blogspot.com>
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Lets try this!

