USING THE DEGREE HOUR SYSTEM FOR MANAGING FIRE BLIGHT TREATMENTS IN PEARS

NEW WORRIES ABOUT BLIGHT?

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THE PEAR DOCTOR INC
KELSEYVILLE, CALIFORNIA


Full Bloom+
1 Day
3/30/2017.
Ruts are
from earlier
scab spray.

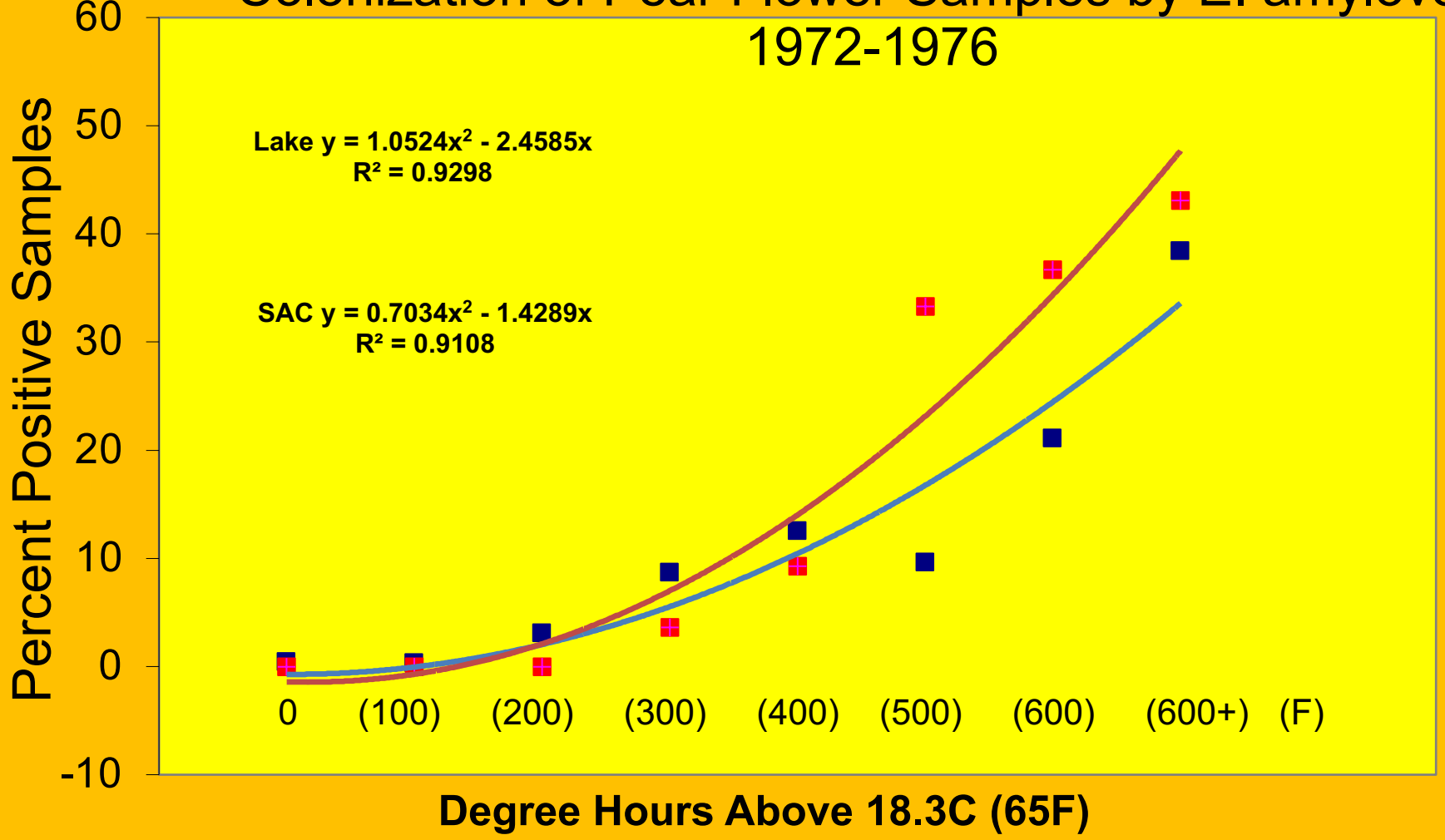
During 1972 to 1976, extensive monitoring was conducted for *E. amylovora* in pear blossom samples from the

(1)Lower Sacramento Delta district (Walnut Grove, CA),
(2)Upper Sacramento district (Yuba City, CA) and
(3)Lake County Coastal Mountain district (Kelseyville, CA).

This assessment showed a high correlation of the % samples positive for *E amylovora* with the number of degree hours above 65F accumulated prior to sample collection.

Van der Zwet, T. B., Zoller, B. G., and Thomson, S. V. 1988. Controlling fire blight of pear and apple by accurate predication of the blossom blight phase. Plant Disease 72 : 464-472.
http://www.apsnet.org/publications/PlantDisease/BackIssues/Documents/1988Articles/PlantDisease72n06_464.pdf

Colonization of Pear Flower Samples by E. amylovora 1972-1976



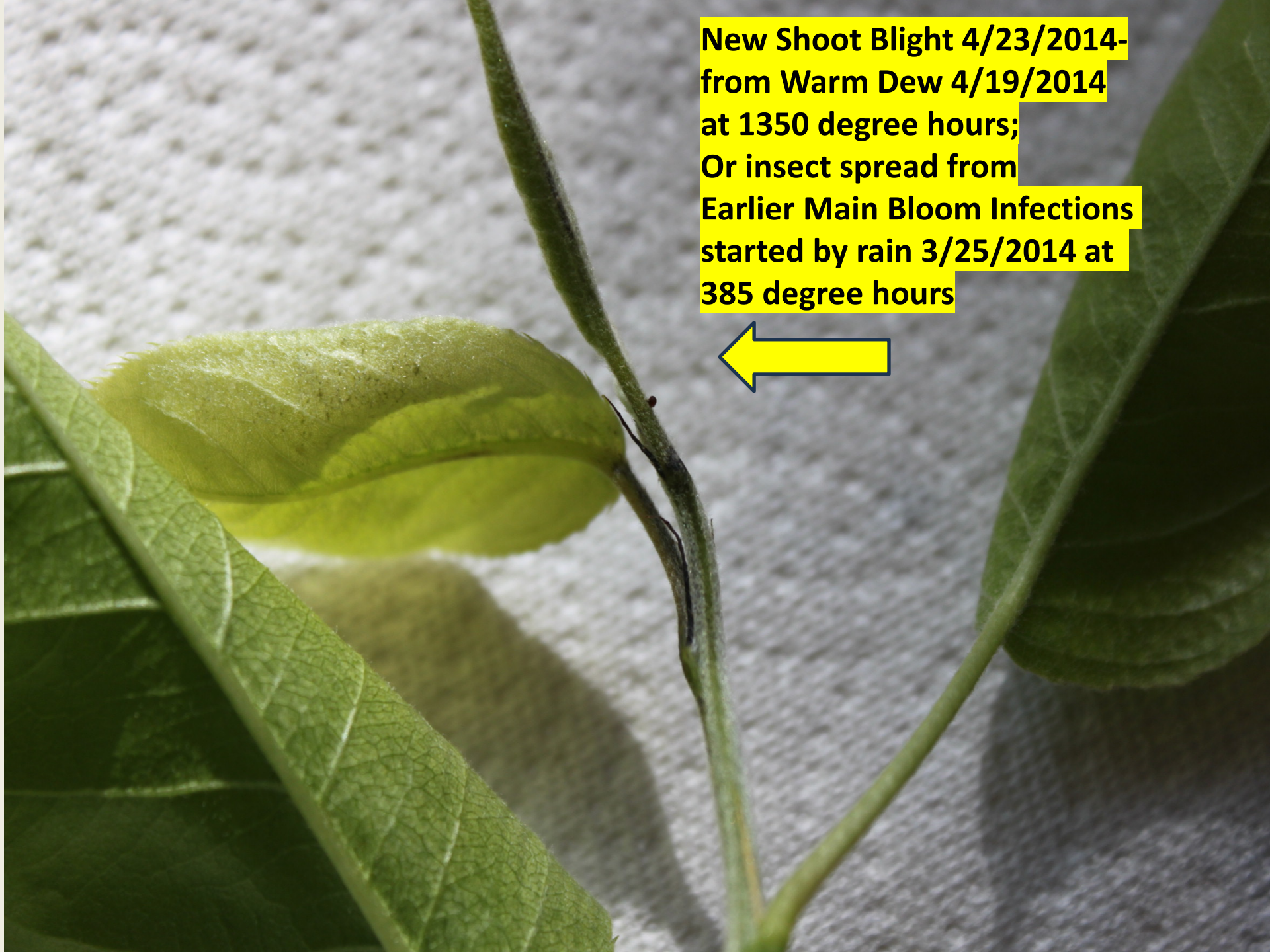
Number of Samples								
229	323	129	23	72	115	71	1362	Sac Valley
50	52	28	28	43	6	30	248	Lake County

Sac Valley Lake County

Zoller, B. G., and Sisevich, J. 1979. Blossom populations of *Erwinia amylovora* in pear orchards vs accumulated degree hours over 18.3C (65F), 1972-1976 Phytopathology 69: 10

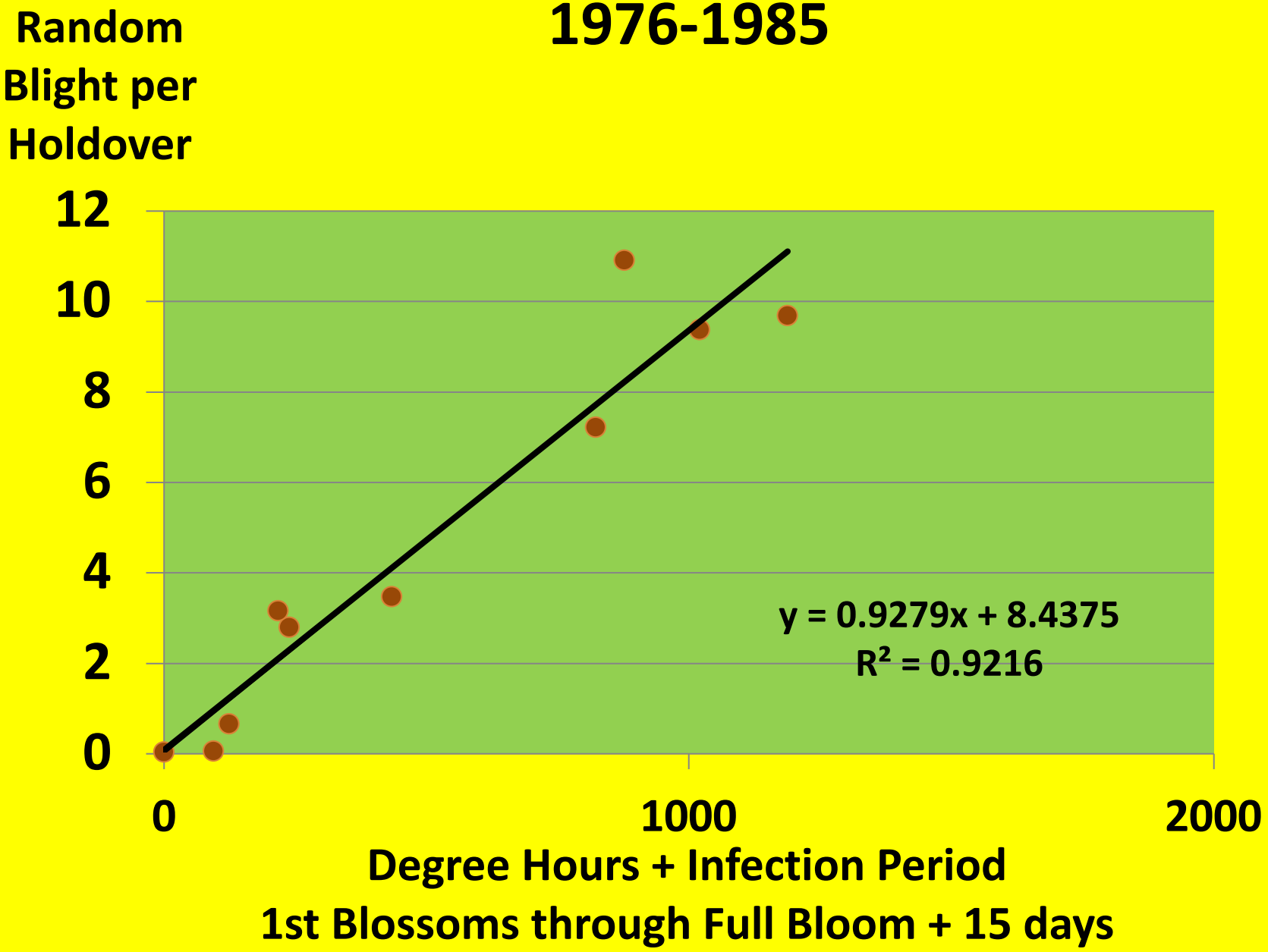

Cutting Blight from Home Seckel Tree 4-4-2015,
Rain 3/22 after 616 Degree Hours above 65F


Blight 5/10/2011,
Infection Period 1-2 weeks earlier

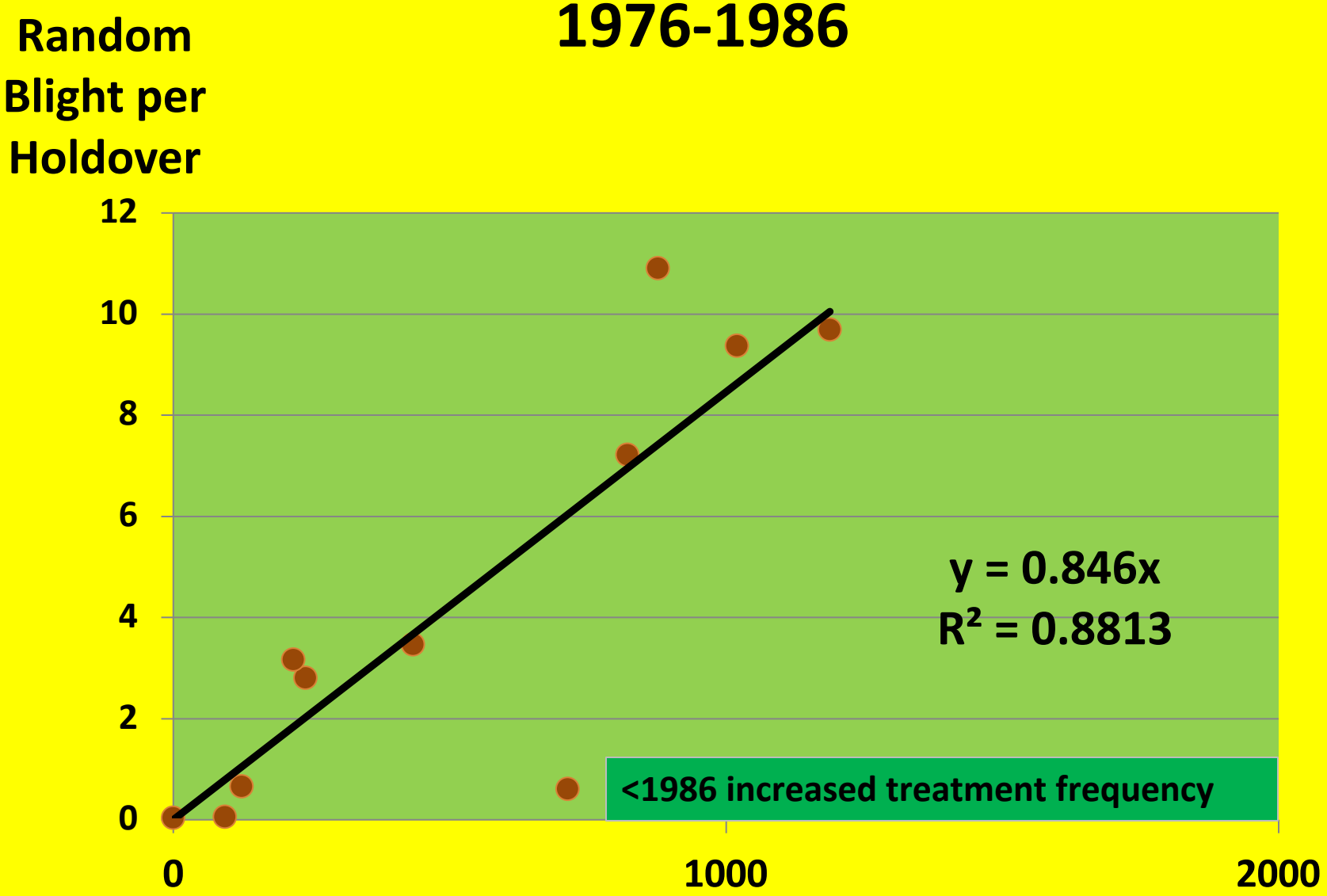

New Shoot Blight 4/23/2014-
from Warm Dew 4/19/2014
at 1350 degree hours;
Or insect spread from
Earlier Main Bloom Infections
started by rain 3/25/2014 at
385 degree hours

Ornamental Flowering Pear
Downtown Kelseyville
January 2016

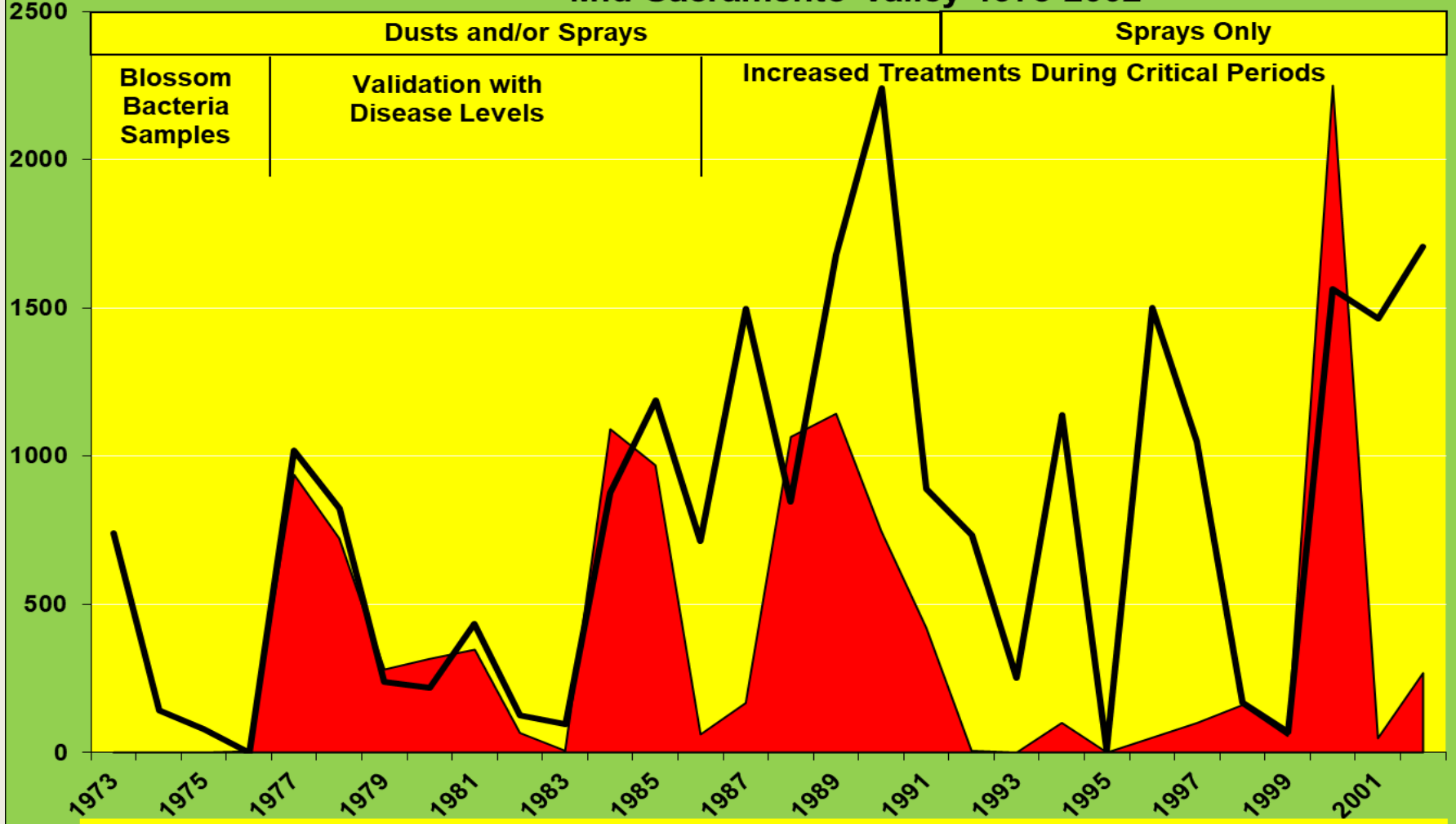
Mid-Sacramento Valley Blight History
1976-1985



Mid-Sacramento Valley Blight History
1976-1986

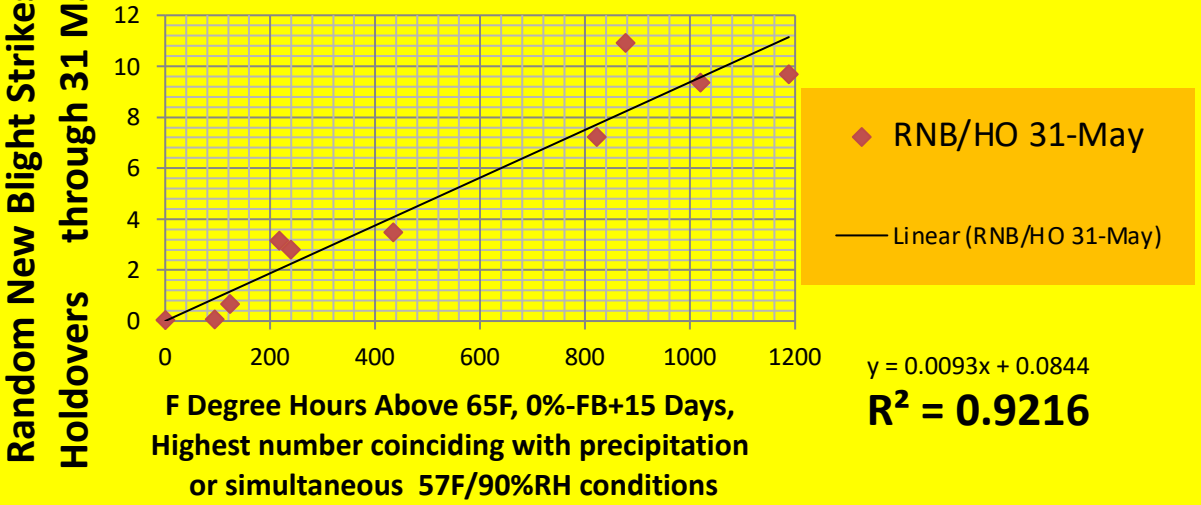


Blight History
Mid-Sacramento Valley 1973-2002



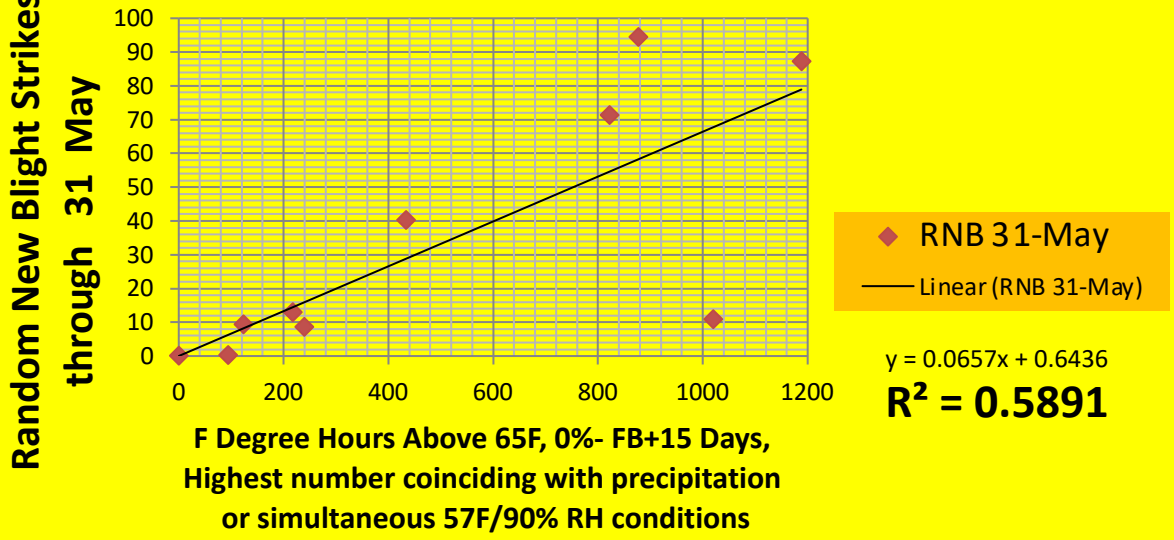
Random New Blight/Holdover

Sacramento Valley 1976-1985



Random New Blight

Sacramento Valley 1976-1985



Using the Degree System

One degree-hour equals 1 degree above 65°F for 1 hour. For example, a temperature of 70°F for 2 hours generates 10 degree-hours.

Accumulate degree-hours each hour of the day unless 3 consecutive days below 66°F occur. In this case, the accumulation of degree-hours is then reduced to zero until temperatures again exceed 65°F.

The accumulated degree-hour total is not reduced by continuous cool temperatures, if the total has surpassed 400 degree-hours and has coincided with precipitation or simultaneous warm, humid infection periods of at least 57°F and 90% relative humidity.

Sacramento Valley Degree Hour System Action Thresholds

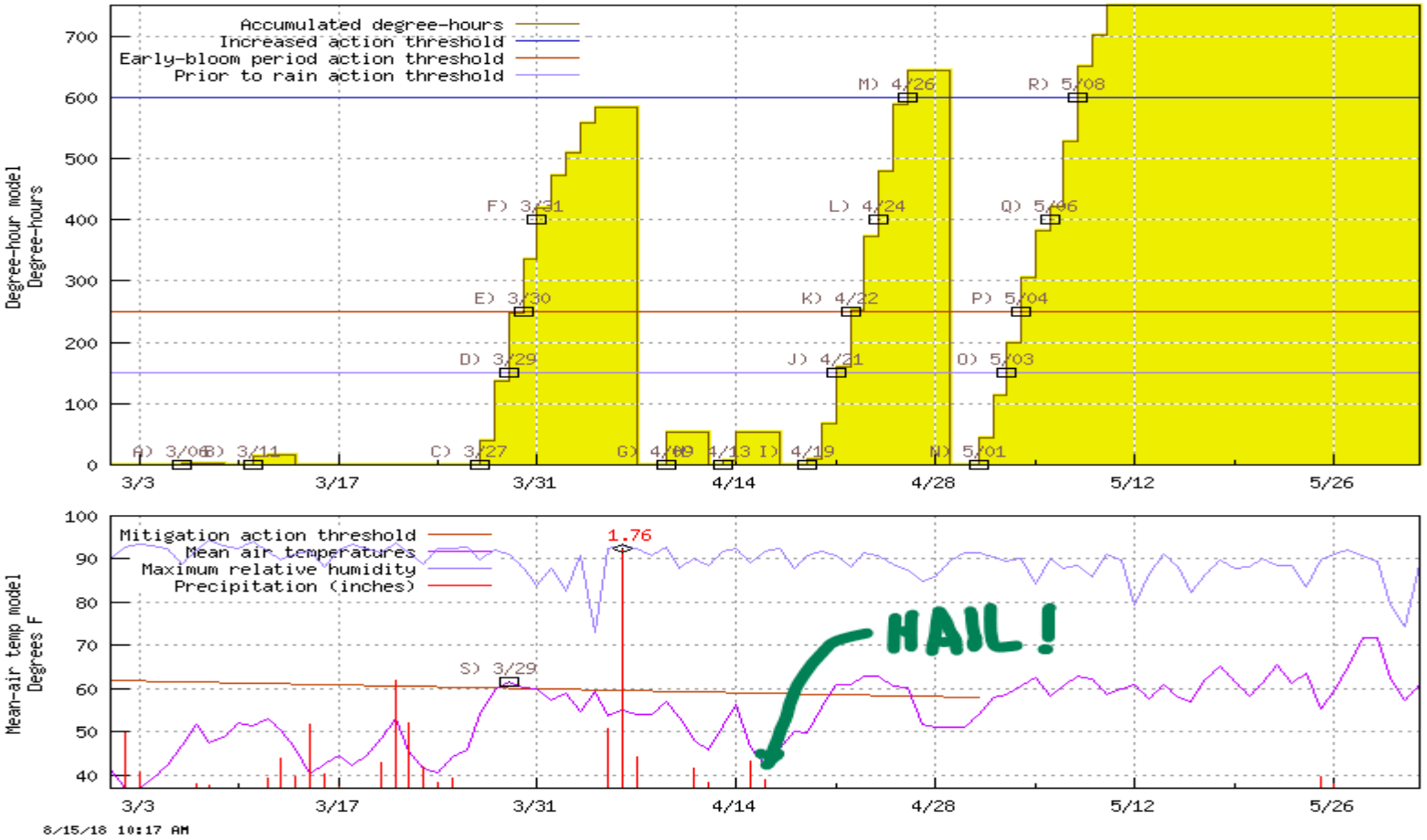
http://www.ipm.ucdavis.edu/MODELS/FBEA/aboutfireblight.html

Degree-Hours	Weather	Action
0	Not relevant	None
1-150	Rain predicted within 24 hours	Spray in the 24 hr. period prior to rain
150-500	Predicted rain or warm, humid weather where the Temperature is at least 57F and Humidity is at least 90%	Repeat treatment every 3-4 days with treatment in the 24 hours prior to predicted conducive weather
Over 500	Predicted rain or warm, humid weather where the Temperature is at least 57F and Humidity is at least 90%	Treat every other day during major bloom

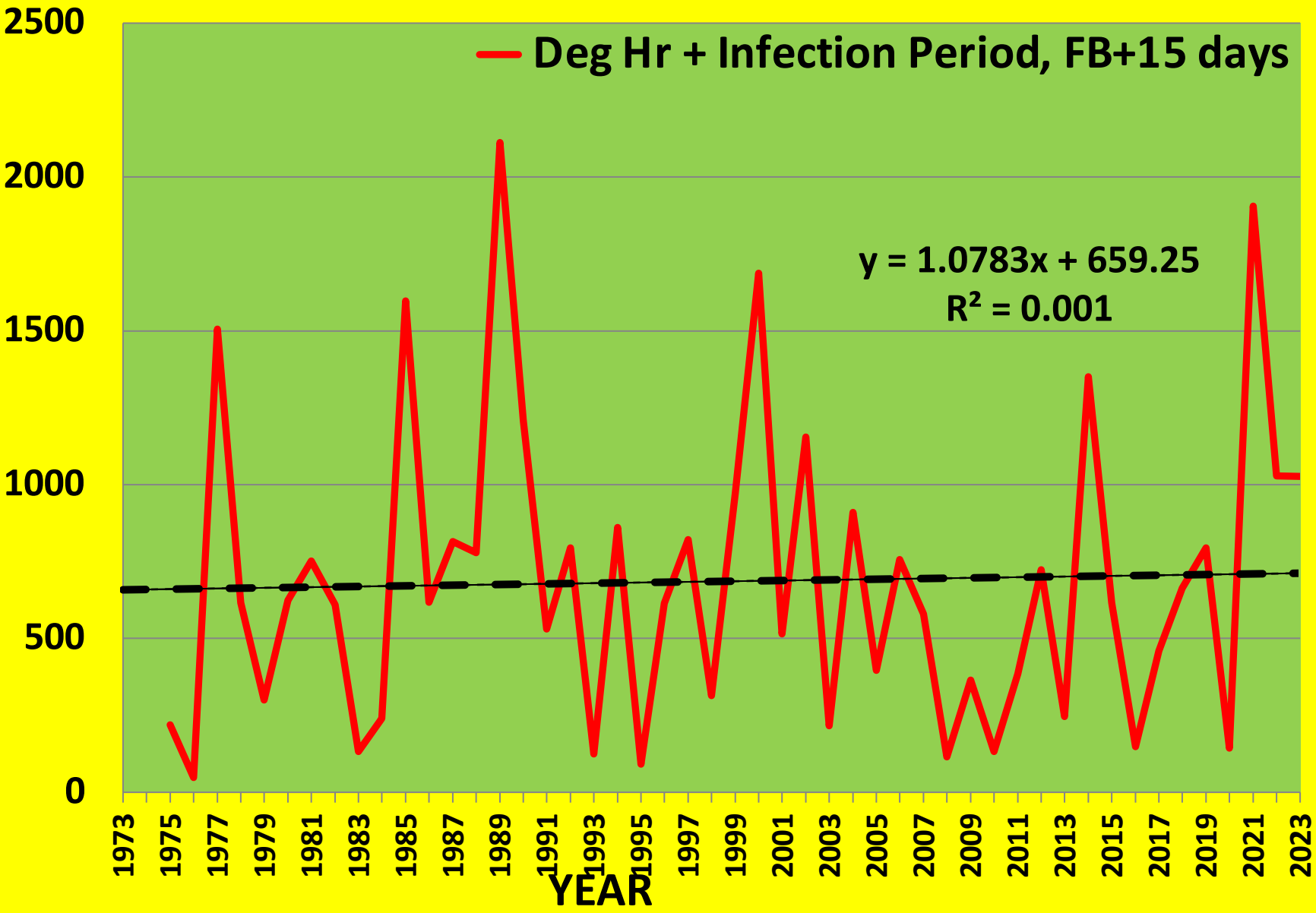
Treatments are half treatments applied every other row. Higher thresholds (+ 100 added to each threshold) are used in the North Coastal Mountain districts as long as dormant season chilling has been typically greater than in the Sacramento Valley districts.

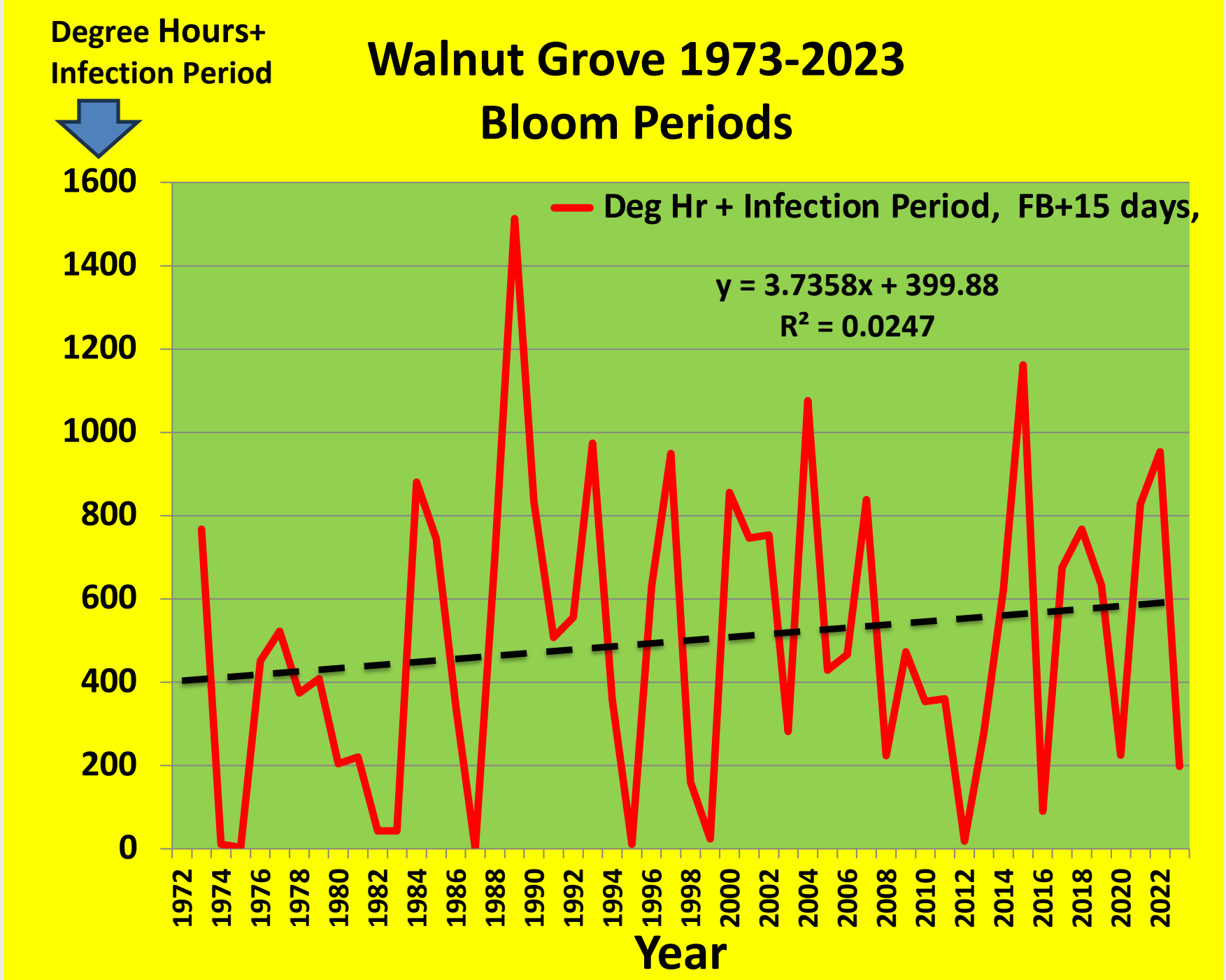
Kelseyville Fire Blight Degree Hour Model 2018

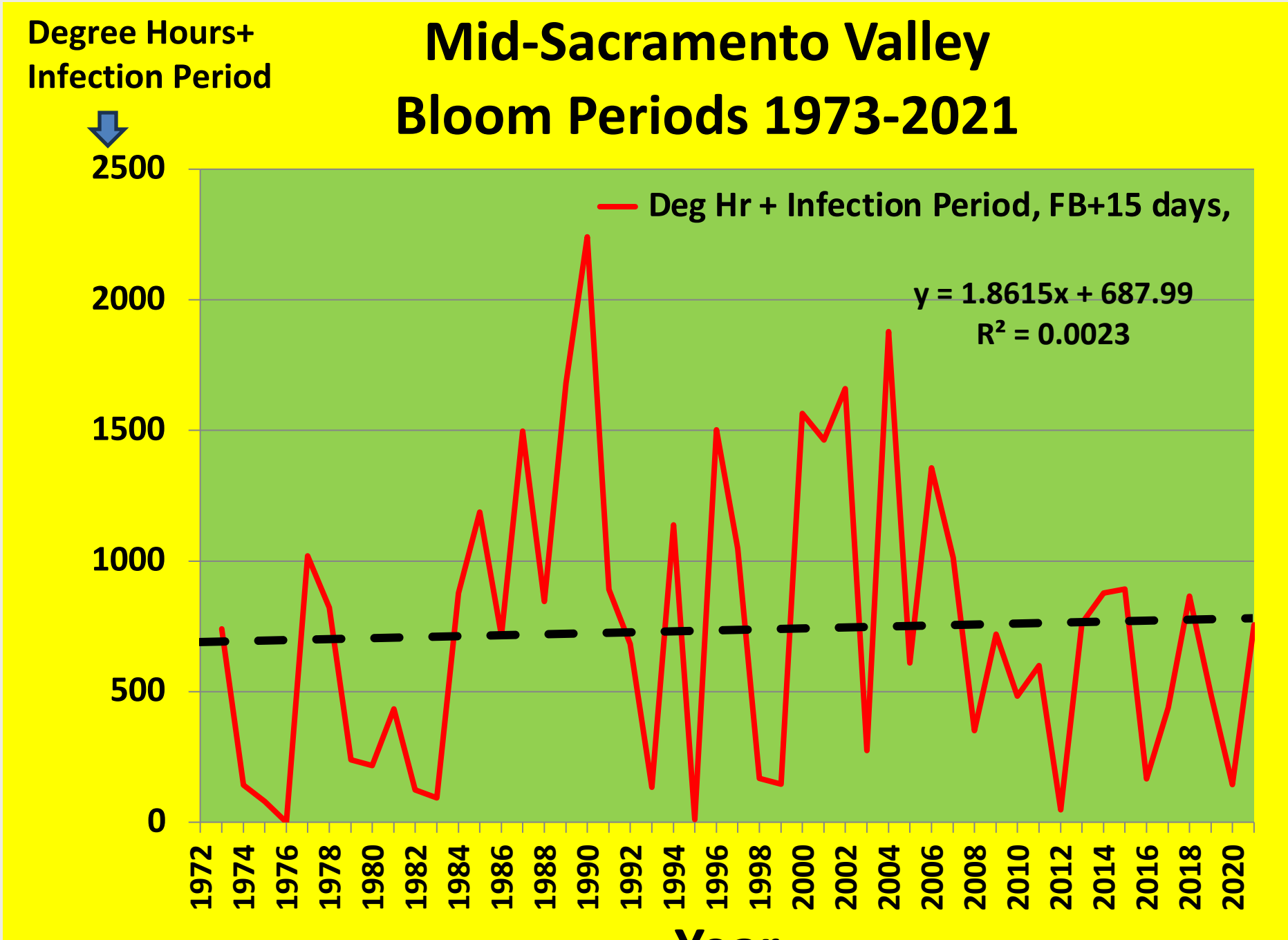
UCIPM Online



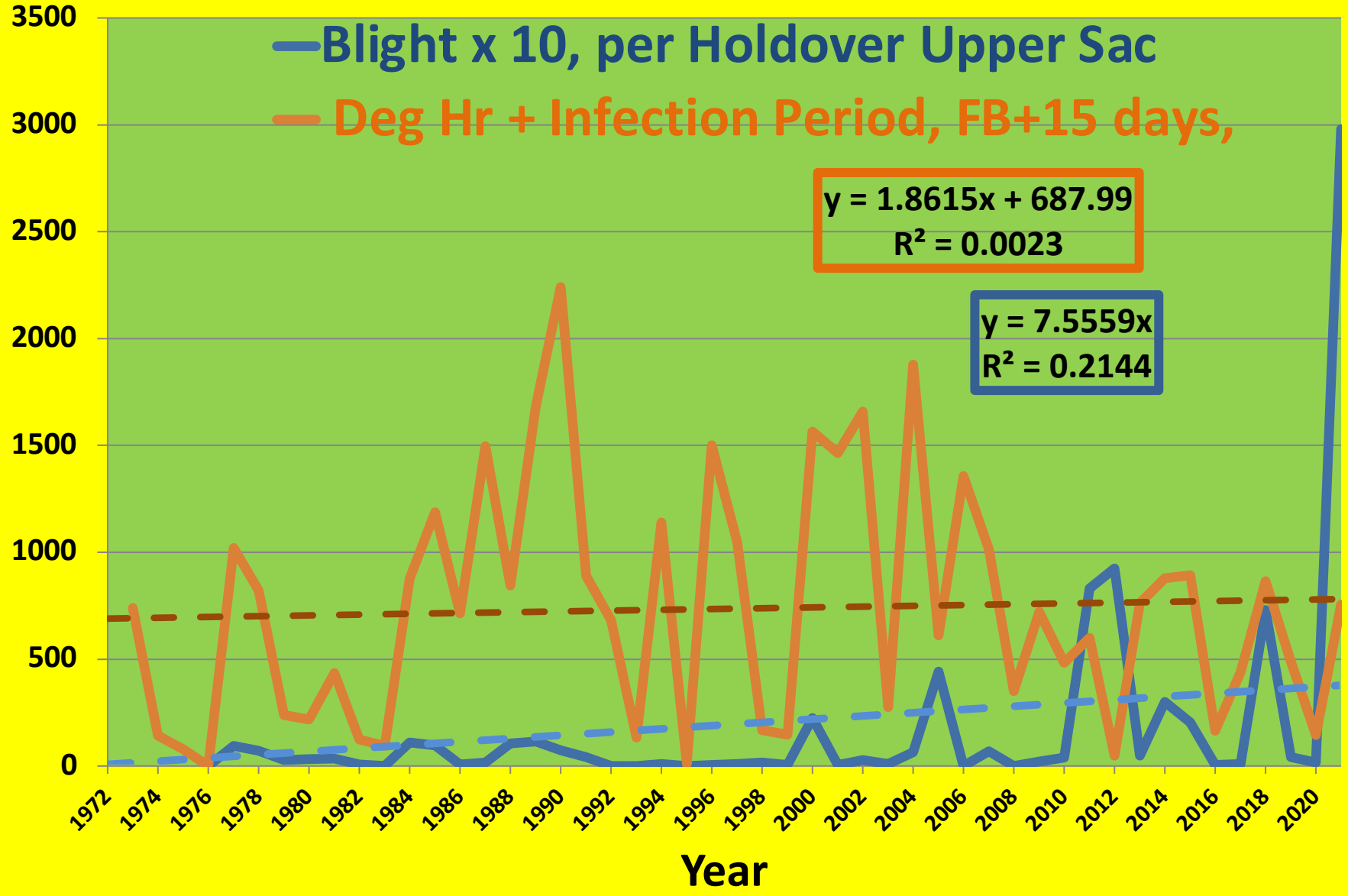
Kelseyville Bloom Periods 1975-2023




Degree Hours+
Infection Period
Walnut Grove 1973-2023
Bloom Periods
Deg Hr + Infection Period, FB+15 days,
y = 3.7358x + 399.88
R² = 0.0247
1600
1400
1200
1000
800
600
400
200
0
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Year


Degree Hours+
Infection Period
Mid-Sacramento Valley
Bloom Periods 1973-2021
Deg Hr + Infection Period, FB+15 days,
y = 1.8615x + 687.99
R² = 0.0023
2500
2000
1500
1000
500
0
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
Year

Mid-Sacramento Valley
Blight History 1973-2021



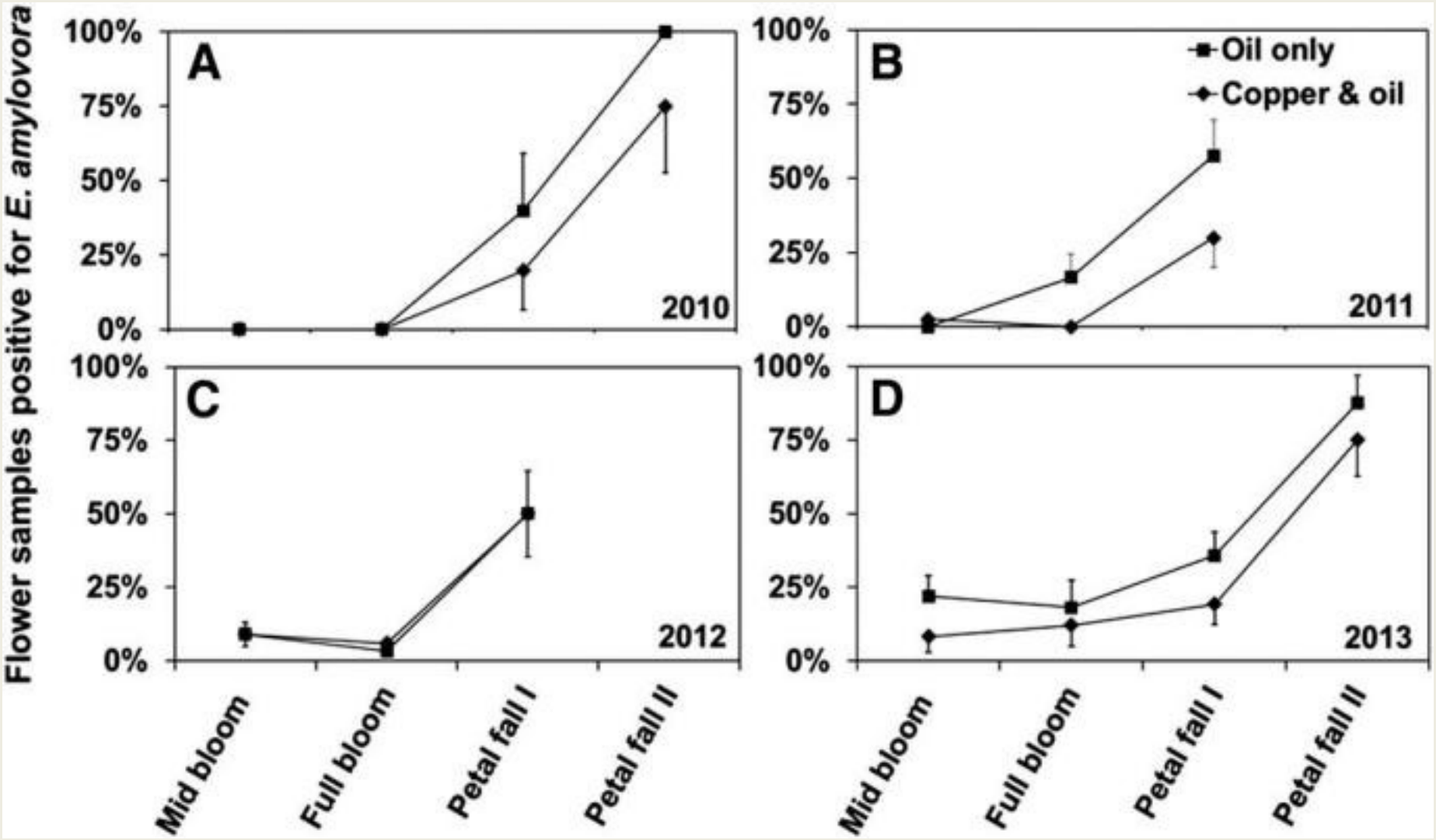
OTHER CHANGES TO CONSIDER:

1- REDUCTION IN CHILLING HOURS IN THE DORMANT SEASONS?

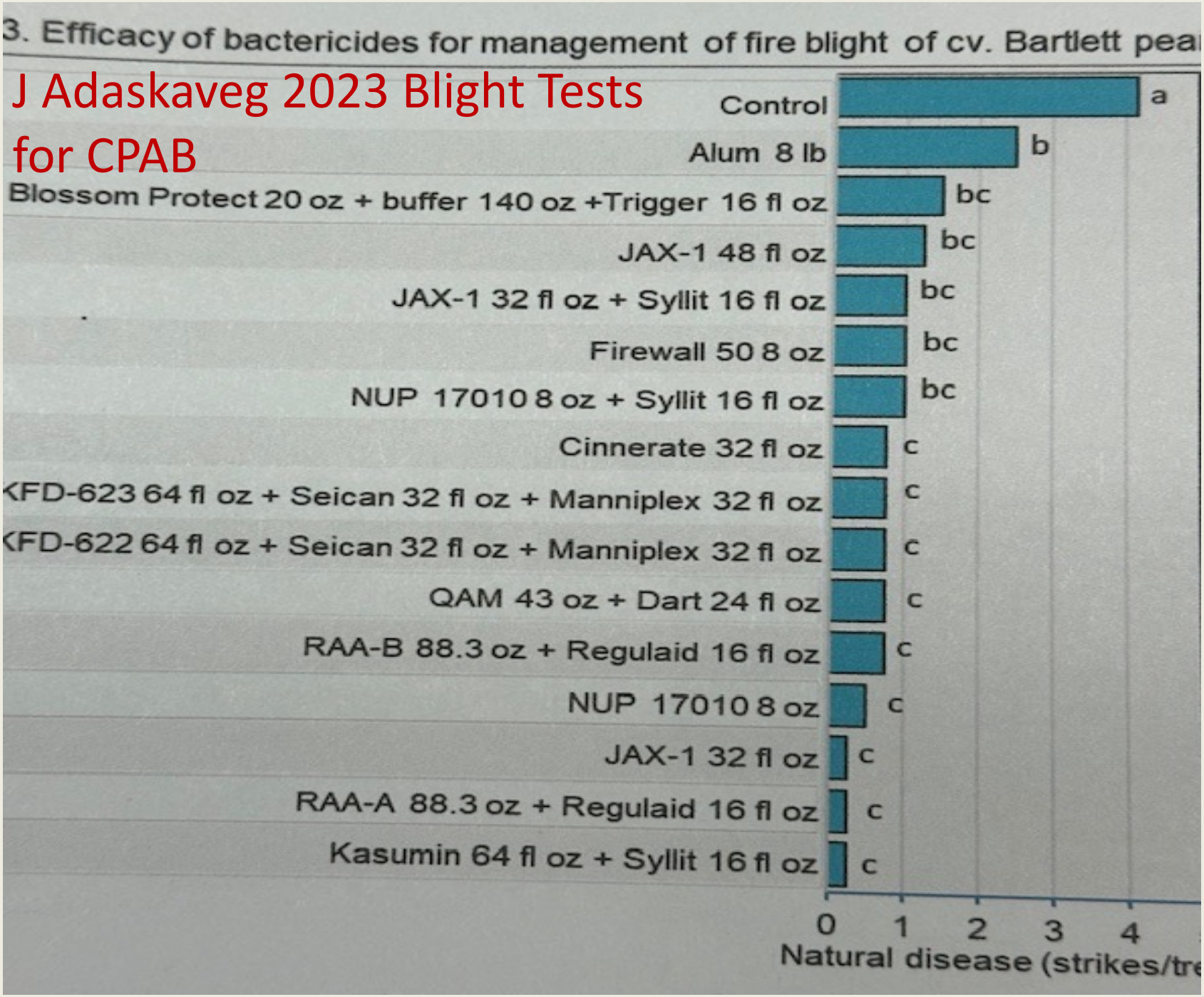
2- INCREASING RESISTANCE TO OXYTETRACYCLINE?

3- GREATER CONTRIBUTION FROM OTHER HOSTS OF *ERWINIA AMYLOVORA*?

Delayed Dormant Copper as a Sanitation Tool



Elkins, R.B. et al. 2015. Plant Disease 99:1147-1152.


3. Efficacy of bactericides for management of fire blight of cv. Bartlett pea
J Adaskaveg 2023 Blight Tests for CPAB
Control
Alum 8 lb
Blossom Protect 20 oz + buffer 140 oz +Trigger 16 fl oz
JAX-1 48 fl oz
JAX-1 32 fl oz + Syllit 16 fl oz
Firewall 50 8 oz
NUP 17010 8 oz + Syllit 16 fl oz
Cinnerate 32 fl oz
KFD-623 64 fl oz + Seican 32 fl oz + Manniplex 32 fl oz
KFD-622 64 fl oz + Seican 32 fl oz + Manniplex 32 fl oz
QAM 43 oz + Dart 24 fl oz
RAA-B 88.3 oz + Regulaid 16 fl oz
NUP 17010 8 oz
JAX-1 32 fl oz
RAA-A 88.3 oz + Regulaid 16 fl oz
Kasumin 64 fl oz + Syllit 16 fl oz
a
b
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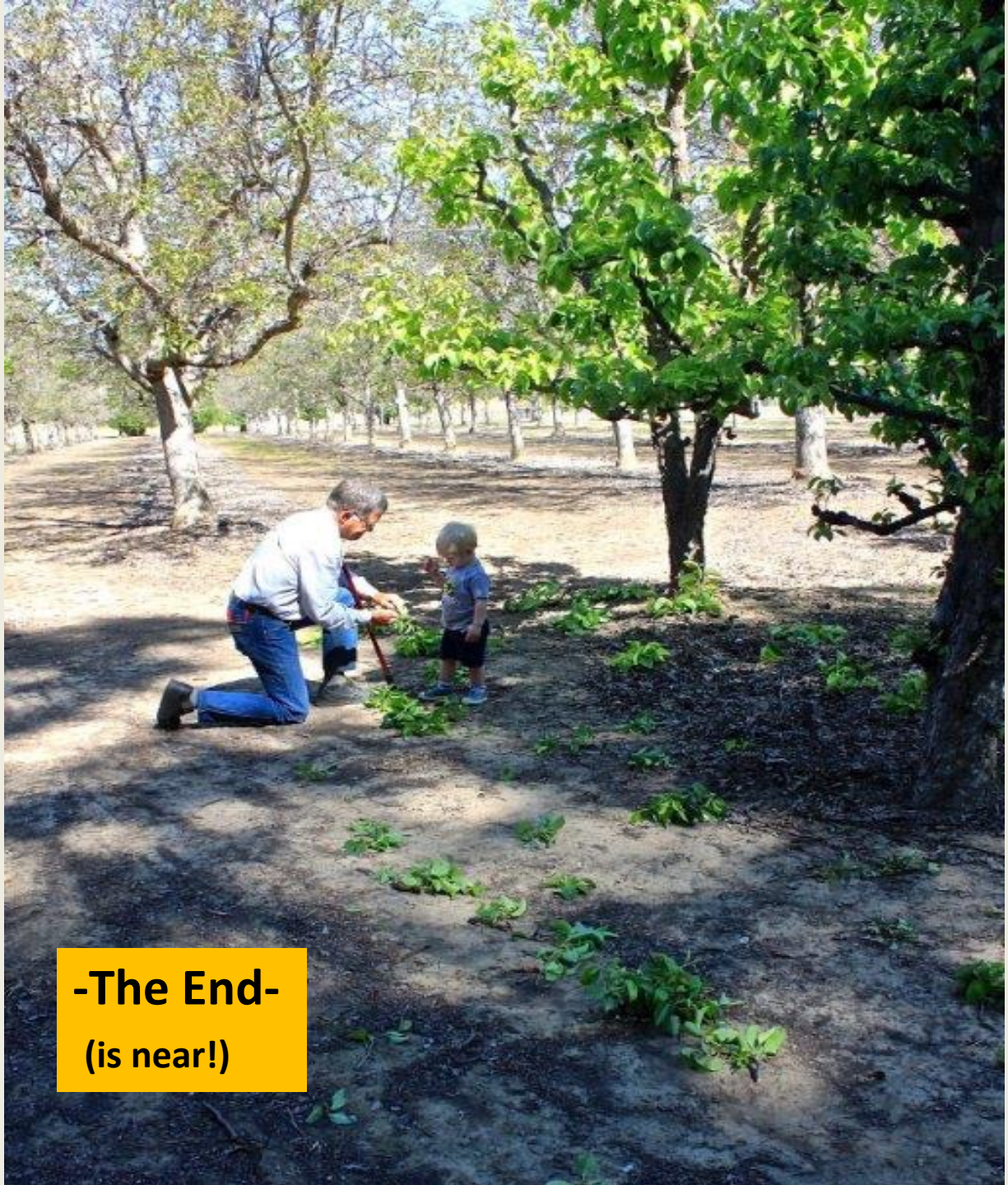
0
1
2
3
4
Natural disease (strikes/tre


-The End-
(is near!)