




# Successful Orchard Management



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Successful orchard  
management requires  
consistent cropping  
and trees that thrive!





## Blueberry Chill Model

To retrieve chill units from the blueberry chill model, choose a state, station, and season of interest.

Select a state:

Select a station:

Select a growing season:

GET DATA

This project is being done in collaboration with Bill Cline and Benny Bloodworth in the NCSU Department of Plant Pathology, and the North Carolina Agricultural Research Service (NCARS).

\* Model accumulates 1 point for average hourly temperatures below 45° F; 0.5 point for temperatures 45-55° F; -0.25 point from 55-85° F; -1 point for temperatures 85° F and above. The model begins when it has a positive balance that is not negated by warmer weather. Once 800+ chill hours have accumulated, points are no longer negated for temperatures 55° and above. The model ends February 28 at midnight.

Model developed by Dr. Mike Mainland, Professor Emeritus, NCSU Department of Horticultural Science.

\*\* Forecast is made from numerical weather model WRF, initialized at Z.

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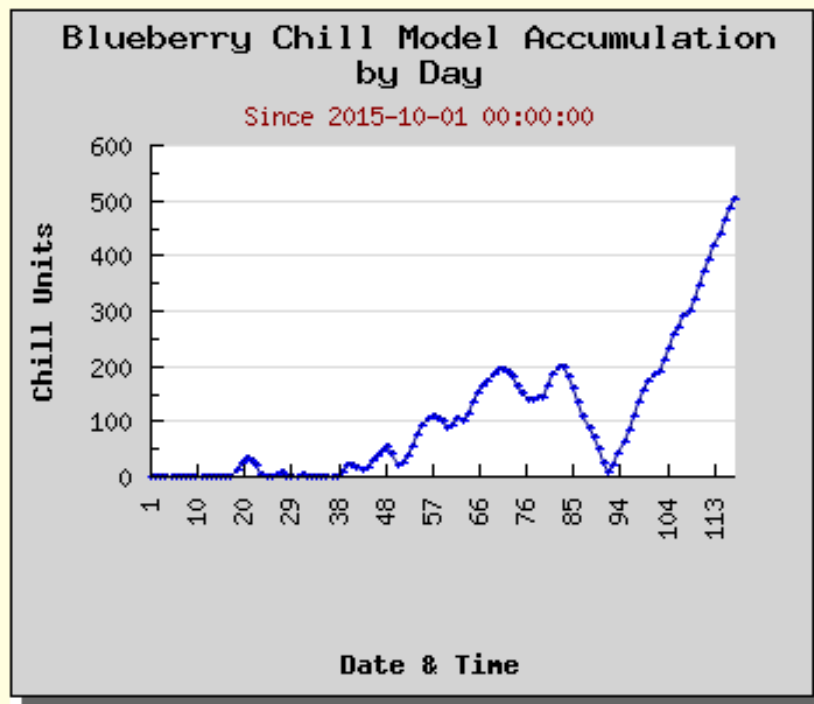


[http://www.nc-climate.ncsu.edu/cronos/blueberry/chill\\_model?state=NC](http://www.nc-climate.ncsu.edu/cronos/blueberry/chill_model?state=NC)

1/1/2017	642.75
1/2/2017	654.75
1/3/2017	666.75
1/4/2017	676.5
1/5/2017	700.5
1/6/2017	724.5
1/7/2017	748.5
1/8/2017	772.5
1/9/2017	796.5
1/10/2017	817.5
1/11/2017	828
1/12/2017	830
1/13/2017	834
1/14/2017	845.5
1/15/2017	854
1/16/2017	868
1/17/2017	874
1/18/2017	875
1/19/2017	886
1/20/2017	893
1/21/2017	899.5
1/22/2017	901

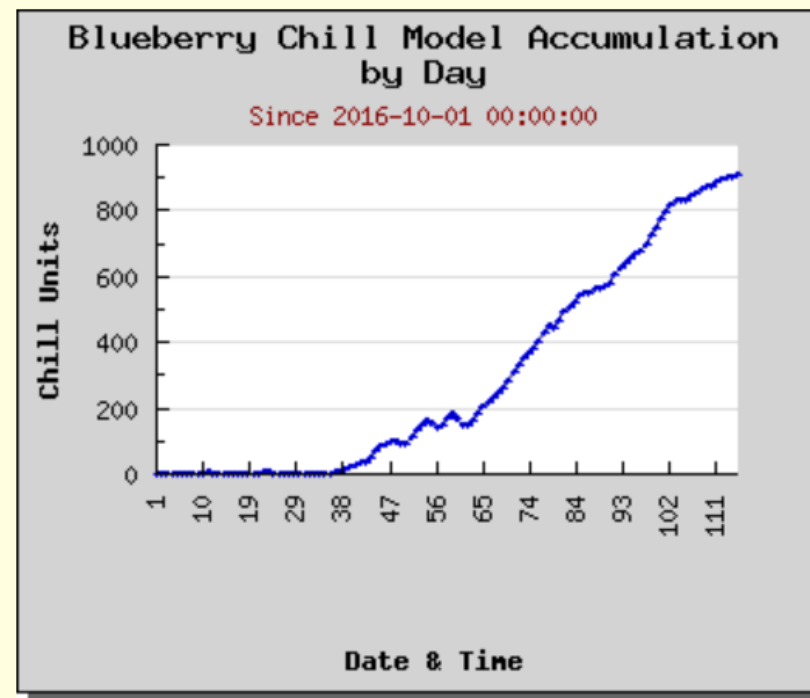
# January 2016

Chill model count = 503.5  
First non-zero value was 2015-11-08 05:00:00



# January 2017

Chill model count = 905  
First non-zero value was 2016-11-04 19:00:00



## Peach Growers Information

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### Peach Tree Videos

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### NC Peach Growers' Society (NCPGS)

NCPGS Website, NCPGS Events

### Departmental Extension Sites

Horticulture, Entomology, Plant Pathology

### Publications & Factsheets

## Posts



ALL POSTS

### Peach Grower Society annual meeting January 24, 2017

Join the NC Peach Growers Society for their annual meeting on Tuesday, January 24, 2017. The meeting will be ...

— 3 weeks ago

### It's quite a 'Contender': Peach Receives Prestigious Award



### NCPGS Offers Sponsorship to Annual Meeting

To honor Roger Galloway, a long time county agent who passed away in

### NC Peach Growers' Society 2016 Annual Meeting

Want peaches? Peach growers both new and experienced are invited to attend the 2016 NC Peach Growers' Society Annual ...

— 1 year ago

### Peach Growers to Receive Clarfication on Assessment



## Home Gardeners

Educational Resources, Peach Tree Videos

## Production & Management

Production, Pest Management, Marketing ...

## Weather & Climate

## NC Peach Growers' Society (NCPGS)

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## Now on Twitter

## ExtensionVoices

A Twitter list by  
[@ExtensionVoices](#)

Tweets from NC Cooperative  
Extension and colleagues,  
nationwide.



**Jeanine Davis**  
[@JeanineNCSU](#)

What can you spray on your  
bons to control diseases &

[Home](#) » [Pest Management](#)

# Pest Management Resources

[NC Peach and Nectarine Disease and Pest Management Guide 2017](#)

The NC Peach and Nectarine Disease and Pest Management Guide gives pesticide options for pests and diseases, as well as guidance on the critical spray windows that should be followed for optimal management of pests and diseases.

[Weed Management Considerations for Peach Orchards](#) (PDF)

Research has shown that weed competition will reduce part of the Peach Handbook, covers orchard floor management classification and herbicide considerations.

[North Carolina Agricultural Chemicals Manual](#)

This manual provides growers, Extension personnel, researchers and professionals with the most up-to-date information available on application, and safe and proper use of agricultural chemicals, updated as changes in recommendations occur through

[Crop Data Management Systems: Labels and MSDS](#)

An agricultural database of crop protection product labels and sheets (MSDS). Search by manufacturer or brand name

[Southeastern Peach, Nectarine and Plum Pest Manager](#)

Pest problems vary across the Southeast. This guide, developed by specialists from ten southeastern land-grant universities, covers multiple states and production areas.

[For Additional Peach Disease Information Visit the Plant](#)

## 2017 North Carolina Peach and Nectarine Disease and Pest Management Guide



# 2009 NC-140 Peach Rootstock Trial

- Evaluated 18 rootstocks with 'Redhaven' as the cultivar
- Soil was fumigated with Telone II at 30 gals/acre on a 12 ft strip
- Trees planted at 16' x 20' on 3/10/2009
- Micro-sprinkler irrigation installed April, 2010
- Dan 2001 Micro-sprinkler (23 ft diameter, 18.5 gals/hr)





Viking – Peach x Almond x Flowering Plum, CA

Atlas – Peach x Almond x Flowering Plum, CA

Bright's Hybrid 5 – Almond x Peach, CA

Mirobac - Myrobolan Plum x Almond, Spain

Guardian® (3-17-7) – Peach, USDA Byron, GA and Clemson University, SC

Lovell – Peach, 1882 CA drying peach

KV010123 – Peach, USDA, Kearneysville, WV

KV010127 - Peach, USDA, Kearneysville, WV

Krymsk®86 (Kuban 86) – Myrobolan Plum x Peach, Russia

Empyrean®2 (Penta) - European Plum, Italy

Imperial California – European plum, Italy

HBOK 10 – Peach, University of CA

HBOK 32 - Peach, University of CA

*Prunus americana* selection - American Plum, MN

Fortuna – Plum x Peach, Russia

Krymsk®1 (VVA-1) – Nanking Cherry x Myrobolan Plum, Russia

Controller 5 (K146-43) – Japanese Plum x Peach, CA

# 2009 NC-140 Peach Rootstock Trial - 2015

Rootstock	2015 Survival (%)	2015 TCSA (cm <sup>2</sup> ) (3/2015)	2015 Yield (kg)	Cumulative Yield (2011-15) (kg)	Yield Efficiency
Atlas	100 a*	111.2 a	20.7 abc	132.8 a	0.194 ab
Bright's Hybrid 5	75 ab	121.9 a	27.6 abc	120.6 ab	0.2ab
Controller 5(K146-43)	13 cd	--	0	--	-
Empyrean 2(Penta)	13 cd	--	--	--	--
Fortuna	50 abcd	44.4 c	--	11.0 c	--
Guardian	100 a	105.3 a	33.8 a	141.2 a	0.330 a
HBOK 10 (Controller 8)	100 a	48.4 c	15.4 cd	66.1 bc	0.344 a
HBOK 32 (Controller 7)	88 a	48.0 c	16.5 bcd	75.1 bc	0.347 a
Imperial California	0 d	--	--	--	-
Krymsk 1 (VVA-1)	25 bcd	33.3 c	--	--	-
Krymsk 86 (Kuban 86)	50 abcd	87.4 ab	19.9 abcd	124.5 ab	0.244 ab
KVO 10123	100 a	91.8 a	26.5 abc	120.4 ab	0.294 a
KVO 10127	100 a	91.1 a	28.7 ab	123.6 ab	0.322 a
Lovell	75 ab	111.1 a	34.1 a	147.4 a	0.310 a
Mirobac	13 cd	--	--	--	--
Prunus americana	63 abc	52.9 bc	4.1 d	34.0 c	0.070 b
Viking	100 a	105.7 a	30.5 a	149.8 a	0.321 a
TRT Prob.	≤0.0001	≤0.0001	≤0.0001	≤0.0001	≤0.0001

# 2009 NC-140 Peach Rootstock Trial - 2016



<u>Rootstock</u>	<u>TCSA (cm<sup>2</sup>)</u>	<u>Cumulative Yield (kg)</u>
Bright's Hybrid 5	121.9 a	120.6 ab
Atlas	111.2 a	132.8 a
Lovell	111.1 a	147.4 a
Viking	105.7 a	149.8 a
Guardian®	105.3 a	141.2 a
KV010123	91.8 a	120.4 ab
KV010127	91.1 a	123.6 ab
HBOK 10 **	48.4 c	66.1 bc ((143.9/acre???)
HBOK 32 **	48.0 c	75.1 bc



Disease ratings of 'Redhaven' peach trees grown on 17 rootstocks in Jackson Springs, NC. Tree and bloom ratings were conducted on a scale from 0-5, where 0 is alive and 5 is dead.

Rootstock	Bacterial Canker Die- Back 2010 (0-5)	Blossom Blast 2011 (0-5)	Trunk Water Soaked Area Rating 2012 (1-3)
Atlas <sup>TM</sup>	0.25 ab	1.50 b	0.13 b
Bright's Hybrid #5	1.25 ab	2.13 b	0.38 b
Controller <sup>TM</sup> 5	1.13 ab	2.75 ab	2.25 a
Penta	0 b	1.38 b	0.50 b
Fortuna	1.63 ab	1.88 b	0 b
Guardian®	0 b	1.00 b	0 b
Controller <sup>TM</sup> 8	0.13 b	1.00 b	0 b
Controller <sup>TM</sup> 7	0 b	1.00 b	0 b
Imperial California	0 b	1.63 b	2.63 a
Krymuk® 1	2.38 a	4.13 a	0.06 b
Krymuk® 86	0 b	1.13 b	0 b
KV010123	0.13 b	1.00 b	0 b
KV010127	0 b	1.00 b	0 b
Lovell	0.63 ab	1.50 b	0 b
Replantac®	0 b	1.25 b	0.38 b
Prunus americana	1.38 ab	2.13 b	0 b
Viking <sup>TM</sup>	0.63 ab	1.00 b	0 b
TRT Prob.	0.0014	<.0001	<.0001



## Conclusions after 8 years:

- Under the North Carolina sandhills environment, 'Redhaven' scions on the rootstocks of **Controller™ 5, Penta, Fortuna, Imperial California, Krymsk® 1, Krymsk® 86, and Replantpac®** had greater than 50% mortality associated with bacterial canker compared to 100% survival for trees on Guardian®, the commercial standard.
- There are **rootstock differences in sensitivity to expressions of bacterial canker**, such as terminal die-back and blossom blast, with the greatest sensitivity for trees grown on Krymsk® 1.
- Trees grown on Imperial California and Controller™ 5 had the greatest amount of trunk water soaked area in 2012 which may have been a result of many of the trees on those rootstocks collapsing after bloom in 2012.
- Trees grown on Fortuna also potentially had incompatibility issues with premature leaf discoloration and abscission in the autumn and a significant overgrowth of the scion.

# 2017 Peach Rootstock Experiment

Will be planted in Winter 2017

Looking for rootstocks that are size-controlling AND resistant to bacterial canker

- Lovell
- Halford
- Guardian
- HBOK 10
- HBOK 32
- MP-29- ?
- Sharpe - ?



A perspective view of a peach orchard. Rows of mature peach trees with dense green foliage line a central grassy path. The path is flanked by rows of trees, creating a sense of depth. The ground is covered with green grass and some fallen fruit.

# **Orchard Floor Management Can Affect Many Aspects of a Peach Orchard**





# Why Use a Vegetative Cover?

- Erosion control
  - Wind and water
- Support equipment movement under wet conditions
- Moderate Spring temperature fluctuations
- Maintain soil structure
- Increase moisture infiltration
- Encourage nutrient recycling

# Qualities of an Acceptable Ground Cover?

- Minimizes erosion
- Minimal competition with tree
- Supports equipment movement
- Does not interfere with labor
- Does not interfere with pollination
- Does not harbor pests
  - Insect, disease, vertebrate



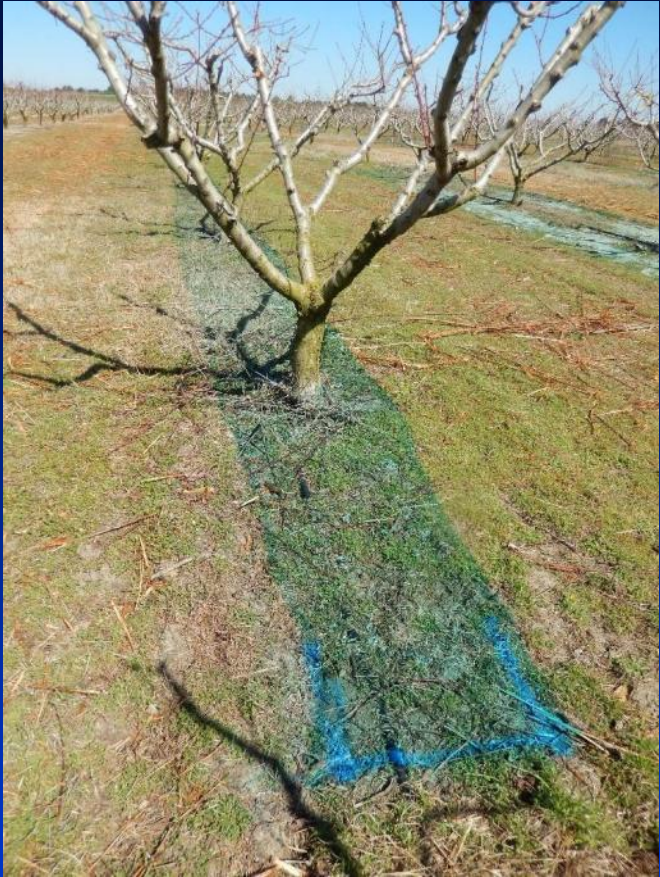




# 2006 Peach Groundcover Experiment

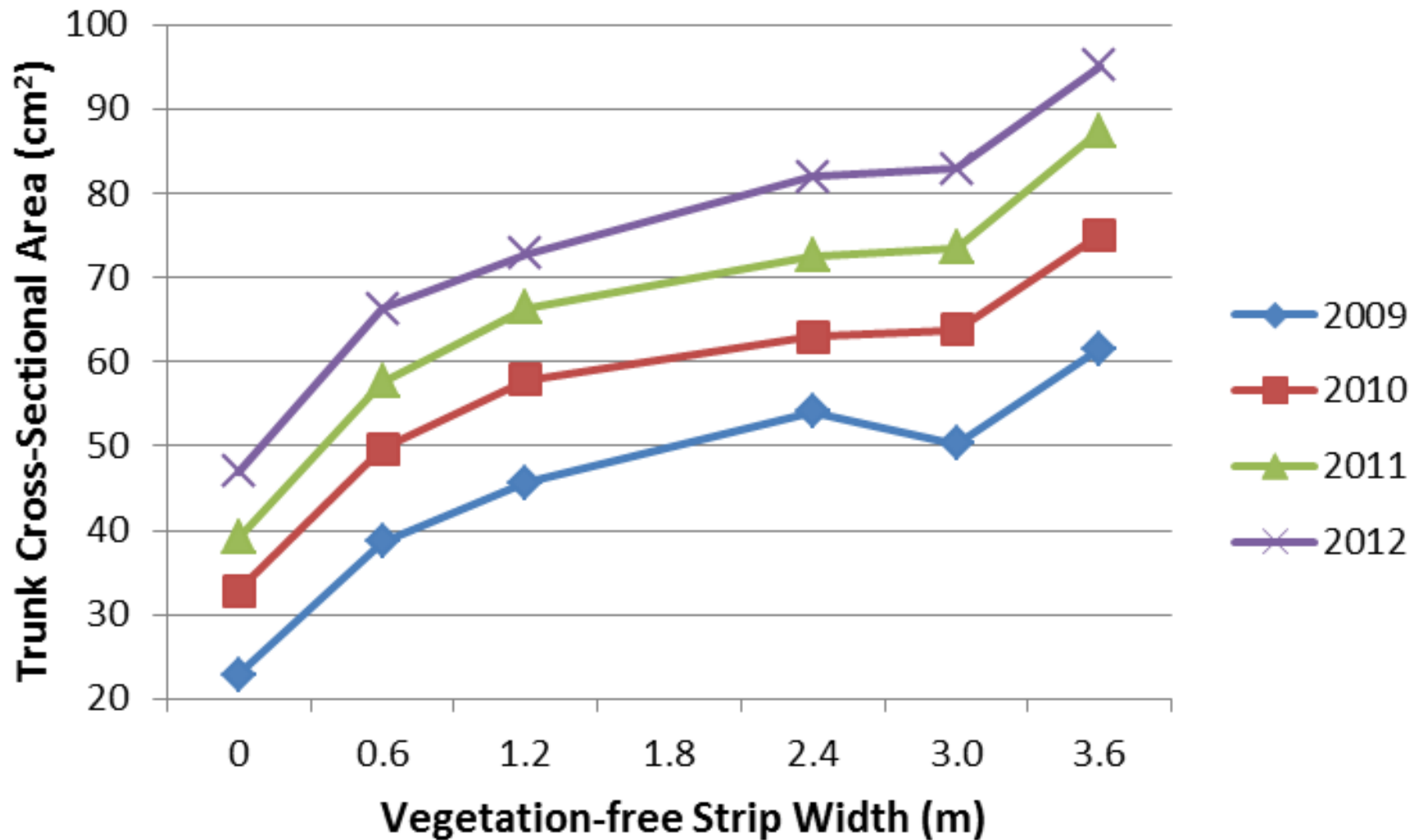








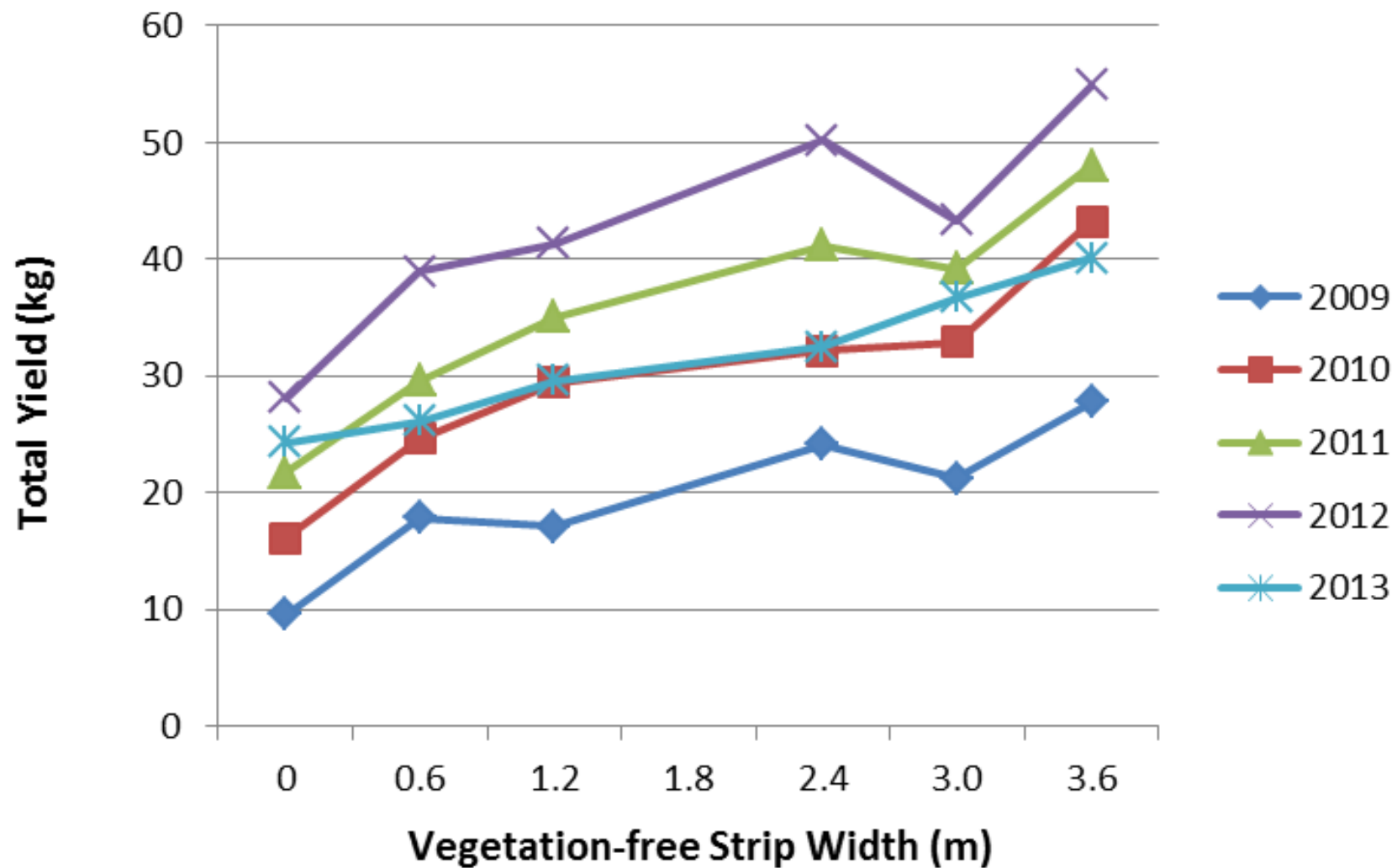
## Effect of Vegetation-free Strip Width on TCSA Years 4-7



# Harvest



# Effect of Vegetation-free Strip Width on Yield Years 4-8







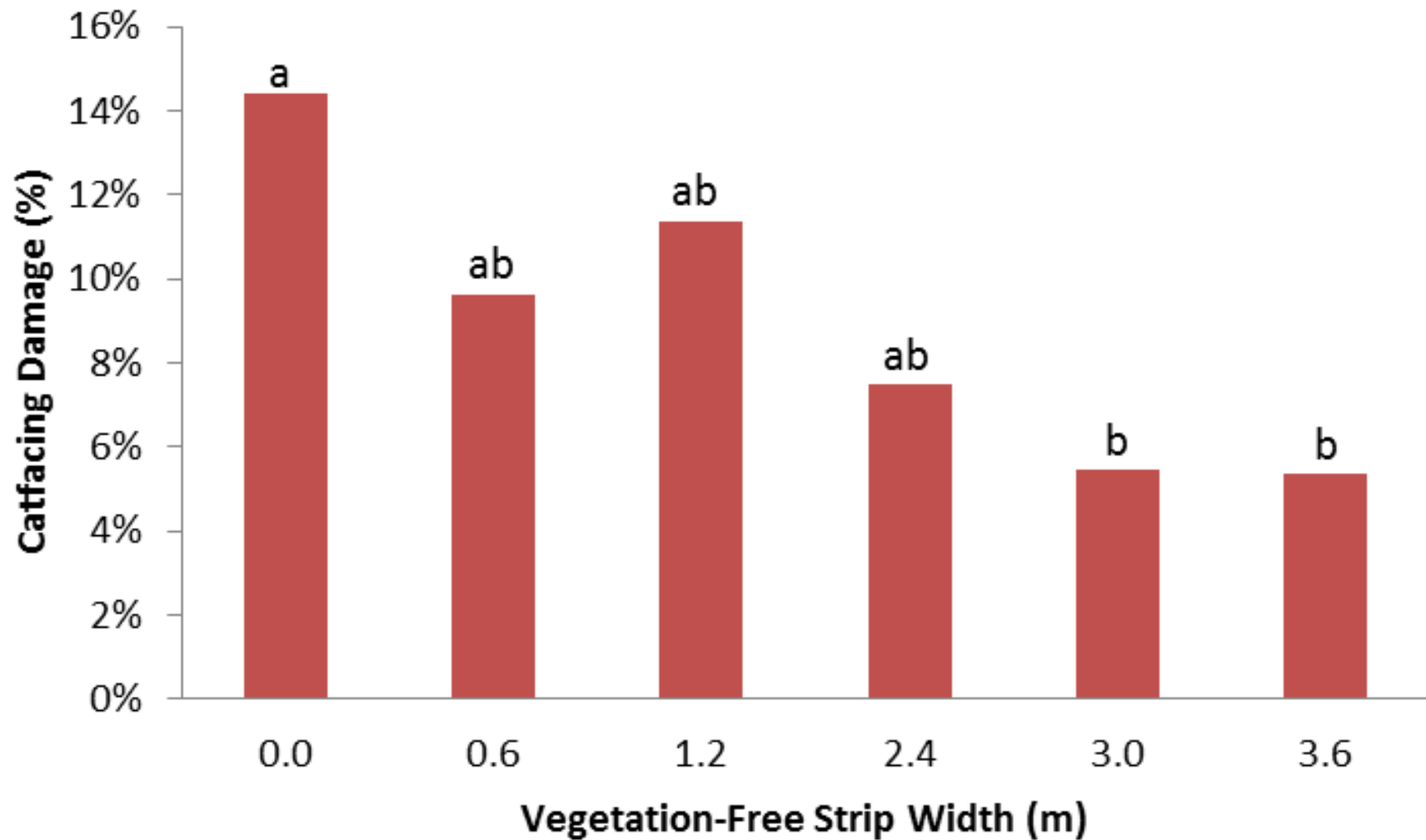




# Rating Catfacing Damage



# Catfacing Results, 2009





**Bahia**



**Bare Ground**



**Centipede**



**Nimblewill**





# Wintergreen Fine Fescue





# K-31 Tall Fescue



# Ground Cover Management

- Annual maintenance of herbicide strip
  - Drip line minimum
- Vegetative grass cover in drive alley
- Eliminate winter annuals in cover
- Suppress height of grass cover
  - Mow or chemically suppress







# Prunus Stem Pitting



Premature fall color



Pits and grooves  
in wood surface



Thick, spongy bark





**Thank You!**







