

Agricultural Decision Tools from the Cornell Climate Smart Farming (CSF) Program and the Network for Environment and Weather Applications (NEWA)

Dan Olmstead – NEWA

Jonathan Lambert – Cornell CSF

USDA Conservation Webinar

May 4th, 2016



NEWA

Network for Environment
and Weather Applications

newa.cornell.edu

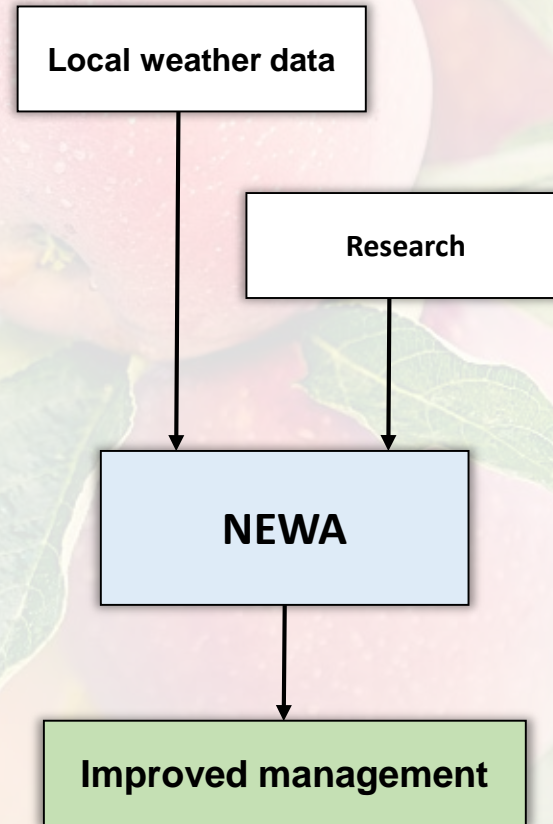
Dan Olmstead, Extension Associate
NEWA Coordinator, New York State IPM Program
Cornell Cooperative Extension

dlo6@cornell.edu



What is NEWA?

- Online grower tools and resources
- Weather station network
- Near real-time weather data
- Local (vs. regional) weather information



History

- Circa 1996
 - NYS IPM Program
 - Curt Petzoldt (founder)
 - Juliet Carroll (NEWA Leader)
 - Tim Weigle (NYSIPM, Grape Extension area educator)
- Manual downloads, fax, modem

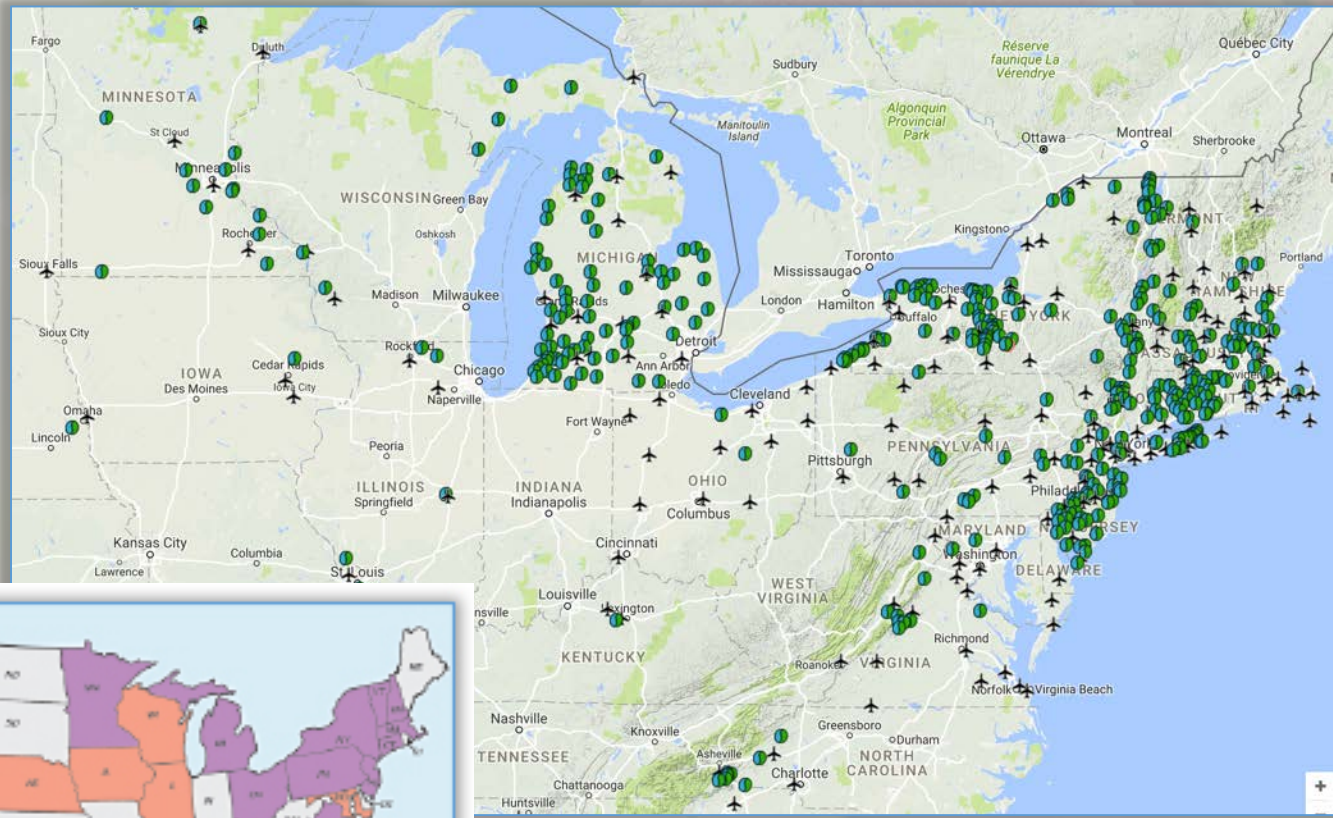


NEWA now

- Rainwise stations
- State mesonets
- NWS airport locations



2017



Collaboration

- Land grant universities
- Grower organizations
- Northeast Regional Climate Center

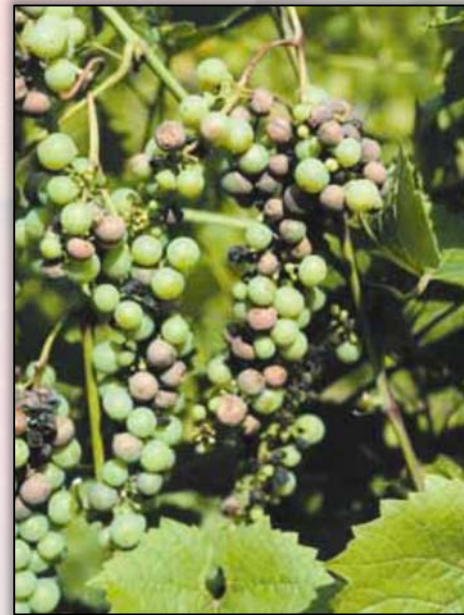


What does NEWA provide?

- Weather data products
- Insect pest resources
- Plant disease resources





Clemson University




W Wilcox, Cornell University

The NEWA website

 **New York State Integrated Pest Management Program**
 **NEWA Network for Environment and Weather Applications**

Search NEWA website
Enter Search...

Weather Data **Pest Forecasts** **Station Pages** **Crop Management** **Crop Pages** **About Weather Stations**

National Weather
 Enter "City, State"
City, ST

About NEWA
[About NEWA](#)
[Contact Us](#)
[NEWA Press Release](#)
[Vision Statement](#)
[You're NEWA Blog](#)

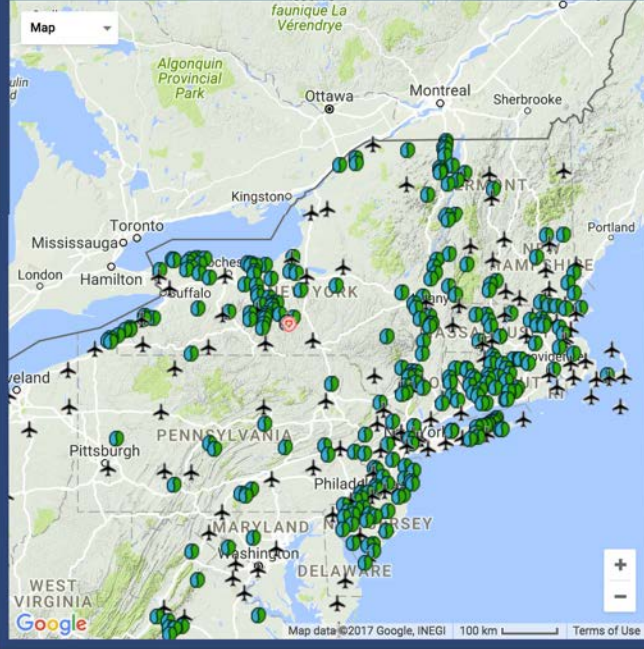
Other Weather Data Sources
[6-10 Day Outlook \(NWS\)](#)
[National Doppler Radar Sites](#)
[National Weather Service](#)
[NWS Graphical Forecasts](#)
[NWS State Data](#)
[Weather Activity Planner](#)
[Weekly Weather & Crop Bulletin \(USDA\)](#)
[About Other Weather Data Sources](#)

Other Pest Forecast Tools
[Cucurbit Downy Mildew Forecasting](#)
[Fusarium Head Blight Prediction Center](#)
[PA-PIPE Weed Models](#)
[Soybean Rust ipmPIPE](#)
[About Other Pest Forecast Tools](#)

Apple Diseases
Apple Insects
Apple Leaf Wetness Events
Grape Forecast Models
Cabbage Maggot
Onion Disease Models
Onion Maggot
Late Blight DSS
Potato Disease Models
Tomato Disease Models
Sw Corn Stewart's Wilt Map
Turfgrass Diseases
Other Pest Forecast Tools

Welcome to the NEWA Home Page

Click on a map marker to go to the weather station's home page.



Map data ©2017 Google, INEGI 100 km [Terms of Use](#)

NEWA station page

Weather Data Quick Links

Past 12 months shown. Current month highlighted.

Daily Summary
[Jun](#) | [Jul](#) | [Aug](#) | [Sep](#) | [Oct](#) | [Nov](#)
[Dec](#) | [Jan](#) | [Feb](#) | [Mar](#) | [Apr](#) | [May](#)


Hourly Data
[Jun](#) | [Jul](#) | [Aug](#) | [Sep](#) | [Oct](#) | [Nov](#)
[Dec](#) | [Jan](#) | [Feb](#) | [Mar](#) | [Apr](#) | [May](#)

Growing Degree Days (Base 50F)
[Jun](#) | [Jul](#) | [Aug](#) | [Sep](#) | [Oct](#) | [Nov](#)
[Dec](#) | [Jan](#) | [Feb](#) | [Mar](#) | [Apr](#) | [May](#)

Growing Degree Days (Base 50F BE)
[Jun](#) | [Jul](#) | [Aug](#) | [Sep](#) | [Oct](#) | [Nov](#)
[Dec](#) | [Jan](#) | [Feb](#) | [Mar](#) | [Apr](#) | [May](#)

Growing Degree Days (Base 86/50F)
[Jun](#) | [Jul](#) | [Aug](#) | [Sep](#) | [Oct](#) | [Nov](#)
[Dec](#) | [Jan](#) | [Feb](#) | [Mar](#) | [Apr](#) | [May](#)

National Weather Service Forecast

 Enter "City, ST" or "zip code"
City,ST

[This Station's 7-Day Forecast](#)

[National Doppler Radar Sites](#)

Helpful Links

How to Use and Interpret Pest Forecasts
Select a link from list...

Pest Management Guidelines
Select a link from list...

University Cooperative Extension Programs
Select a link from list...

About NEWA

[About NEWA](#)

Albion, NY Weather Station Page


Station Page forecasts use [default biofix dates](#) and provide results for the current download date. For prior years, other biofix dates, locations and models, choose from [Pest Forecasts](#) or [Crop Management](#) on the main menu.

Albion Pest Forecasts

Apple Scab	Plum Curculio	Alfalfa Weevil
Fire Blight	Obliquebanded Leafroller	Cabbage Maggot
Sooty Blotch/Flyspeck	Apple Maggot	Onion Maggot
Leaf Wetness Events	Grape Diseases	Onion Diseases
Spotted Tentiform Leafminer	Grapevine Downy Mildew	Potato Diseases
Oriental Fruit Moth	Grape Berry Moth	Tomato Diseases
Codling Moth		

Station Location

Lat/Lon: 43.28/-78.13
Elevation: 430 ft.



Google

Last Download

5/2/2017 10 PM

Station Sensors

- Temperature
- Precipitation
- Solar radiation
- Wind speed
- Wind direction
- Relative Humidity
- Soil temperature
- Soil moisture

Statewide and Regional Pest Forecasts

[Sweet Corn Stewart's Wilt Forecast](#) [Potato/Tomato Late Blight DSS](#)
[Sweet Corn Stewart's Wilt Map](#)
[Cucurbit Downy Mildew](#)
[Soybean Rust](#)
[Turfgrass Diseases](#)

Tools and Resources

- Fruit production
 - Apples
 - Grapes
- Vegetable production
 - Onion
 - Cabbage
- Weather products
 - Degree day resources



Other resources

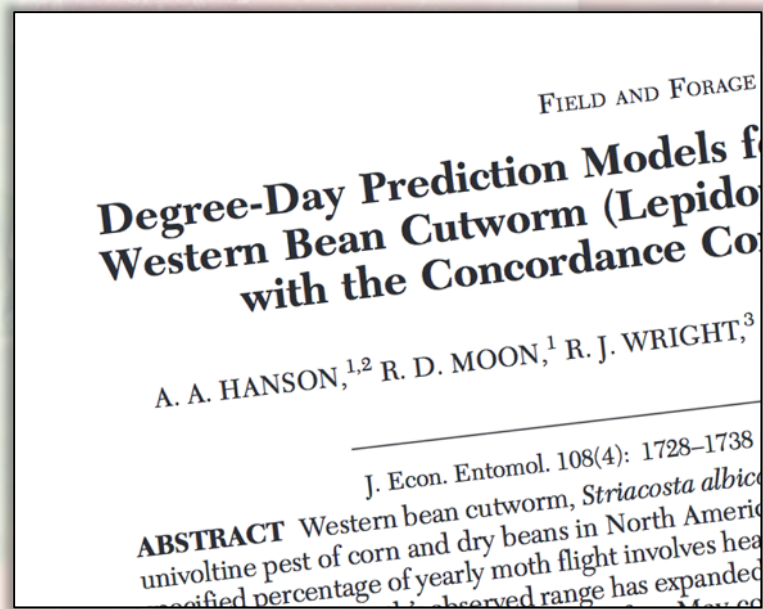
- Weather products

- Hourly summary
- Daily summary
- Degree day tables
- Degree day calculator
 - Custom start/end
 - Different base values
 - (°C) 4, 14.3
 - (°F) 32, 39, 40, 43, 43BE, 45, 48, 50, 50BE, 55, 44.14, 86/50

Weather Data	Pest
All Weather Data	
Hourly Data	
Daily Summary	
Degree Days	
Degree Day Calculator	
Degree Day Forecasts - NY	
Degree Day Forecasts - MA	
Degree Day Forecasts - CT	
Northeast Regional Climate Center (NRCC)	
NRCC Data Services	
New Jersey Weather	
Other Weather Sources	

Adding new tools

- Growers
 - Real world problems
- Extension
 - Education
 - Outreach
- Researchers
 - Entomology
 - Plant pathology
 - Horticulture



Looking to the future

- 8 berry tools
- 100+ ornamental tools
- Vegetable tools
 - Cercopora in beets
 - Western bean cutworm
- Field crops
 - Data support
- Forestry and natural resources
 - Hemlock woolly adelgid?
 - Emerald ash borer?
 - Asian longhorn beetle?
 - Spotted wing drosophila?
 - Brown marmorated stink bug?
 - Black swallow wort?
 - Giant hogweed?

Climate Smart Farming: Using Climate-Based Decision Tools to Prepare for Climate Variability and Change

Jonathan Lambert

Cornell Institute for Climate Smart Solutions
Climate Smart Farming Program

USDA Conservation Webinar
May 4th, 2017

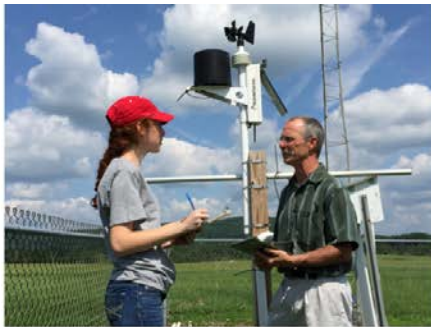


Cornell University





- Formed in 2013
- Working toward resilient and sustainable agricultural, ecological, and social systems in the face of a rapidly changing climate
- Launched Cornell Climate Smart Farming (CSF) Program and CSF Extension Team in 2015



Research



Education/Outreach



Partnerships

Climate Smart Farming

Program Goals

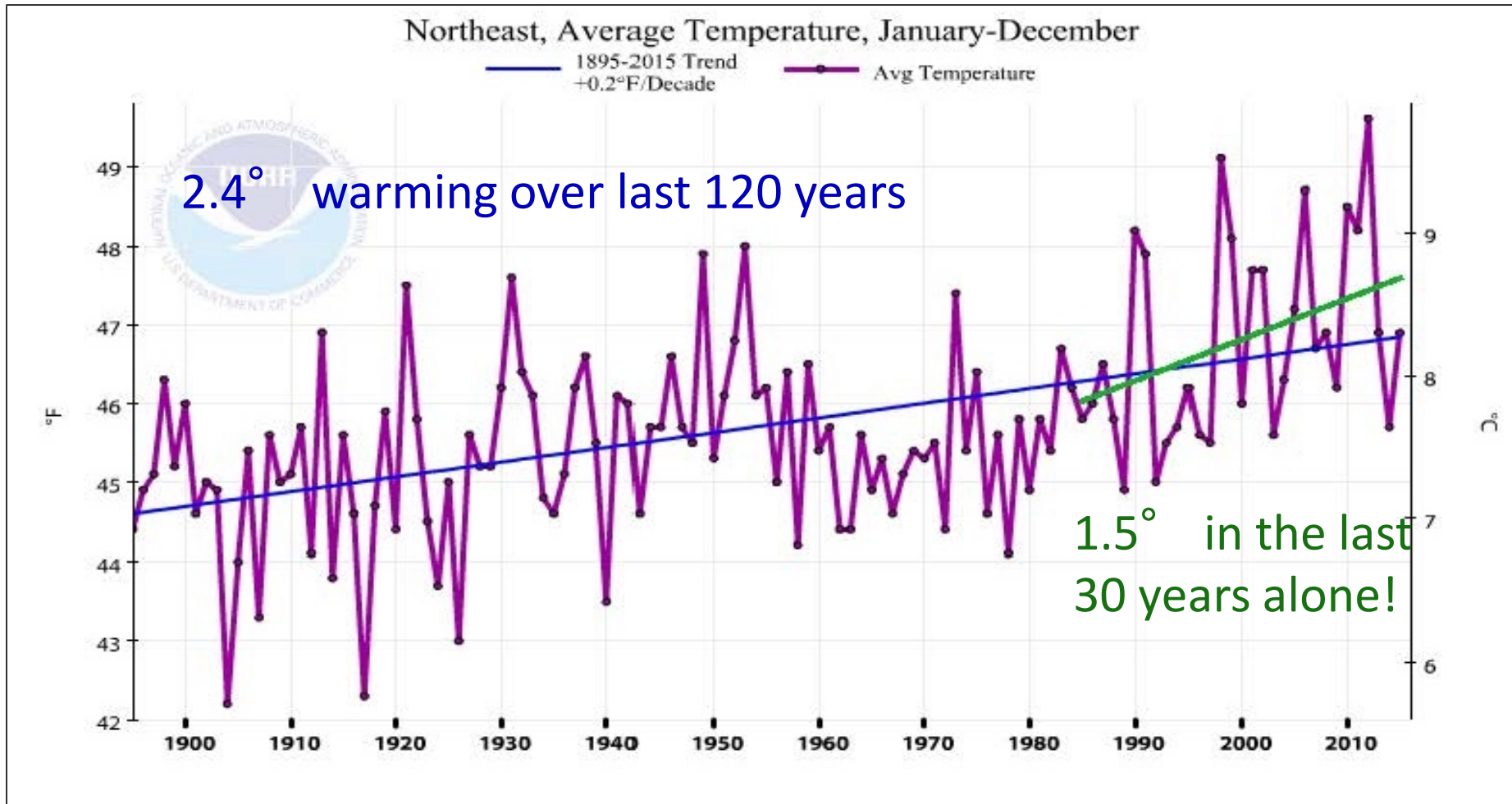


- Increase farm resiliency to extreme weather events, climate variability and change, through assessing risk & adopting BMPs (**adaptation**).
- Increase energy efficiency and renewable energy capacity to reduce GHG emissions and operating costs, and utilize BMPs (**mitigation**).
- Sustainably **increase agricultural productivity** and farming incomes, to contribute to regional & global **food security**.

Observed Climate Data and Impacts

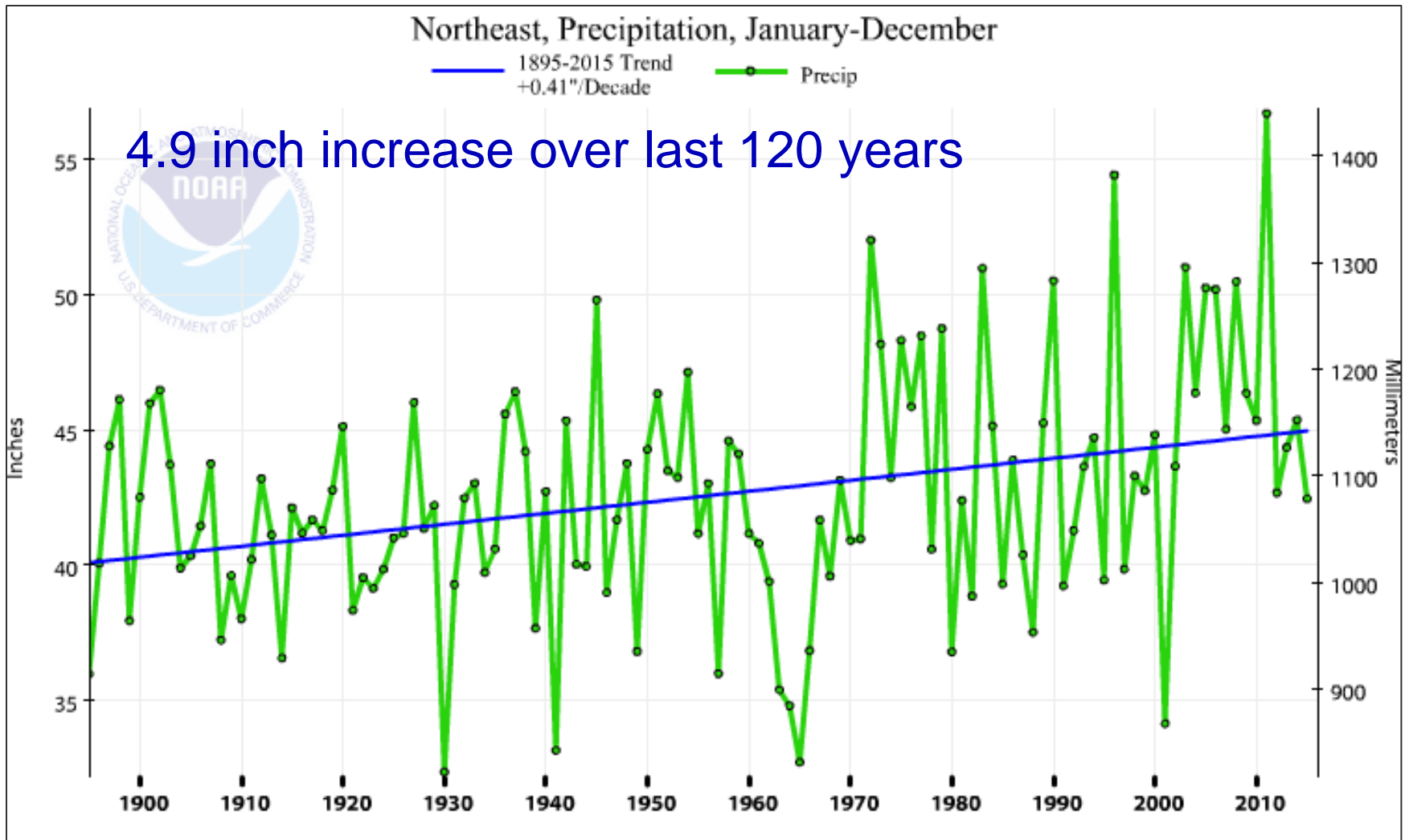


NE Temperature Trend



Source: NOAA NCDC. Data 1895-2015.

NE Precipitation Trend

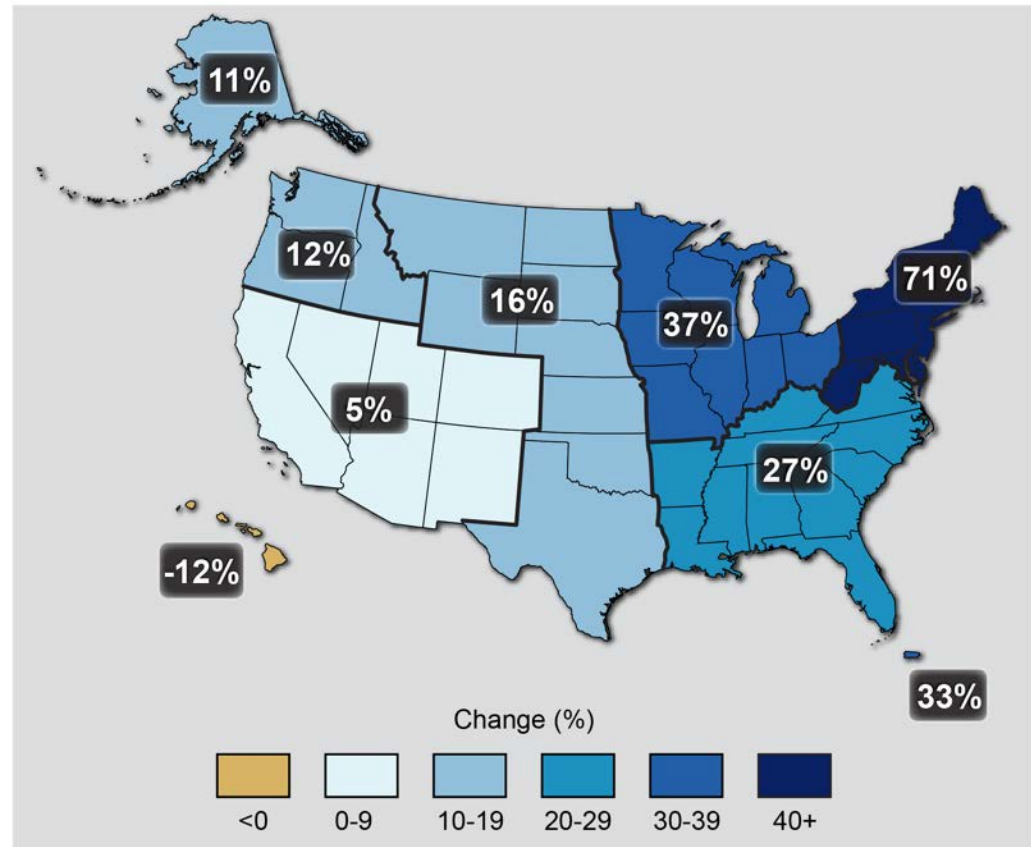


Source: NOAA NCDC. Data 1895-2015.

Observed Trends in 1-day Very Heavy Precipitation (1958 to 2012)

The Northeast has had the greatest increase in heavy precipitation in the United States.

Observed Change in Very Heavy Precipitation

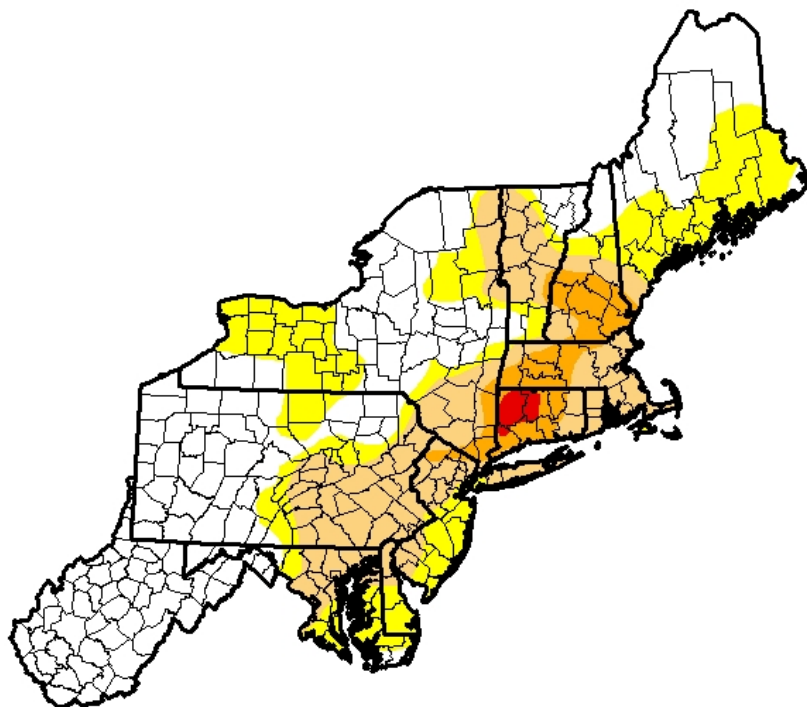


Source: NOAA/NCDC

Short-Term Drought

U.S. Drought Monitor Northeast

February 21, 2017
(Released Thursday, Feb. 23, 2017)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	48.49	51.51	28.01	6.53	0.70	0.00
Last Week <i>2/14/2017</i>	48.78	51.22	28.17	6.53	0.70	0.00
3 Months Ago <i>11/22/2016</i>	21.60	78.40	55.03	20.87	3.40	0.00
Start of Calendar Year <i>1/3/2017</i>	30.54	69.46	43.67	11.68	1.39	0.00
Start of Water Year <i>9/27/2016</i>	21.72	78.28	40.32	19.59	6.68	0.00
One Year Ago <i>2/23/2016</i>	83.96	16.04	2.33	0.00	0.00	0.00

Intensity:

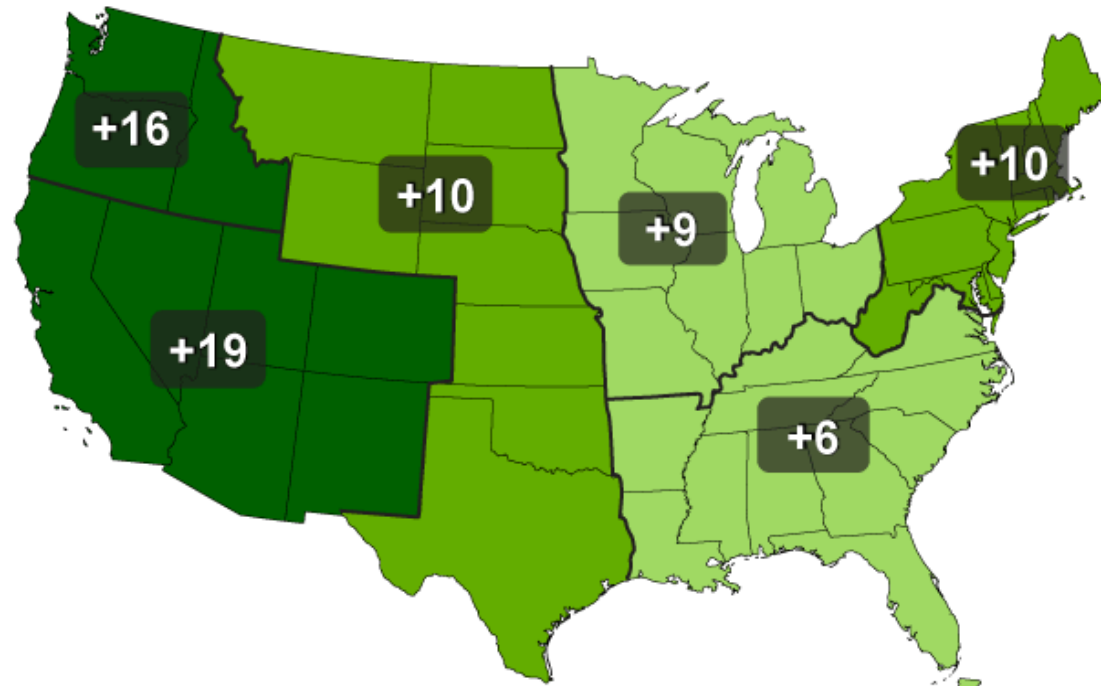
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

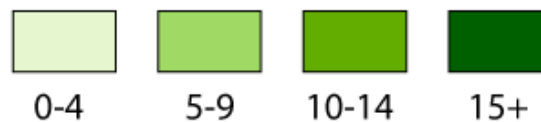
Author:
Richard Heim
NCEI/NOAA



Observed Increase in Frost-Free Season Length

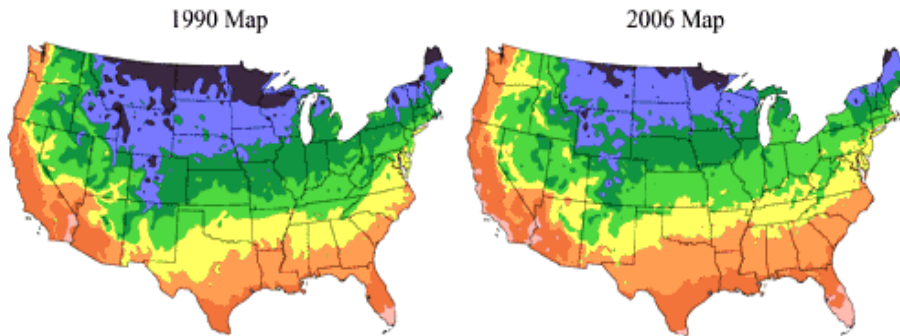


Change in Annual Number of Days



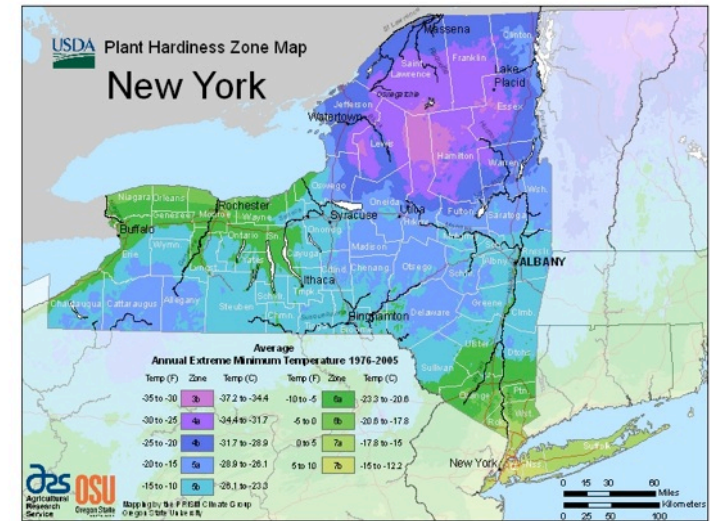
The period between the last occurrence of 32° F in the spring and the first occurrence of 32° F in the fall, has increased in each U.S. region during 1991-2012 relative to 1901-1960. NOAA/NCDC / CICS-NC.

Changes in Plant Hardiness Zones



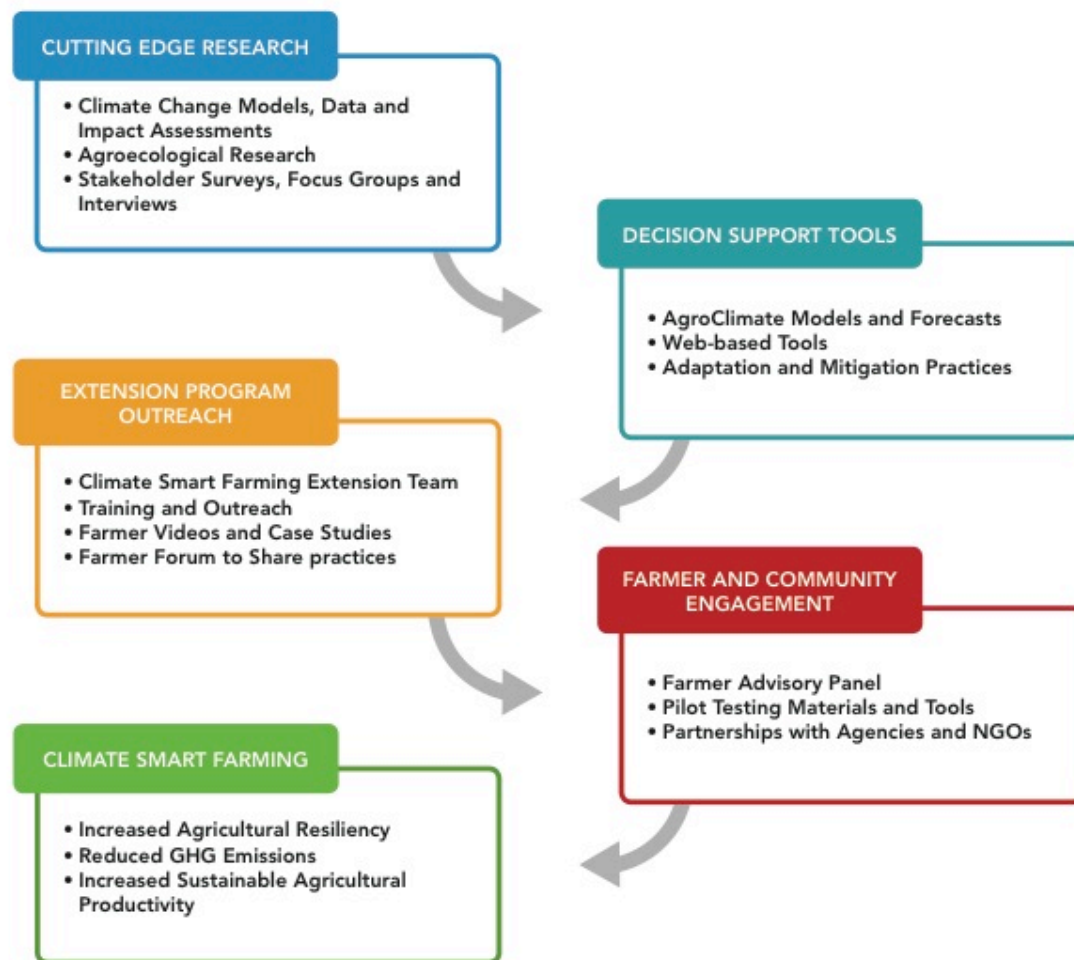
After USDA Plant Hardiness Zone Map, USDA Miscellaneous Publication No. 1475, Issued January 1990.

National Arbor Day Foundation Plant Hardiness Zone Map published in 2006.



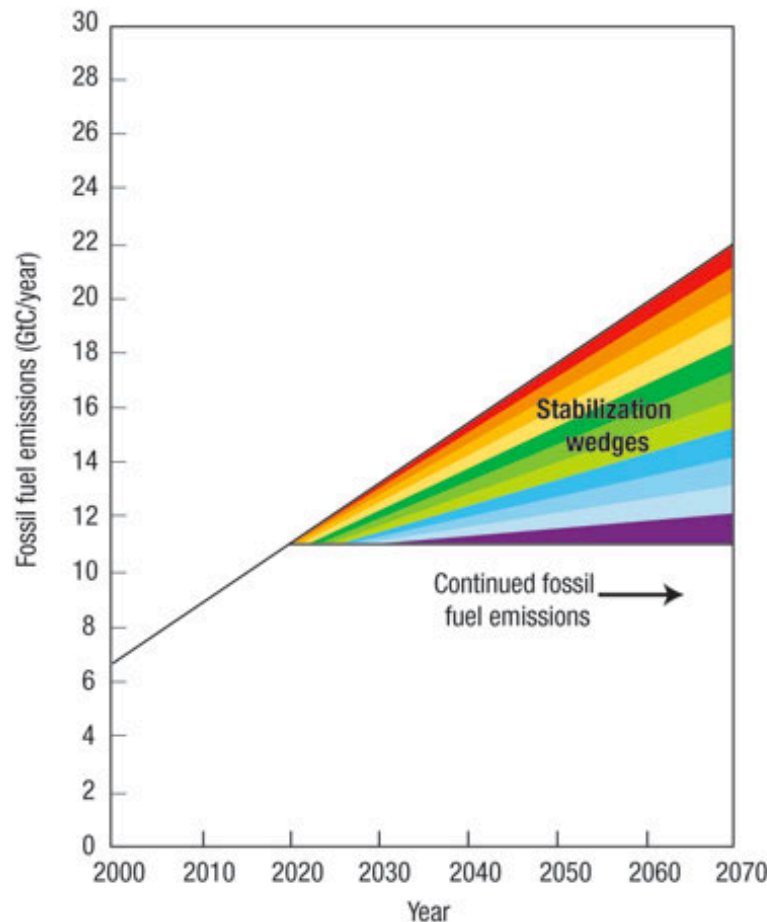
New USDA Plant Hardiness Zone Map 2012

Stakeholder-Driven Research & Extension



Climate Change Mitigation:

Actions that will reduce the ultimate magnitude of climate change. What are some Examples?



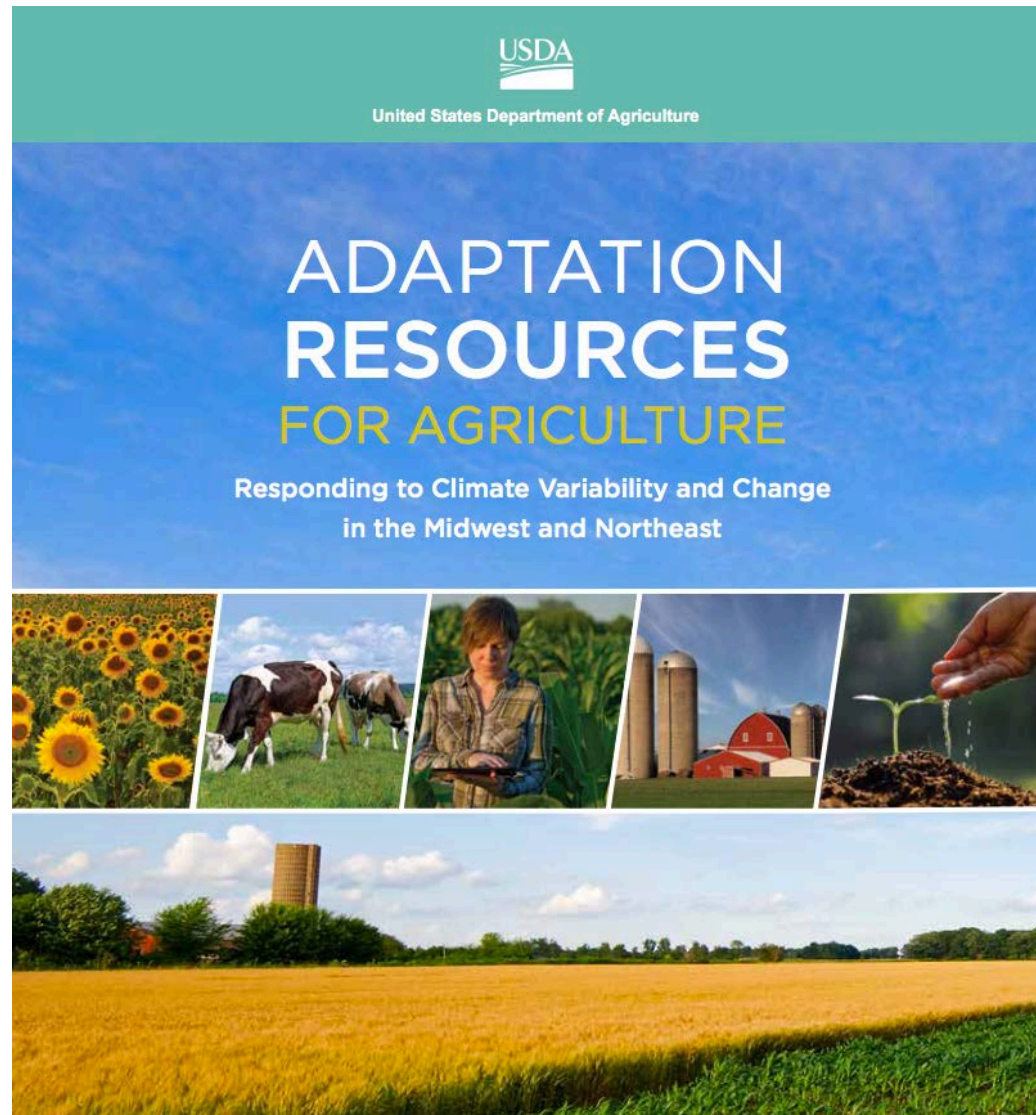
- Coal: 800 gigawatt-sized plants with all the carbon captured and permanently sequestered
- Nuclear: 700 new gigawatt-sized plants (plus replacement plants)
- Concentrated solar thermal electric: 1,600 gigawatts peak power
- Solar photovoltaics: 3,000 gigawatts peak power
- Efficient buildings: savings totalling 5 million gigawatt-hours
- Efficient industry: savings totalling 5 million gigawatt-hours, including co-generation and heat recovery
- Wind power: 1 million large wind turbines (2 megawatts peak power)
- Vehicle efficiency: all cars 60 miles per US gallon
- Wind for vehicles: 2,000 gigawatts wind, with most cars plug-in hybrid electric vehicles or pure electric vehicles
- Cellulosic biofuels: using up to one-sixth of the world's cropland
- Forestry: end all tropical deforestation

Climate Change Adaptation:

- Reduce the level of physical, social, or economic impact of climate change and variability
- Take advantage of new opportunities emerging from climate change
- Examples?



USDA Adaptation Resources for Ag (2016)



USDA Ag Adaptation Framework (2016)

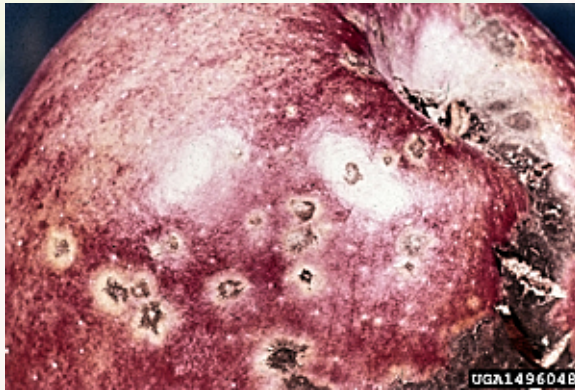
- Step 1: DEFINE management goals & objectives
- Step 2: ASSESS site-specific climate change impacts & vulnerabilities
- Step 3: EVALUATE management objectives given projected impacts & vulnerabilities
- Step 4: IDENTIFY adaptation approaches & tactics for implementation
- Step 5: MONITOR & evaluate effectiveness of implemented actions





Part II – Using NEWA tools

Disease management



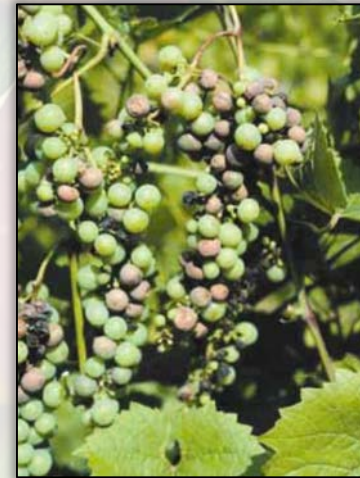
University of Georgia Plant Pathology, forestryimages.org



HF Schwartz, Colorado State University, bugwood.org



P Nitzsche and A Wyenandt, Rutgers University



W Wilcox, Cornell University

Onion diseases

- Botrytis leaf blight
- Downy mildew
- Purple blotch



HF Schwartz, Colorado State University, bugwood.org

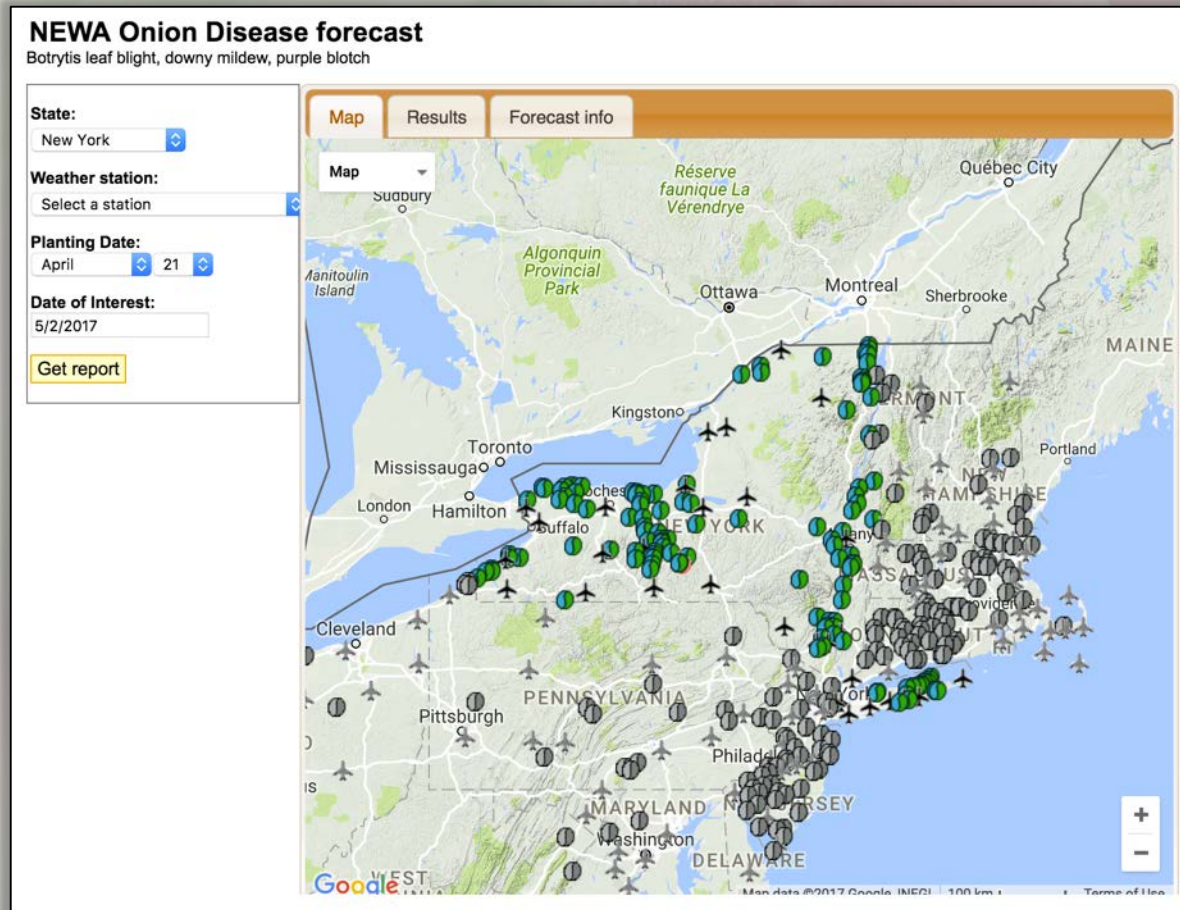


HF Schwartz, Colorado State University, bugwood.org



HF Schwartz, Colorado State University, bugwood.org

On-farm management



NEWA onion disease tools

State:
New York

Weather station:
Lafayette

Planting Date:
April 21

Date of Interest:
05/31/2016

[Get report](#)

Map
Results
Forecast info

Onion Disease for Lafayette

Disease	Past 7 Days		Today	Ensuing 5 Days					
	Number of days favorable	Average rating per day	May 31	Jun 1	Jun 2	Jun 3	Jun 4	Jun 5	
Botrytis leaf blight	Michigan Botrytis forecast (BLB)	1	20	48	41	18	52	60	49
	Modified Blight Alert (IPI)	0	1.62	2.49	2.59	1.93	5.85	4.18	4.57
Downy Mildew	1	NA	Not favorable	Not favorable	Not favorable	Favorable	Not favorable	Not favorable	
Purple Blotch (PRI)	5	6.3	6.7	6.3	5.7	6.0	6.0	4.7	

Past 7 Days

- Extremely favorable
- Very favorable
- Moderately favorable
- Slightly favorable
- Not favorable

Threshold Levels

Michigan Botrytis: BLB ≥ 50
 Modified Blight Alert: IPI ≥ 7
 Purple Blotch: PRI ≥ 5.7

Over threshold

Below threshold

DOWNCAST (Downy mildew)
Sporulation risk value

Predictive Index (PRI)
Alternaria sporulation risk
PRI > 5.7 indicates high infection potential

Predicts Botrytis spore release.
BLB indicates inoculum potential.
>50 indicates significant risk.

Use in combination with scouting and >30% chance of rain.
Inoculum Production Index (IPI)
IPI > 7, one lesion and change of rain indicates treatment

Insect Pest Management



BA Nault, Cornell University



Clemson University



S Bauer, USDA Agricultural Resesarch Service, bugwood.org



TM Gilligan and ME Epstein, USDA APHIS ITP, bugwwod.org

Onion Maggot

- ***Delia antiqua***
 - Pupae overwinter
 - Adults emerge mid-spring
 - First instars destroy onion seedlings
 - Management
 - Avoidance
 - Chemical treatment
- Key life stages
 - 50% overwintering adult emergence
 - 50% 1st generation adult emergence



Overwintering adult management

NEWA Onion Maggot

State:

Weather station:

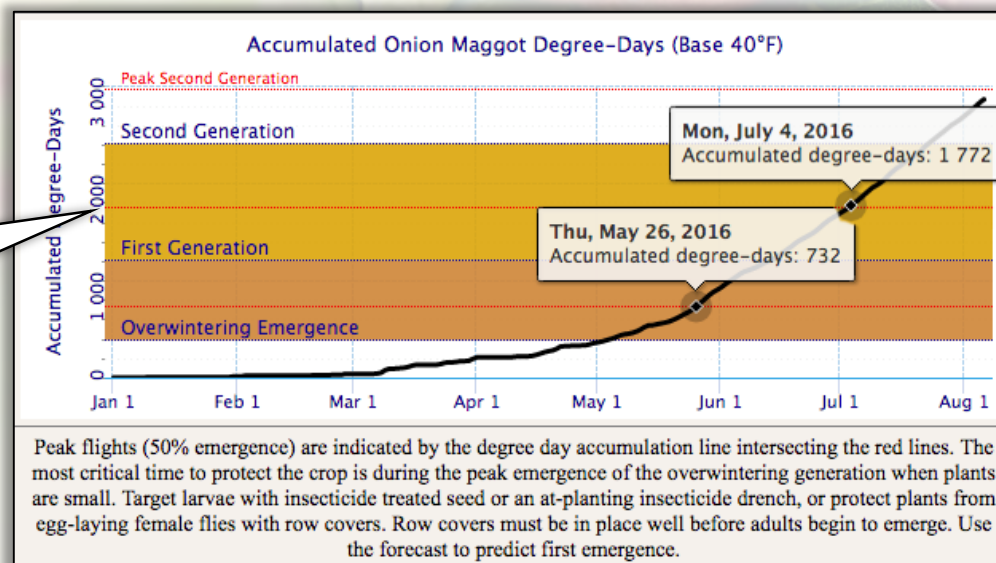
Date of Interest:

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Onion Maggot Degree-Days (Base 40°F) for Lafayette								
	Past	Past	Current	Ensuing 5 Days				
Date	May 20	May 21	May 22	May 23	May 24	May 25	May 26	May 27
Daily Degree-Days	16	19	22	22	21	25	33	36
Seasonal Accumulation	591	610	631	653	674	699	732	767
Generation (OW=overwintering)	OW	OW	OW	OW	OW	OW	OW	OW

Red cells indicate estimated 50% emergence (peak flight).

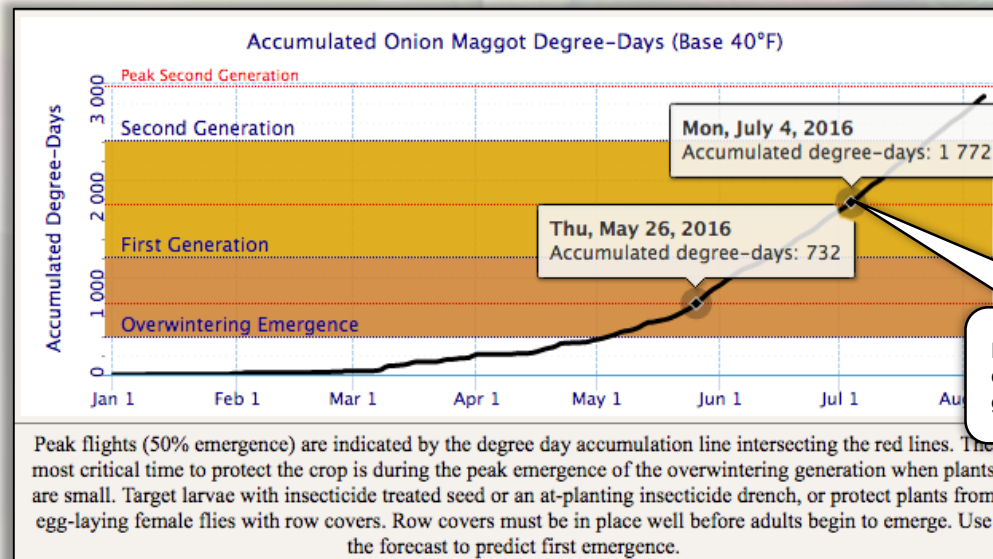
Red line indicates 50% emergence. Treatment or avoidance should be implemented by this point



First generation adult management

Onion Maggot Degree-Days (Base 40°F) for Lafayette								
	Past	Past	Current	Ensuing 5 Days				
Date	Jun 21	Jun 22	Jun 23	Jun 24	Jun 25	Jun 26	Jun 27	Jun 28
Daily Degree-Days	25	22	23	23	30	35	36	33
Seasonal Accumulation	1415	1437	1460	1483	1513	1547	1583	1616
Generation	First	First	First	First	First	First	First	First

Red cells indicate estimated 50% emergence (peak flight).



Degree Day Calculator

Base Temperature	Insect Phenology Model or Disease Development Model
14.3°C	brown marmorated stink bug
4°C	cabbage maggot
0°C	apple scab
40°F	onion maggot
43°F	obliquebanded leafroller, spotted tentiform leafminer
45°F	oriental fruit moth
47.14°F	grape berry moth
48°F	alfalfa weevil
50°F	growing degree days (GDD), codling moth, plum curculio, apple maggot
55°F	fire blight shoot blight symptom development

NEWA Degree Day Calculator

State:


Weather station:

Degree day type:

Accumulation start date:

End date:

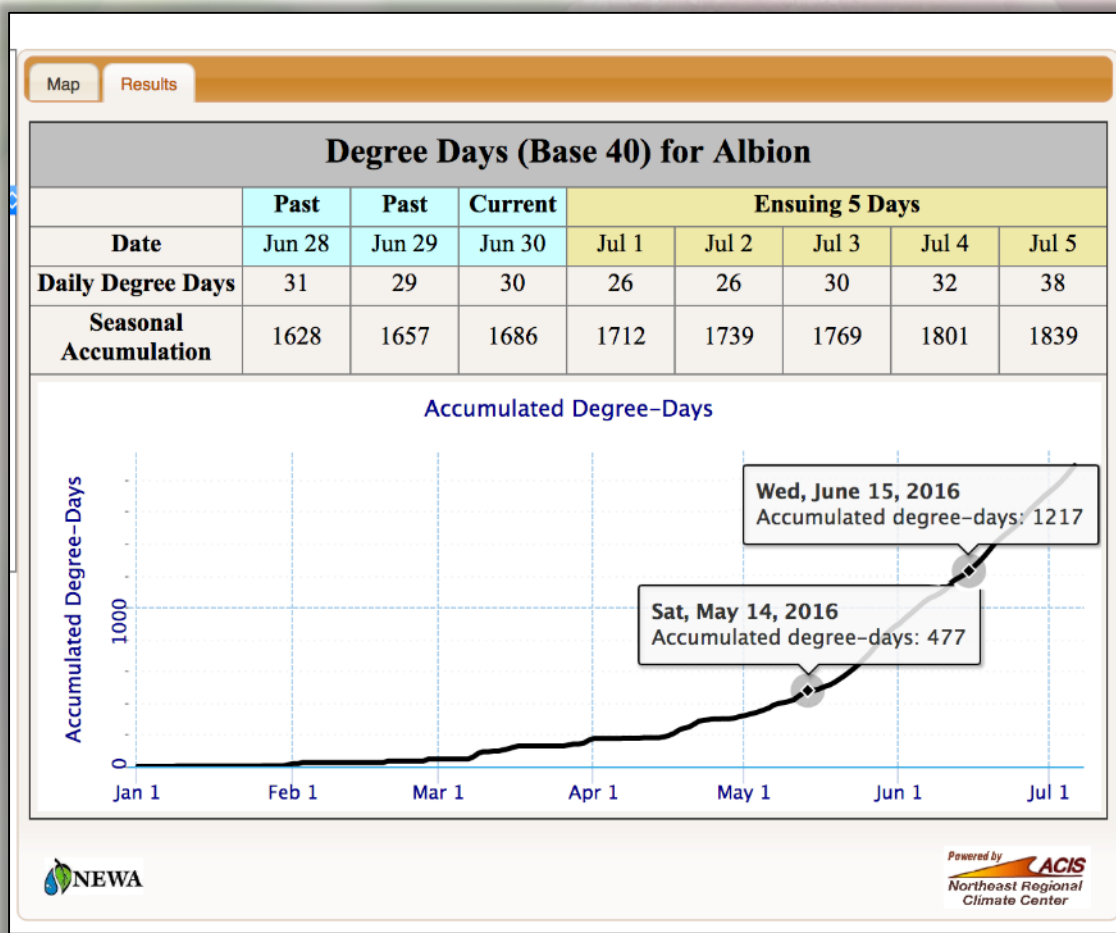
[About degree days](#)



Case study

- New insect pest
- Base 40(F)
 - Accumulation from Jan 1
 - Susceptible life stages
 - First generation, first instar (450 DD)
 - Secondary infestation risk
 - Second generation, third instar (1200 DD)

Management Timing



Developmental Variation

Location	G1 first instar	G2 third instar
Green Creek, SC	March 12	April 19
Ashtabula, OH	April 25	June 5
Geneva, NY	May 7	June 11
Lebanon, NH	May 19	June 17

NEWA summary

- Current fruit and vegetable tools
 - Apples and grapes
 - Onion and cabbage
- Future efforts
 - Strengthen fruit, more vegetables
 - Field crops
 - Forestry?
 - Invasive species?
 - Others?

Part II – Decision Tools

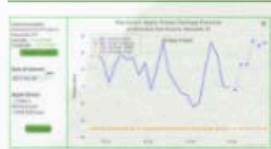
How is the changing climate affecting your farm?

Climate Smart Farming Decision Tools

Cutting-edge tools to help farmers manage climate risk.

See more Tools

CSF Apple Stage / Freeze Damage Probability



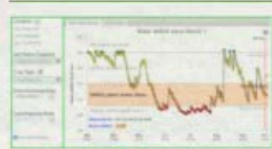
Charts model development stage plus T10, T50 & T90 Apple hardiness temperatures vs. daily minimum observed/forecast temperature. May be used to assess potential risk for freeze damage.

CSF Grape Hardiness & Freeze Risk



Charts hardiness temperature vs. daily observed/forecast temperatures for several varieties of grapes.

CSF Water Deficit Calculator



Monitors current and forecasted soil water deficit at your location to allow efficient water management and smart scheduling of irrigation.

CSF Growing Degree Day Calculator



Plots Growing Degree Days (GDD) to help predict plant development and pest/disease outbreaks, and provides a climatological context.

CSF Resources & BMPs



Resources and Best Management Practices

Reduce emissions. Increase resiliency and profitability. Realize opportunities.

[See more Resources](#)

TOP RESOURCES

[About My Woods](#)

[Adaptation Workbook for Forest Management and Conservation](#)

[Anaerobic Digester Business Model and Financing Options](#)

[Animal Agriculture in a Changing Climate](#)

[Annual Phosphorus Loss Estimator](#)

[Building soils for better crops](#)

<http://climatesmartfarming.org/resources/>

CSF Resources and Best Management Practices

Climate

Tools

Team

Resources

Forum

Videos

Categories

Agricultural Sectors

- Dairy, Poultry, and Livestock
- Field Crops
- Grapes
- Greenhouse, Nursery, and Sod
- Maple
- Specialty Crops
- Tree Fruit and Berries
- Vegetables

Media Types

- Decision Support Tool
- Fact Sheet
- Online Courses
- Reports and Studies
- Videos
- Weather Map
- Workshop Presentations

Vulnerability Types

- Drought
- Flooding
- Frost Risk
- Heat Stress
- Insects
- Multiple Vulnerabilities
- Weeds

Adaptation Strategies

- Conservation Tillage
- High-Residue Cover Crops
- Irrigation
- Multiple Adaptation Strategies
- Soil Health

Mitigation Strategies

- Green House Gas Accounting

USDA Adaptation Resources for Agriculture



The USDA has recently released its Adaptation Resources for Agriculture report for "responding to climate variability and change in Read more »

Comet Farm



COMET-Farm is a whole farm and ranch carbon and greenhouse gas accounting system. The tool guides you through describing Read more »

CCE Forage Exchange



Producers or growers with surplus forage or corn may use this site for free to list what they Read more »

USDA Cover Cropping Factsheet



The USDA Northeast Regional Climate Hubs are in the process of releasing a series of factsheets on climate Read more »

PRO-DAIRY Program



PRO-DAIRY links New York's dairy farmers and agribusiness professionals to critical research and resources, giving them the information they Read more »

Science for a Hungry World



The NASA "Science for a Hungry World" video series covers the challenges surrounding feeding an ever growing population Read more »

Maine's Climate Future: Assessment Report



Published by the University of Maine, Maine's Climate Future is a comprehensive assessment of climate change in Maine. Read more »

NRCS Technical Publications



The Plant Materials Program is an extensive listing of technical publications organized by topics such as Climate Change, Cover Read more »

Connecticut Ag Impact Report



Published by the Connecticut Governor's Steering Committee on Climate Change, this report analyses the potential impacts of climate Read more »

CSF Extension Team for NYS



Climate Smart Farming Extension Team

Let us help you increase your farm's resiliency and sustainability.

[Read about the Team](#)



Dr. Kimberley Morrill,
Dairy Management

Dr. Kitty O'Neil,
Field Crops & Soil Health

Laura McDermott,
Small Fruit

Dr. Darcy E.P. Telenko,
Vegetables and Integrated Pest
Management

Luke Haggerty,
Viticulture & Enology

<http://climatesmartfarming.org/climate-smart-farming-extension-team/>



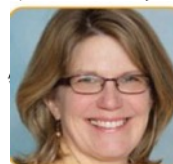
Extension Team



Dr. Kitty O'Neil, Field Crops & Soil Health



Dr. Kim Morrill, Dairy Management



Laura McDermott, Small Fruit



Dr. Darcy Telenko, Vegetables & IPM



Cornell Cooperative Extension System: 1000s Educators/Every County:

<http://climatesmartfarming.org/climate-smart-farming-extension-team/>

CSF Farmer Interview Videos

Climate Smart Farming Multimedia

Gain first-hand knowledge via farmer success stories and demos.

[See more Multimedia](#)



RECENT MULTIMEDIA

[Adaptation and Agriculture](#)

[Apple Growers](#)

[Common Thread Farm](#)

[Cornell Maple](#)

[Farming for Energy](#)

[Fishkill Farms](#)

[Hahn Farm](#)

Climate Smart Farming Tools

Climate

Tools

Team

Resources

Forum

Videos

CSF Apple Stage / Freeze Damage Probability



Charts model development stage plus T10, T50 & T90 Apple hardiness temperatures vs. daily minimum observed/forecast temperature. May be used to assess potential risk for freeze damage.

CSF Grape Hardiness & Freeze Risk



Charts hardiness temperature vs. daily observed/forecast temperatures for several varieties of grapes.

CSF Water Deficit Calculator



Monitors current and forecasted soil water deficit at your location to allow efficient water management and smart scheduling of irrigation.

CSF Growing Degree Day Calculator



Plots Growing Degree Days (GDD) to help predict plant development and pest/disease outbreaks, and provides a climatological context.

Climate Normals - Northeast Regional Climate Center



Climate normals are an arithmetic average of a variable such as temperature over a prescribed 30-year period.

Network for Environment and Weather Applications



NEWA makes it possible for farmers to share resources for weather data collection, analysis, distribution, and archiving

U.S. Drought Monitor



The map is based on measurements of climatic, hydrologic and soil conditions as well as reported impacts and observations from more than 350 contributors around the country.

New York State / Northeast Drought Atlas



This brand new product, courtesy of Dr. Toby Ault and his research group, is designed to portray drought and drought risk in new and useful ways to agriculturalists.

Apple Stage/Freeze Risk 30-Day Trend & Forecast

Current Location :
Johnny Appleseed's Orchard
DeMunn Rd, Beaver Dams, NY
Latitude : 42.282480
Longitude : -76.934862

[Change Location](#)

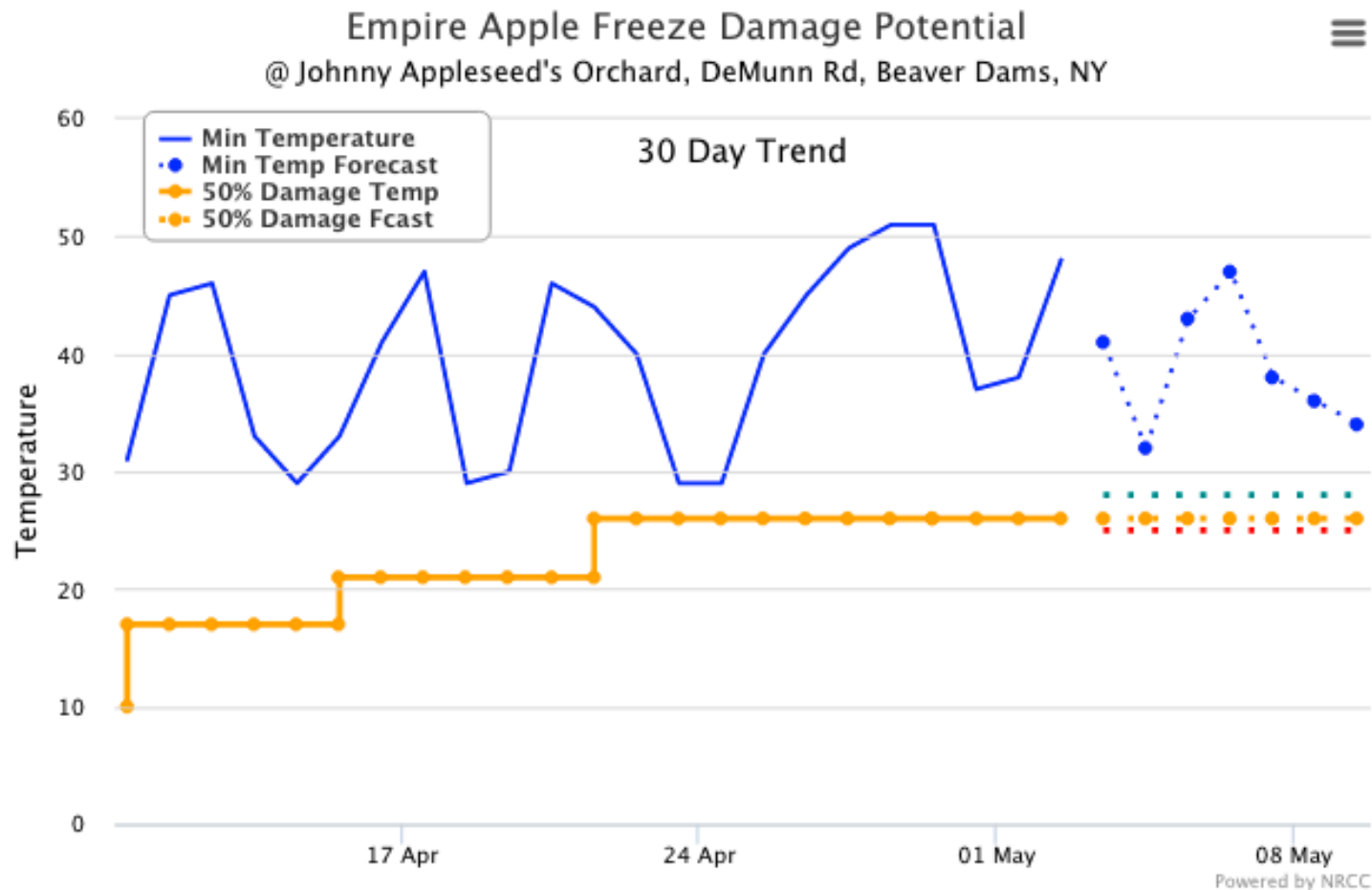
Date of Interest:

2017-05-02

Apple Variety

- Empire
- McIntosh
- Red Delicious

[Full Season](#)



Apple Stage/Freeze Risk 30-Day Trend & Forecast

CSF Apple Stage / Freeze Damage Probability

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Videos

Enter County, State, Zip Code, or Address

GO

Current Location :

Johnny Applesseed's Orchard
DeMunn Rd, Beaver Dam, NY

Latitude : 42.282480

Longitude : -76.93486

Change Location

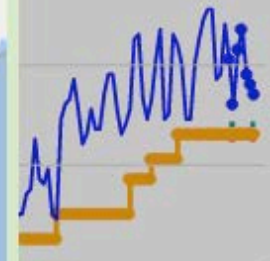
Date of Interest:

2017-05-02

Apple Variety

- Empire
- McIntosh
- Red Delicious

30 Day Trend



Apr 2017 May 2017

Powered by NRCC

Apple Stage/Freeze Risk 30-Day Trend & Forecast

Current Location :
Johnny Appleseed's Orchard
DeMunn Rd, Beaver Dams, NY
Latitude : 42.282480
Longitude : -76.934862

[Change Location](#)

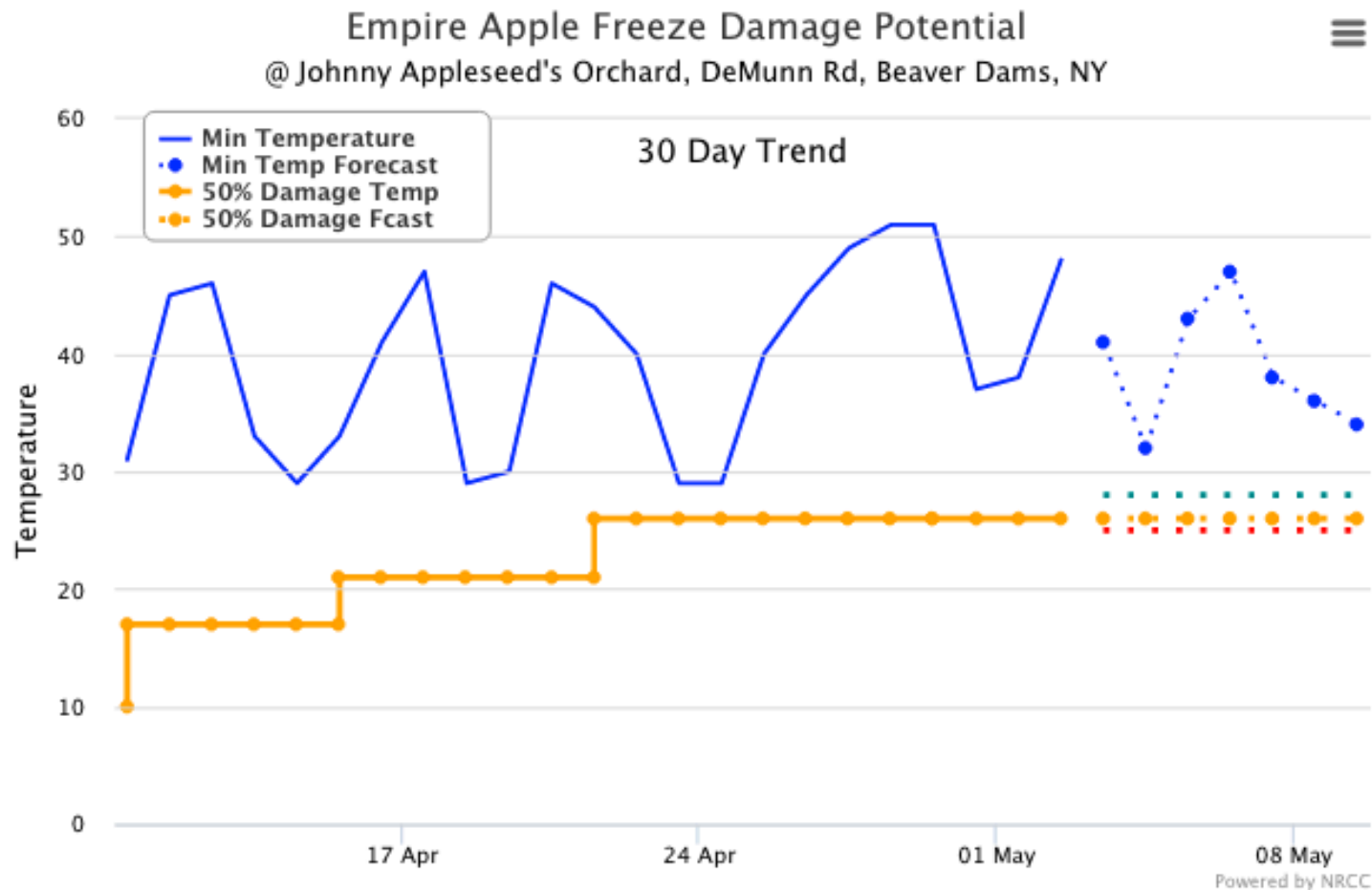
Date of Interest:

2017-05-02

Apple Variety

- Empire
- McIntosh
- Red Delicious

[Full Season](#)



Apple Stage/Freeze Risk Full Season

Current Location :

Johnny Appleseed's Orchard
DeMunn Rd, Beaver Dams, NY

Latitude : 42.282480

Longitude : -76.934862

Change Location

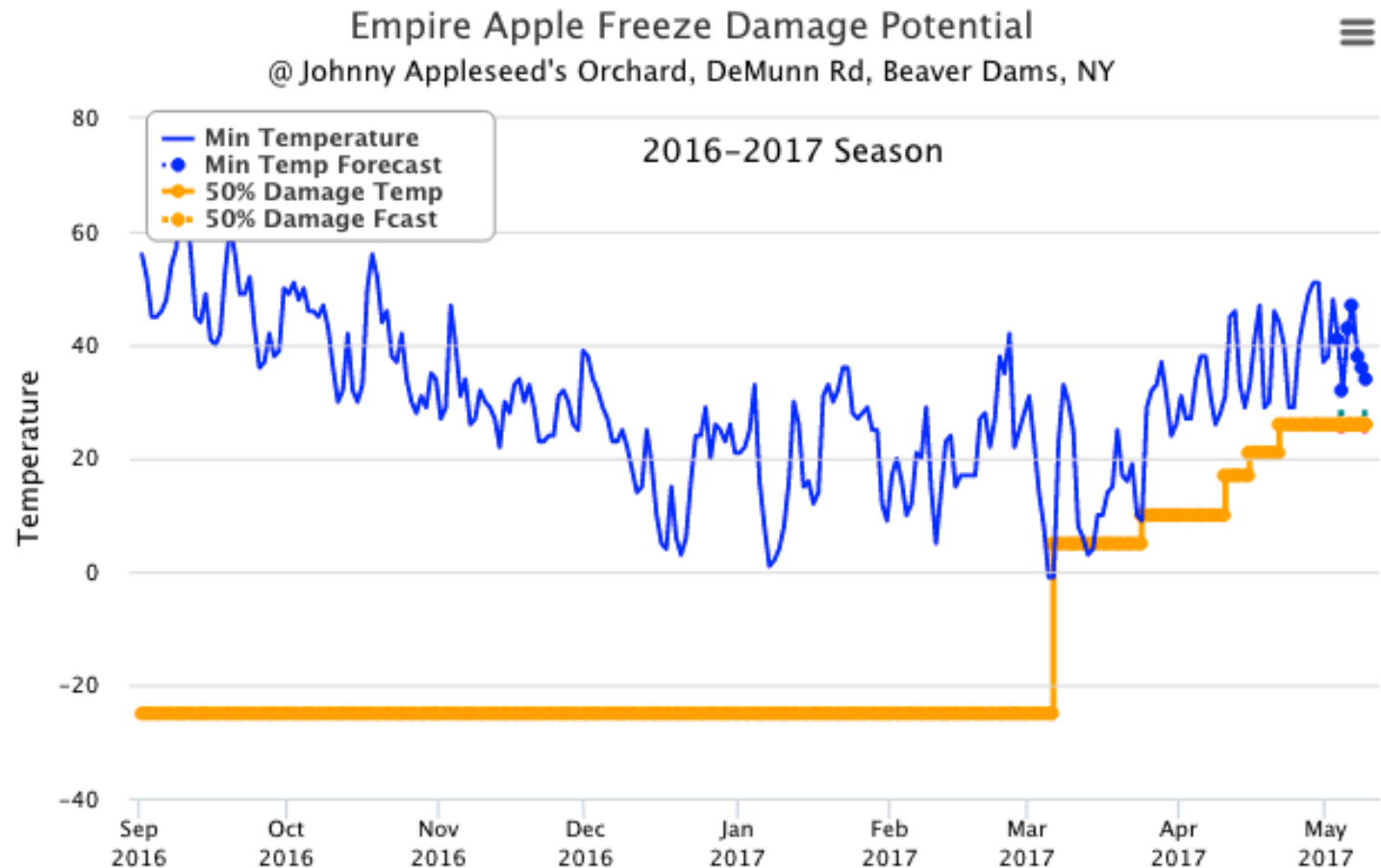
Date of Interest:

2017-05-02

Apple Variety

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- McIntosh
- Red Delicious

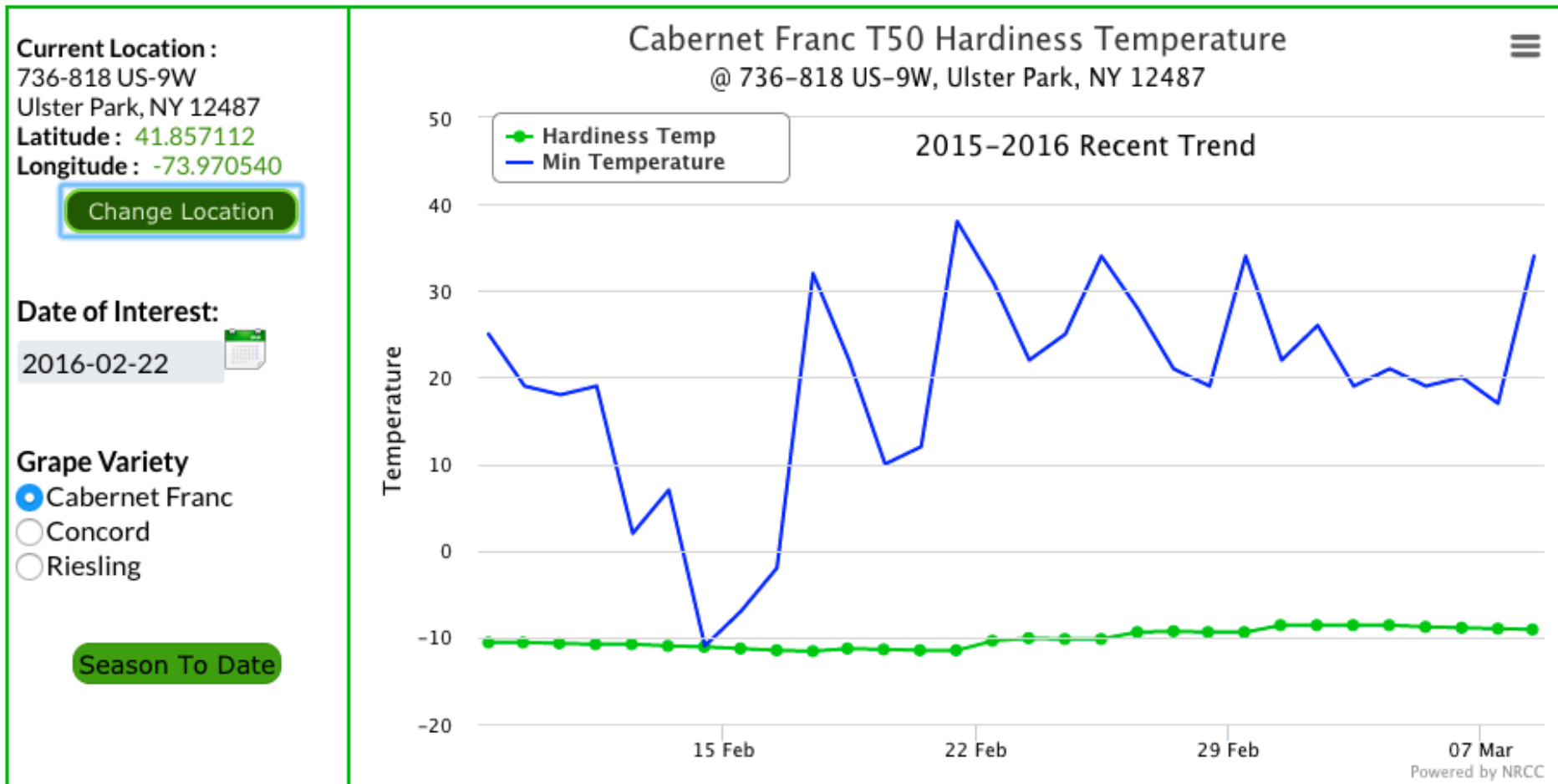
30 Day Trend



Grape Hardiness Tool

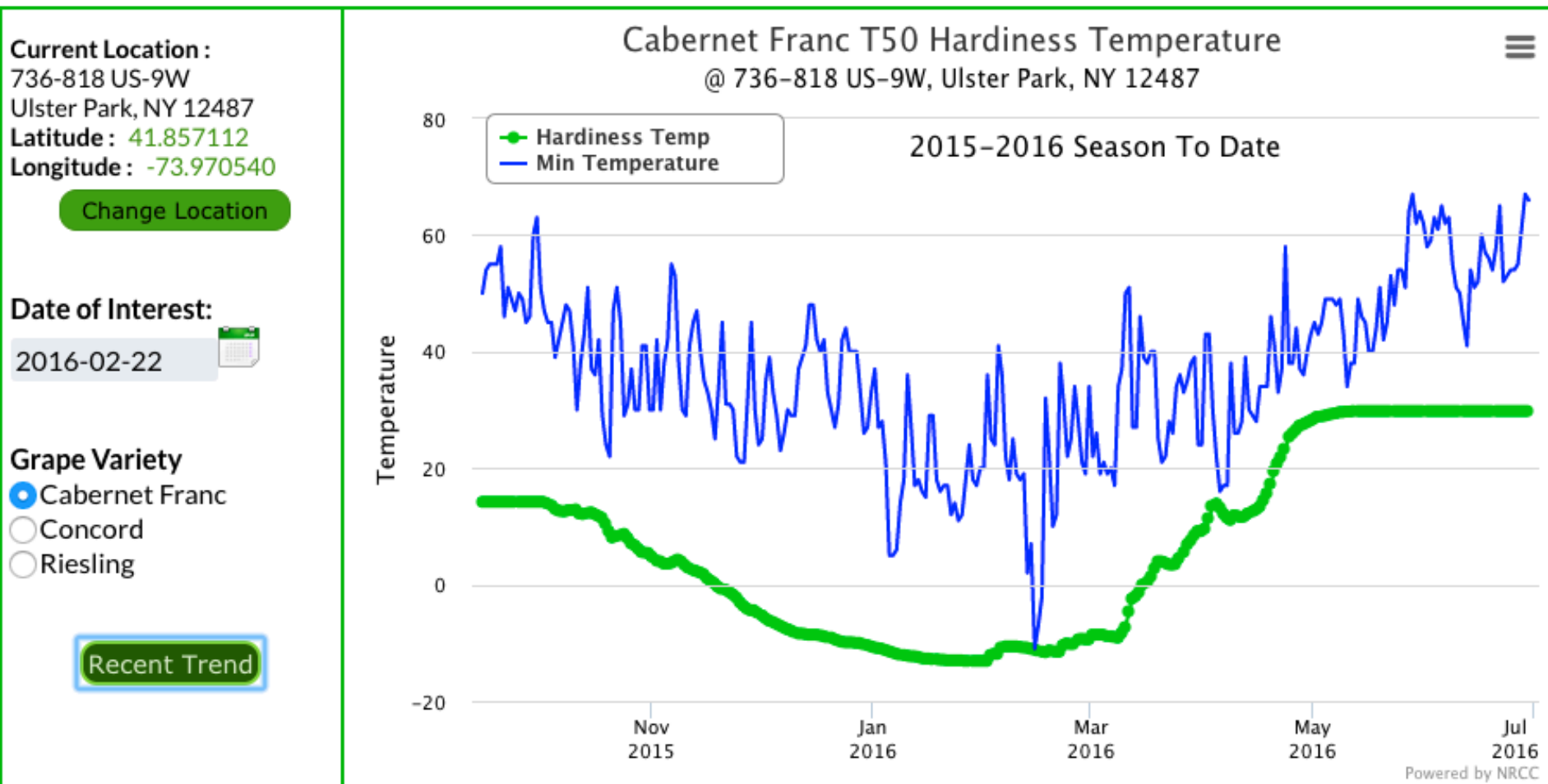


- Spring frosts not receding as quickly as flowering is advancing
- Can be used to determine level of freeze injury to grapes as a product of weather conditions and stage of plant development



Grape Hardiness Tool

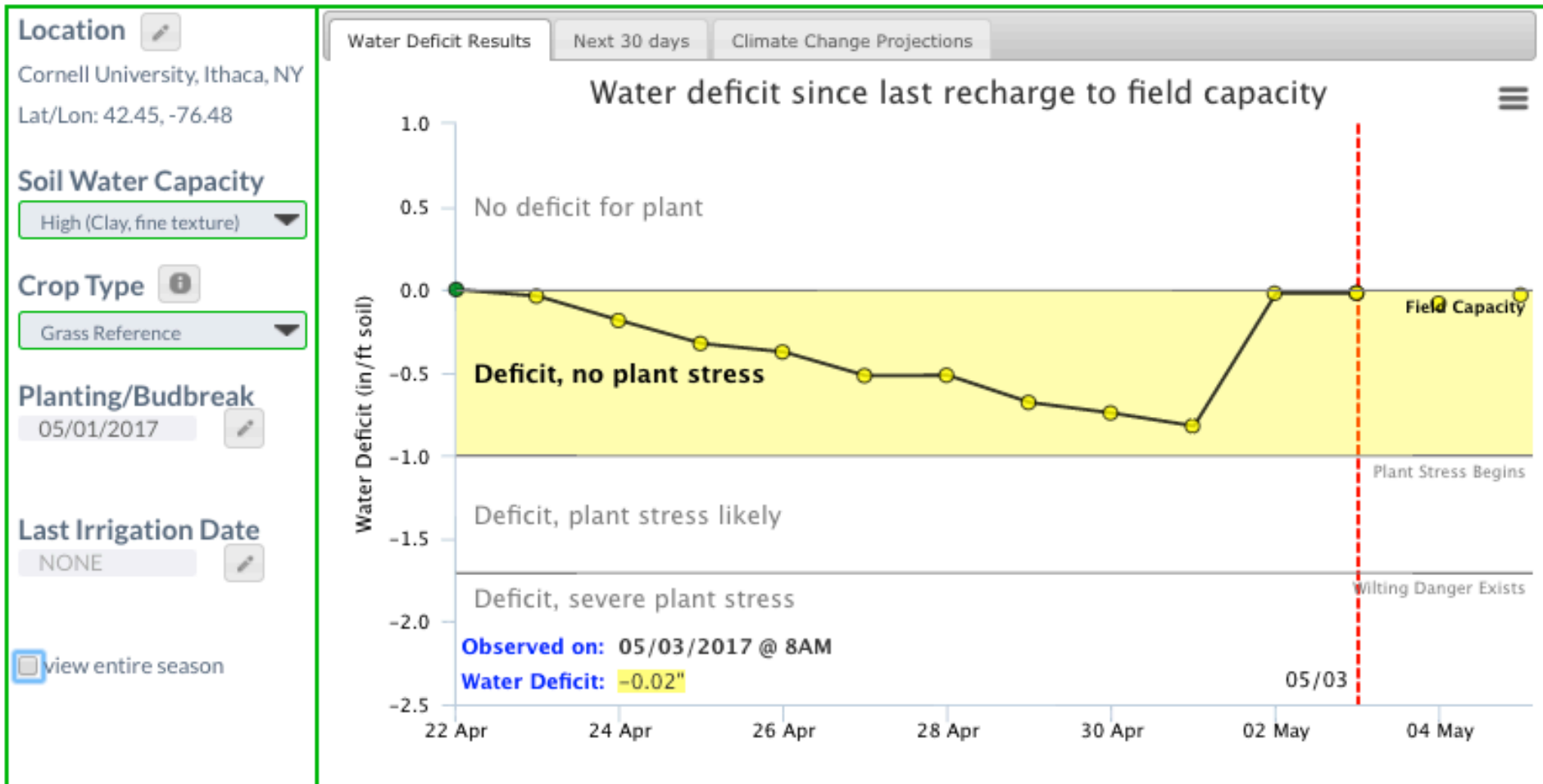
- See the whole season at a glance to know where the most risk occurred



Water Deficit Calculator



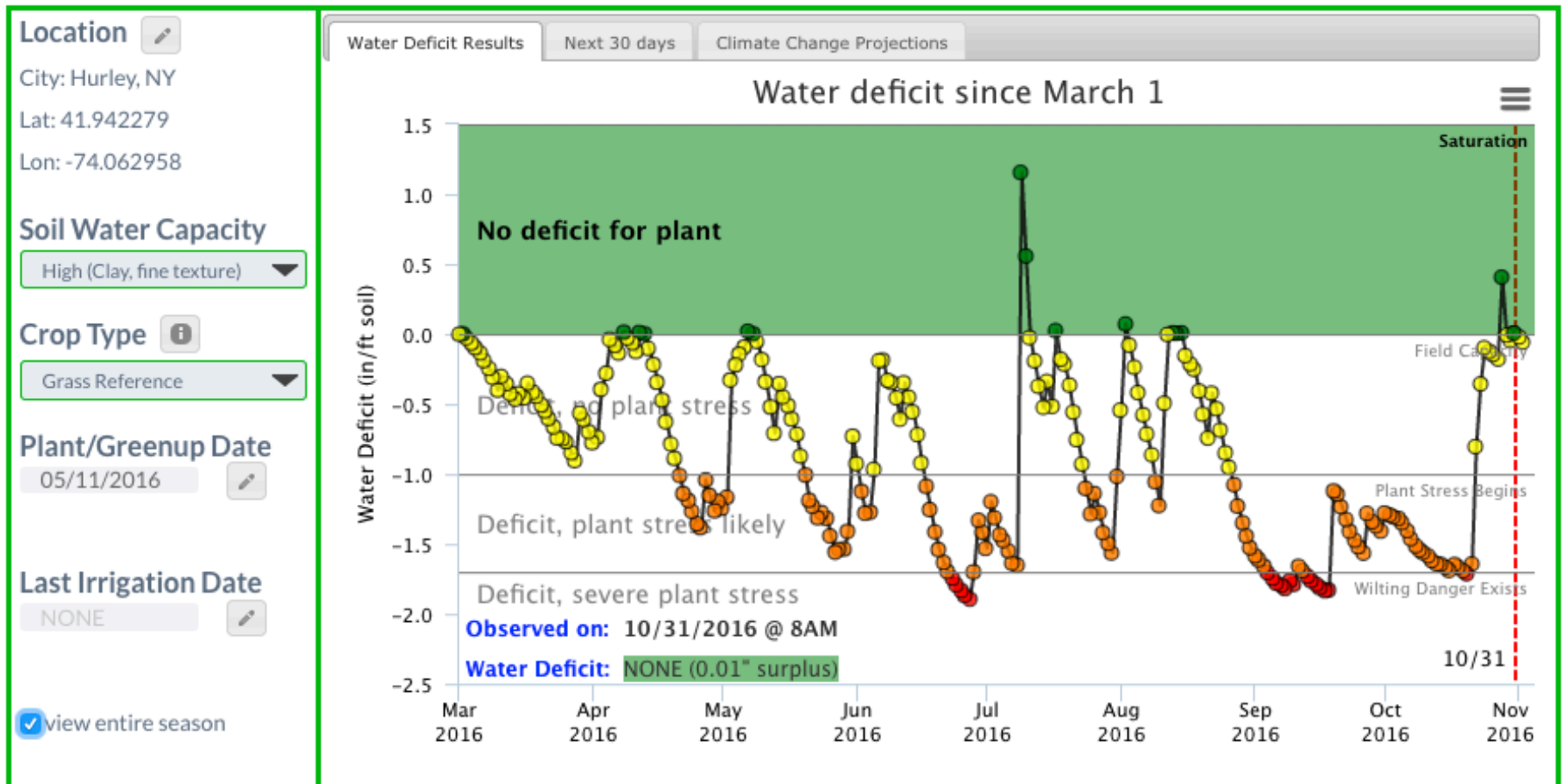
- Estimates effective root zone soil water content to inform decision makers about current and forecasted water deficits
- Uses precipitation, evapotranspiration, drainage, and runoff



Water Deficit Calculator



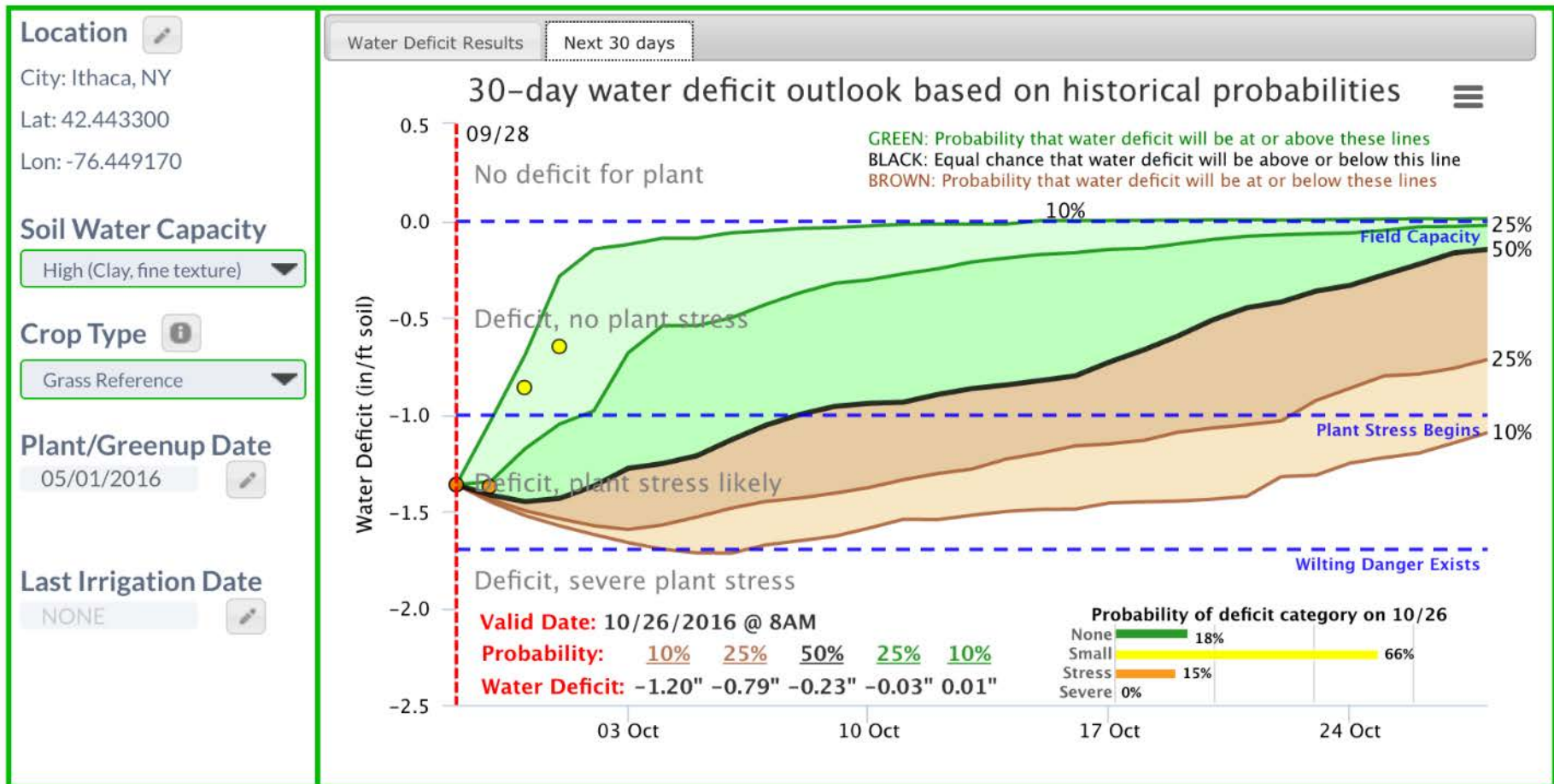
- Estimates effective root zone soil water content to inform decision makers about current and forecasted water deficits
- Uses precipitation, evapotranspiration, drainage, and runoff



Water Deficit Calculator



- Can be used to plan water applications to minimize plant stress and maximize water conservation
- Assesses the probability of naturally reaching certain levels of soil water content over the next month



Water Deficit Calculator



- Long-Term Climate Change Context

Location

City: Hurley, NY
Lat: 41.942279
Lon: -74.062958

Soil Water Capacity

High (Clay, fine texture)

Crop Type

Grass Reference

Plant/Greenup Date

05/11/2016

Last Irrigation Date

NONE

Water Deficit Results Next 30 days **Climate Change Projections**

***Coming Soon:** Over the next several months, our programming team will be incorporating data from downscaled climate change projections into each tool, covering the Northeastern United States. The climate change projections are determined from the CMIP5 climate models, maintained by the Northeast Regional Climate Center (NRCC) at Cornell. This data will provide the long-term context for the data shown in each Climate Smart Farming Tool – for example, in this tool, the climate projections data will provide context for how climate change will affect the potential for water deficits by season and crop type in the future. This type of information will help farmers and decision makers understand how climate change will likely affect them over the coming decades. For more information, please contact us at cicss@cornell.edu.*

The logo for Climate Smart Farming (CSF) features a stylized sun, a cloud, a water droplet, and a plant, with the text 'CSF' in large green letters and 'Climate Smart Farming' in smaller black text below it, followed by 'A program of Cornell University'.

Growing Degree Day Tool



- Shows seasonal outlook during and out of season

Current Location :
1289 Hurley Mountain Rd
Hurley, NY 12443
Latitude : 41.942710
Longitude : -74.061016

[Change Location](#)

Planting Date:

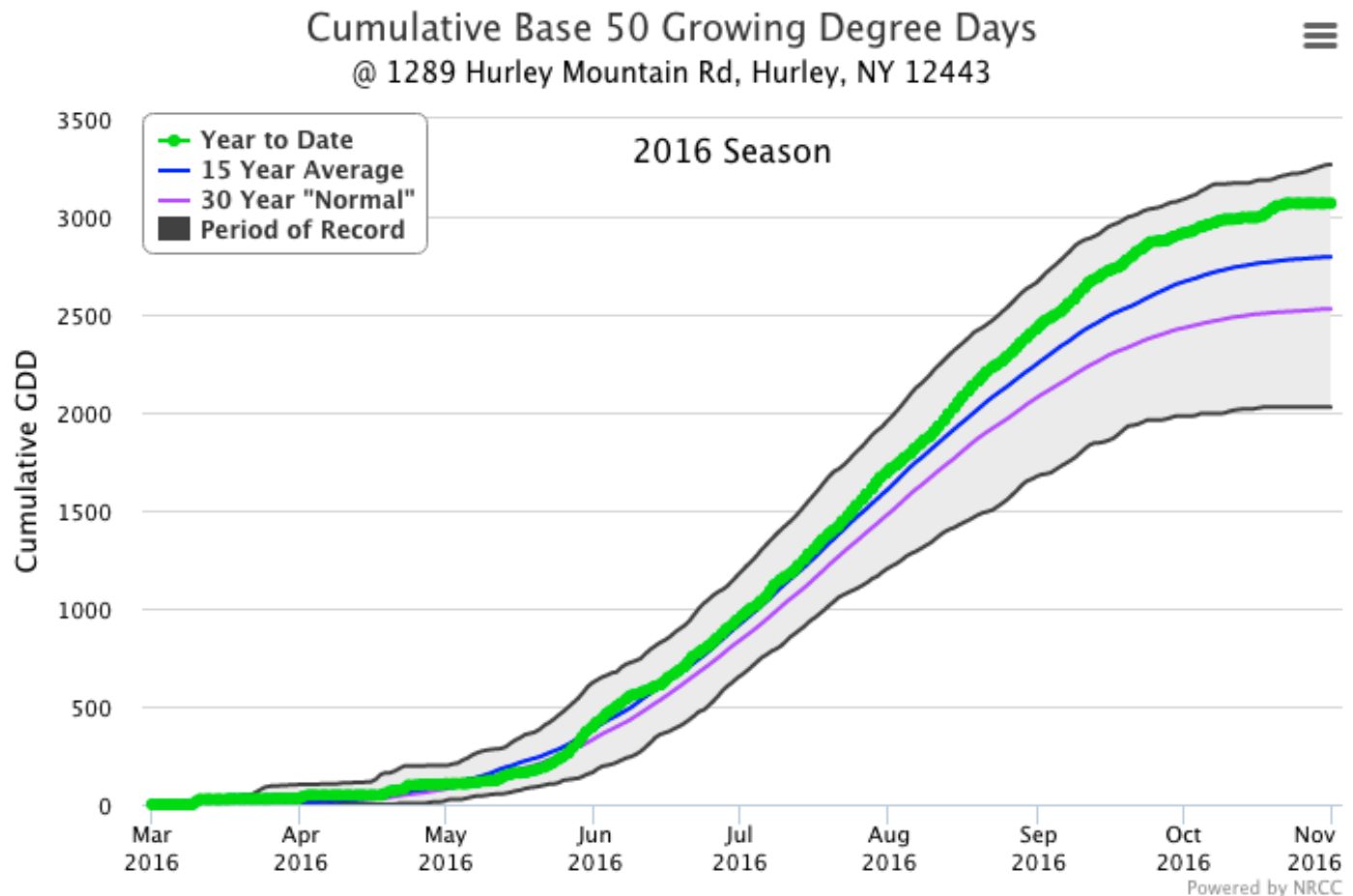
2016-03-01



GDD Threshold

- Base 50
 Base 8650

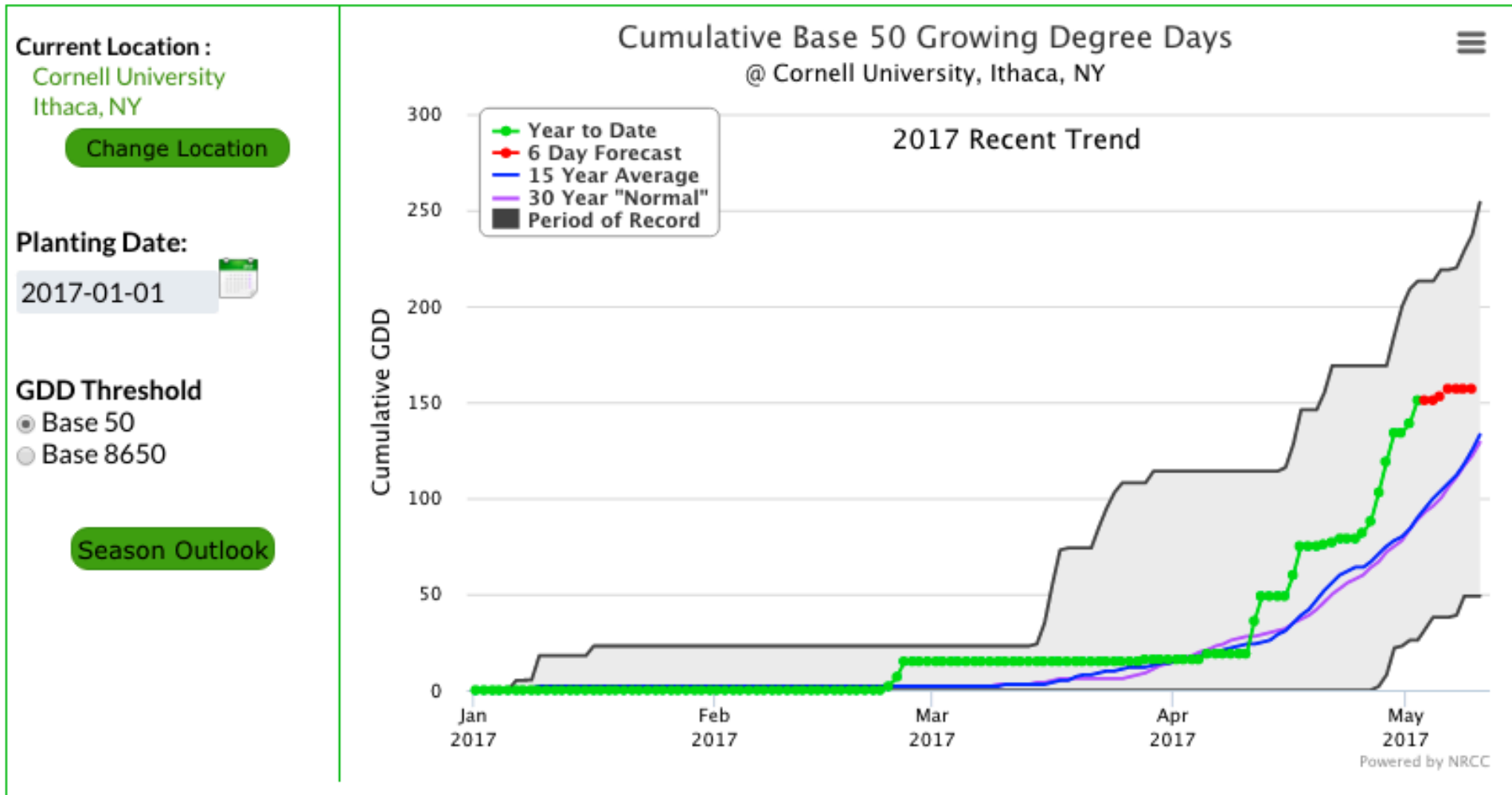
Growing season is over.



Growing Degree Day Tool



- Displays forecast when in season



Thank You! Contact Us

Jonathan Lambert

Cornell Institute for Climate Smart Solutions

Climate Smart Farming Program

jl3356@cornell.edu

www.climatesmartfarming.org

