CHANGES TO HERBICIDES AND PGRS & UTILIZING THE NEWA SYSTEM

Rob Crassweller, Penn State University

rmc7@psu.edu

Penn State Extension

Starane Ultra (supplemental label)

- Fluroxypyr (Group 19 herbicide)
- Growth regulator type herbicide
- Post-emergent for ***pome fruit only***
- horseweed, blackberry, Carolina geranium, clover, grape
- 0.4 – 1.4 pt/acre
- Orchards minimum of 4 yrs old
- PHI of 14 days

Homeplate

- All tree fruits
  - Burndown & sucker control
  - Directed and shielded sprays
- Non-selective total vegetation killer (OMRI listed)
- Caprylic acid (44% ai)
- Apply as 3 – 9% solution
- Use 1% solution as an “adjuvant” for other materials
- REI of 12 hours
- No PHI listed

AXXE®

BROAD SPECTRUM HERBICIDE

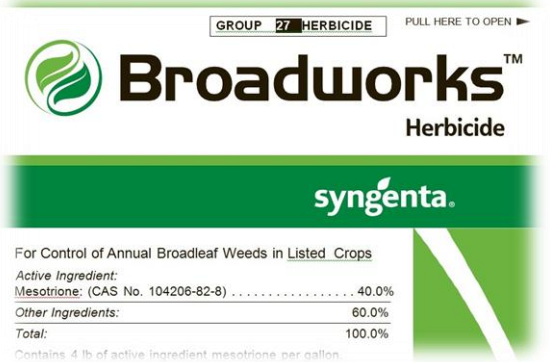
- Ammonium nonanoate 40% ai
  - Organic soap salt
  - Damages guard cells around stomates (desiccant)
- Growth regulator type herbicide for vegetative burndown
- Pome and stone fruit
  - Vegetative burndown
  - Directed & shielded sprays
  - Sucker control
- 13 -16 fl. oz./gallon (10 – 13% v/v)
- Weeds need to be dry, do not apply w/in 2 hours before rain
- OMRI listed

Broadworks™ from Syngenta

- Currently for peaches, nectarines & plums
- Primarily geared toward pigweeds
- Others (pre-)
  - chickweed, fleabane, galinsoga, geranium, groundsel, henbit, lambsquarters, nightshades, pineappleweed, common ragweed, shepherds purse, smartweeds, velvetleaf, waterhemp
- Others (post-)
  - all the above but in most cases weeds ≤ 3-5”

Broadworks™ from Syngenta

- Also known as Calisto
- Mesotrione (WSSA Group 27)
- Post & Pre-emergent for **broadleaf weeds**
- Active on glyphosate resistant marestail & fleabane
- Systemic activity



Zeus Prime XC

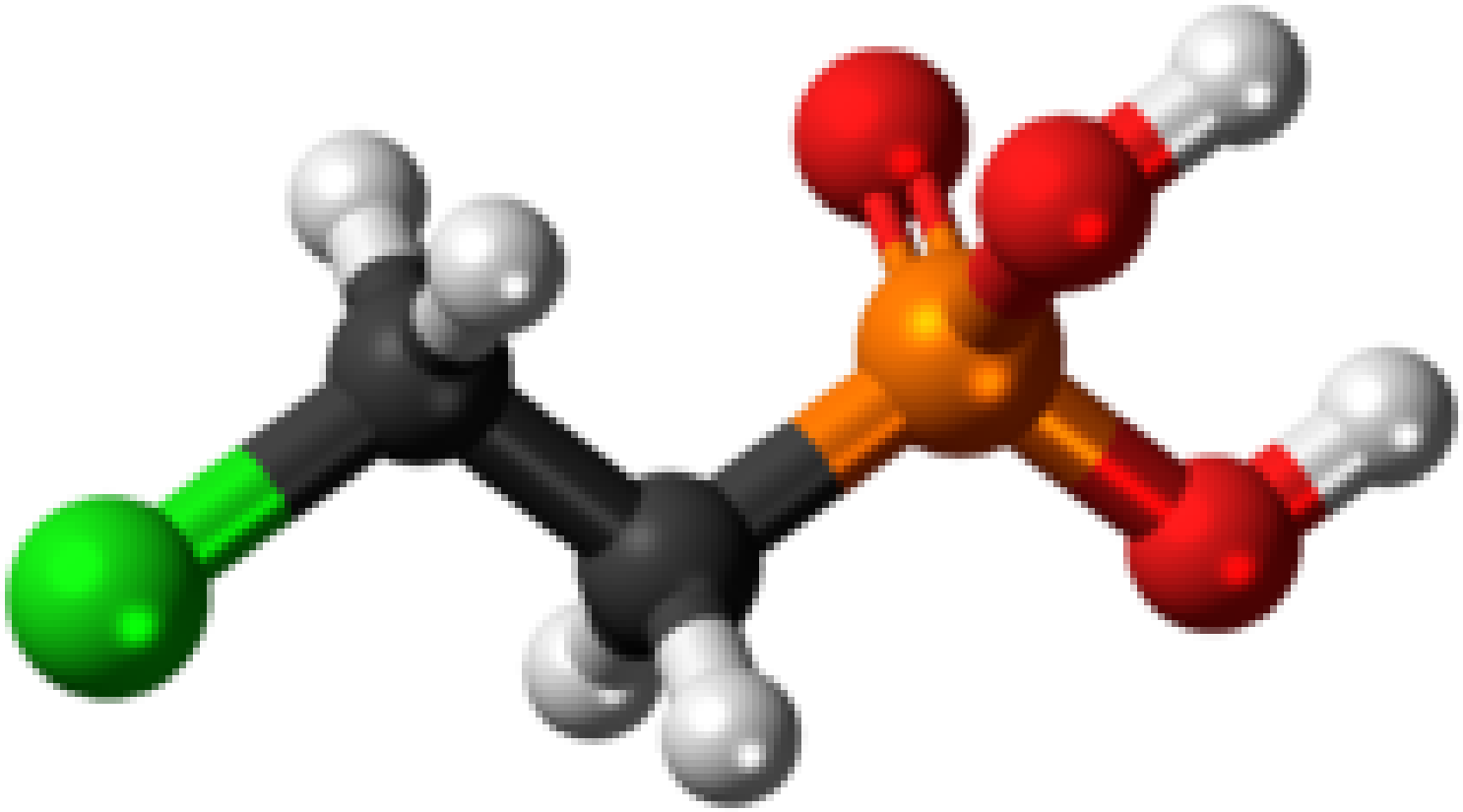
- Apples blueberries, bushberries, caneberries, grapes
- WSSA Group 14
- Combination of POST- + PRE
  - carfentrazone-ethyl + sulfentrazone
- Works on broadleaves & grasses
- REI = 12 hours
- PHI = 14 days
- **Good choice to alternate with Alion (indaziflam)**

What can you use to control yellow nutsedge?

- Herbicides
  - Apples - halosalfuron - methyl (Sandea)
  - All Tree Fruit – rimsulfuron (Matrix et al.)
  - Glyphosate – August treatments
- Watch PHI for each material
- Absorbed by both roots & foliage

https://extension.psu.edu/orchard-weed-control-nutsedge-cyperus-esculentus

REVIEW OF PLANT GROWTH REGULATORS



Plant Growth Regulators

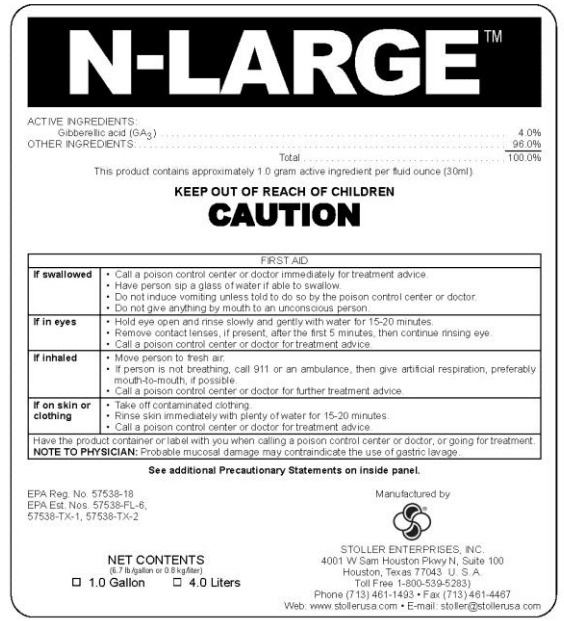
- Increase Fruit Size (other than crop load adjustment)
  - 6- benzyladenine
    - Exilis Plus 6 – 30 fl. oz.
    - MaxCel 6 – 32 fl. oz.
    - Exilis 9.5 SC – 1.3 – 6.4 fl. oz.

Gibberellin Products

- GA3 Products:
  - ProGibb (40SG, 4% & 5.7% liquid),
  - GibGro (5% & 20% powder, 4% liquid)
  - Falgro (4% & 6.18% liquids, 20% powder)
  - **N-Large** (4% & 6.26% liquid)

STOLLER® **N-Large**™

Specimen Label



N-LARGE™

ACTIVE INGREDIENTS:
Gibberellic acid (GA_3) 4.0%
OTHER INGREDIENTS: 96.0%
Total 100.0%

This product contains approximately 1.0 gram active ingredient per fluid ounce (30ml)

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID	
If swallowed	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. **NOTE TO PHYSICIAN:** Probable mucosal damage may contraindicate the use of gastric lavage.	

See additional Precautionary Statements on inside panel.

EPA Reg. No. 57538-18
EPA Est. Nos. 57538-FL-6, 57538-TX-1, 57538-TX-2

Manufactured by

STOLLER ENTERPRISES, INC.
4001 W Sam Houston Pkwy N, Suite 100
Houston, Texas 77043 U. S. A.
Toll Free 1-800-539-5283)
Phone (713) 461-1493 • Fax (713) 461-4467
Web: www.stollerusa.com • E-mail: stoller@stollerusa.com

NET CONTENTS
(8.7 lb/gallon or 0.8 kg/liter)
☐ 1.0 Gallon ☐ 4.0 Liters

www.stollerusa.com
1-800-539-5283

Tart Cherry

maintain & extend fruiting capacity, reduce blind nodes (1 yr. delay) 4-18 grams ai/A depending on tree age & vigor

Sweet Cherry

increase fruit size, color and firmness 16-48 grams ai/A

Stone Fruit

increase firmness & fruit quality 16-32 grams ai/A

Nonbearing Stone Fruit

reduce flowering & fruiting on young trees to reduce competition on tree development. Begin treatment in 2nd leaf. Discontinue the year before desired harvest.

Gibberellin products (GA_{4+7}) Fine Americas

Novagib 10L (0.95% ai)

Novagib 5L (5% ai)

- Russet reduction in apples
- Suppression of apple fruit cracking
- Increase cherry fruit size

Gibberellin Products (1.8% GA_{4+7})+ 1.8%6BA

- Promalin – Valent
- Perlan – Fine Americas

- Both Can Be Used For:
  - Improve fruit typiness & size
  - Increase fruit set after frost
  - Increase lateral branching both foliar and latex paint application

6-Benzyladenine products

- MaxCel – 1.9% ai - Valent
- RiteWay* – 1.9% ai - Nufarm
- **6-BA*** – 1.9% ai – Genesis Agri-Products
- Exilis Plus – 2% ai – Fine Agrochemicals
- Exilis 9.5SC – 9.5% ai – Fine Agrochemicals

***not labeled for increased branching on young trees**

Increasing red color on apples

- Blush® 5.2% ai. & 10% ai
  - Jasmonic acid compound
  - Abscisic acid like compound
  - Plays role with ethylene in early ripening of climacteric fruit
- 1-2 applications of 26-52 fl.oz./**acre****
  - @ 7-14 day intervals
  - 7-42 days prior to anticipated harvest
- Do not apply during hottest part of day

Splendor (CPPU forchlorfenuron)

- Increase fruit size of sweet cherries or pears
- 16 – 24 fl.oz./100 gallons of spray mix in 100 to 200 gpa
- Cherries
  - @ bloom, shuck split or straw color to color break
  - Later applications to increase reduction in fruit cracking
- Pears
  - @ 15-25 days post petal fall
  - Earlier application could result in deformed fruit

Refine™ (NAA) – Fine Americas, Inc.

- Refine 3.5WSG – Na salt, thinning, stop drop, return bloom
- Refine 3.5L – Na salt, thinning, stop drop, return bloom
- Refine 6.25L – K salt, thinning & stop drop
- Refine 24.2L – K salt, stop drop only

ReTain®

- Increase Fruit Set
  - Apples – 1 pouch/A @ pink – full bloom
  - Cherry – 1-2 pouches/A @ bloom or 1+1 @ pouch balloon – first bloom
  - European Pear – 1 pouch/A @ prior to white bud or after full bloom but before PF

- Reduce June Drop European Pear
  - 1 pouch/A @ 10 mm diameter fruit size

Ethephon products

- Ethephon 2 – several companies
- Ethephon 2SL – several companies
- Motivate – Fine America
- **Verve – Nufarm Americas**
- Ethrel (Bayer ?)

New Opportunity for Crop Load Adjustment

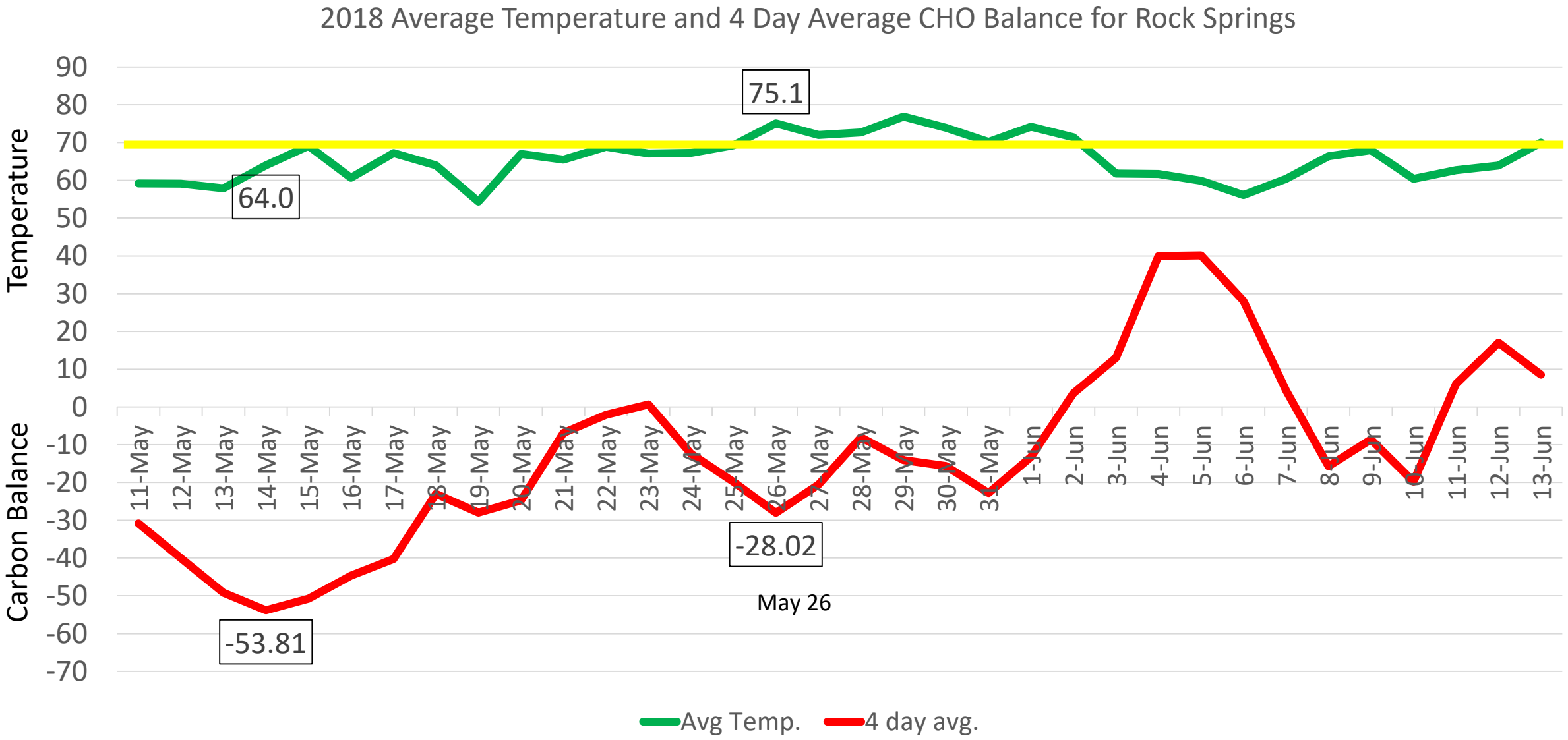
Blossom Thinning

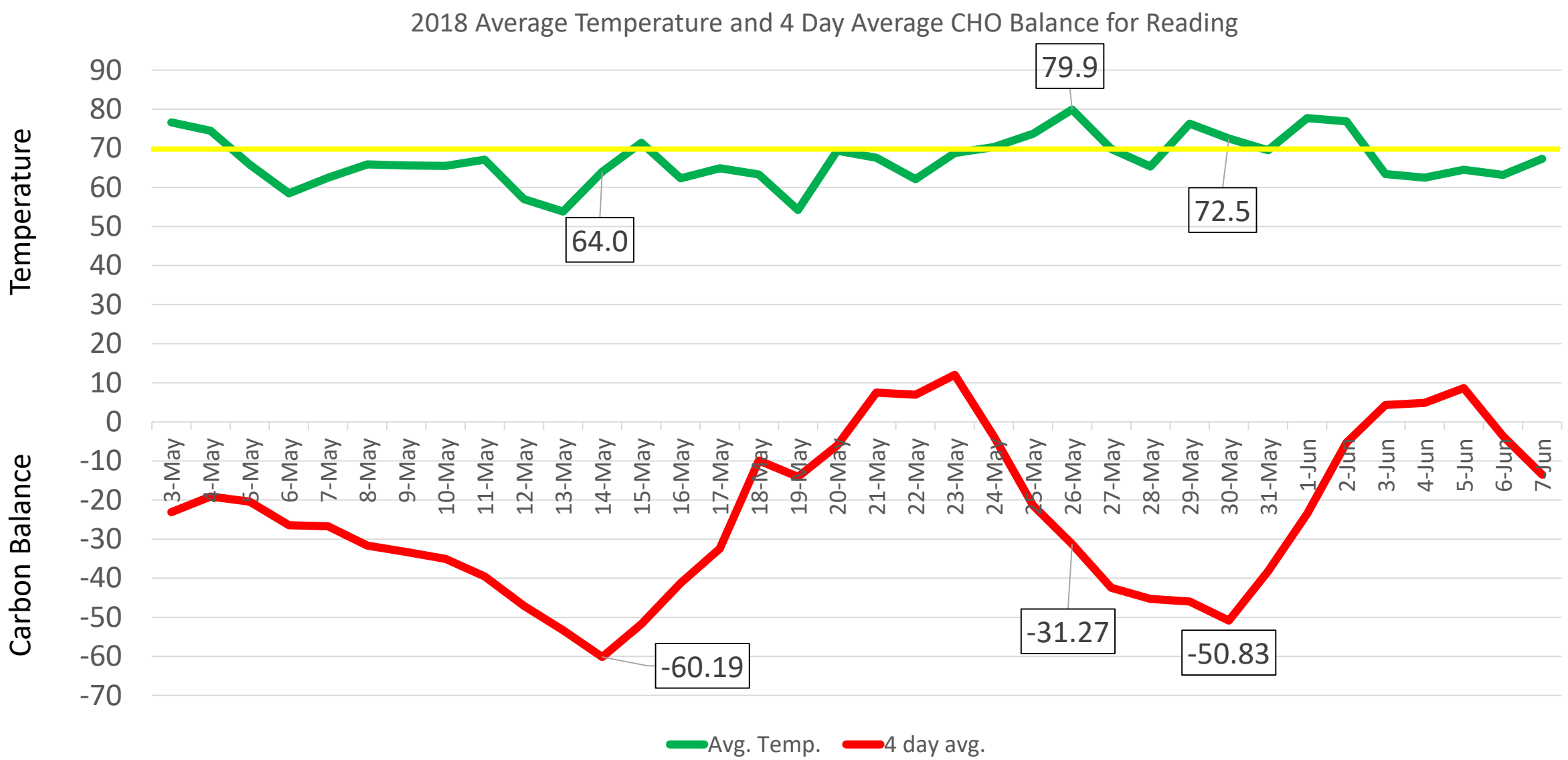
Blossom Thinning with Lime Sulfur

- Jim Schupp, Tom Kon, Edwin Winzeler and Melanie Schupp
- Penn State Fruit Research and Extension Center
- Biglerville, PA

Blossom Thinner

- NovaSource
  - 29% Lime-sulfur solution
- Technically, not a PGR
- Prevents pollen tube growth &/or fertilization
- Photosynthetic inhibitor

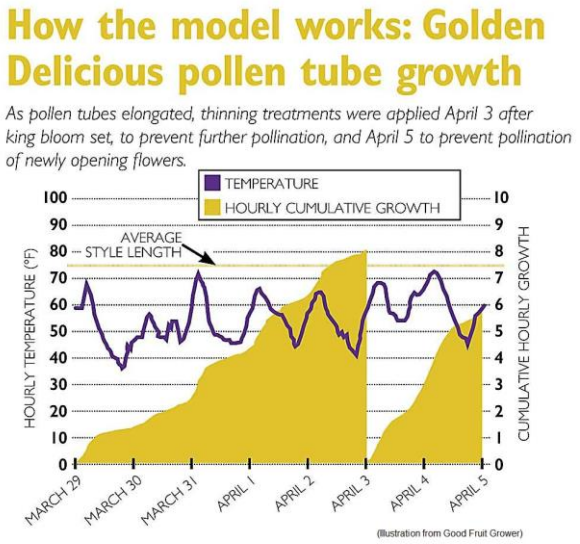

2018 Average Temperature and 4 Day Average CHO Balance for Rock Springs
Temperature
Carbon Balance
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
75.1
64.0
-28.02
-53.81
May 26
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
23-May
24-May
25-May
26-May
27-May
28-May
29-May
30-May
31-May
1-Jun
2-Jun
3-Jun
4-Jun
5-Jun
6-Jun
7-Jun
8-Jun
9-Jun
10-Jun
11-Jun
12-Jun
13-Jun
Avg Temp.
4 day avg.


2018 Average Temperature and 4 Day Average CHO Balance for Reading
Temperature
Carbon Balance
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
79.9
64.0
72.5
-60.19
-31.27
-50.83
3-May
4-May
5-May
6-May
7-May
8-May
9-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
23-May
24-May
25-May
26-May
27-May
28-May
29-May
30-May
31-May
1-Jun
2-Jun
3-Jun
4-Jun
5-Jun
6-Jun
7-Jun
Avg. Temp.
4 day avg.

Potential Pattern

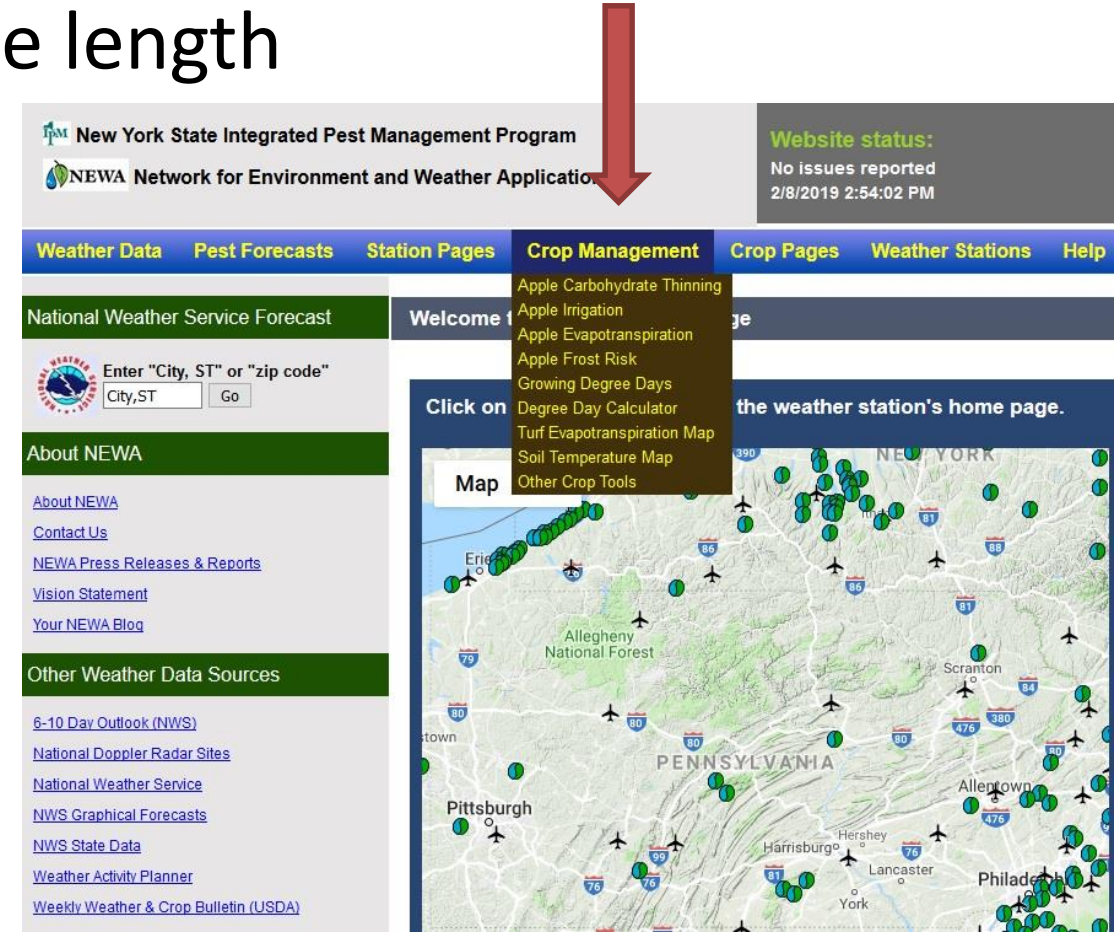
1. Complete thinning program with multiple LS + oil sprays
   a. Two closely timed sprays allowing only earliest and potentially larger fruit to remain
   b. Could follow up with post-bloom thinner if needed
2. Single application
   a. Re-assess set at 10-12 mm for follow up with post-bloom thinners
   b. Early fruit would be distinctly larger & may not come off

From Jim Schupp



Pollen Tube Growth Model (PTGM)

- Developed at Virginia Tech
- Requires pre-measurement of style length
- Utilize the NEWA PTGM model
- www.newa.cornell.edu



Positives to Lime Sulfur & Oil

- Consistent blossom thinner with predictable results
  - Extends thinning window to bloom
- Used with PTGM to target later blooms, while allowing king-blooms to develop normally
- Longer window of application than other blossom thinners
- May help with disease and mite management

From Jim Schupp

Potential Negatives to Lime Sulfur + Oil

- Need to determine average flower style length
- Need for second spray after the first
  - Increased stress, reduction in fruit growth due to lower Pn
- Interaction with environment may result in over-thinning
- Potential for some fruit russetting
- Corrosive nature of materials
  - Equipment and potential leaf burn

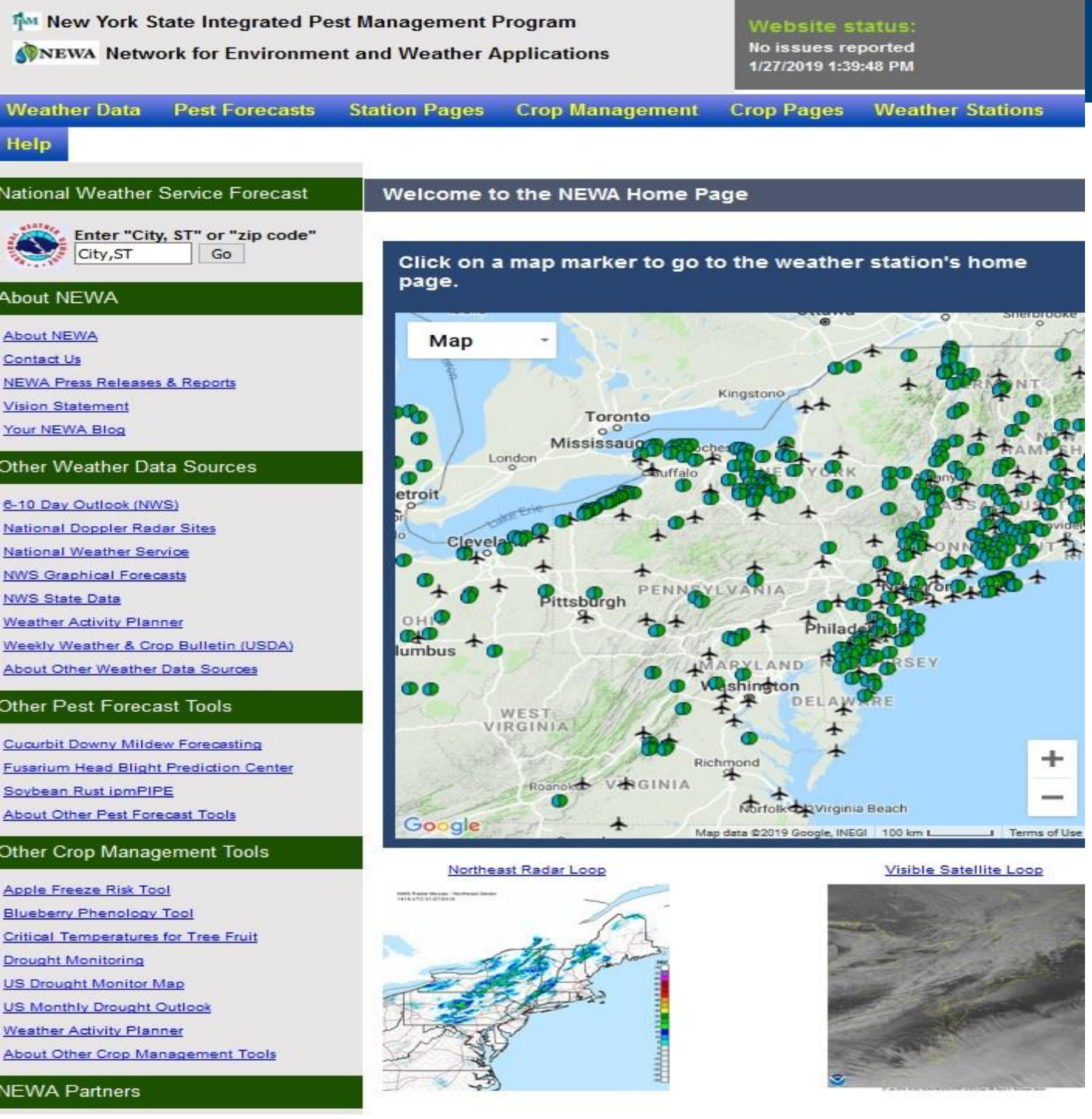
From Jim Schupp

NEWA

Network for Environment & Weather Applications

NEWA history

- Remember PSAOC?
- Remember SkyBit?
- PA became a member in 2013
  - Membership in 2013 paid for by CoAS & Horticulture Department
  - Since 2014 membership paid for by SHAP Extension Committee



www.newa.cornell.edu

http://ptgm.newa.cornell.edu/

Cooperating Institutions & Organizations in NEWA

- Cornell University
- Michigan State Univ.
- Minnesota Apple Growers Assoc.
- North Carolina Apple Growers
- Ohio State Univ.
- Pennsylvania State Univ.
- Rutgers Univ.
- Univ. of Connecticut
- Univ. of Massachusetts
- Univ. of New Hampshire
- Univ. of Vermont
- Univ. of Wisconsin
- Virginia Tech
- West VA Univ.

Penn State **Extension**

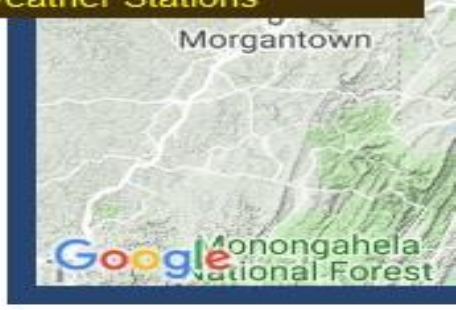
Weather Stations

Weather Data | Pest Forecasts | Station Pages | Crop

Weather Stations in Pennsylvania

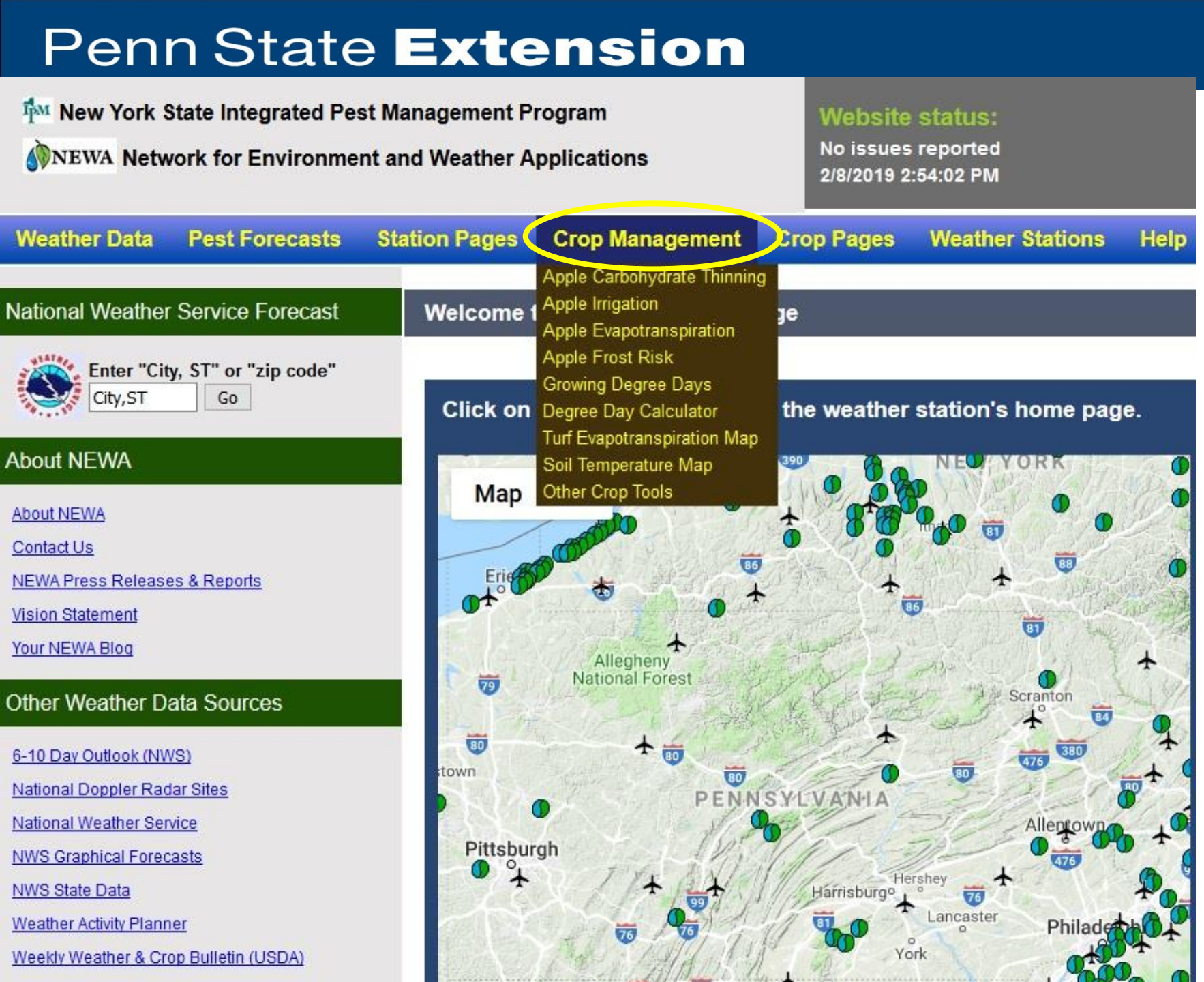
Weather Stations
Allentown
Altoona
Biglerville (Hollabaugh)
Bradford
Breinigsville (Grim)
Cabot (Mathias Farm)
DuBois
Erie
Harborcreek
Harborcreek (Escarpment)
Hostetler Airport (StoneView)
Johnstown
Lake City
Lewisburg (Fero Vineyards)
McDonald
Middletown Harrisburg
NE Philadelphia
New Paris (Boyer)
North East (Side Hill)
North East (State Line)
North East Escarpment
North East Lab
Philadelphia
Piney Mountain
Pittsburgh
Reading
Rock Springs
Scott Township
Wilkes-Barre
Williamsport
York Springs (Lerew)

- Alabama
- Connecticut
- Delaware
- District of Columbia
- Iowa
- Illinois
- Kentucky
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Missouri
- Nebraska
- New Hampshire
- New Jersey
- New York
- North Carolina
- Ohio
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Virginia
- Vermont
- West Virginia
- Wisconsin
- All Weather Stations



31 records found.

www.newa.cornell.edu



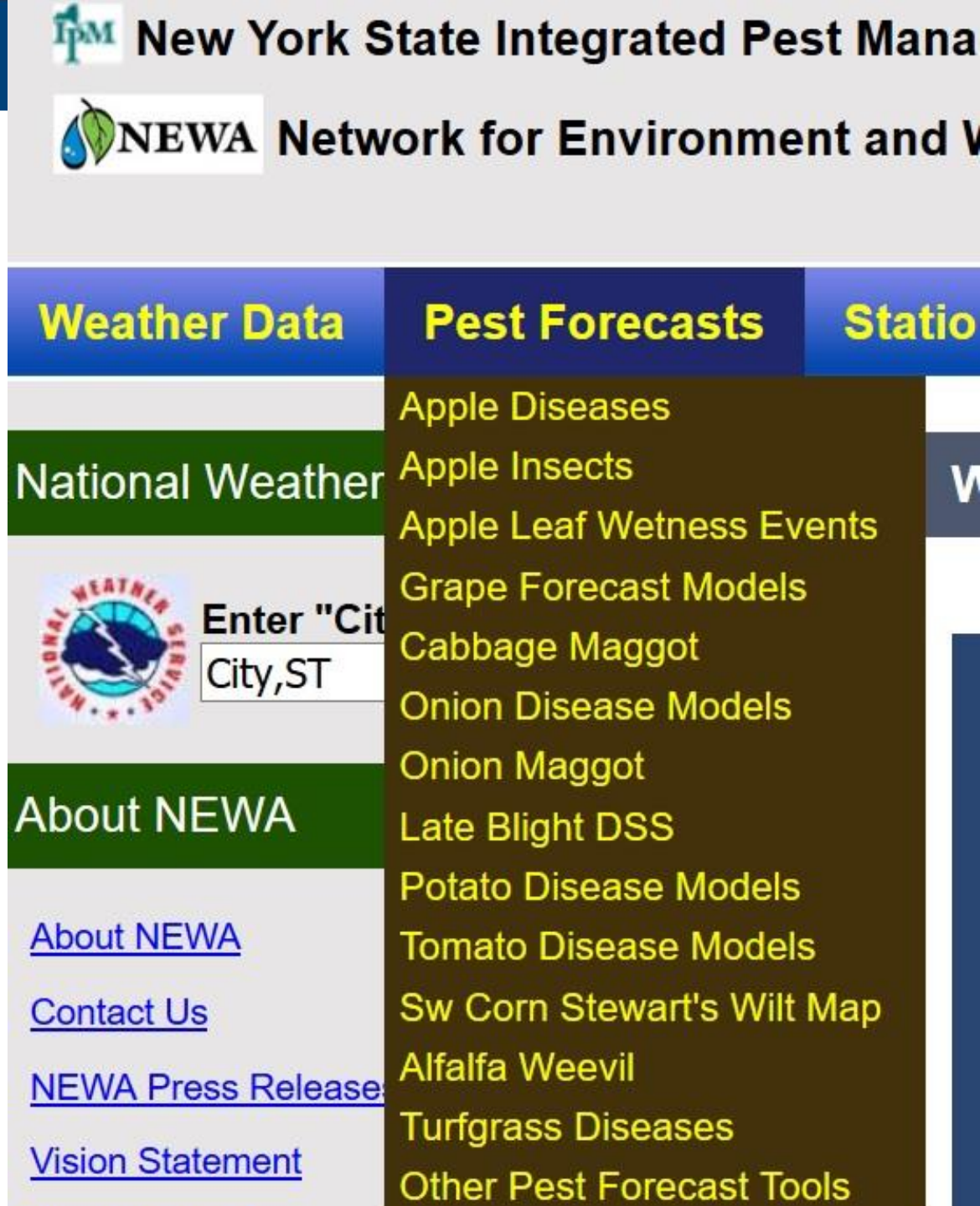
Horticultural Tools

Crop Management Tab

Carbohydrate Model
Irrigation Model
Evapotranspiration
Frost Risk
Growing Degree Days

Penn State **Extension**

Crop Information Available



www.newa.cornell.edu

QUESTIONS / COMMENTS

Gibberellin products (GA_{4+7}) Fine Americas

Novagib 10L (0.95% ai)

Novagiv 5L (5% ai)

Russet reduction in apples

2-4 applications @ 20-33 fl. oz. in maximum of 100 gpa**

max of 66-80 fl. oz./A in one season

Suppression of apple fruit cracking

3-6 applications @ 32-64 fl.oz. in *sufficient water***

Increase cherry fruit size

1-4 applications @6-12 fl.oz./100 gallons H_2O**

max of 48 fl.oz./ in one season

What is Available on NEWA

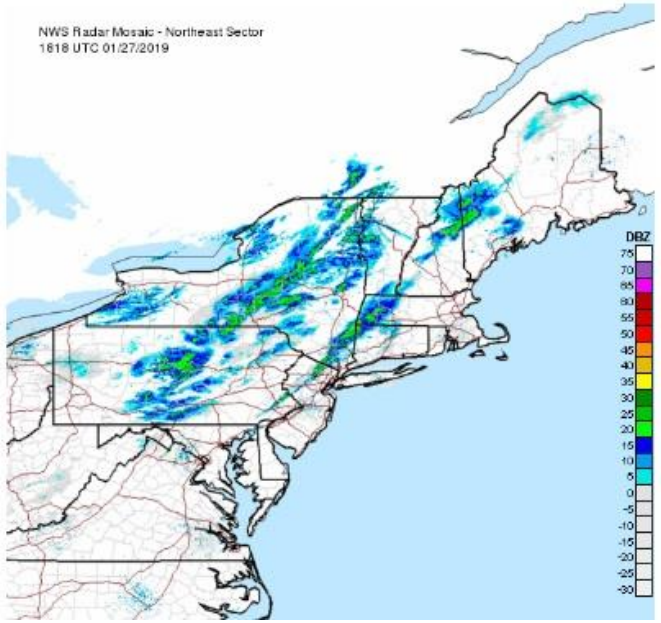
- Individual weather station information
  - 32 locations in PA
  - 6-10 day outlook
  - Doppler radar
- Crop Management
  - MaluSim Carbohydrate Model
  - Pollen Tube Growth Model application to be available this year

Other information available on NEWA

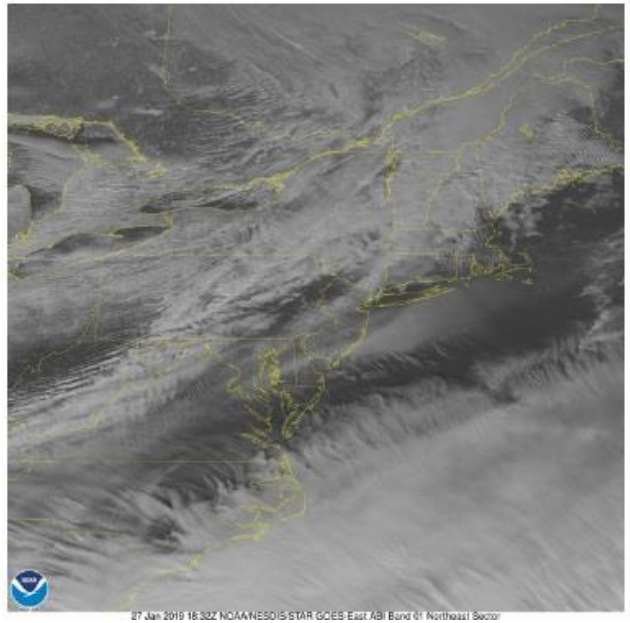
Other Crop Management Tools

- Apple Freeze Risk Tool
- Blueberry Phenology Tool
- Critical Temperatures for Tree Fruit
- Drought Monitoring
- US Drought Monitor Map
- US Monthly Drought Outlook
- Weather Activity Planner
- About Other Crop Management Tools

Northeast Radar Loop

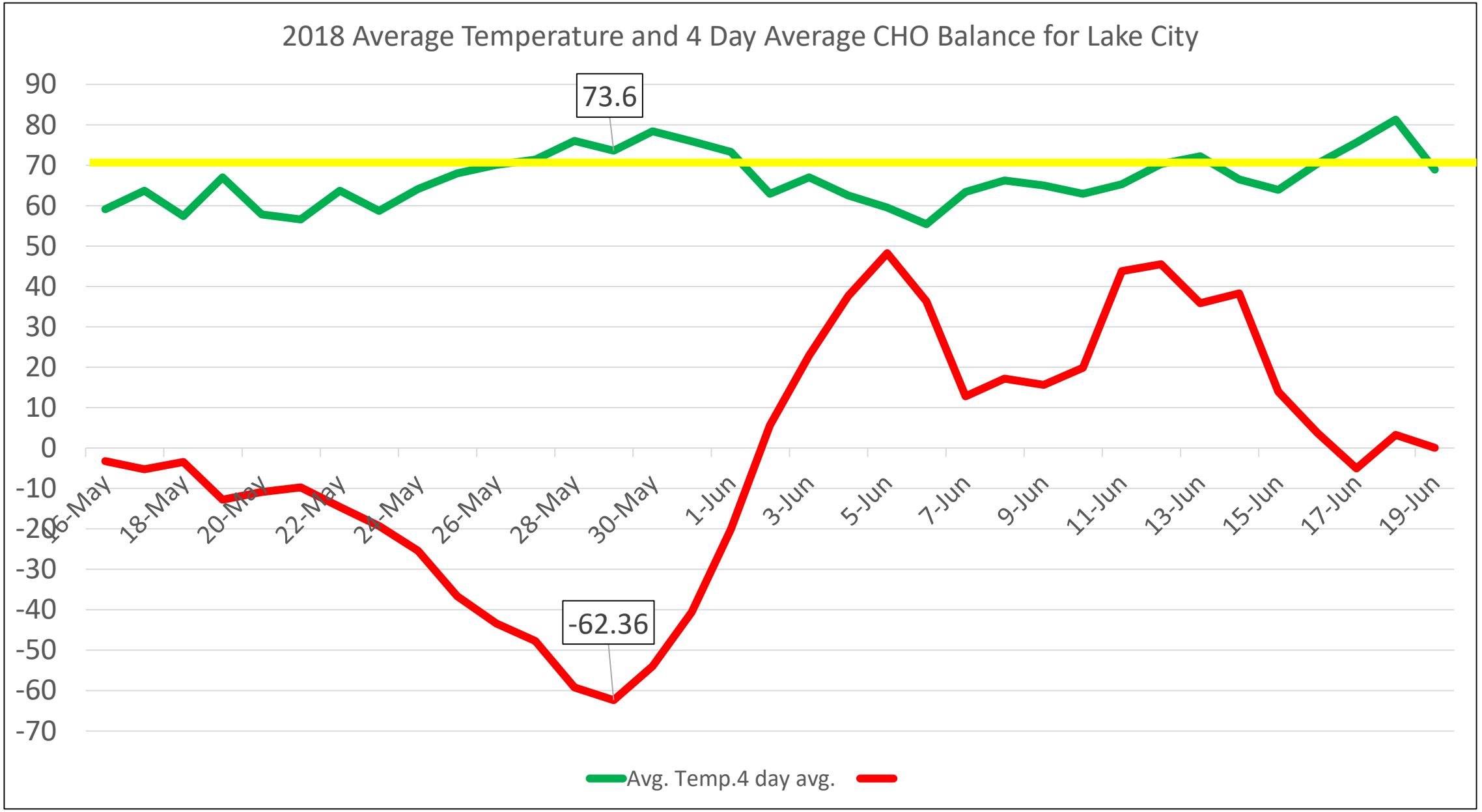


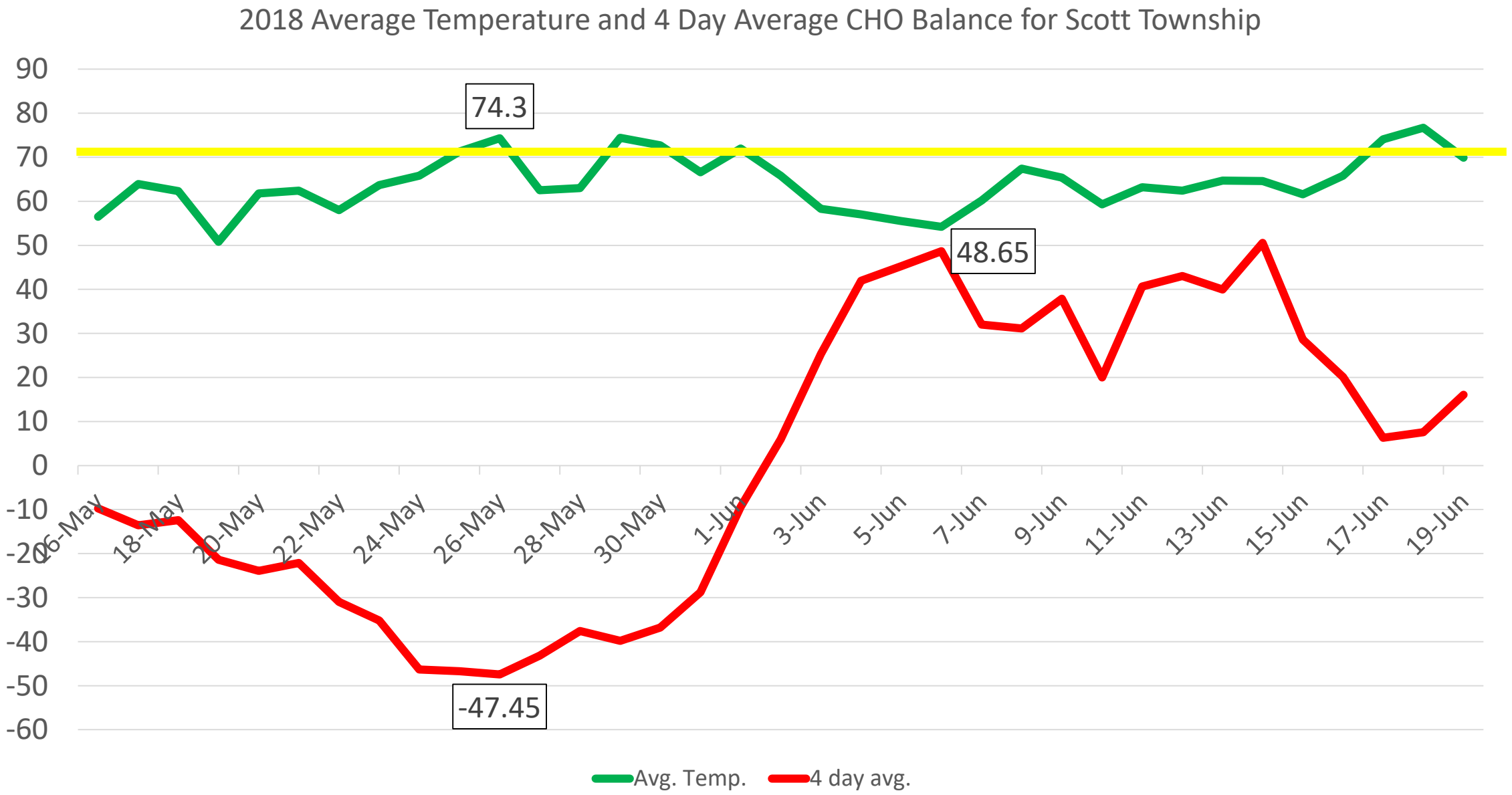
Visible Satellite Loop



www.newa.cornell.edu

Monitor open blossoms


2018 Average Temperature and 4 Day Average CHO Balance for Lake City
73.6
-62.36
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
16-May
18-May
20-May
22-May
24-May
26-May
28-May
30-May
1-Jun
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
Avg. Temp.
4 day avg.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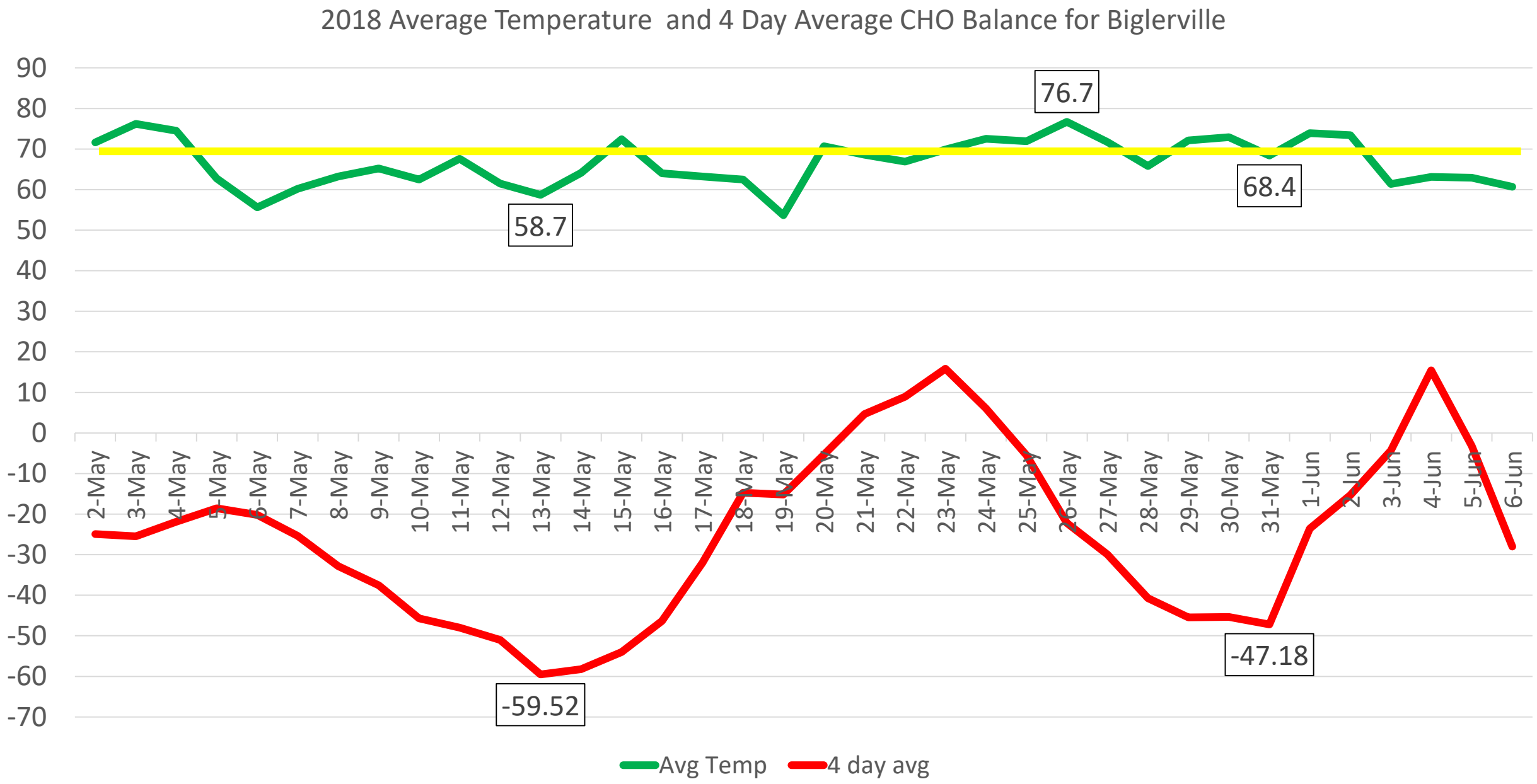
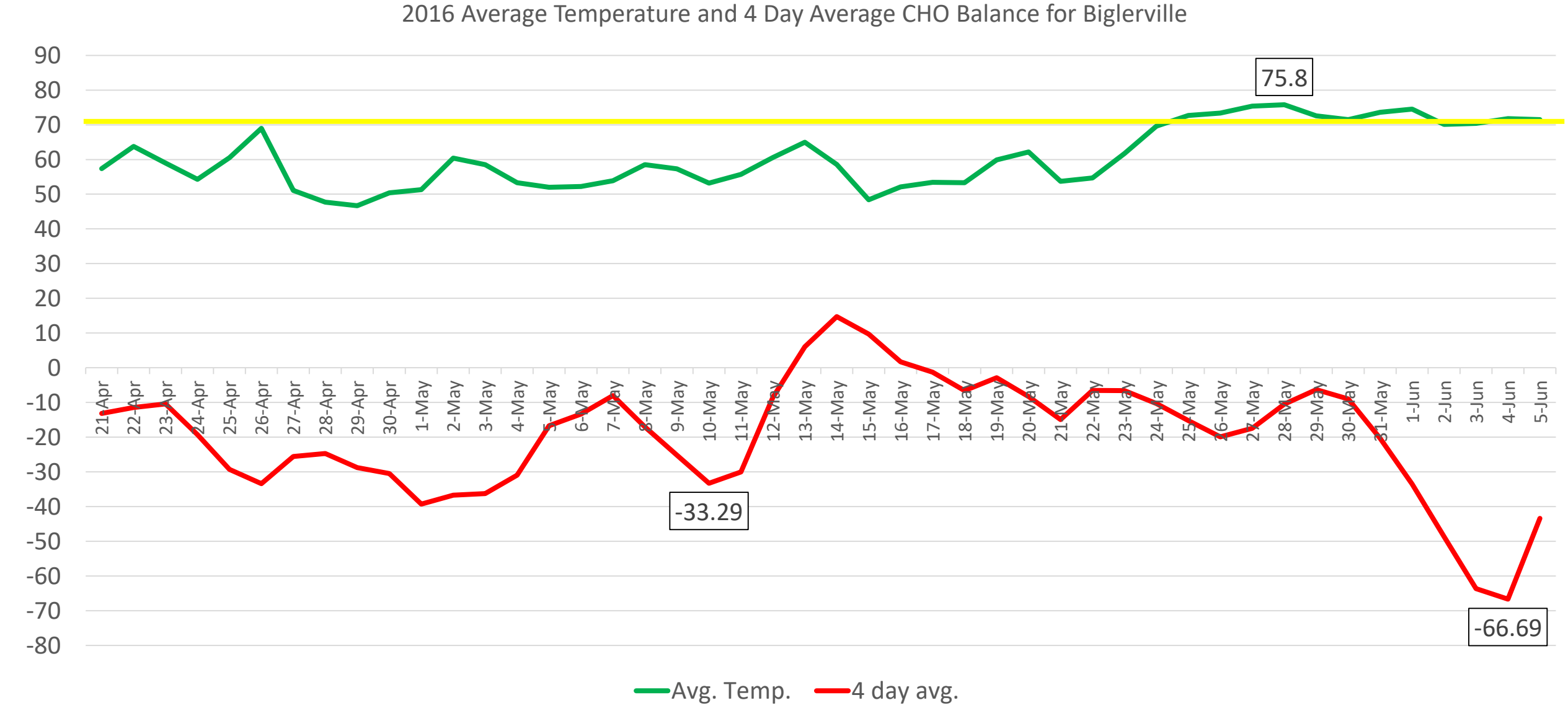
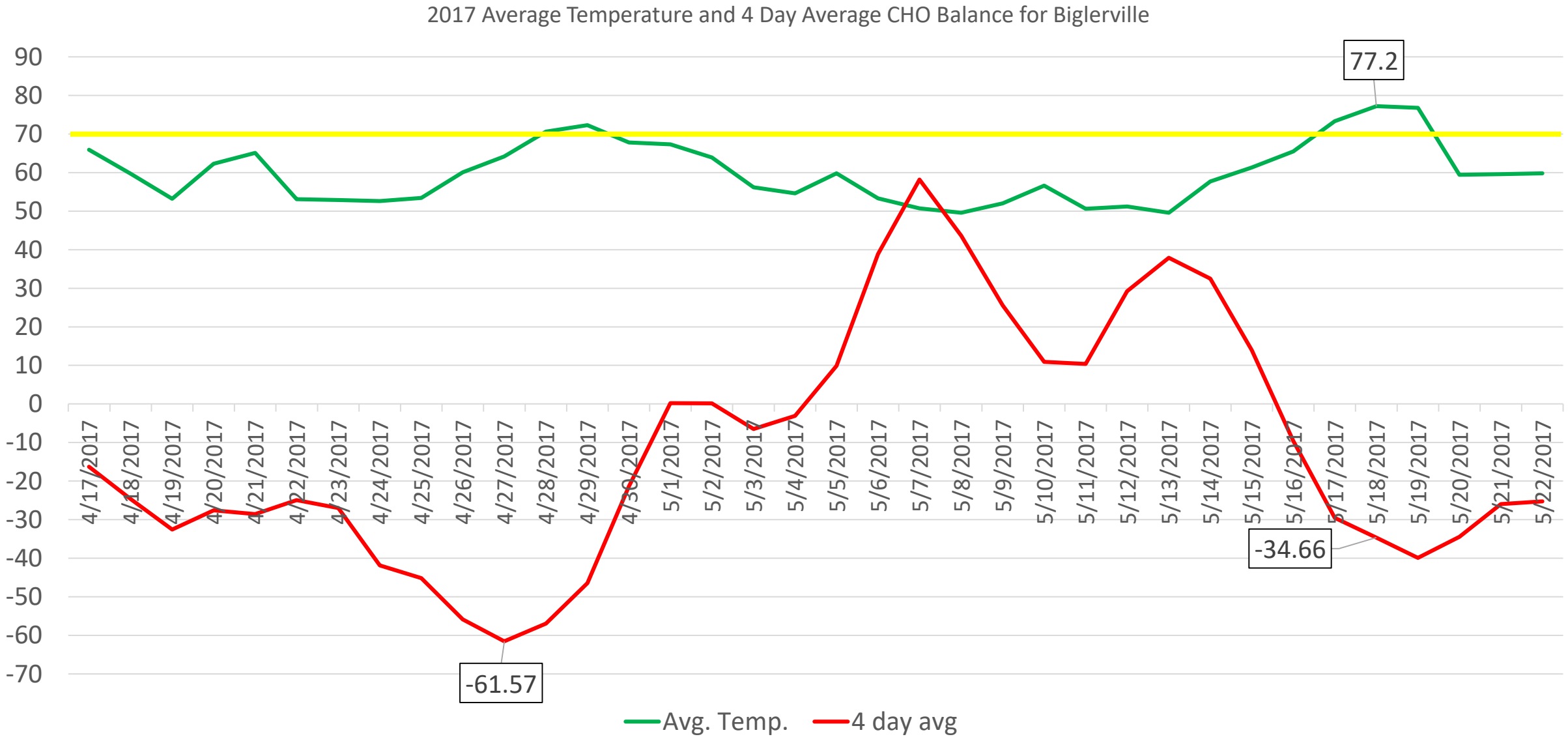
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
74.3
48.65
-47.45
16-May
18-May
20-May
22-May
24-May
26-May
28-May
30-May
1-Jun
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
Avg. Temp.
4 day avg.

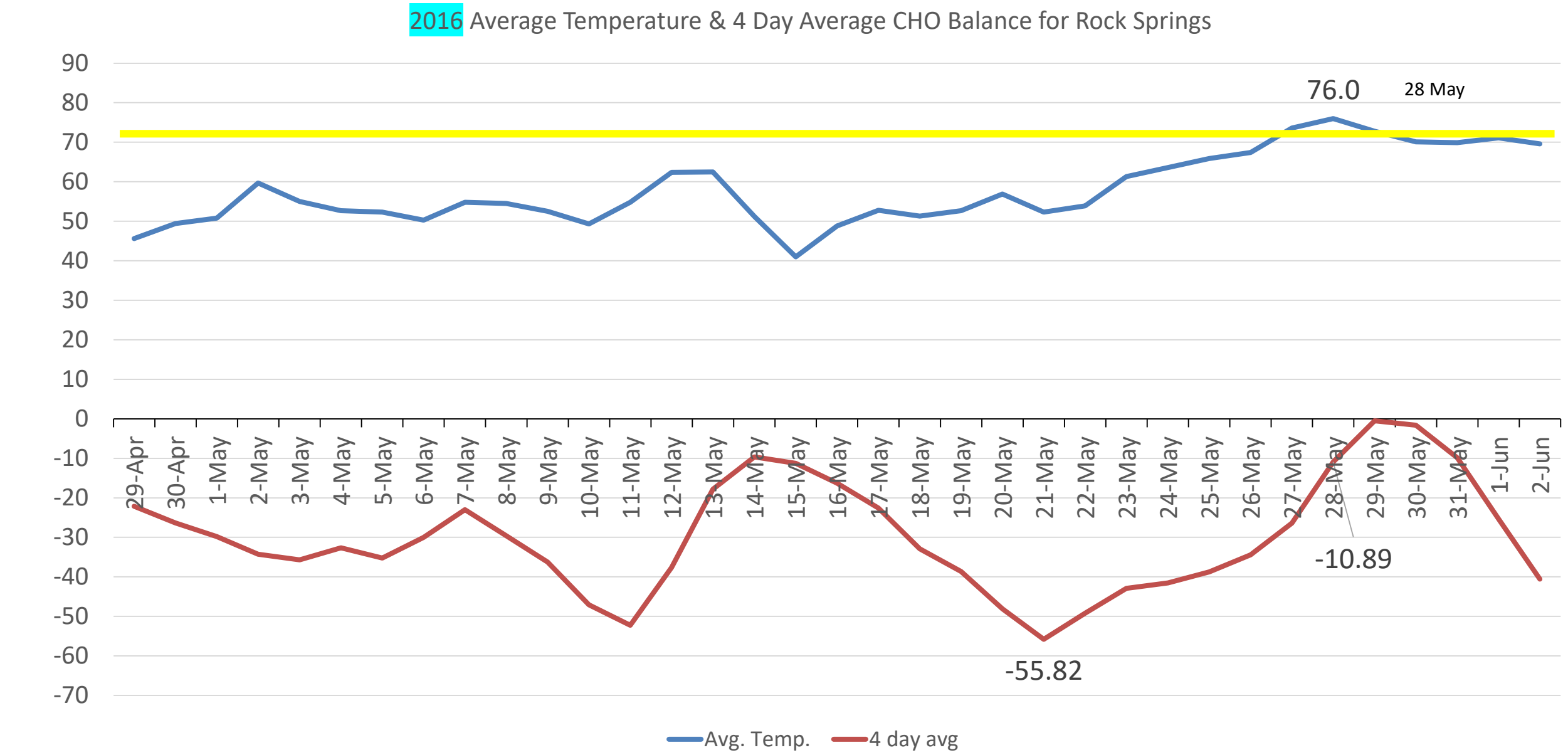

2018 Average Temperature and 4 Day Average CHO Balance for Biglerville
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
76.7
68.4
58.7
-59.52
-47.18
2-May
3-May
4-May
5-May
6-May
7-May
8-May
9-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
23-May
24-May
25-May
26-May
27-May
28-May
29-May
30-May
31-May
1-Jun
2-Jun
3-Jun
4-Jun
5-Jun
6-Jun
Avg Temp
4 day avg

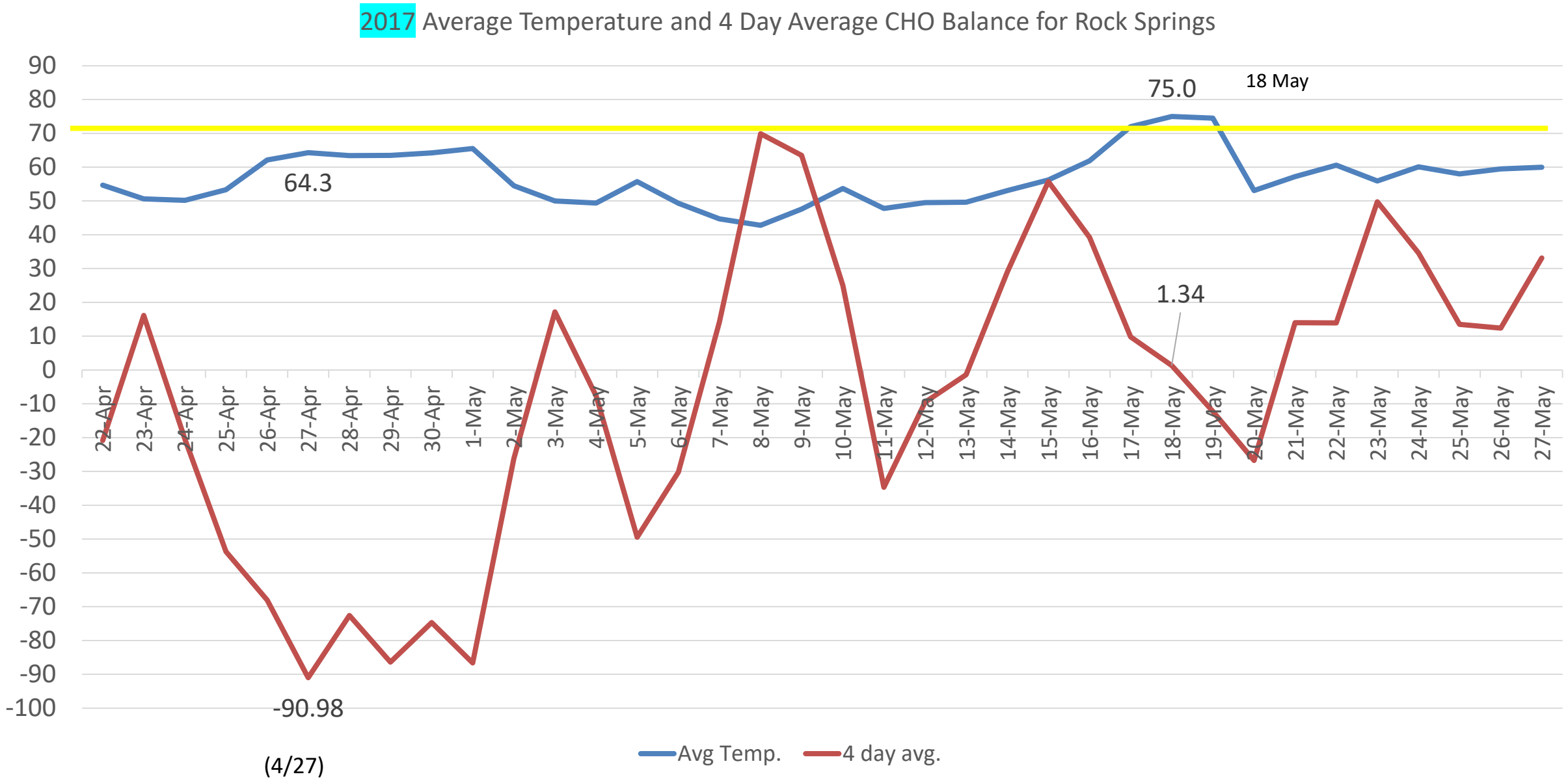

2016 Average Temperature and 4 Day Average CHO Balance for Biglerville
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
75.8
-33.29
-66.69
21-Apr
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
1-May
2-May
3-May
4-May
5-May
6-May
7-May
8-May
9-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
23-May
24-May
25-May
26-May
27-May
28-May
29-May
30-May
31-May
1-Jun
2-Jun
3-Jun
4-Jun
5-Jun
Avg. Temp.
4 day avg.

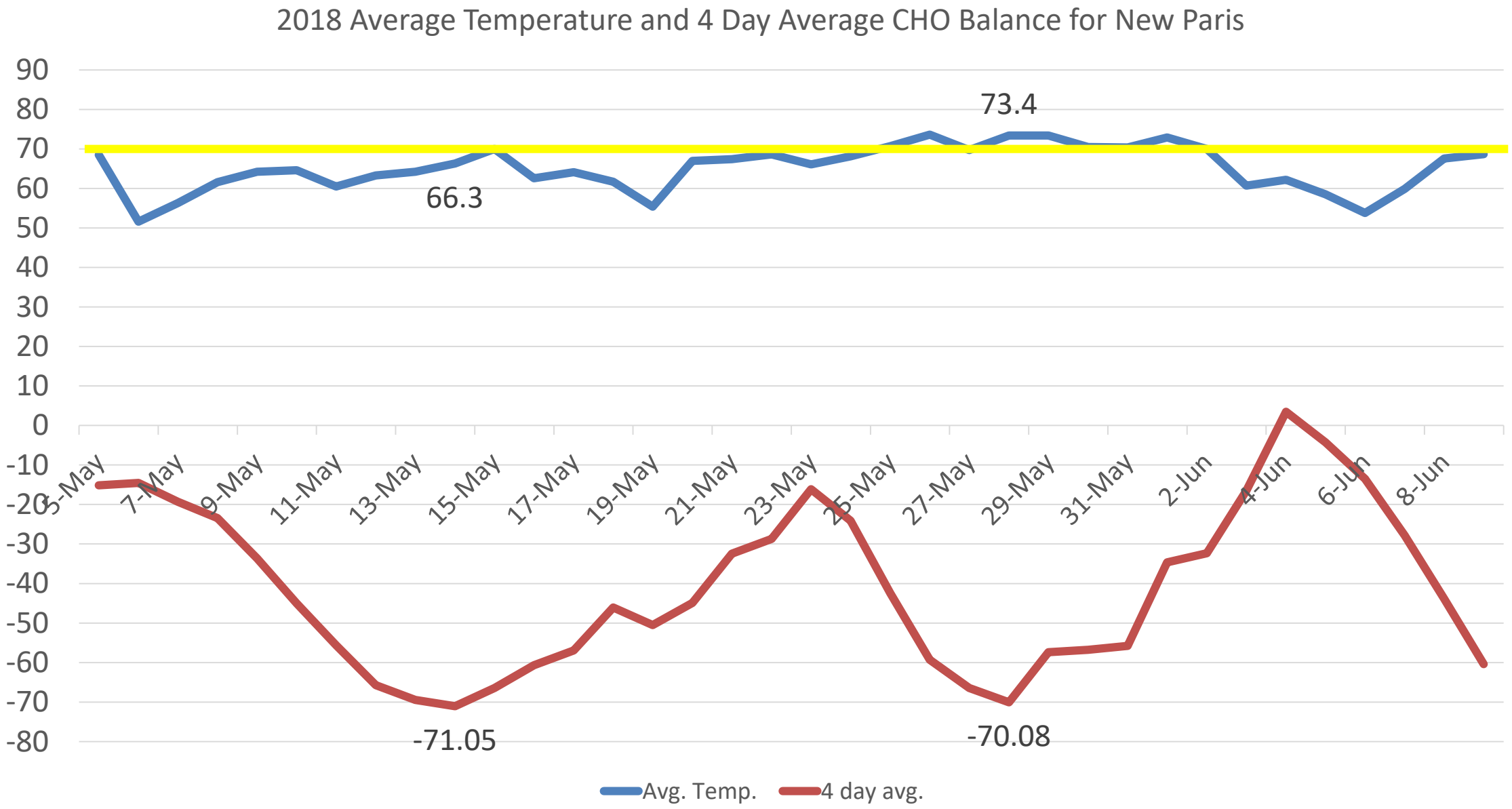

2017 Average Temperature and 4 Day Average CHO Balance for Biglerville
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
77.2
-34.66
-61.57
4/17/2017
4/18/2017
4/19/2017
4/20/2017
4/21/2017
4/22/2017
4/23/2017
4/24/2017
4/25/2017
4/26/2017
4/27/2017
4/28/2017
4/29/2017
5/1/2017
5/2/2017
5/3/2017
5/4/2017
5/5/2017
5/6/2017
5/7/2017
5/8/2017
5/9/2017
5/10/2017
5/11/2017
5/12/2017
5/13/2017
5/14/2017
5/15/2017
5/16/2017
5/17/2017
5/18/2017
5/19/2017
5/20/2017
5/21/2017
5/22/2017
Avg. Temp.
4 day avg

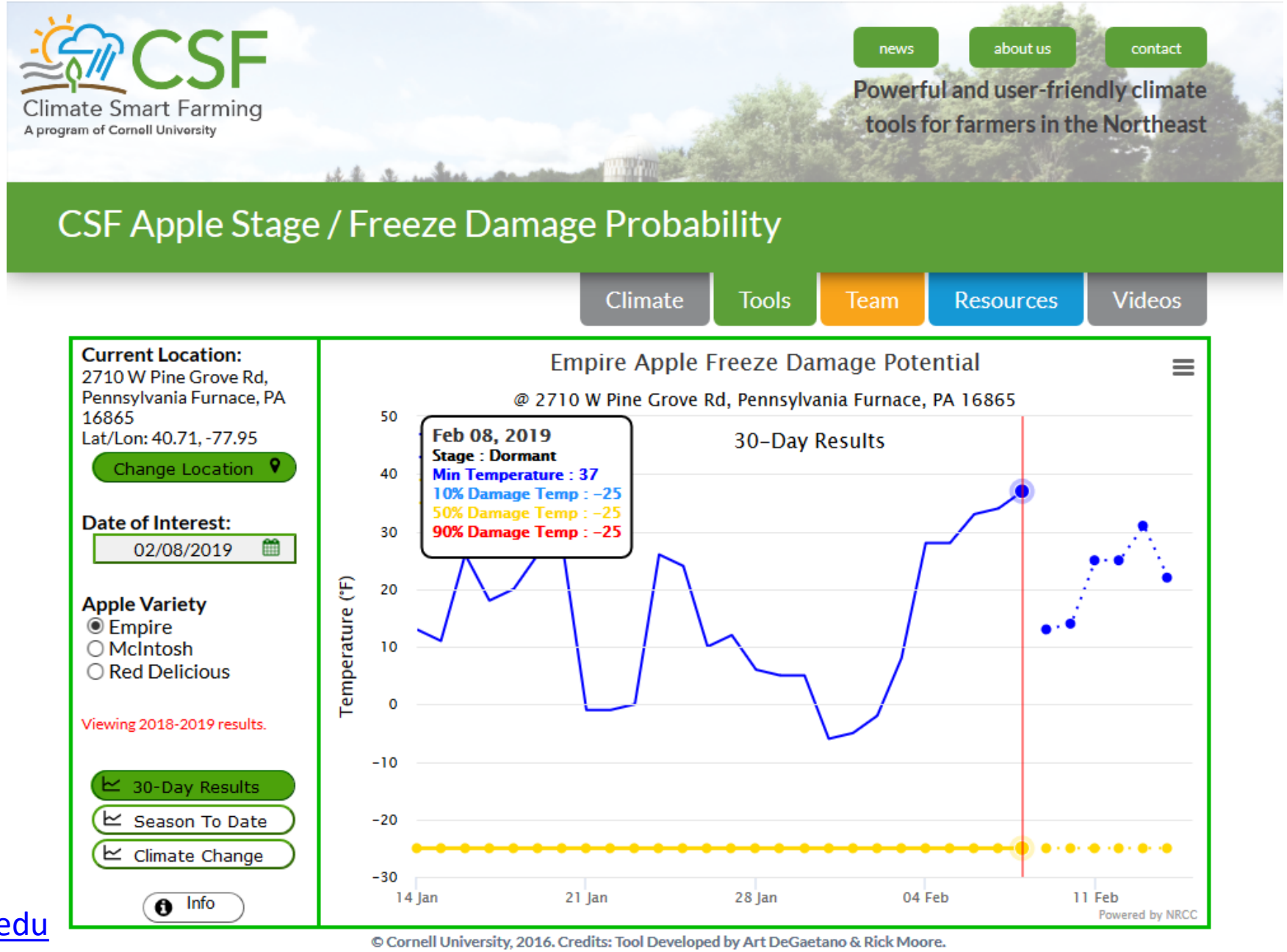
Showcase (Coventa?)

- Option for replants after ground has settled?
- Looking for a source for product
- Broadleaves and grasses
- 2% trifluralin + 0.25% isoxaben + 0.25% oxyfluorfen
- Granular herbicide for nonbearing fruit & nut trees
- Controls weeds growing from seeds but not established weeds
- Needs ½ inch water activation within 3 days of application
- Rates
  - 0.23 – 0.46 lb./100 ft^2 or 0.7 – 1.4 cups/100 ft^2


2016 Average Temperature & 4 Day Average CHO Balance for Rock Springs
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
76.0
28 May
-10.89
-55.82
29-Apr
30-Apr
1-May
2-May
3-May
4-May
5-May
6-May
7-May
8-May
9-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
23-May
24-May
25-May
26-May
27-May
28-May
29-May
30-May
31-May
1-Jun
2-Jun
Avg. Temp.
4 day avg


2017 Average Temperature and 4 Day Average CHO Balance for Rock Springs
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
75.0
18 May
64.3
1.34
-90.98
(4/27)
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
1-May
2-May
3-May
4-May
5-May
6-May
7-May
8-May
9-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
23-May
24-May
25-May
26-May
27-May
Avg Temp.
4 day avg.

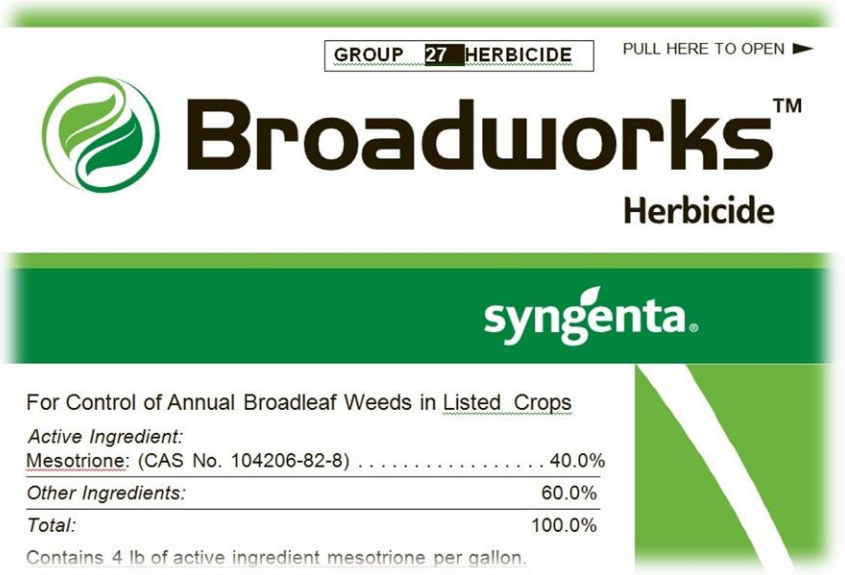

2018 Average Temperature and 4 Day Average CHO Balance for New Paris
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
73.4
66.3
-71.05
-70.08
5-May
7-May
9-May
11-May
13-May
15-May
17-May
19-May
21-May
23-May
25-May
27-May
29-May
31-May
2-Jun
4-Jun
6-Jun
8-Jun
Avg. Temp.
4 day avg.



www.newa.cornell.edu

Rates & Restrictions

- Trees established minimum 12 months
- Do not exceed total of 12 fl oz./A / 12 month period
- Do not exceed 3 applications/ 12 month period
- Do not exceed 6 fl. oz. for first application
- 30 day PHI

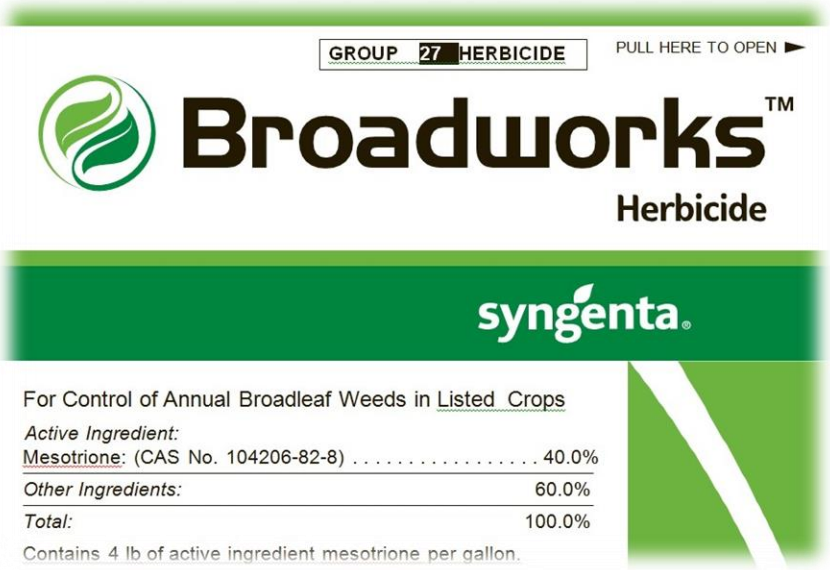


Gibberellin products (GA_{4+7})

- Novagib 10L – 0.95% ai
- Novagib 5L – 5% ai
- Provide 10SG – 10% ai

Broadworks™ cont.

- Can suppress Canada thistle, horsenettle, yellow nutsedge, at higher rates
- No effect on grasses but may see bleaching of crabgrass & foxtails



Penn State **Extension**

About Degree Days

Degree days (DD) are, essentially, a mathematical way to calculate the accumulation of heating units over time. (Cooling units, i.e. chilling hours, can also be calculated, though this is not currently programmed into NEWA.) A brief description of DDs is available from the University of Massachusetts Extension Service at https://ag.umass.edu/landscape/fact-sheets/growing-degree-days-for-management-of-insect-pests-in-landscape.

Keep in mind...

- NEWA serves many agricultural and horticultural commodities.
- There are several formulas that can be used to calculate degree days.
- Max and Min temperatures are collected during a 'defined' 24-hour period.

Because DDs are a way of expressing heating units, entomologists, plant pathologists, horticulturists, and agronomists have utilized DD calculations to model the development (phenology) of arthropod pests, plant diseases, plants, crops, and weeds. For instance, we know that the best fit for explaining the development of ascospores of the apple scab fungus is using degree days calculated with a low cutoff temperature of 32°F. We also know that codling moth development does not progress below 50°F. This is also the case for most plants, thus DDs calculated with a base temperature (or low cutoff) of 50°F are commonly referred to as growing degree days, or GDDs.

NEWA serves many agricultural and horticultural commodities - Several crop, pest, and disease phenology models are programmed into NEWA. Some rely solely on DD tables, some display results directly (DD accumulations are not apparent to the user), and some provide DD ranges when IPM decisions and interventions are needed (hanging traps, spray timings, etc.)

Degree Days (DD) calculated in NEWA at http://newa.cornell.edu/index.php?page=degree-days and the insect phenology and disease models for which they were developed.

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

Growing Degree Day Explanation

What PGR Might Be Helpful After a Frost?

- Must be applied prior to or within 24 hours of frost
- Perlan or Promalin
  - 1 to 2 pints in 50 to 75 – 200 gpa
  - Apply after tissues thaw
  - Do not use a surfactant
- Local Climate interaction ?

Gibberellin products (GA_{4+7})

Novagib 5L (5.0% ai)

- reduce russeting in apples & increase fruit weight

  2-4 applications

  1st @ 4-6.6 fl. oz. in 100 gpa @ PF

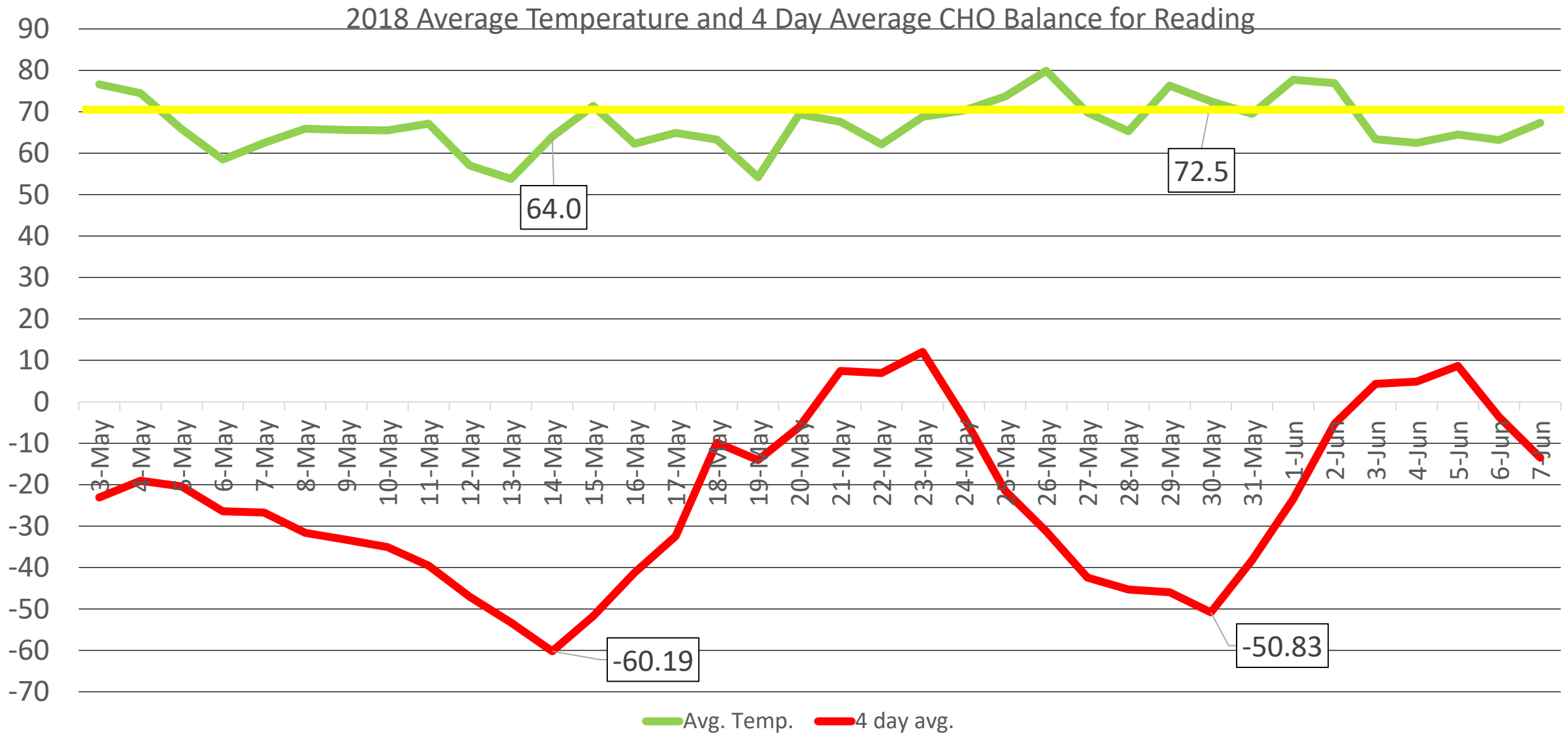
  repeat @ 7-10 day interval for max of 13.2-16 fl.oz/A

- suppression of apple fruit cracking

  3-6 applications

  1st @ 6.4-12.8 fl.oz. in sufficient water** beginning ~mid June-July

  repeat @ 14-21 day interval for at least 4 applications


2018 Average Temperature and 4 Day Average CHO Balance for Reading
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
64.0
72.5
-60.19
-50.83
3-May
4-May
5-May
6-May
7-May
8-May
9-May
10-May
11-May
12-May
13-May
14-May
15-May
16-May
17-May
18-May
19-May
20-May
21-May
22-May
23-May
24-May
25-May
26-May
27-May
28-May
29-May
30-May
31-May
1-Jun
2-Jun
3-Jun
4-Jun
5-Jun
6-Jun
7-Jun
Avg. Temp.
4 day avg.

Jim's Take Home Comments

- LS + Oil effective and consistent
  - Stylet oil, vegetable oil
- LS alone @ 5-6% was less consistent than 2% LS + oil
- 50 gallons/A is comparable to 100 gallons/A
- Do not need to concentrate at lower volume spray

From Jim Schupp

Minimize Tree Injury

- Avoid use when temperatures ≥ 85F
- Avoid consecutive days' application
- Reduce concentration of LS and/or oil
- Apply as a specific spray application
- Potential for captan and oil burn

From Jim Schupp