Vidalia Onion Crop Update Feb 10, 2022 Chris Tyson, Area Onion Agent





Welcome

- Please sign in
- Pesticide License Number for credit



Weather Summary

- Rainfall since Dec. 1st.:
 - Glennville: 6.43 inches
 - Vidalia: 9.09 inches
- Average daily 2 inch soil temps since Dec. 1st
 - Glennville: 56.25 (last year was 51.76)
 - Vidalia: 55.57 (last year was 51.72)
- Average daily temp since Dec 1st
 - Glennville: 53.89 (last year was 49.52)
 - Vidalia: 53.21 (last year was 48.93)
- DD50 heat units since Dec 1st
 - Glennville: 417 (last year was 203)
 - Vidalia: 391 (last year was 182)



Weather Summary

- Cold Jan 30th
 - Vidalia—23.3
 - Glennville 21.9



Heat Unit Accumulation- 50F

Model: 50 °F - Toombs County (GA)

Period [Dec 1 - Feb 6]:	This season	461 GDD
	Last season	197 GDD
	Historic average	301 GDD

Current accumulation La Niña years, long-term climatology



Heat Unit Accumulation-50F vs. historical average

Model: 50 °F - Toombs County (GA)



461

Feb 7,2022

Heat Unit Accumulation-50F vs. last year

Model: 50 °F - Toombs County (GA)





Heat Unit Accumulation-50F Long term projection

Model: 50 °F - Toombs County (GA)





How does the crop look?

- Overall, very good right now.
- Warm weather in December has many fields bigger than usual.
- This got some Botrytis/Stemphyllium started.
- Beat up by rains/wind in January. Good bit of cold weather, few nights in the 20's.
- Freezing temps on Jan. 30 have caused some injury



How does crop look?









Necrotic/dead tissue from cold injury



New growth looks good, but a lot of dead tissue.









Seen a few doubles, too. Below are Candy Joy variety.







Looking ahead

- Disease control
 - We need to manage the all this dead tissue/injury
 - Now is the time to step up our fungicide/bacteria sprays.
 - All this cold injury is an invitation for disease.
- Decisions on Fertility to be made
 - Cal Nitrate-amount/# of applications



Utilizing Poultry Litter?

- How much N is available to onion crop?
 - Litter incorporated (roto-vated in beds) end of Oct.
 - Best prediction is 40~50% range (not 65%)
 - 2 tons=48-60 lbs
 - 3 tons=72-90 lbs
 - Of the total N available, 25% is available right away
 - 2 tons= 12-15 lbs
 - 3 tons= 18-22.5lbs.
 - Some models estimate that 55% of total N from litter has already become available (as of Feb. 7)
 - 2 tons= 26-33 lbs utilized, 21-27 lbs left
 - 3 tons= 39-49 lbs utilized, 32-40 lbs left
- Remainder will be slowly released......



Downy Mildew

Year	Date Downy Mildew Discovered
2021	Not reported
2020	March 23
2019	February 28
2018	March 19
2017	Not reported
2016	April 13
2015	April 20
2014	April 14
2013	April 11
2012	early March

- At a minimum, growers need to begin using protective products such as Bravo and Phosphites
- Growers urged to consider including Omega and Orondis into their rotation
- Good scouting can be valuable



Thrips Control

- When to spray?
- Threshold is 5 thrips per plant (avg), BUT:
- Prior research has shown that **<u>spraying at avg 1</u>** <u>**thrip per plant**</u> can also be successful by reducing future populations and # spray trips across the field.



Thrips Control- What to use? (Last season's prices)

- Radiant need to use 8-10 oz, \$50 65, 4-5 days residual
- Exirel 13.5-20.5 oz, \$40-65, 1+ week residual
- Torac 24 oz, \$35, 1+ weeks residual
- Lannate- 1.5-3pts, \$10-25, No residual
- Pyrethroids (Mustang Maxx, Warrior) Cheap, not much residual
- Pyrethroids only work on *Fusca* thrips. May be other types in your fields. Fusca accounted for ½ of population in 2019 trial.



Crop Budget—Input Costs

Unit	Quantity	Price	Amt/acre	Total	Yours
Thou	85.00	6.50	552.50	553	600
Ton	0.33	43.00	14.19	14	136
Ton	0.20	375.00	75.00	75	120
Ton	0.70	345.00	241.50	242	427.50
Acre	1.00	321.00	60.00	60	70
Acre	1.00	300.00	300.00	300	450
Acre	1.00	30.00	30.00	30	30
Acre	1.00	50.00	50.00	50	100
Acre	1.00	450.00	450.00	450	500
Acre	1.00	0.00	0.00	0	200
Appl	8.00	8.90	71.20	71	100
\$	1844.39	0.07	64.55	65	75
Acre	1.00		1908.94	1,909	2809
Unit	Quantity	Price	Amt/acre	+47% in before h Total	crease variable costs arvest. Yours
Boxes	665.00	1.50	998	998	
Hrs	50.00	12.00	600	600	
Boxes	665.00	1.50	997.50	998	
Ea	100.00	0.48	48.00	48	
	Unit Thou Ton Ton Ton Acre Acre Acre Acre Acre Acre Acre Acre	Unit Quantity Thou 85.00 Ton 0.33 Ton 0.20 Ton 0.70 Acre 1.00 S 1844.39 Acre 1.00 Unit Quantity Boxes 665.00 Hrs 50.00 Boxes 665.00 Ea 100.00	Unit Quantity Price Thou 85.00 6.50 Ton 0.33 43.00 Ton 0.20 375.00 Ton 0.70 345.00 Acre 1.00 321.00 Acre 1.00 300.00 Acre 1.00 300.00 Acre 1.00 50.00 Acre 1.00 0.00 Acre 1.00 0.07 Acre 1.00 0.07 Mare 50.00 1.50 Boxes 665.00 1.50 Hrs 50.00 12.00 Boxes 665.00 1.50 Ea 100.00 0.48	UnitQuantityPriceAmt/acreThou85.006.50552.50Ton0.3343.0014.19Ton0.20375.0075.00Ton0.70345.00241.50Acre1.00321.0060.00Acre1.00300.00300.00Acre1.00300.00300.00Acre1.0030.00300.00Acre1.0050.0050.00Acre1.00450.00450.00Acre1.000.000.00Appl8.008.9071.20\$1844.390.0764.55Acre1.001908.94UnitQuantityPriceAmt/acreBoxes665.001.50998Hrs50.0012.00600Boxes665.001.50997.50Ea100.000.4848.00	Unit Quantity Price Amt/acre Total Thou 85.00 6.50 552.50 553 Ton 0.33 43.00 14.19 14 Ton 0.20 375.00 75.00 75 Ton 0.70 345.00 241.50 242 Acre 1.00 321.00 60.00 60 Acre 1.00 300.00 300.00 300 Acre 1.00 30.00 300.00 300 Acre 1.00 50.00 50.00 50 Acre 1.00 50.00 50.00 50 Acre 1.00 0.00 0.00 0 Acre 1.00 0.07 64.55 65 Acre 1.00 1.50 998

Direct Seeded

- My 2^{nd} year growing direct seeded
- Planted October 18th
- Macon
- 4 in spacing in row



Pre-plant



10 DAP



10 DAP







21 DAP---1 leaf stage







37 DAP—1st Goal Application



43 DAP, 6 days after 1st Goal app.



43 DAP, 6 days after 1st Goal app.







56 DAP



78 DAP, 1-4-22



114 DAP 1-9-22


Herbicide Program So Far

• 10/19/21	Dacthal 4 pts	1 DAP
• 11/1/21	Dacthal 4 pts	14 DAP
• 11/24/21	Goal 3 oz + Prowl 1 pt	37 DAP
• 12/3/21	Goal 2 oz	46 DAP
• 12/17/21	Goal 3 oz	60 DAP
• 1/11/21	Goal 6 oz + Prowl 1 pt	85 DAP
• 1/31/22	Goal 5 oz	105 DAP
• 2/11/22	Goal 8 oz	116 DAP

- 27 oz total Goal
- 5 oz left to legally use between now and May 1^{st} . Not going to cut it.



















Variety Trial

- 52 entries
- Planted Dec. 1st
- 150 lbs 5-10-15 after planting
- 300 lbs 5-10-15 early Jan
- 500 lbs 5-10-15 late Jan
- Cal Nitrate application soon......





Research Update on Fungal and Bacterial Disease Management in Onion

BHABESH DUTTA

ASSOCIATE PROFESSOR AND VEGETABLE EXTENSION PATHOLOGIST COASTAL PLAIN EXPERIMENT STATION UNIVERSITY OF GEORGIA, TIFTON

Botrytis leaf blight (BLB) was widespread and moderately severe in 2021



Efficacy of individual fungicides on BLB

Treatments and rate per acre	Application frequency	AUDPC
Rovral 1.5 pt	4	1427.5 c
Scala 18 fl oz	4	2056.8 a
Luna Tranquility 16 fl oz	4	1165.6 cd
Omega 500 1 pt	4	1098.7 cd
Miravis Prime 11.4 fl oz	4	1106.2 cd
Merivon 11 fl oz	4	876.2 d
Experimental	4	1762.5 b
Non-treated check	-	2318.5 a

How did fungicides perform in a program against BLB?

Treatments and rate per acre	Application frequency	Final disease severity (%)	AUDPC
Luna tranquility 16 fl oz Inspire super 20 fl oz Scala 18 fl oz	2 2 2	55.0 b	1111.2 b
Omega 500 1 pt Inspire super 20 fl oz Scala 18 fl oz	2 2 2	58.8 b	1312.2 b
Miravis Prime 11.4 fl oz Inspire super 20 fl oz Scala 18 fl oz	2 2 2	57.5 b	1199.2 b
Merivon 11 fl oz Inspire super 20 fl oz Scala 18 fl oz	2 2 2	58.8 b	1225.5 b
Merivon 11 fl oz Scala 18 fl oz	2 2 2	56.3 b	1202.2 b
Non-treated check		91.3 a	2460.9 a

Cevya: A novel FRAC 3 fungicide shows promise against BLB

Treatments and rate per acre	Application frequency	AUDPC
Luna tranquility 16 fl oz Cevya 5 fl oz	4 4	640.6 b
Luna Tranquility 16 fl oz Inspire super 20 fl oz	4 4	576.2 b
Merivon 11 fl oz Cevya 5 fl oz	4 4	685.0 b
Merivon 11 fl oz Inspire super 5 fl oz	4 4	643.7 b
Non-treated check		1018.2 a

Ho	Howler: An OMRI listed biological, not effective against Botrytis leaf blight				
	Treatments and rate per acre	Application frequency	AUDPC		
	Howler 5 lb Luna Tranquility 16 fl oz Inspire Super 20 fl oz	2 2 2	1056.2 b		
	Luna Tranquility 16 fl oz Inspire super 20 fl oz	3 3	943.2 b		
	Howler 5 lb	6	1908.5 a		
	Luna Tranquility 16 fl oz Inspire super 5 fl oz Miravis Prime 11.4 fl oz	2 2 2	846.2 b		
	Non-treated check		2153.2 a		

Catamaran® (Potassium Phosphite+Bravo)

- Can provide protection against **Botrytis and downy mildew**

Treatments and rate per acre	Application frequency	Botrytis (AUDPC)
Catamaran 5 pt	4	1408.3 b
Viathon 2 pt	4	1539.1 b
Non-treated check		2406.5 a

Ranking of Fungicides with Respect to their Efficacy on Botrytis

Fungicides	Efficacy
Omega 500	High-to-moderate
Miravis Prime	High-to-moderate
Luna Tranquility	Moderate
Inspire super	Moderate
Fontelis/Merivon	Moderate
Quadris top	Moderate-to-low
Pristine	Moderate-to-low
Switch	Moderate-to-low
Quadris	Moderate-to-low
Rovral	Moderate-to-low
Scala	No efficacy/potential field resistance

Ranking of Fungicides with Respect to their Efficacy on Stemphylium

Fungicides	Efficacy
Luna Tranquility	High-to-moderate
Inspire super	Moderate
Miravis Prime	Moderate
Quadris top	Moderate-to-low
Pristine	Moderate-to-low
Switch	Moderate-to-low
Quadris	Moderate-to-low
Rovral	Low
Omega 500	No efficacy
Scala	No efficacy

Downy mildew was not observed in 2021



Ranking of Fungicides with Respect to their Efficacy on Downy Mildew

Fungicides	Efficacy	
Omega 500	Moderate	
Orondis Ultra	Moderate	
Bravo	Moderate-to-low	
Zampro	Moderate-to-low	
Phosphite	Low (but can help)	
Previcur Flex	No efficacy	
Ranman	No efficacy	
Reason	No efficacy	
Revus	No efficacy	
Presidio	No efficacy	

General Onion Spray Guide

Spray No.	¹ Fungicide(s)/target disease
Two weeks after	Overhead drench application of Fontelis or Endura/RHIZ, WM, PR + Copper fungicide (foliar
transplanting	pathogens)
1	Chlorothalonil or Catamaran/BNR, BLB, PB/ BLB, PB
2	Pristine or Merivon or Fontelis or Rovral/BLB, BNR, SLB, PB
3	Chlorothalonil or Catamaran/BNR, BLB, PB/ BLB, PB
4	Pristine or Merivon or Fontelis or Rovral/BLB, BNR, SLB, PB; ManKocide or Kocide or Nordox
	(Pseudomonas)
5	Chlorothalonil or Catamaran/BNR, BLB, PB/ BLB, PB
6	Pristine or Merivon or Fontelis/BLB, BNR, SLB, PB; ManKocide or Kocide or Nordox (Pseudomonas)
7	Chlorothalonil or Catamaran/BNR, BLB, PB/ BLB, PB
8	Luna tranquility or Inspire super or Omega 500 or Miravis Prime or Switch/BLB, BNR, SLB, PB (Omega
	500 lacks SLB activity)
9	Chlorothalonil/BNR, BLB, PB + ManKocide or Kocide or Nordox (bacterial diseases)
10	Luna tranquility or Inspire super or Omega 500 or Miravis Prime or Switch/BLB, BNR, SLB, PB (Omega
	500 lacks SLB activity)
11	Chlorothalonil or Catamaran/BNR, BLB, PB + ManKocide or Kocide or Nordox (bacterial diseases)
12	Luna tranquility or Inspire super or Omega 500 or Miravis Prime or Switch/BLB, BNR, SLB, PB
	(Omega 500 lacks SLB activity)
13	Chlorothalonil or Catamaran /BNR, BLB, PB + ManKocide or Kocide or Nordox (bacterial diseases)
14	Luna tranquility or Inspire super or Omega 500 or Quadris top or Switch/BLB, BNR, SLB, PB (Omega
	500 lacks SLB activity)
15	Chlorothalonil/BNR, BLB, PB + ManKocide or Kocide or Nordox (bacterial diseases)
16	Luna tranquility or Inspire super or Omega 500 or Miravis Primer or Switch/BLB, BNR, SLB, PB
	(Omerce E00 looks ELD estivity)

Research Update on Bacterial Disease Management in Onion



Bacterial streak and bulb rot caused by *Pseudomonas viridiflava*



Pseudomonas viridiflava can be seed early in season (Jan and Feb)

How does *Pseudomonas* circulates in the environment and impact onion?





Center rot of onion: Pantoea sp.



Sour skin of onion: *Burkholderia cepacia*



Onion bulb decay: *Enterobacter cloacae*



Slippery skin: Burkholderia gladioli pv. alliicola



Some of the factors that favor bacterial rots

- Accumulation of contaminated soil particles and water in neck can initiate bacterial rot
- Quite common in floppy leaf varieties



Same onion plant after weeks

Hail-damage or wind-driven rain or heavy wind (dust) can initiate bacterial issues too





Bacterial Diseases of Onions in Georgia

Bhabesh Dutta and Ronald Gitaitis Department of Plant Pathology





Distribution of bacterial genera on symptomatic onion foliage and bulbs in GA in 2020



Distribution of bacterial genera on symptomatic onion foliage and bulbs in GA in 2021



UGA Bactericide Trial 2021 (natural infection; UGA, Tifton)

Treatment and rate of product/acre	Active ingredient(s)	Internal rot (%)	•
Mankocide 2.5 lb	Mancozeb + CuOH	8.3 b	
Kocide 3000 1.5 lb	CuOH	9.0 b	•
Champ 1.5 lb	CuOH	10.3 b)
Oxidate 5.0 1.28 fl oz/gal	H_2O_2 + peroxyacetic acid	9.5 b	
Forticept 1.28 fl oz/gal	Thyme oil	13.4 b	•
Agrititan 800 ppm	TiO ₂ /Zn	10.7 b	
LifeGard 2 fl oz	Bacillus mycoides strain J	<u>7.0 b</u>	
Nordox 1 lb	Cu ₂ O	4.7 b	
Mastercop 1 pt	CuSO ₄	14.3 b	J
Howler 5 lb	Pseudomonas	8.6 b	
	chlororaphis strain AFS009		
Theia 3 lb	Bacillus subtilis strain	18.6 ab	
	AFS032321		1
NUCop 1.5 lb	Cupric Hydroxide	<u> </u>	J
Non-treated check		37.3 a	

- Six applications at a 10- to 14-day interval; first application coincided with first leaf senescence (first week of March 2021)
- Spring 2021 in Vidalia, GA was relatively cool and drier than 2020, and bacterial foliar symptoms did not appear until a week prior to harvest
- **2020 trial results:** More bulb rot (75% incidence in check plots); ManKocide was the most effective, then other copper products, AgriTitan, & Lifegard

LifeGard can be used as a rotation partner with Copper Bactericides (VOVRC, Lyons, GA)

Treatment and rate per acre	Frequency of application	Final disease severity (%)	AUDPC
LifeGard 2 fl oz	6	32.5 b	233.2 b
LifeGard 2 fl oz Kocide 3000 1.5 fl oz	3 3	40.0 b	251.3 b
Kocide 3000 1.5 fl oz	6	27.5 b	181.6 b
Nordox 1 lb	6	24.2 b	150.6 b
Non-treated check	-	62.5 a	470.1 a



BIOLOGICAL PLANT ACTIVATOR

OMRI certified and also for conventional use

Agent Collaborative Trial (2021)

Input category	Center rot (%)	Marketable yield (lb/plot)
Low input	38.4 c	49.2 c
Grower's standard	24.0 b	66.5 b
High input	16.4 a	85.4 a


Evaluation of digging methods on post-harvest incidence of bacterial rot

Methods of onion digging	External rot (%)	Internal rot (%)
Chain digger	11.5 a	9.0 B
Straight-blade undercutter	14.5 a	20.5 A
P-value	0.246	<0.001

- After digging, bulbs were field cured for 3-days prior to storage.
- Onion bulbs from replicated plots (four replicates) were evaluated after a one month of storage at 4°C.
- Internal rot was associated with mainly Pantoea spp., and external rot was associated with Burkholderia spp. and Pectobacterium spp. based on arbitrarily-collected symptomatic samples.
- Similar results to 2020 trial: 6.2 vs. 12.5% internal bulb rot for plots harvested with a chain digger vs. straight-blade undercutter, respectively.

Evaluation of harvesting methods on post-harvest incidence of bacterial rot

Methods of onion harvest	External rot (%)	Internal rot (%)
Mechanical harvest (Top Air Onion harvester)	12.5 a	4.5 B
Manual harvest	17.0 a	14.5 A
P-value	0.312	<0.001

- Internal rot was associated with mainly *Pantoea* spp., and external rot was associated with *Burkholderia* spp. and *Pectobacterium* spp. based on arbitrarily-collected symptomatic samples.
- Similar results to 2020 trial: 2.2 vs. 10.5% incidence of internal bulb rot for plots harvested mechanically vs. manually, respectively.

Evaluation of neck clipping length on post-harvest incidence of bacterial rot

Neck length clipped	External rot (%)	Internal rot (%)
5-inches	10.0 a	4.5 B
3-inches	9.5 a	4.0 B
1-inch	14.2 a	19.0 A

- Field curing was done prior to clipping
- Internal rot was associated with mainly Pantoea spp., and external rot was associated with Burkholderia spp. and Pectobacterium spp. based on arbitrarily-collected symptomatic samples.



Post-harvest bacterial rot





How does neck clipping length impact bacterial rot?

How does moisture content in neck impact bacterial rot?

Optimum moisture content in neck that improves storage quality?