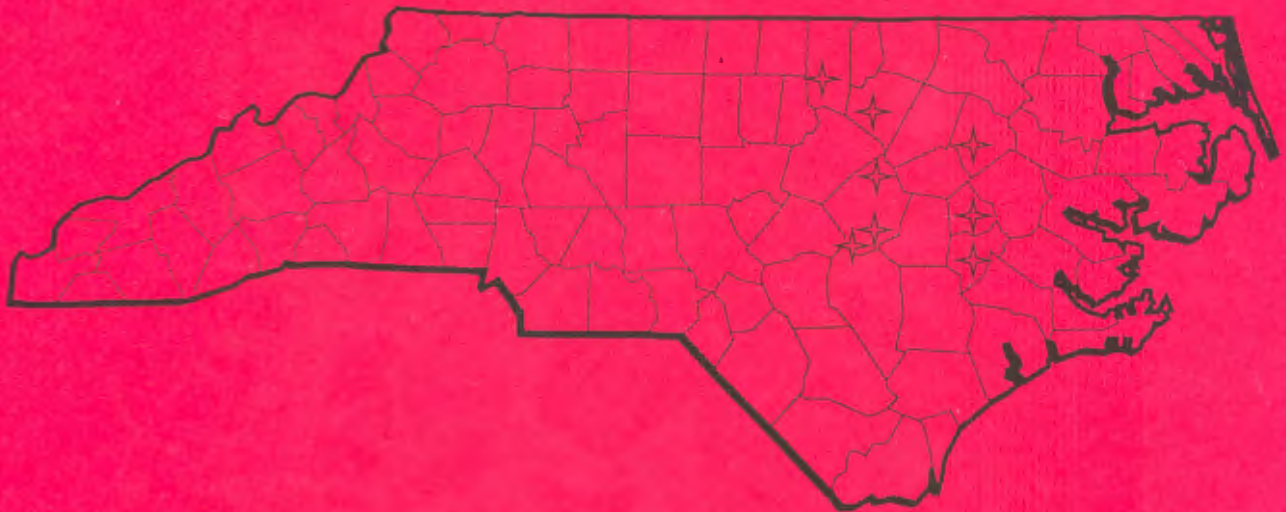


North Carolina Combined Tobacco Tour

July 15-17, 2013



North Carolina Cooperative Extension Service
North Carolina State University

ACKNOWLEDGEMENTS

The Extension-Research Tobacco Program as currently conducted would not be possible without support from a number of sources beyond state and federal appropriations. The 2013 programs are being supported, in part, by the following:

PLANT PATHOLOGY

Altria Client Services
Bayer CropScience
DuPont, USA
TriEst Ag Group
MANA Crop Protection
MPT Mustard Products & Technologies Inc.
N.C. Tobacco Research Comm.
N.C. Tobacco Trust Fund Comm.
Philip Morris International
Profigen
RJ Reynolds Tobacco Company
Syngenta Crop Protection
Valent USA

BIOLOGICAL & AGRICULTURAL ENGINEERING

Altria Client Services
Japan Tobacco International
NC Tobacco Research Commission
Alliance One International
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ENTOMOLOGY

Bayer Crop Science
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DuPont Crop Protection
FMC Corporation, Inc.
N.C. Tobacco Foundation
N.C. Tobacco Growers Association
RJ Reynolds Fund of Excellence

CROP SCIENCE

Alliance One International
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Bayer Crop Science
BASF Corporation
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FMC Corporation
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Reynolds American Tobacco Company
Santa Fe Natural Tobacco Co.
Speight Seed Farm, Inc.
Syngenta Corporation
United Phosphorus, Inc.
United Tobacco Co.
Universal Leaf Tobacco Company

NORTH CAROLINA COMBINED TOBACCO TOUR 2013

Dr. Mina Mila
Plant Pathology

Dr. Loren R. Fisher & Mr. Matthew Vann
Crop Science

Dr. G.H. Ellington
Biological & Agricultural
Engineering

Dr. Hannah J. Burrack & Dr. Clyde Sorenson
Entomology

Technical Support: Plant Pathology:
John Radcliff, Jane Dove Long

Crop Science:
Ken Barnes, Joe Priest, Scott Whitley

Entomology:
Aurora Toennisson, Demetri Tsiolkas, Tanner Stanfield

Bio. & Ag. Engineering:
Justin Macialek, John Norwood, Will Graham

Special Thanks: Graduate Students:
Nathan Bennett, Jack Bittner, Matthew Drake, Alejandro Merchan,
Sally Taylor

NORTH CAROLINA STATE UNIVERSITY, RALEIGH, N.C.

Published by

THE NORTH CAROLINA COOPERATIVE EXTENSION SERVICE

July 2013

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This publication contains information (or results) from use patterns of pesticides, some of which are currently not covered by a registered label. Such results are included for informational purposes and should not be taken as recommendations for use. It is unlawful to use any pesticide in a manner inconsistent with label directions.

Distinguished Sponsors

Philip Morris International

*Welcome Dinner * Monday Evening*

BeltWide Incorporated

*Breakfast * Tuesday morning*

Japan Tobacco International

*Lunch * Tuesday afternoon*

RJ Reynolds

*Lunch * Wednesday afternoon*

Alliance One Tobacco USA

Altria Client Services

Bayer CropScience

Carolina Soils Co.

Chemtura Corp.

Cureco

Drexel Chemical Company

DuPont

F.W. Rickard Seed

Gold Leaf Seed

Suretrol

Syngenta

TriEst Ag Group

Universal Leaf North America US

Workman Tobacco Seed

Yara

Tour refreshments (The Chuckwagon), Tour Flags & Tour Book

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2013 TEST LOCATIONS

The field programs for this year included tests scattered throughout the tobacco area. Listed below are the various types of tests in the field, their location, cooperating growers, extension agents and station personnel who are responsible for them.

Plant Pathology

<u>Location</u>	<u>Cooperator</u>	<u>Test Supervisor</u>
Black Shank Variety Evaluation		
Caswell	Daniels Farms	Will Strader
Franklin	May Farms	Charles Mitchell
Yadkin	Brown Farms	
UCPRS		Lewis Pitt
Granville Wilt Variety Evaluation		
Johnston	Barefoot Farms	Bryant Spivey
Wilson	Scott Brother's Farm	Norman Harrell
Black Shank Chemical Trials		
Greene	Blizzard Farms	Roy Thaggard
Rockingham	Herbin Farms	Will Strader
Wilson	Sharpe Farms	Norman Harrel
UCPRS		Lewis Pitt
Nematode Chemical Control		
Hoke	Eddie Baker	
Johnston	Jeffery Lee Farm	Bryant Spivey

Biological and Agricultural Engineering

<u>Location</u>	<u>Grower Cooperator</u>	<u>County Agent</u>
VFD Fan Speed Reduction Technology		
Wilson	Scott Farms	Norman Harrell
Johnston	Triple B Farms	Bryant Spivey
Harnett	DMG Farms	Brian Parrish
Variable Firing Rate Burner Technology		
Wilson	Scott Farms	Norman Harrell
Wayne/Lenoir	Mac Grady	Kevin Johnson/ Mark Keene
Wood-Chip Fired Hot Water Heating System		
Harnett	Ryan Patterson	Brian Parrish
Person	Allan Newton	Kim Woods
Energy Efficiency Assessment of New Curing Barns		
Johnston	Randy Edwards	Bryant Spivey
Franklin	Taylor Farms	Charles Mitchell
Greene	Dawson Farms	Roy Thagard
Transplant Greenhouse Energy Usage		
Greene	Roy Wood	Roy Thagard
Greene	Dennis Wood	
Johnston	Triple B Farms	Bryant Spivey
Johnston	Ray Boswell	
Harnett	DMG Farms	Brian Parrish
Stokes	Rodney Rogers	Tim Hambrick

Entomology

<u>Trial</u>	<u>Location</u>	<u>Project Leaders</u>
Lepidopteran management with foliar insecticides	Lower Coastal Plain Research Station <i>Lenoir County</i>	Aurora Toennisson & Clyde Sorenson
	Upper Coastal Plain Research Station <i>Edgecombe County</i>	Aurora Toennisson & Clyde Sorenson
Efficacy of organic insecticides against key tobacco pests	Lower Coastal Plain Research Station <i>Lenoir County</i>	Aurora Toennisson & Clyde Sorenson
	Upper Coastal Plain Research Station <i>Edgecombe County</i>	Aurora Toennisson & Clyde Sorenson
Soil Applied Registered & Unregistered Insecticides	Lower Coastal Plain Research Station <i>Lenoir County</i>	Aurora Toennisson & Clyde Sorenson
	Upper Coastal Plain Research Station <i>Edgecombe County</i>	Aurora Toennisson & Clyde Sorenson
Tobacco variety susceptibility to key insect pests	Lower Coastal Plain Research Station <i>Lenoir County</i>	Alejandro Merchan, Aurora Toennisson & Clyde Sorenson
Systemic imidacloprid and tobacco budworm parasitism	Upper Coastal Plain Research Station <i>Edgecombe County</i>	Sally Taylor & Clyde Sorenson
	Lower Coastal Plain Research Station <i>Lenoir County</i>	Sally Taylor & Clyde Sorenson
Interaction between pretransplant applied insecticides and fertilizers	Carter Farms <i>Moore County</i>	Taylor Williams, Bill Carter, Brad Mallow, Aurora Toennisson & Hannah Burrack

Crop Science

Location

Whiteville
Lloyd Ransom
Superintendent

Test Type

Various rates, Application Methods and Application Timing with Liquid Nitrogen (UAN)
Various Rates and Application Timing with Liquid Nitrogen (UAN)
Evaluate the Efficacy of DCCPP Alone & Tank-Mixed with MH
Evaluate Devrinol 50DF XT and KFD-97-03 for Weed Control
Effects of HM9425C with Flumetralin for Sucker Control
OVT; OVTA; RV; RFT; Holdability

Kinston
Brett Byum
Tobacco Supervisor

Regional Sucker Control Study
Pesticide Residue Study
Various Nitrogen Sources on Yield, Quality and Chemical Characteristics of Flue-Cured Tobacco
Sucker Control Study with Various Suckercides
Evaluation of Contacts for Sucker Control
Effects of Organic Nitrogen Sources on Yield and Quality
Organic Nitrogen Rate study
OVT; OVTA; RSP; RFT
Evaluation of Flumentralin & N-Tac (contact) in a Drop Line Application

Rocky Mount
Lewis Pitts
Tobacco Supervisor

Various rates, Application Methods and Application Timing with Liquid Nitrogen (UAN)
Pesticide Residue Study
Sucker Control Study
Impact of Palmer Amaranth Populations on Yield and Quality
Various Rates and Application Timing with Liquid Nitrogen (UAN)
OVT; OVTA; RSP; RFT

Oxford
Carl Watson
Tobacco Supervisor

Regional Sucker Control Study
Chemical Sucker Control Study
Various Rates, Application Methods and Application Timing With Liquid Nitrogen (UAN)
Various Rates and Application Timing with Liquid Nitrogen (UAN)
Effects of Organic Nitrogen Sources on Yield and Quality
Organic Nitrogen Rate Study
Evaluation of Flumentralin & N-Tac (contact) in a Drop Line Appl.
The Evaluation of Conservation Tillage Methods in FC Tobacco
Various Nitrogen Sources on Flue-Cured Tobacco
OVT; OVTA; RSP; RFT

Crop Science

Reidsville Auman French Tobacco Supervisor	Burley Pesticide Residue Study Burley Regional Sucker Control Study Burley Chemtura Sucker Control Maryland 609 and TN 90 LC for Yield and Quality Various Nitrogen Sources for Yield, Quality and Chemical Characteristics on Burley Tobacco Burley OVT; RQT Study
Laurel Springs John Council Tobacco Supervisor	Burley OVT; Burley Regional Quality Study Burley Regional Preliminary Variety Study Burley Regional Sucker Control Study Burley Chemtura Sucker Control Study
Waynesville Kyle Miller Tobacco Supervisor	Various Nitrogen Sources on Yield, Quality and Chemical Characteristics on Burley Tobacco

2013 Crop Science On-Farm Flue-Cured Extension Tests

Johnston County Bryant Spivey County Extension Director	Evaluation of Prime+ Carryover on Flue-Cured Tobacco followed by Sweet Potatoes The Impact of Various Tillage and Field Preparation Methods on Soil Moisture and Compaction
Forsyth & Stokes County Tim Hambrick County Extension Agent	The Impact of Various Tillage and Field Preparation Methods on Soil Moisture and Compaction The Evaluation of Alternative Fertilizer Programs for Flue-cured Tobacco in the Western Piedmont of North Carolina
Davidson County Troy Coggins County Extension Agent	The Evaluation of Alternative Fertilizer Programs for Flue-cured Tobacco in the Western Piedmont of North Carolina

**2013 North Carolina Combined Tobacco Tour
Driving Directions**

<u>Time</u>	<u>Directions</u>	<u>Mileage</u>
	Headquarters Hotel -- Hampton Inn 100 Jesse Tart Circle, Dunn, NC 28334	
Monday, July 15		
	<i>NO TRAFFIC PROTECTION TO WELCOME DINNER</i>	
	<i>Directions from Hampton Inn to Brass Lantern Steakhouse</i>	
	Exit from rear of Hampton Inn parking lot	
	Left on S Sampson Ave	0.2
	Slight Right on Jackson Rd.	0.4
	Left on Spring Branch Rd	0.1
	Left into Brass Lantern Steakhouse Parking Lot	
6:15pm -- Cash Bar	Welcome Dinner -- Brass Lantern Steakhouse	
7:00pm -- Dinner	515 Spring Branch Rd Dunn, NC 28334	
Tuesday, July 16		
	7:00 Depart Hampton Inn	
	7:00 Right on Cumberland St/Hwy 421 S	0.2
	7:00 Straight through stop light at I-95	0.3
	7:01 Left on Hwy 55 E	3.6
	7:06 Left on Green Path Rd	0.4
	7:07 Right on Godwin Lake Rd	2.4
	7:10 Straight through stop sign at Hwy 242	2.5
	7:14 Straight Through stop sign at Hwy 96	1.2
	7:16 Straight through stop light at Hwy 50	1.5
	7:18 Right on Barefoot Rd	0.1
	7:20 Arrive at Jefferey Lee Farm	
7:20 -- 8:20	Breakfast & Impact of Tillage and Land Prep on Soil Moisture Jefferey Lee Farm -- Johnston County 100 Barefoot Rd. Benson, NC	
	8:20 Depart Jefferey Lee farm	0.4
	8:21 Right on Eldridge Road	2.1
	8:24 Left on NC Hwy 50	0.2
	8:25 Arrive at Brad Barefoot Farm on Left	

8:25 -- 9:00

Granville Wilt Variety Trial -- Brad Barefoot Farm -- Johnston County
11952 Hwy 50 Newton Grove, NC

9:00 Depart Barefoot Farm	
9:00 Left on NC Hwy 50	2.1
9:02 Left on NC Hwy 55	1.5
9:04 Follow Traffic Circle to stay on NC Hwy 55	17.1
9:23 Straight through light at Burke Martin Rd	0.2
9:24 Straight through light at NC Hwy 117	0.1
9:24 Straight through light at NC Hwy 117	0.2
9:25 Straight through light at Breazeale Ave	10.7
9:37 Straight through stop sign at NC Hwy 111	15.5
9:54 Left on Pink Hill Rd to stay on NC Hwy 55	3.3
9:58 Straight at stoplight Hwy 70 ByPass	1.1
10:00 Straight through stop light at Haritage St	0.1
10:00 Straight through stop light at NC Hwy 258	0.1
10:01 Straight through stop light at McLewean St	0.1
10:01 Straight through stop light at Independence St	0.4
10:02 Follow Traffic Circle to stay on NC Hwy 55/11	
10:02 Straight through stop light at Caswell St	0.4
10:04 Straight through stop light at Washington Ave	0.1
10:04 Straight through stop light at Vernon Ave	0.6
10:04 Straight through stop light at Highland Ave	1.2
10:06 Left on Cunningham Rd	1.5
10:08 Right on NC Hwy 58	0.1
10:10 Left into Research Station	

10:15 -- 1:00

Lower Coast Plains Research Station/Cunningham Research Farm
200 Cunningham Rd. Kinston, NC

(10:15 -- 11:10)

***Regional Tobacco Growth Regulator Test, Pesticide Residue Study,
Effects of Organic Nitrogen Sources on FC Tobacco, Organic Nitrogen Rate Test***

(11:15- 12:00)

***Efficacy of organically acceptable insecticides against key tobacco pests
Susceptibility of tobacco varieties with variable alkaloid concentrations to insect feeding***

(12:00 -- 1:00)

Lunch

1:00 Depart Kinston Research Station	
1:00 Right on NC Hwy 58	2.5
1:05 Straight through stop light at C.F. Harvey Pkwy	9.3
1:15 Straight through stop light at Hwy 258/ SE 2nd St	1.3
1:17 Straight through stop light at Hwy 903/ Harper St	0.2
1:17 Straight through stop light at Martin Luther King Jr Pkwy	0.2
1:18 Straight through stop light at Hull Rd	1
1:19 Right to stay on Hwy 58	1.2
1:20 Left on farm path to Donnie Blizzard Farm	
1:25 Arrive at Donnie Blizzard Farm	

1:25 -- 2:00

Black Shank Chemical Trial -- Donnie Blizzard Farm -- Greene County
1300 NC-58 Snow Hill, NC

2:00	Depart Donnie Blizzard Farm	
2:05	Left on Hwy 58	11.8
2:18	Right onto Hwy 111	4.1
2:23	Straight through stop light at Hwy 264	1.3
2:25	Left on Good News Church Rd	2.8
2:28	Straight through stop sign at SR-1004	4.5
2:33	Straight through stop sign at Hwy 124	1.2
2:35	Straight through stop sign at N. Fountain Rd	1.3
2:37	Straigh through stop sign at Hwy 42	1.9
2:39	Left at stop sign onto Hwy 43 N	4.1
2:44	Right on Jenkin's Farm Rd	1.9
2:47	Left on Nobles Mill Pond Rd	2.8
2:50	Left into Rocky Mount Research Station	

2:50 -- 5:00

Upper Coastal Plain Research Station
2811 Nobles Mill Pond Rd. Rocky Mt, NC

(2:55 -- 3:35)

Rates and Timing of Liquid Nitrogen on FC Tobacco
Rates, Methods and Timing with Liquid Nitrogen on FC Tobacco

(3:40 -- 4:05)

Black Shank OVT, OVT-A, RFT, RSP

(4:10 -- 5:00)

Impact of FC Tobacco on Palmer Amaranth Population in Cropping Rotation,
Efficacy of insecticides against tobacco budworm and tobacco/tomato hornworm
Efficacy of soil applied insecticides against key tobacco pests
Effects of systemic imidacloprid on tobacco budworm and parasitism rates

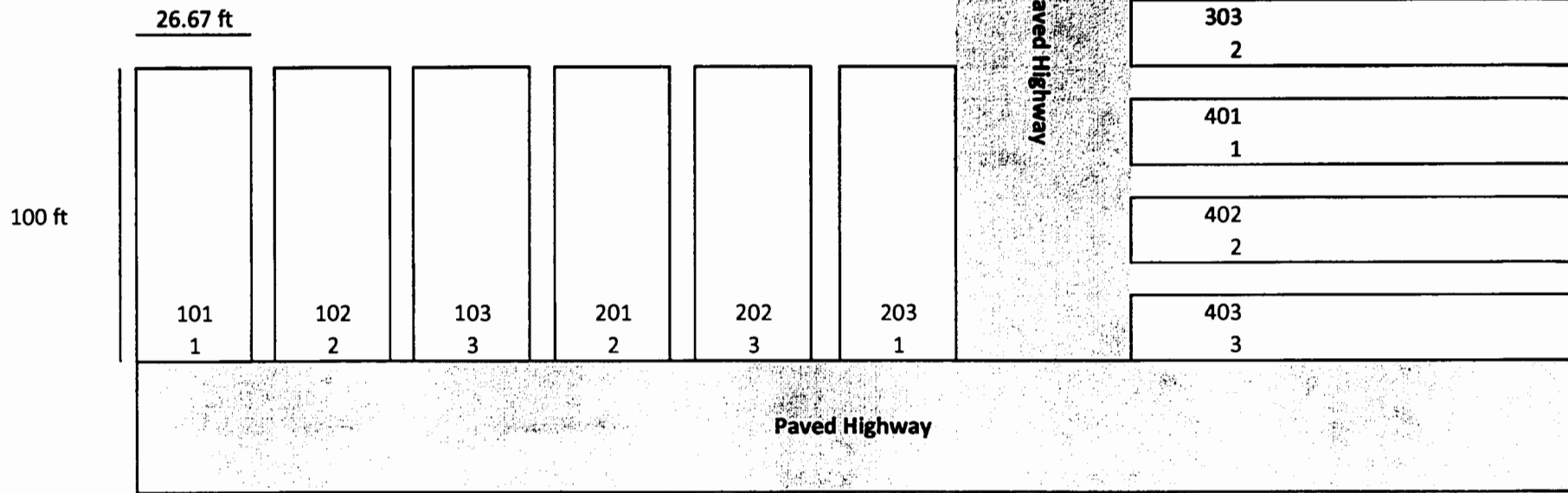
<u>Time</u>	<u>Directions</u>	<u>Milage</u>
Wednesday, July 17		
7:30 -- 8:30	Breakfast & Energy Efficiency Assessment of New Curing Barns Randy Edwards Farm -- Johnston County 200 Salem Church Rd. Wendell, NC	
	8:30 Depart Randy Edwards Farm	
	8:30 Right on Salem Church Rd	0.2
	8:31 Straight through stop sign at Old Johnson Rd	0.5
	8:32 Right at stop sign on Lake Wendell Rd	0.6
	8:33 Straight through stop sign at Applewhite Rd	2.1
	8:36 Left at stop sign on Hwy 96	0.1
	8:36 Right at stop sign on Hwy 231	2.4
	8:39 Left at stop sign on Hwy 39	6.6
	8:44 Straight through stop sign at Hwy 97	3.6
	8:47 Straight through stop sign at Old US 64 hwy	4.9
	8:52 Left at stop light to stay on Hwy 39	8.1
	9:02 Right on Egypt Church Road	0.8
	9:05 Left on farm path	0.1
	9:10 Arrive at May farm	
9:10 -- 9:45	Black Shank Variety Trial -- May Farms -- Franklin County 373 Egypt Church Rd. Louisburg, NC	
	9:45 Depart May farm	
	9:45 Right on Egypt Churuch Rd	0.8
	9:47 Right on Hwy 39	2.2
	9:50 Left at stop light on Hwy 401/Beckett Blvd	0.7
	9:52 Right at stop light on Hwy 56	0.2
	9:52 Straight through Walmart stop light	8.3
	10:03 Straight through stop light at Hwy 1A	0.1
	10:04 Straight through stop light at Cheatham Rd	7.1
	10:14 Right at stop light on Hwy 96/Wilton Rd	11.3
	10:27 Straight through stop light at I-85	0.1
	10:28 Straight through stop light at I-85	0.1
	10:28 Left at stop light on Oxford Loop Rd	1.1
	10:30 Straight through stop light at Hwy 15	0.9
	10:33 Straight through stop light at Hillsborough St	0.1
	10:35 Left into Station	
10:35 -- 12:00	Oxford Tobacco Research Station 901 Hillsboro St, Oxford, NC	
(10:35 -- 12:00)	<i>Evaluation of Conservation Tillage Methods in FC Tobacco Effects of Different Nitrogen Sources on Yield, Quality, Chemical and Sensory Characteristics of FC Tobacco Flue-Cured OVT, OVT-A, RSP, & RFT</i>	
12:00 -- 1:00	Lunch -- George's Family Restaurant 104 E Industry Dr. Oxford, NC 27565	
1:15	Tour of Sante Fe Natural Tobacco Facilities 3220 Knotts Grove Rd, Oxford, NC	

The Impact of Varous Tillage and Land Preparation Methods on Soil Moisture-Johnston County, NC 2013

Cooperating Farmer: Jeffrey Lee Cooperating Agent: Bryant Spivey

Treatment:

- 1) High fall bed with wheat cover (Established November 21, 2012)
- 2) Strip Tillage (Established April 25, 2013)
- 3) Spring Tillage (Established April 25, 2013)



2013 Granville Wild Variety Trial - Johnston County

121 19	122 24	123 6	124 25	125 14	126 34	127 27	128 9	129 32	130 3	131 21	132 18	133 7	134 33	135 26	136 15	PH	PH	PH	PH	PH	PH	PH	PH
97 6	98 30	99 8	100 34	101 31	102 27	103 29	104 4	105 11	106 12	107 23	108 16	109 2	110 8	111 20	112 13	113 10	114 17	115 31	116 5	117 1	118 22	119 30	120 26
73 1	74 21	75 15	76 13	77 16	78 28	79 22	80 2	81 7	82 20	83 17	84 5	85 11	86 18	87 26	88 19	89 33	90 10	91 24	92 14	93 23	94 25	95 12	96 4
49 21	50 12	51 25	52 5	53 18	54 31	55 22	56 20	57 1	58 9	59 6	60 33	61 14	62 15	63 30	64 16	65 7	66 28	67 27	68 24	69 9	70 3	71 32	72 29
25 22	26 26	27 29	28 6	29 21	30 17	31 20	32 25	33 33	34 16	35 4	36 11	37 3	38 34	39 17	40 8	41 23	42 32	43 19	44 2	45 26	46 10	47 29	48 13
1 19	2 7	3 10	4 9	5 13	6 15	7 4	8 1	9 24	10 23	11 5	12 18	13 31	14 27	15 30	16 11	17 28	18 12	19 8	20 32	21 34	22 2	23 3	24 14

5/Jul/2013 (2013_GWvar_Johnston) AOV Means Table Page 1 of 1

Rating Data Type	Percent Dis	Percent Dis	Percent Dis
Rating Date	6/6/2013	6/18/2013	7/5/2013
Entry No.	Entry Name		
1	GL 338	9 b	47 abc
2	K 346	4 b	26 abc
3	GL 368	6 b	57 abc
4	PVH 2254	5 b	28 abc
5	PVH 1452	3 b	18 bc
6	CU 124	4 b	26 abc
7	PVH 2275	6 b	39 abc
8	NC 925	3 b	36 abc
9	CU 144	5 b	40 abc
10	CC 901	7 b	41 abc
11	GL 395	4 b	26 abc
12	CC 67	3 b	31 abc
13	CU 110	5 b	34 abc
14	CC 143	6 b	52 abc
15	CC 1063	1 b	15 c
16	PVH 2248	8 b	32 abc
17	CC 33	4 b	42 abc
18	CC 35	12 b	66 abc
19	CC 304	11 b	38 abc
20	GF 157	9 b	39 abc
21	CC 13	8 b	46 abc
22	GF 318	12 b	50 abc
23	NC 92	12 b	59 abc
24	NC 938	8 b	33 abc
25	NC 939	4 b	44 abc
26	GL 362	14 b	79 ab
27	K 394	7 b	67 abc
28	TI 1068	36 a	100 a
29	NC 196	10 b	64 abc
30	K 326	15 b	59 abc
31	CC 37	4 b	18 bc
32	CC 700	16 b	86 a
33	NC 299	8 b	42 abc
34	NC 606	7 b	31 abc

**2013 REGIONAL TOBACCO GROWTH REGULATOR TEST
CUNNINGHAM RESEARCH STATION
KINSTON, NC**

REP IV

415 1	414 10	413 2	412 6	411 8	410 9	409 5	408 14	407 3	406 7	405 15	404 13	403 11	402 12	401 4
301 1	302 5	303 4	304 9	305 7	306 3	307 13	308 2	309 15	310 12	311 11	312 6	313 10	314 8	315 14

REP III

SMALL ALLEY

REP II

215 1	214 6	213 14	212 2	211 7	210 11	209 9	208 4	207 13	206 3	205 8	204 10	203 15	202 12	201 5
101 1	102 2	103 3	104 4	105 5	106 6	107 7	108 8	109 9	110 10	111 11	112 12	113 13	114 14	115 15

REP I

FARM PATH

DESIGN: RANDOMIZED COMPLETE BLOCK.

PLOT SIZE: 2-ROWS, 7.3' WIDE AND 40' LONG.

VARIETY: NC 196 (GH PLANTS). TRANSPLANTED: 4-16-13

FERTILIZATION: STANDARD RESEARCH STATION CULTURAL PRACTICES.

North Carolina State University

2013 REGIONAL TOBACCO GROWTH REGULATOR TEST

Title No. 2: JOE PRIEST LOREN FISHER MATTHEW VANN SCOTT WHITLEY

Trial ID: SCK-13 Location: KINSTON Trial Year: 2013

Protocol ID: SCK-13 Investigator: Joseph A Priest

Project ID: Study Director:

Sponsor Contact:

Reps: 4 Plots: 7.3 by 50 feet
 Spray vol: 50 gal/ac Mix size: 3 gallons (min 1.6758)

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Amt Product to Measure	Rep 1	Rep 2	Rep 3	Rep 4
1	TOPPED, NOT SUCKERED						101	215	301	415
2	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx	102	212	308	413
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	(RMH-30 1.5 GPA & FLUPRO 0.5 GPA) TM	1.5	EC	2.25	lb ai/a	340.7 ml/mx				
		1.2	EC	0.6	lb ai/a	113.6 ml/mx				
3	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx	103	206	306	407
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	FLUPRO 0.5 GPA	1.2	EC	0.6	lb ai/a	113.6 ml/mx				
	RMH-30 1.0 GPA (AFTER 1ST HARV	1.5	EC	1.5	lb ai/a	227.1 ml/mx				
4	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx	104	208	303	401
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	FLUPRO 0.5 GPA	1.2	EC	0.6	lb ai/a	113.6 ml/mx				
	(RMH-30 1.0 GPA & FLUPRO 0.25 GPA) TM	1.5	EC	1.5	lb ai/a	227.1 ml/mx				
		1.2	EC	0.3	lb ai/a	56.78 ml/mx				
5	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx	105	201	302	409
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	(RTM 2.5 GPA & FLUPRO 0.5 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
		1.2	EC	0.6	lb ai/a	113.6 ml/mx				
	(RTM 2.5 GPA & RMH-30 1.0 GPA & FLUPRO 0.25 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	1.5	EC	1.5	lb ai/a	227.1 ml/mx					
	1.2	EC	0.3	lb ai/a	56.78 ml/mx					
6	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx	106	214	312	412
	(RTM 2.5 GPA & FLUPRO 0.5 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
		1.2	EC	0.6	lb ai/a	113.6 ml/mx				
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	(RTM 2.5 GPA & FLUPRO 0.25 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	1.2	EC	0.3	lb ai/a	56.78 ml/mx					
7	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx	107	211	305	406
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	(RTM 2.5 GPA & FLUPRO 0.5 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
		1.2	EC	0.6	lb ai/a	113.6 ml/mx				
	(RTM 2.5 GPA & FLUPRO 0.25 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	1.2	EC	0.3	lb ai/a	56.78 ml/mx					
8	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx	108	205	314	411
	(RTM 2.5 GPA & FLUPRO 0.25 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
		1.2	EC	0.3	lb ai/a	56.78 ml/mx				
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	(RTM 2.5 GPA & FLUPRO 0.5 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	1.2	EC	0.6	lb ai/a	113.6 ml/mx					
9	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx	109	209	304	410
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	(RTM 2.5 GPA & FLUPRO 0.25 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
		1.2	EC	0.3	lb ai/a	56.78 ml/mx				
	(RTM 2.5 GPA & FLUPRO 0.25 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx				
	1.2	EC	0.6	lb ai/a	113.6 ml/mx					

North Carolina State University

2013 REGIONAL TOBACCO GROWTH REGULATOR TEST

Title No. 2: JOE PRIEST LOREN FISHER MATTHEW VANN SCOTT WHITLEY
 Trial ID: SCK-13 Location: KINSTON Trial Year: 2013
 Protocol ID: SCK-13 Investigator: Joseph A Priest
 Project ID: Study Director:
 Sponsor Contact:

Reps: 4 Plots: 7.3 by 50 feet
 Spray vol: 50 gal/ac Mix size: 3 gallons (min 1.6758)

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Amt to Measure	Product	Rep 1	Rep 2	Rep 3	Rep 4
10	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx		110	204	313	414
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	FLUPRO 0.5 GPA	1.2	EC	0.6	lb ai/a	113.6 ml/mx					
	FLUPRO 0.25 GPA	1.2	EC	0.3	lb ai/a	56.78 ml/mx					
11	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx		111	210	311	403
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	(RTM 2.5 GPA & FLUPRO 0.5 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
		1.2	EC	0.6	lb ai/a	113.6 ml/mx					
	(RTM 2.5 GPA & FLUPRO 0.25 GPA) TM	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	1.2	EC	0.3	lb ai/a	56.78 ml/mx						
12	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx		112	202	310	402
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	FLUPRO 0.5 GPA	1.2	EC	0.6	lb ai/a	113.6 ml/mx					
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
13	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx		113	207	307	404
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	FLUPRO 0.5 GPA	1.2	EC	0.6	lb ai/a	113.6 ml/mx					
	(RTM 1.0 GPA) & (FLUPRO 0.25 GPA) TM	6.01	EC	6.01	lb ai/a	227.1 ml/mx					
	1.2	EC	0.3	lb ai/a	56.78 ml/mx						
14	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx		114	213	315	408
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	FLUPRO 0.5 GPA	1.2	EC	0.6	lb ai/a	113.6 ml/mx					
	(X-77 0.25% & FLUPRO 0.25 GPA) TM	100	P	0.25	% v/v	28.39 ml/mx					
	1.2	EC	0.3	lb ai/a	56.78 ml/mx						
15	RTM 2.0 GPA	6.01	EC	12.025	lb ai/a	454.4 ml/mx		115	203	309	405
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	RTM 2.5 GPA	6.01	EC	15.03	lb ai/a	567.9 ml/mx					
	(RTM 1.0 GPA) & (FLUPRO 0.25 GPA) TM	6.01	EC	6.01	lb ai/a	227.1 ml/mx					
		1.2	EC	0.3	lb ai/a	56.78 ml/mx					
	(RTM 1.0 GPA) & (FLUPRO 0.25 GPA) TM	6.01	EC	6.01	lb ai/a	227.1 ml/mx					
	1.2	EC	0.3	lb ai/a	56.78 ml/mx						

Sort Order: Treatment

**2013 PESTICIDE RESIDUE STUDY
CUNNINGHAM RESEARCH STATION
KINSTON, NC**

REP IV

		4				4				4				4				4				4				4				4			
		0				0				0				0				0				0				0				0			
		8				7				6				5				4				3				2				1			
		1				2				3				4				5				6				7				8			
		3				3				3				3				3				3				3				3			
		0				0				0				0				0				0				0				0			
		1				2				3				4				5				6				7				8			
		1				2				3				4				5				6				7				8			

REP III

SMALL ALLEY

REP II

		2				2				2				2				2				2				2				2			
		0				0				0				0				0				0				0				0			
		8				7				6				5				4				3				2				1			
		1				2				3				4				5				6				7				8			
		1				1				1				1				1				1				1				1			
		0				0				0				0				0				0				0				0			
		1				2				3				4				5				6				7				8			
		1				2				3				4				5				6				7				8			

REP I

Design: Non-Randomized.

Plot Size: 5-row plots except treatment # 8 (untreated check). Shaded plots will be sprayed with various insecticides and fungicides , cured-leaf samples will be collected for residues. Un-shaded plots are guard rows.

Variety: NC 196 (GH Plants). Transplanted: 4-16-13

Fertilization: Standard research station cultural practices except for insecticide and fungicide application for products in the test.

North Carolina State University

2013 Pesticide Residue Study-Kinston, NC

Trial ID: PRK-13 Location: Kinston, NC Trial Year: 2013
 Protocol ID: PRK-13 Investigator: Joseph A Priest
 Project ID: PRK-13 Study Director: Matthew Vann
 Sponsor Contact:

Reps: 4 Plots: 18.3 by 45 feet
 Spray vol: 20 gal/ac Mix size: 2 gallons (min 1.6636)

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Growth Stage	Amt Product to Measure	Rep 1	Rep 2	Rep 3	Rep 4
1	Spinosad (Blackhawk)	2.88	EC	3.2 fl oz/a	May 15	9.464 ml/mx	101	201	301	401
	1st Foliar Application	2.88	EC	3.2 fl oz/a	May 24	9.464 ml/mx				
	2nd Foliar Application	2.88	EC	3.2 fl oz/a	June 3	9.464 ml/mx				
	3rd Foliar Application	2.88	EC	3.2 fl oz/a	June 13	9.464 ml/mx				
	4th Foliar Application	2.88	EC	3.2 fl oz/a	June 24	9.464 ml/mx				
	5th Foliar Application	2.88	EC	3.2 fl oz/a	3 DAY PHI	9.464 ml/mx				
	6th Foliar Application	2.88	EC	3.2 fl oz/a		9.464 ml/mx				
2	Cyantraniliprole (Verimark)			13.5 fl oz/a		Unknown Fm Ds	102	202	302	402
	Tray Drench Application									
3	Fenamidone (Reason)	4.13	SC	8.2 fl oz/a		24.25 ml/mx	103	203	303	403
	1st Foliar Application	4.13	SC	8.2 fl oz/a		24.25 ml/mx				
	2nd Foliar Application	4.13	SC	8.2 fl oz/a		24.25 ml/mx				
	3rd Foliar Application	4.13	SC	8.2 fl oz/a		24.25 ml/mx				
4	Chlorantraniliprole (Coragen)	1.67	SC	7.0 fl oz/a		20.7 ml/mx	104	204	304	404
	Transplant Water Application	1.67	SC	4.2 fl oz/a		12.42 ml/mx				
	1st Foliar Application	1.67	SC	4.2 fl oz/a		12.42 ml/mx				
	2nd Foliar Application	1.67	SC	4.2 fl oz/a		12.42 ml/mx				
5	Difenoconazole (Inspire)	2.08	EC	10.27 fl oz/a		30.37 ml/mx	105	205	305	405
	1st Foliar Application	2.08	EC	10.27 fl oz/a		30.37 ml/mx				
	2nd Foliar Application	2.08	EC	10.27 fl oz/a		30.37 ml/mx				
6	Indoxacarb (Steward)	1.25	EC	2.054 fl oz/a		6.074 ml/mx	106	206	306	406
	1st Foliar Application	1.25	EC	2.054 fl oz/a		6.074 ml/mx				
	2nd Foliar Application	1.25	EC	2.054 fl oz/a		6.074 ml/mx				
7	Tebuconazole (Folicur 3.6F)	3.6	F	2.97 fl oz/a		8.783 ml/mx	107	207	307	407
	1st Foliar Application	3.6	F	2.97 fl oz/a		8.783 ml/mx				
	2nd Foliar Application	3.6	F	2.97 fl oz/a		8.783 ml/mx				
8	Untreated Check						108	208	308	408

Sort Order: Treatment

**Evaluate the Effects of Organic Nitrogen Sources on Flue-cured Tobacco
Cunningham Research Station
Kinston, NC**

Rep IV

414 13	413 14	412 11	411 12	410 1	409 2	408 3	407 4	406 9	405 10	404 7	403 8	402 5	401 6
301 1	302 2	303 5	304 6	305 7	306 8	307 9	308 10	309 13	310 14	311 11	312 12	313 3	314 4

Rep III

Small alley

Rep II

214 3	213 4	212 13	211 14	210 11	209 12	208 5	207 6	206 1	205 2	204 7	203 8	202 9	201 10
101 1	102 2	103 3	104 4	105 5	106 6	107 7	108 8	109 9	110 10	111 11	112 12	113 13	114 14

Rep I

Design: Spilt-Plot

Plot size: 4 rows, 14.7' wide and 45' long.

No shading plots will receive admire in greenhouse. Shaded plots no admire.

Variety: NC 196 (GH plants). Transplanted: 4-16-13

Fertilization: Research station will broadcast K-mag (0-0-22) to test. Project leader will apply the various organic nitrogen sources.

North Carolina State University

Evaluation of the Effects of Organic Nitrogen Sources on the Production of Flue-Cured Tobacco on Cured Leaf Quality and Late Season Insect Pressure

Title No. 2: Nathan Bennett Loren Fisher Matthew Vann Joe Priest Scott Whitley

Trial ID: OFK-13 Location: Kinston Trial Year: 2013

Protocol ID: OFK-13 Investigator: Joseph A Priest

Project ID: Study Director: Loren Fisher

Sponsor Contact:

Reps: 4

Plots: 14.7 by 45 feet

Trt No.	Treatment Name	Amt Product to Measure	Rep			
			1	2	3	4
1	100% Nitrogen Broadcast of Nature Safe (13-0-0) 65 lbs N/acre Insecticides Applied	NA for Unit NA for Unit	101	206	301	410
2	100% Nitrogen Broadcast of Nature Safe (13-0-0) 65 lbs N/acre Insect Damage - No Insecticides Applied	NA for Unit NA for Unit	102	205	302	409
3	50% Nitrogen Broadcast of Nature Safe (13-0-0) 32.5 lbs N/acre 50% Nitrogen Sidedressed with Nature Safe (13-0-0) 32.5 lbs N/acre Insecticides Applied	NA for Unit NA for Unit NA for Unit	103	214	313	408
4	50% Nitrogen Broadcast of Nature Safe (13-0-0) 32.5 lbs N/acre 50% Nitrogen Sidedressed with Nature Safe (13-0-0) 32.5 lbs N/acre Insect Damage - No Insecticides Applied	NA for Unit NA for Unit NA for Unit	104	213	314	407
5	100% Nitrogen Sidedressed of Nature Safe (13-0-0) 50% after Transplanting (32.5 lbs N/acre) 50% at Layby (32.5 lbs N/acre) Insecticides Applied	NA for Unit NA for Unit NA for Unit NA for Unit	105	208	303	402
6	100% Nitrogen Sidedressed of Nature Safe (13-0-0) 50% after Transplanting (32.5 lbs N/acre) 50% at Layby (32.5 lbs N/acre) Insect Damage - No Insecticides Applied	NA for Unit NA for Unit NA for Unit NA for Unit	106	207	304	401
7	100% Nitrogen Broadcast of Nutri-max (12-1-0) 65 lbs N/acre Insecticides Applied	NA for Unit NA for Unit	107	204	305	404
8	100% Nitrogen Broadcast of Nutri-max (12-1-0) 65 lbs N/acre Insect Damage - No Insecticides Applied	NA for Unit NA for Unit	108	203	306	403
9	50% Nitrogen Broadcast of Nutri-max (12-1-0) 32.5 lbs N/acre 50% Nitrogen Sidedressed with Nutri-max (12-1-0) 32.5 lbs N/acre Insecticides Applied	NA for Unit NA for Unit NA for Unit	109	202	307	406
10	50% Nitrogen Broadcast of Nutri-max (12-1-0) 32.5 lbs N/acre 50% Nitrogen Sidedressed with Nutri-max (12-1-0) 32.5 lbs N/acre Insect Damage - No Insecticides Applied	NA for Unit NA for Unit NA for Unit	110	201	308	405
11	100% Nitrogen Sidedressed with Nutri-max (12-1-0) 50% after Transplanting (32.5 lbs N/acre) 50% at Layby (32.5 lbs N/acre) Insecticides Applied	NA for Unit NA for Unit NA for Unit NA for Unit	111	210	311	412
12	100% Nitrogen Sidedressed with Nutri-max (12-1-0) 50% after Transplanting (32.5 lbs N/acre) 50% at Layby (32.5 lbs N/acre) Insect Damage - No Insecticides Applied	NA for Unit NA for Unit NA for Unit NA for Unit	112	209	312	411
13	Conventional Check (21.4 gpa/acre 28% UAN Insecticides Applied	NA for Unit NA for Unit	113	212	309	414
14	Conventional Check (21.4 gpa/acre 28% UAN Insect Damage - No Insecticides Applied	NA for Unit NA for Unit	114	211	310	413

Sort Order: Treatment

**Organic Nitrogen Rate Test in Flue-Cured Tobacco
Cunningham Research Station
Kinston, NC**

Rep IV

409 6	408 4	407 9	406 2	405 5	404 8	403 1	402 7	401 3
301 2	302 8	303 7	304 4	305 3	306 1	307 9	308 5	309 6

Rep III

Small Alley

Rep II

209 7	208 9	207 4	206 3	205 8	204 2	203 6	202 1	201 5
101 1	102 2	103 3	104 4	105 5	106 6	107 7	108 8	109 9

Rep I

Design: Randomized Complete Block

Plot size: 4-rows, 14.7' wide and 45' long

Variety: NC 196 (GH plants). Transplanted: 4-16-13

Fertilization: Research station will broadcast K-mag (0-0-22) to test. Project leader will broadcast the various organic nitrogen sources and rates.

North Carolina State University

Organic Nitrogen Rate Test in Flue-Cured Tobacco

Title No. 2: Nathan Bennett Loren Fisher Matthew Vann Joe Priest Scott Whitley

Trial ID: OFKA-13

Location: Kinston Trial Year: 2013

Protocol ID:

Investigator: Joseph A Priest

Project ID:

Study Director: Loren Fisher

Sponsor Contact:

Reps: 4

Plots: 14.6 by 45 feet

Trt No.	Treatment Name	Amt Product to Measure	Rep 1	2	3	4
1	50 lbs N/Acre Nature Safe (13-0-0) Broadcast	NA for Unit	101	202	306	403
2	65 lbs N/Acre Nature Safe (13-0-0) Broadcast	NA for Unit	102	204	301	406
3	80 lbs N/Acre Nature Safe (13-0-0) Broadcast	NA for Unit	103	206	305	401
4	95 lbs N/Acre Nature Safe (13-0-0) Broadcast	NA for Unit	104	207	304	408
5	50 lbsN/Acre Nutri-max (12-1-0) Broadcast	NA for Unit	105	201	308	405
6	65 lbs N/Acre Nutri-max (12-1-0) Broadcast	NA for Unit	106	203	309	409
7	80 lbs N/Acre Nutri-max (12-1-0) Broadcast	NA for Unit	107	209	303	402
8	95 lbs N/Acre Nutri-max (12-1-0) broadcast	NA for Unit	108	205	302	404
9	Conventional Check (65 lbs N/A) 21.4 gpa/acre 28% UAN	NA for Unit	109	208	307	407

Sort Order: Treatment

Efficacy of organically acceptable insecticides against key tobacco pests

Locations

Upper Coastal Plain Research Station

Rocky Mount, NC

Lower Coastal Plain Research Station

Kinston, NC

Principle Investigator

Hannah Burrack

Research Associate

Aurora Toennisson

Purpose

To compare the efficacy of organically acceptable (OMRI listed) insecticides against tobacco flea beetles, green peach aphids, tobacco budworm, and tobacco/tomato hornworms.

Treatments	Active ingredient(s)	Rate/acre	Target pest
1. Untreated control			
2. Dipel DF	<i>Bacillus thuringiensis</i> (Bt)	1 lb	Tobacco budworm, tobacco/tomato hornworms
3. Pyganic 1.4EC	Pyrethrins	64 fl oz	Green peach aphid, tobacco flea beetle
4. GOS Neem Extract + surfactant	Neem extract		Green peach aphid, tobacco flea beetle
5. EcoTec + TriTec	Rosemary and peppermint oils + Petroleum oil	4 pt + 1.5% v/v	Green peach aphid, tobacco flea beetle
6. Aza-Direct	Azadirachtin	2 pt	Green peach aphid, tobacco flea beetle
7. Entrust (Lower Coastal Plain Research Station only)	Spinosad	2 oz	Tobacco budworm, tobacco flea beetle, tobacco/tomato hornworms

Plot map

Lower Coastal Plain Research Station

401 7	402 2	403 4	404 5	405 3	406 6	407 1
301 7	302 1	303 4	304 2	305 5	306 6	307 3
201 5	202 1	203 7	204 4	205 3	206 2	207 6
101 2	102 3	103 6	104 5	105 4	106 1	107 7

Methods

This experiment was conducted at the Lower Coastal Plain Research Station, Kinston, NC and the Upper Coastal Plain Research Station, Rocky Mount, NC. Plots at the Lower Coastal Plain Research Station were planted on 24 April 2013, and plots at the Upper Coastal Plain Research Station were planted on 29 April 2013. No pre transplant insecticides were applied to any of the plants, and only organically acceptable insecticides were applied as part of this experiment. Conventional fertility, sucker control, and fungicide treatments were applied as needed.

Beginning 3 weeks after transplant (WAT), pest populations were assessed as follows

1. Tobacco flea beetles (TFB) were counted on 10 plants each in rows 2 and 3. TFB holes were counted on the largest field grown leaf on the same 10 plants.
2. The number of tobacco budworm (TBW) infested plants in rows 2 and 3 were counted, and the percentage of TBW infested plants was calculated.
3. The number of plants with 50 or more wingless green peach aphids (GPA) on their upper leaves were in rows 2 and 3 were counted, and the percentage of GPA infested plants was calculated.
4. If present, the number of tobacco/tomato hornworm (HW) larvae were counted on 10 plants each in rows 2 and 3.

When, and if, insect populations reached economic thresholds (4 TFB/plant; 10% TBW infested plants; 10% GPA infested plants; or 1+ HW per 10 plants), insecticide treatments were applied.

Results to date

Insect populations were generally low in all plots. TFB numbers did not reach threshold in any of the plots during the first four weeks post transplant, despite relatively large numbers of flea beetle holes. Therefore, TFB treatments were not applied in the field. A laboratory leaf dip assay was conducted using field-collected insects, but the results of this bioassay are not necessarily generalizable to field conditions.

In order to assess efficacy of test materials against TBW, plots at the Lower Coastal Plain Research Station were treated one week prior to topping, when relatively large TBW populations had developed. This is not a recommended commercial treatment timing, as topping will essentially eliminate TBW populations. GPA infestations were also not at threshold prior to treatment. The number of TBW and GPA infested plants per plot were then counted 1, 4, and 7 days after treatment (DAT).

Both the number of TBW and GPA infested plants increased during the week after treatment, but there was not a significant interaction between treatment and time. There were significantly more GPA infested plants in Entrust treated plots, relative to the untreated control and other treatments, but other treatments did not decrease aphid infested plants relative to the untreated control (Figure 2). Entrust treated plants also had significantly fewer TBW larvae than any other treatments and the untreated control (Figure 3).

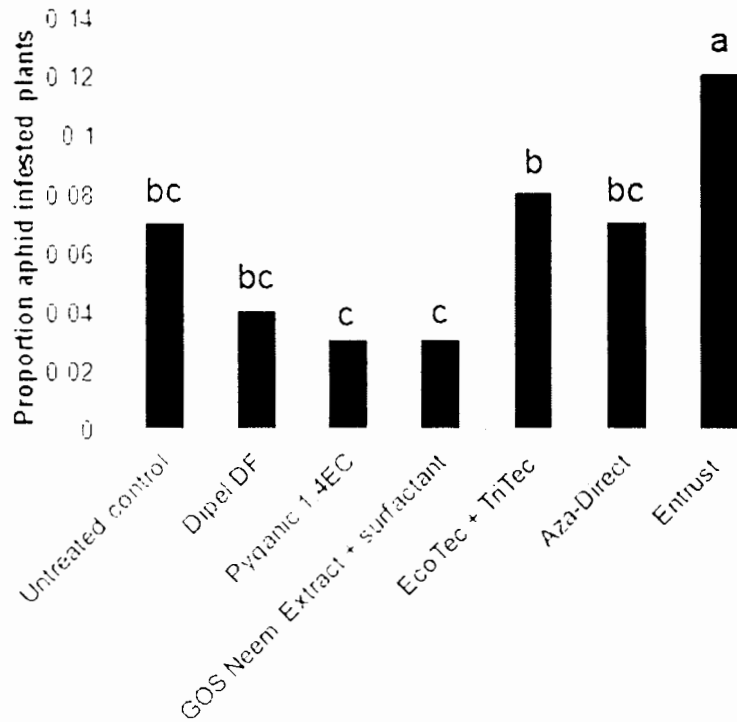


Figure 2. GPA infested plants. Lower Coastal Plain Research Station. Values indicated by the same letter are not significantly different from one another ($\alpha=0.05$) via Fisher's Protected LSD.

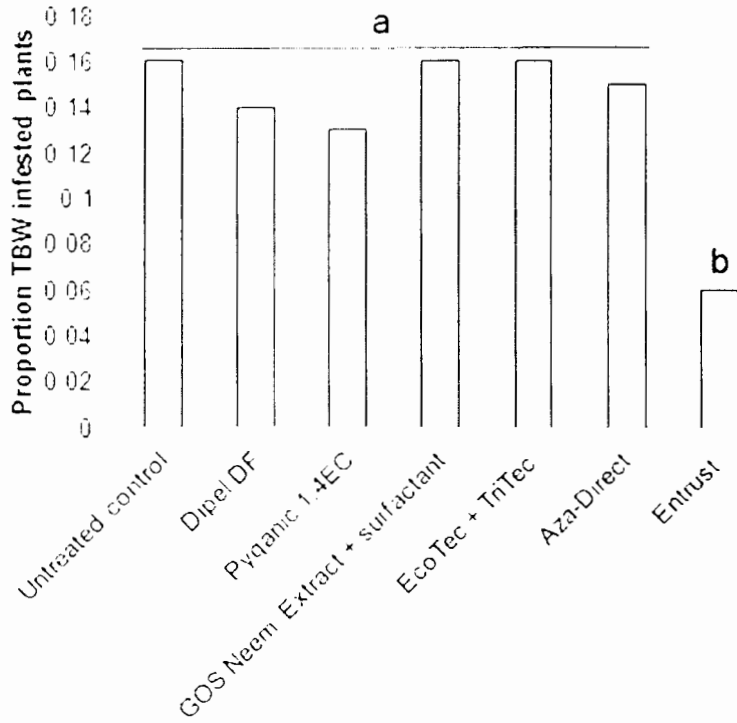


Figure 3. TBW infested plants, Lower Coastal Plain Research Station. Values indicated by the same letter are not significantly different from one another ($\alpha=0.05$) via Fisher's Protected LSD.

Susceptibility of tobacco varieties with variable alkaloid concentrations to insect feeding

Location

Lower Coastal Plain Research Station

Kinston, NC

Graduate Student

Alejandro Merchan

Principle Investigator

Hannah Burrack

Research Associate

Aurora Toennisson

Purpose

To determine if there are differences in insect density or damage between varieties with differing levels of alkaloids.

Treatments

1. K326, certified
2. K326, experimental
3. TN 90 LC (low converting)
4. TN 90, experimental

Plot map

401 3	402 4	403 2	404 1
301 4	302 2	303 1	304 3
201 3	202 2	203 4	204 1
101 1	102 2	103 3	104 4

Methods

This experiment was conducted at the Lower Coastal Plain Research Station, Kinston, NC, and plots were planted on 24 April 2013. No insecticide was been applied to plants either pre or post transplant. Fertility, sucker control, and fungicide treatments were applied as needed, following standard NC State University recommendations.

Field insect densities

Beginning 3 weeks after transplant (WAT), pest populations were assessed as follows:

1. Tobacco flea beetles (TFB) were counted on 10 plants each in rows 2 and 3. TFB holes were counted on the largest true leaf on the same 10 plants.
2. The number of tobacco budworm (TBW) infested plants in rows 2 and 3 were counted, and the percentage of TBW infested plants was calculated.

3. The number of plants with 50 or more wingless green peach aphids (GPA) on their upper leaves were in rows 2 and 3 were counted, and the percentage of GPA infested plants was calculated.
4. If present, the number of tobacco/tomato hornworm (HW) larvae were counted on 10 plants each in rows 2 and 3.

Laboratory assays

In addition to field observations, three adult female GPA were exposed to leaves collected from each plot in laboratory assays begun 3 WAT and repeated on a weekly basis. Adult survivorship and nymph production were measured over the course of 5 days. These assays are ongoing and will continue through harvest or until GPA cease to survive on leaves for the observation period.

No significant difference in GPA survivorship or nymph production has been observed between varieties to date. Assays on TBW survivorship and performance are underway and will expand to include HW larvae in the latter half of the season.

Results to date

Field insect densities

There was no significant difference between varieties in the number of flea beetle holes per leaf nor in the number of flea beetles in 20 plants per plot. Aphid densities were too low in this experiment to compare potential differences per topping. On the last two pretopping sample dates, however, there were significant differences in the number of TBW infested plants between varieties (Figure 1). The highest budworm infestations were observed in LC burley plots, with relatively high infestations also present in experimental burley plots.

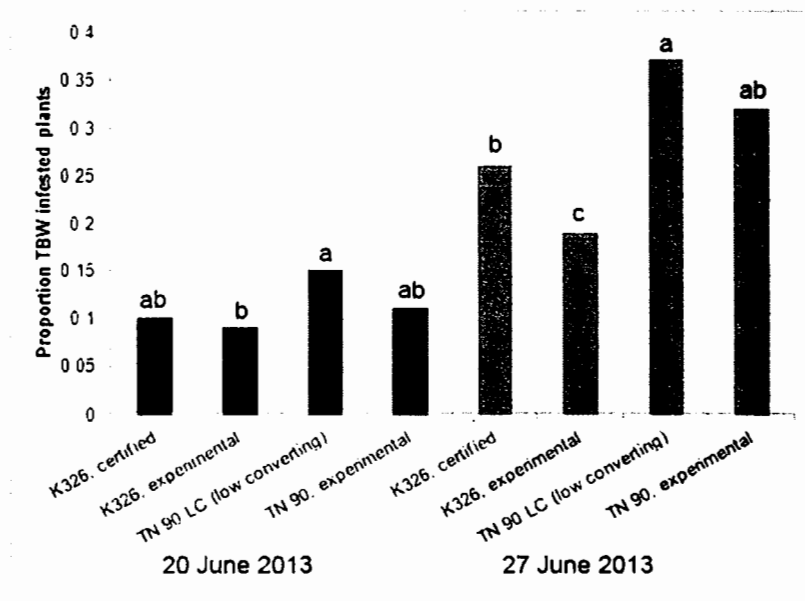


Figure 1. Proportion of TBW infested plants in center two rows on the last two sample dates, Lower Coastal Plain Research Station. Values indicated by the same letter are not significantly different from one another ($\alpha=0.05$) via Fisher's Protected LSD.

Black Shank Chemical Trial Protocol -- Greene County -- Blizzard Farm

Trt No.	Treatment Name	Rate	Unit	Appl Description
1	Untreated Check			
2	Presidio		4 fl oz/a	Attran
	Presidio		4 fl oz/a	1st Cult
	Presidio		4 fl oz/a	Layby
3	Presidio		4 fl oz/a	Attran
	Revus		22 fl oz/a	1st Cult
	Presidio		4 fl oz/a	Layby
4	Ridomil Gold		0.25 pt/a	Attran
	Ridomil Gold		1 pt/a	1st Cult
	Ridomil Gold		1 pt/a	Layby
5	Presidio		4 fl oz/a	Attran
	Ridomil Gold		1 pt/a	1st Cult
	Presidio		4 fl oz/a	Layby
6	Presidio		8 fl oz/a	Attran
	Presidio		8 fl oz/a	1st Cult
	Presidio		8 fl oz/a	Layby
7	Ridomil Gold		0.25 pt/a	Attran
	Presidio		4 fl oz/a	1st Cult
	Presidio		4 fl oz/a	Layby
8	10-34-0		14.7 lb/a	Attran
9	10-34-0		14.7 lb/a	Attran (Tank Mix)
	Ridomil Gold		0.25 pt/a	Attran (Tank Milx)

2013 Black Shank Chemical Trial -- Greene County

28	29	30	31	32	33	34	35	36
5	3	9	8	2	6	4	1	7
<hr/>								
19	20	21	22	23	24	25	26	27
1	7	8	4	5	3	2	6	9
<hr/>								
10	11	12	13	14	15	16	17	18
6	4	5	2	1	7	3	9	8
<hr/>								
1	2	3	4	5	6	7	8	9
3	2	8	1	6	9	5	4	7

**Various Rates and Application Timing of Liquid Nitrogen (UAN) on FC Tobacco
Upper Coastal Plain Research Station
Rocky Mount, NC**

410	409	408	407	406	405	404	403	402	401
5	8	2	9	7	3	10	1	6	4

Rep IV

5' alley

301	302	303	304	305	306	307	308	309	310
3	7	9	8	10	5	6	4	2	1

Rep III

5' alley

210	209	208	207	206	205	204	203	202	201
8	9	7	10	1	2	4	6	3	5

Rep II

5' alley

101	102	103	104	105	106	107	108	109	110
1	2	3	4	5	6	7	8	9	10

Rep I

Farm Road

Design: Randomized complete block

Plot size: 4-rows, 16' wide and 40' long.

Variety: NC 196 (GH plants). Transplanted: 4-24-13

Fertilization: Test to receive a blanket application of K-mag (0-0-22) according to soil test report. Project leader will apply the various nitrogen treatments using liquid 28% UAN.

North Carolina State University

Various Rates, & Application Timing with Liquid Nitrogen (UAN) on FC Tobacco

Title No. 2: MATTHEW DRAKE LOREN FISHER MATTHEW VANN JOE PRIEST SCOTT WHITLEY

Trial ID: LNARM-13

Location: Rocky Mount, NC Trial Year: 2013

Protocol ID:

Investigator: Joseph A Priest

Project ID:

Study Director: Loren Fisher

Sponsor Contact:

Reps: 4

Plots: 16 by 50 feet

Trt No.	Treatment Name	Amt Product to Measure	Rep 1	2	3	4
1	CONTROL - 50% NITROGEN AFTER PLANTING 50% NITROGEN AT 4 WEEKS	NA for Unit NA for Unit	101	206	310	403
2	50% NITROGEN AFTER PLANTING 25% NITROGEN AT 4 WEEKS	NA for Unit NA for Unit	102	205	309	408
3	25% NITROGEN AFTER PLANTING 25% NITROGEN AT 2 WEEKS 25% NITROGEN AT 4 WEEKS 25% NITROGEN AT 6 WEEKS	NA for Unit NA for Unit NA for Unit NA for Unit	103	202	301	405
4	25% NITROGEN AFTER PLANTING 25% NITROGEN AT 2 WEEKS 25% NITROGEN AT 4 WEEKS	NA for Unit NA for Unit NA for Unit	104	204	308	401
5	25% NITROGEN AFTER PLANTING 25% NITROGEN AT 4 WEEKS 25% NITROGEN AT 6 WEEKS 25% NITROGEN AT 8 WEEKS	NA for Unit NA for Unit NA for Unit NA for Unit	105	201	306	410
6	25% NITROGEN AFTER PLANTING 25% NITROGEN AT 4 WEEKS 25% NITROGEN AT 6 WEEKS	NA for Unit NA for Unit NA for Unit	106	203	307	402
7	25% NITROGEN AT 2 WEEKS 25% NITROGEN AT 4 WEEKS 50% NITROGEN AT 8 WEEKS	NA for Unit NA for Unit NA for Unit	107	208	302	406
8	25% NITROGEN AT 2 WEEKS 25% NITROGEN AT 4 WEEKS 25% NITROGEN AT 8 WEEKS	NA for Unit NA for Unit NA for Unit	108	210	304	409
9	50% NITROGEN AFTER PLANTING 50% NITROGEN AT 4 WEEKS 25% NITROGEN AT 8 WEEKS	NA for Unit NA for Unit NA for Unit	109	209	303	407
10	50% NITROGEN AFTER PLANTING 25% NITROGEN AT 4 WEEKS 25% NITROGEN AT 6 WEEKS	NA for Unit NA for Unit NA for Unit	110	207	305	404

Sort Order: Treatment

**Various Rates, Application Methods and Application Timing with Liquid Nitrogen (UAN) on FC Tobacco
Upper Coastal Plain Research Station
Rocky Mount, NC**

Wide alley

408 5	407 3	406 6	405 7	404 4	403 2	402 8	401 1
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Rep IV

5" alley

301 8	302 6	303 1	304 2	305 4	306 3	307 5	308 7
----------	----------	----------	----------	----------	----------	----------	----------

Rep III

5' alley

208 4	207 8	206 5	205 2	204 7	203 3	202 1	201 6
----------	----------	----------	----------	----------	----------	----------	----------

Rep II

5' alley

101 1	102 2	103 3	104 4	105 5	106 6	107 7	108 8
----------	----------	----------	----------	----------	----------	----------	----------

Rep I

Design: Randomized complete block.

Plot size: 4 rows, 16' wide and 40' long.

Variety: NC 196 (GH plants). Transplanted: 4-24-13

Fertilization: Research station to apply blanket application of K-mag according to soil test report. Project leader will apply the various nitrogen treatments using liquid 28% UAN.

North Carolina State University

Various Rates, Appli. Methods & Timing with Liq.Nitrogen (UAN) on FC Tob

Title No. 2: Matthew Drake Loren Fisher Matthew Vann Joe Priest Scott Whitley
 Trial ID: UANRM-13 Location: Rocky Mount, NC Trial Year: 2013
 Protocol ID: Investigator: Joseph A Priest
 Project ID: Study Director: Loren Fisher
 Sponsor Contact:

Reps: 4 Plots: 16 by 50 feet

Trt No	Treatment Name	Amt Product to Measure	Rep 1	2	3	4
1	CONTROL - 50% NITROGEN AFTER PLANTING 50% NITROGEN AT 4 WEEKS	NA for Unit NA for Unit	101	202	303	401
2	50% NITROGEN AFTER PLANTING 25% NITROGEN AT 4 WEEKS	NA for Unit NA for Unit	102	205	304	403
3	25% NITROGEN AFTER PLANTING 25% NITROGEN AT 4 WEEKS 25% NITROGEN AT 6 WEEKS 25% NITROGEN AT 8 WEEKS-STALK RUNDOWN	NA for Unit NA for Unit NA for Unit NA for Unit	103	203	306	407
4	25% NITROGEN AFTER PLANTING 25% NITROGEN AT 4 WEEKS 25% NITROGEN AT 6 WEEKS 25% NITROGEN AT 8 WEEKS-APPLY ON SOIL SURFACE	NA for Unit NA for Unit NA for Unit NA for Unit	104	208	305	404
5	25% NITROGEN AT 2 WEEKS 25% NITROGEN AT 4 WEEKS 50% NITROGEN AT 8 WEEKS-STALK RUNDOWN	NA for Unit NA for Unit NA for Unit	105	206	307	408
6	25% NITROGEN AT 2 WEEKS 25% NITROGEN AT 4 WEEKS 50% NITROGEN AT 8 WEEKS-APPLY ON SOIL SURFACE	NA for Unit NA for Unit NA for Unit	106	201	302	406
7	50% NITROGEN AFTER PLANTING 50% NITROGEN AT 4 WEEKS 25% NITROGEN AT 8 WEEKS-STALK RUNDOWN	NA for Unit NA for Unit NA for Unit	107	204	308	405
8	50% NITROGEN AFTER PLANTING 50% NITROGEN AT 4 WEEKS 25% NITROGEN AT 8 WEEKS-APPLY ON SOIL SURFACE	NA for Unit NA for Unit NA for Unit	108	207	301	402

Sort Order: Treatment

2013 Black Shank OVT UCPRS

287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	FW	FW	FW	FW	FW	FW
18	87	78	56	28	60	3	19	25	82	10	8	29	20	80	47	46	5	15	79						
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
74	12	58	38	50	11	67	99	93	14	86	51	70	34	66	39	95	77	43	23	72	7	98	22	44	54
235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
37	75	33	88	45	68	31	62	85	94	96	83	65	9	30	97	4	2	41	69	17	52	6	35	53	81
209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234
63	92	73	57	1	84	91	102	64	32	16	21	36	101	49	61	13	42	24	76	100	90	89	48	71	55
183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208
12	39	69	17	73	83	97	18	88	93	47	33	20	102	78	29	76	4	28	19	58	59	26	27	40	59
157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182
41	92	95	23	53	5	64	2	9	34	89	77	15	48	63	67	27	81	25	84	42	52	94	60	32	14
131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156
1	70	7	79	71	61	26	22	6	74	91	10	35	82	40	21	49	38	68	75	90	96	72	37	86	99
105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
31	24	87	65	8	56	80	101	66	36	98	30	50	44	45	62	46	43	54	13	16	85	3	57	55	51
79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
17	78	77	93	21	98	86	1	63	52	92	102	46	76	32	53	84	89	33	9	70	14	7	47	11	100
53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
99	39	68	66	97	23	57	5	81	71	28	26	42	11	91	20	44	80	94	64	45	60	48	58	15	82
27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
30	37	75	100	6	54	41	10	24	19	12	3	96	8	49	83	62	59	13	67	69	55	101	2	61	56
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
65	90	31	50	27	88	74	79	73	29	22	25	87	38	36	85	40	4	35	16	34	95	72	51	18	43

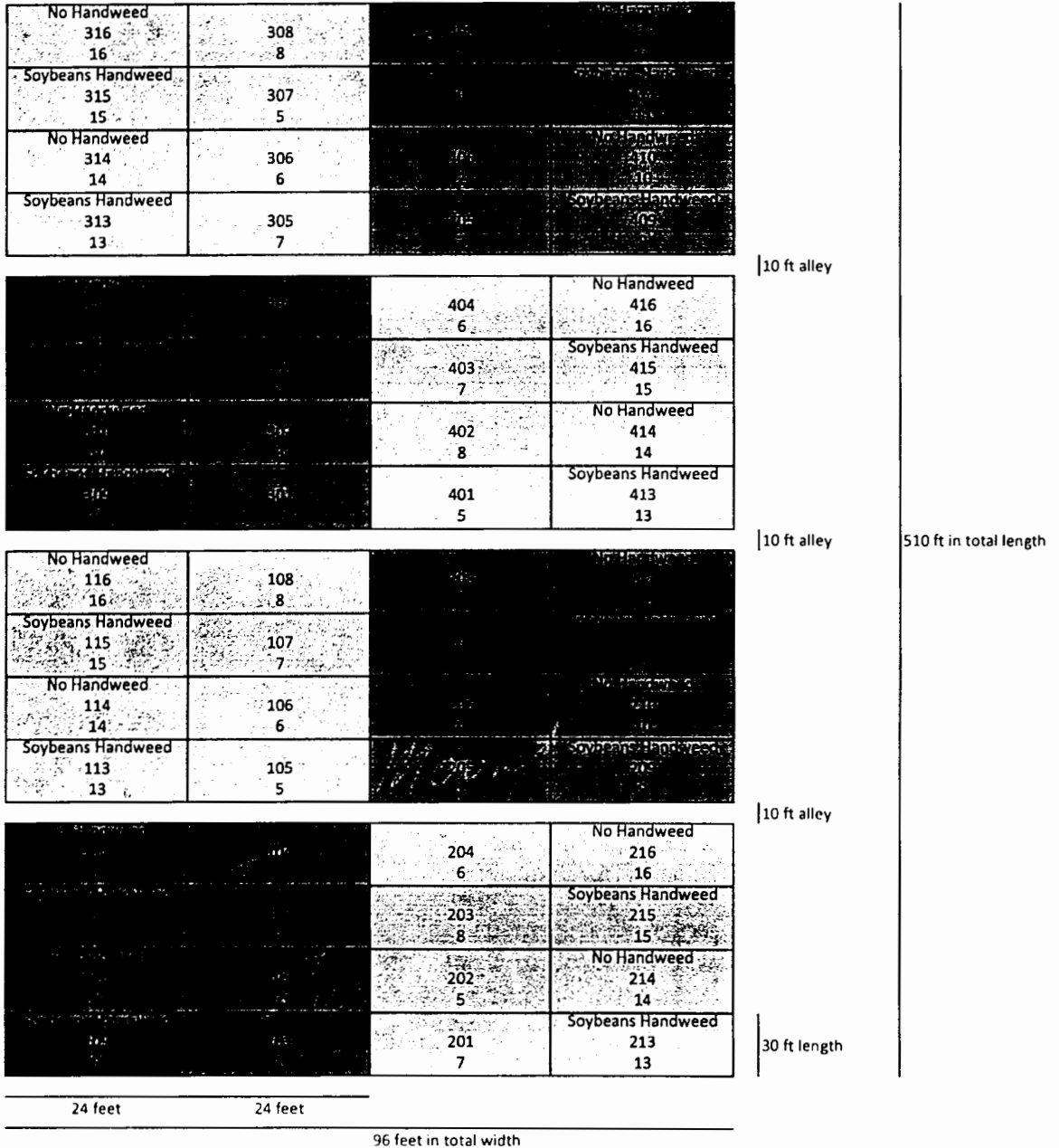
28/Jun/2013 (2013_OVT_RockyMount) AOV Means Table Page 1 of 1

Entry No.	Entry Name	Percent Dis 6/28/2013
1	NC 471	0 d
2	CC 700	0 d
3	SP 168	0 d
4	GL 338	0 d
5	K 346	0 d
6	GL 368	0 d
7	PVH 2254	0 d
8	NC 291	2 d
9	NC 297	2 d
10	NC 95	0 d
11	PVH 2110	2 d
12	SP 225	0 d
13	NC 72	2 d
14	PVH 1452	0 d
15	CU 124	2 d
16	PVH 2275	2 d
17	NC 925	0 d
18	CU 144	0 d
19	SP 227	0 d
20	CC 901	0 d
21	GL 395	0 d
22	NC 71	0 d
23	CC 67	0 d
24	CU 110	0 d
25	CC 143	0 d
26	CC 1063	0 d
27	PVH 2248	0 d
28	CC 27	2 d
29	CC 33	0 d
30	CC 35	9 d
31	K 326	2 d
32	PVH 1118	2 d
33	NC 2326	0 d
34	SP 220	2 d
35	NC 299	0 d
36	CC 304	0 d
37	NC 196	0 d
38	GF 157	0 d
39	CC 13	0 d
40	GF 318	0 d
41	NC 92	3 d
42	NC 606	0 d
43	SP 236	0 d
44	CC 37	0 d
45	NC 938	0 d
46	NC 939	0 d
47	GL 362	2 d
48	1071	89 a
49	NC 2326	0 d
50	NC 95	0 d

51 K 326	0 d
52 CU 185	2 d
53 CU 206	0 d
54 RJR 216	0 d
55 CU 177	0 d
56 CU 179	0 d
57 CU 210	0 d
58 NC 2326	0 d
59 NC 95	2 d
60 K 326	2 d
61 CU 171	0 d
62 AOV 212	0 d
63 CU 186	0 d
64 CU 159	5 d
65 NCEX 61	0 d
66 GLEX 398	0 d
67 PXH 1	2 d
68 NCEX 60	0 d
69 GLEX 328	2 d
70 NCEX 59	0 d
71 PXH 7	0 d
72 NCEX 58	0 d
73 PXH 13	0 d
74 1071	45 c
75 NC 2326	0 d
76 NC 95	3 d
77 K 326	2 d
78 RJR 217	0 d
79 NCEX 57	0 d
80 XHN 55	6 d
81 NCEX 54	0 d
82 CU 208	0 d
83 NCEX 56	0 d
84 GLEX 309	0 d
85 NCEX 40	0 d
86 CU 203	0 d
87 CCEX 22	0 d
88 NCEX 55	0 d
89 XHN 54	2 d
90 CCEX 18	0 d
91 NCEX 36	0 d
92 CU 204	0 d
93 CCEX 52	0 d
94 PXH 16	0 d
95 RJR 215	0 d
96 CU 170	2 d
97 PXH 18	2 d
98 CU 45	0 d
99 GLEX 394	0 d
100 XHN 61	2 d
101 GF 164	2 d
102 1071	77 b

The Impact of Flue-Cured Tobacco on Palmer Amaranth Population in a Cropping Rotation-UCPRS 2013

← North



Treatments:

- | | |
|---|--|
| 1) Shallow Tillage w/Spartan + Command and Handweeding | 9) Shallow Tillage-Soybeans Handweeded |
| 2) Shallow Tillage w/Spartan + Command and No Handweeding | 10) Shallow Tillage-Soybeans No Handweed |
| 3) Shallow Tillage w/Command and Handweeding | 11) Shallow Tillage-Soybeans Handweed |
| 4) Shallow Tillage w/Command and No Handweeding | 12) Shallow Tillage-Soybeans No Handweed |
| 5) Deep Tillage w/Spartan + Command and Handweeding | 13) Deep Tillage-Soybeans Handweed |
| 6) Deep Tillage w/Spartan + Command and No Handweeding | 14) Deep Tillage-Soybeans No Handweed |
| 7) Deep Tillage w/Command and Handweeding | 15) Deep Tillage-Soybeans Handweed |
| 8) Deep Tillage w/Command and No Handweeding | 16) Deep Tillage-Soybeans No Handweed |

**Tobacco plots will be 24 feet wide (6, 48" rows)
 **Soybean plots will be 24 feet wide (8, 36" rows)

Deep Tillage
 **Row will run in a east-west direction

Efficacy of insecticides against tobacco budworm and tobacco/tomato hornworm

Locations

Upper Coastal Plain Research Station

Rocky Mount, NC

Lower Coastal Plain Research Station

Kinston, NC

Principle Investigators

Hannah Burrack

Clyde Sorenson

Research Associate

Aurora Toennisson

Purpose

To compare the efficacy of currently registered insecticides in tobacco against infestations of tobacco budworm/corn earworm and tobacco/tomato hornworm larvae.

To determine the number of applications typically necessary to manage caterpillar pests in North Carolina tobacco.

Treatments, Rate/acre	Active ingredient(s)	Application method
1. Untreated control		
2. DPX-EXP, 20 fl oz	Experimental	Transplant water (TPW)
3. DPX-EXP + DPX-EXP, 20 fl oz + 20 fl oz	Experimental	TPW + Foliar, at threshold
4. Belt, 3 fl oz	Flubendamide	Foliar, at threshold
5. Belt, 2 fl oz	Flubendamide	Foliar, at threshold
6. Besiege, 9 fl oz	Chlorantraniliprole & Lambda cyhalothrin	Foliar, at threshold
7. Blackhawk, 1.5 oz	Spinosad	Foliar, at threshold
8. Blackhawk, 2 oz	Spinosad	Foliar, at threshold
9. Coragen, 5 fl oz	Chlorantraniliprole	Foliar, at threshold

Plot Map

401 7	402 6	403 4	404 9	405 2	406 5	407 8	408 1	409 3
301 6	302 1	303 7	304 9	305 5	306 8	307 3	308 4	309 2
201 2	202 3	203 6	204 7	205 4	206 8	207 1	208 5	209 9
101 7	102 2	103 9	104 6	105 5	106 1	107 4	108 8	109 3

Methods

This experiment was conducted at the Lower Coastal Plain Research Station, Kinston, NC and the Upper Coastal Plain Research Station, Rocky Mount, NC. Plots at the Lower Coastal Plain Research Station were planted on 24 April 2013, and plots at the Upper Coastal Plain Research Station were planted on 29 April 2013. All plants were treated in the greenhouse with 0.6 fl oz Admire Pro/1000 plants to manage early season infestations of green peach aphids and tobacco flea beetles. Plants in the middle two rows of each plot were observed for caterpillars weekly beginning 3 WAT.

When a plot reached threshold for either TBW or HW, that plot was treated. Rows 1 and 4 of each plot served as buffers between plots. Treatments were applied in 15 gal water per acre at 45 (Kinston) and 60 (Rocky Mount) psi pressure. The number of treatments necessary to reduce caterpillar populations below threshold during the growing season and efficacy of those treatments following application for each material, 7 DAT, was collected in each plot.

Plots at the Lower Coastal Plain Research Station did not reach threshold prior to flowering, so to gather efficacy data, all plots except for those assigned Treatments 4 & 5 (Belt treatments) were treated the week prior to topping. Post treatment counts were made in treated plots at 4 and 7 DAT. Belt treatments were excluded because leaf from these plots will be sampled to measure flubendiamide residue levels at the end of the season in an effort to relate residues to threshold based insect management programs.

Results to date

One of the most significant results to date from this experiment is that at the Lower Coastal Plain Station, none of the plots reached the TBW economic threshold pre topping, and only 10 plots at the Upper Coastal Plain Research Station had reached economic threshold by 24 June. TBW populations were generally low during 2013, and the use of economic thresholds to time treatments would likely have resulted in one or fewer pre topping insecticide application at many locations in eastern North Carolina.

At the Lower Coastal Plain Research Station, plots treated only with soil applications of DPX-EXP at transplant had significantly lower TBW populations prior foliar applications (Figure 4). However, in the week following foliar applications, TBW densities in these plots increased. By 7 DAT, all plots treated with foliar insecticides had significantly lower TBW densities than untreated control plots.

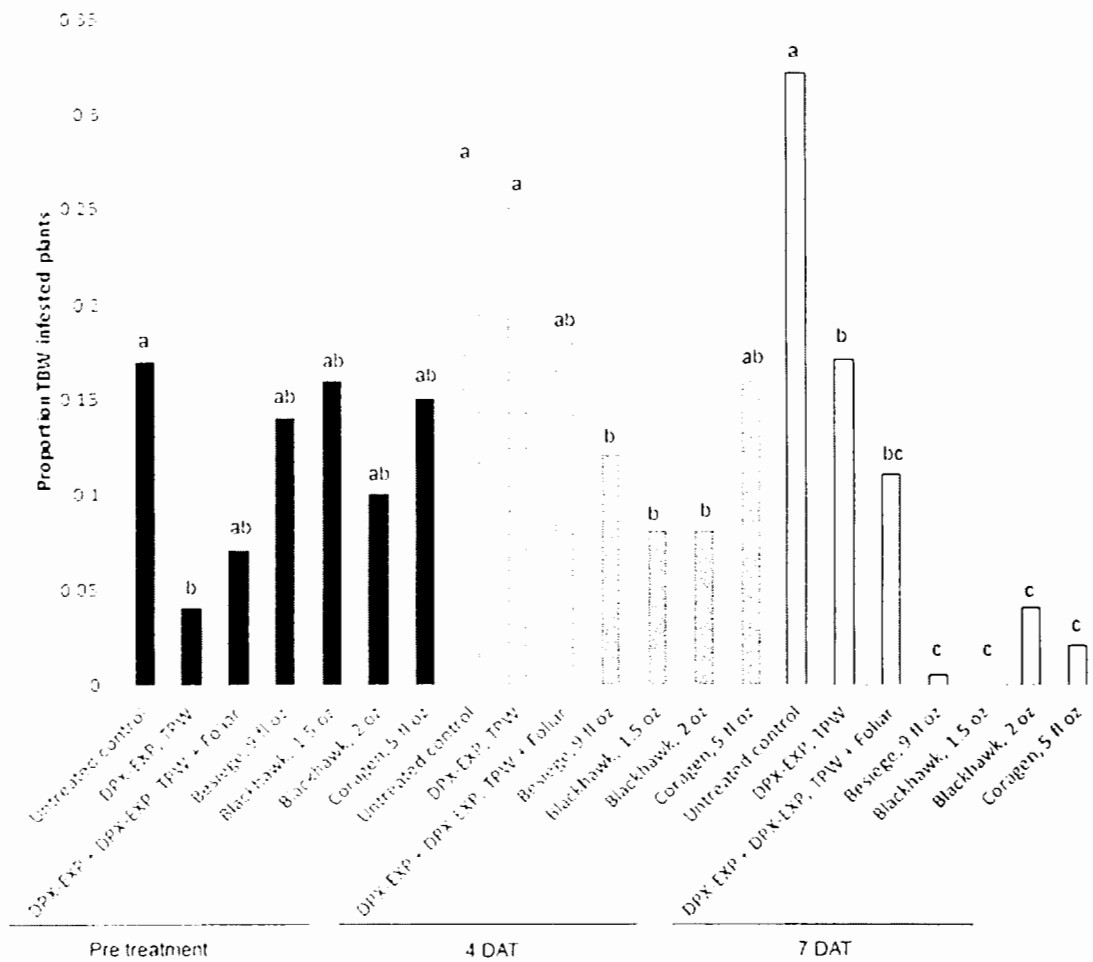


Figure 4. TBW infested plants at the Lower Coastal Plain Research Station before and following pre topping foliar applications. Values within a sample date indicated by the same letter are not significantly different from one another ($\alpha=0.05$) via Fisher's Protected LSD.

Efficacy of soil applied insecticides against key tobacco pests

Locations

Upper Coastal Plain Research Station

Rocky Mount, NC

Lower Coastal Plain Research Station

Kinston, NC

Principle Investigators

Hannah Burrack

Clyde Sorenson

Research Associate

Aurora Toennisson

Purpose

To compare the efficacy of currently registered and unregistered soil applied insecticides against tobacco flea beetle, green peach aphid, tobacco budworm, and tobacco/tomato hornworm.

Treatments, Rate/acre	Active ingredient(s)	Application method
1. Untreated control		
2. HGW86 20SC, 10.2 fl oz	Cyantraniliprole	Greenhouse tray drench (GTD)
3. HGW86 20SC + Coragen, 10.2 fl oz + 5 fl oz	Cyantraniliprole + Chlorantraniliprole	GTD + Transplant water (TPW)
4. HGW86 20SC + Coragen, 10.2 fl oz + 5 fl oz	Cyantraniliprole + Chlorantraniliprole	TPW
5. HGW86 20SC + Admire Pro, 10.2 fl oz + 0.6 fl oz/1000 plants	Cyantraniliprole + Imidacloprid	GTD
6. HGW86 20SC + Admire Pro + Coragen, 13.5 fl oz + 0.6 fl oz/1000 plants + 5 fl oz	Cyantraniliprole + Imidacloprid + Chlorantraniliprole	GTD + GTD + TPW
7. Admire Pro + Coragen; 0.6 fl oz/1000 plants + 5 fl oz	Imidacloprid + Chlorantraniliprole	GTD + TPW
8. Admire Pro + Coragen; 0.6 fl oz/1000 plants + 7 fl oz	Imidacloprid + Chlorantraniliprole	GTD + TPW
9. Brigadier, 21.8 fl oz	Imidacloprid + Bifenthrin	TPW
10. Brigadier, 25.6 fl oz	Imidacloprid + Bifenthrin	TPW

Plot Map

401 4	402 10	403 2	404 3	405 1	406 7	407 9	408 5	409 6	410 8
301 2	302 10	303 9	304 1	305 5	306 8	307 7	308 3	309 6	310 4
201 7	202 10	203 9	204 1	205 3	206 8	207 4	208 2	209 5	210 6
101 9	102 5	103 10	104 8	105 3	106 2	107 6	108 1	109 4	110 7

Methods

This experiment was conducted at the Lower Coastal Plain Research Station, Kinston, NC and the Upper Coastal Plain Research Station, Rocky Mount, NC. Plots at the Lower Coastal Plain Research Station were planted on 24 April 2013, and plots at the Upper Coastal Plain Research Station were planted on 29 April 2013. Greenhouse treatments were applied 3 days or fewer before transplant, and TPW treatments were applied at transplant via 4 gal mini tank attached to the setter. Insect populations were counted on plants in rows 1 & 2 at the Lower Coastal Plain Research Station and rows 2 & 3 at the Upper Coastal Plain Research Station.

Beginning 3 weeks after transplant (WAT), pest populations were assessed as follows

1. Tobacco flea beetles (TFB) were counted on 10 plants each in sampled rows. TFB holes were counted on the largest field grown leaf on the same 10 plants.
2. The number of tobacco budworm (TBW) infested plants in sampled rows were counted, and the percentage of TBW infested plants was calculated.
3. The number of plants with 50 or more wingless green peach aphids (GPA) on their upper leaves were in sampled rows were counted, and the percentage of GPA infested plants was calculated.
4. If present, the number of tobacco/tomato hornworm (HW) larvae were counted on 10 plants each in sampled rows. *HW larvae were not present in meaningful numbers pre topping.*

In addition, potential phytotoxicity was assessed by measuring the width of the largest leaf on 10 plants in sampled rows at 3 and 4 WAT and by measuring plant height on 10 plants in the sampled rows 5 and 6 WAT. A phytotoxicity rating (measuring degree of yellowing or foliar burn) was not conducted as no visible phytotoxicity was present post transplant.

Results to date

Unless otherwise noted, results presented are from Upper Coastal Plain Research Station plots.

Phytotoxicity

Most of the insecticide treated plants had both wider leaves and were taller than untreated control plants, but a treatment that combined Admire Pro with HGW86 and Coragen (Treatment 6) had narrower leaves and/or shorter plants than other treatments or the untreated control (Figures 5 and 6, respectively). This difference in leaf width and plant height was most significant in the treatment which included three soil applied active ingredients, Treatment 6.

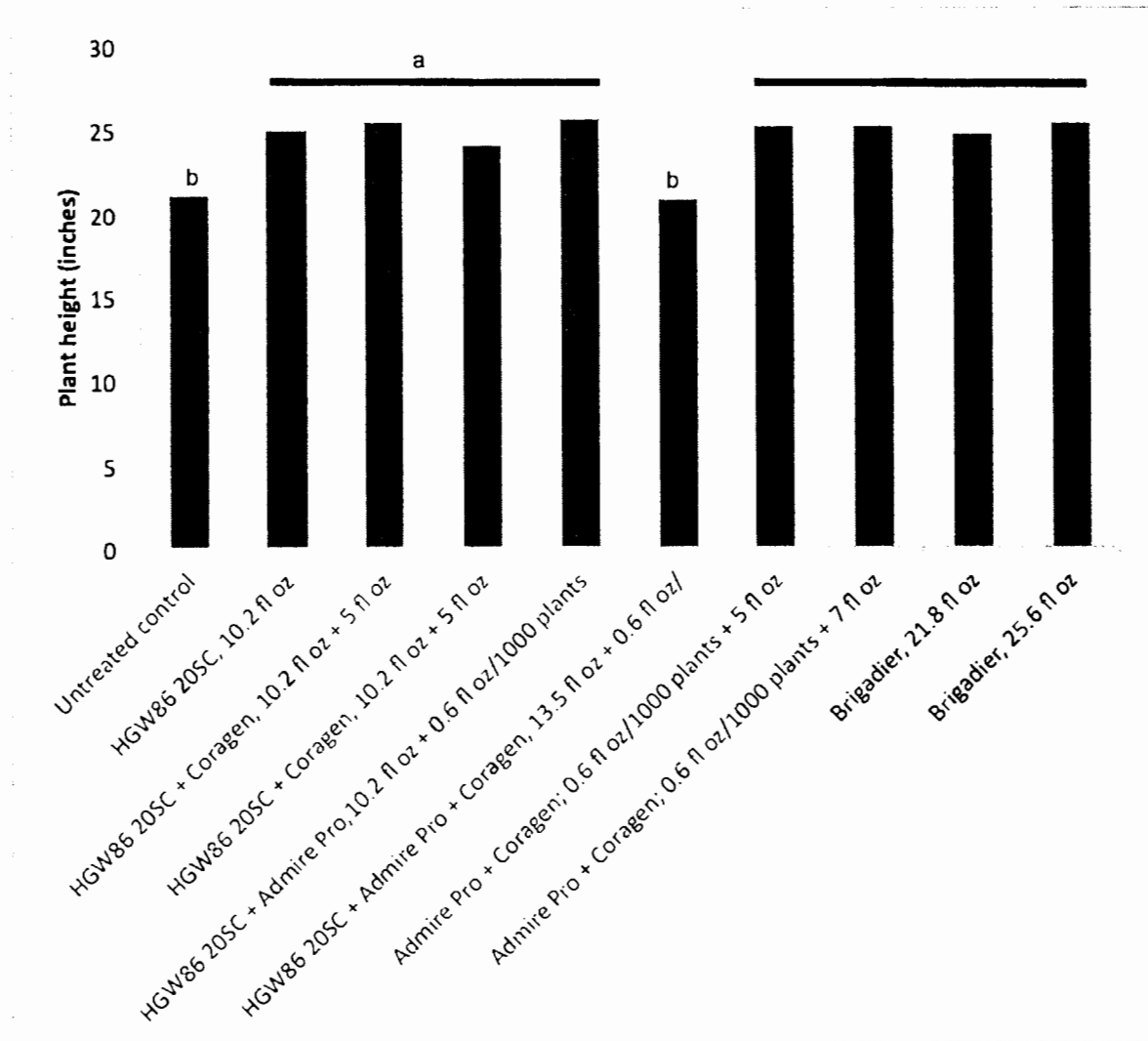


Figure 6. Plant height in inches averaged over two observation dates, 5 and 6 weeks after transplant. Values indicated by the same letter are not significantly different from one another ($\alpha=0.05$) via Fisher's Protected LSD

Tobacco flea beetle

All the insecticides compared reduced the number of tobacco flea beetles present in plots and the number of tobacco flea beetle holes. There appeared to be either an additive effect of combining Admire Pro and HGW86 or a positive rate effect for HGW86, because Treatment 6 had both the lowest number of TFB and the least damage. However, the number of TFB or FB holes in Treatment 6 were not significantly different from other Admire Pro containing treatments nor most other HGW86 containing treatments, with the exception of Treatment 2 on some of the observation dates.

Table 1. TFB and feeding holes on plants at the Upper Coastal Plain Research Station, Rocky Mount, NC. Values within a sample date followed by the same letter are not significantly different from one another ($\alpha=0.05$) via Fisher's Protected LSD.

Treatment	Rate/acre, Application method	Tobacco flea beetles per 10 plants			Average tobacco flea beetle holes per leaf		
		21 May	29 May	4 June	21 May	29 May	4 June
Untreated control		22.75 a	11.75 a	7.75 ab	11.36 a	20.36 a	24.13 a
HGW86 20SC	10.2 fl oz, GTD	0.50 b	6.50 b	5.50 abc	0.34 b	1.14 cd	5.25 cd
HGW86 20SC + Coragen	10.2 fl oz + 5 fl oz, GTD + TPW	0.50 b	5.50 bc	7.50 ab	0.46 b	1.00 d	8.18 bcd
HGW86 20SC + Coragen	10.2 fl oz + 5 fl oz, TPW	1.50 b	7.75 ab	7.25 ab	1.06 b	4.96 bc	12.00 b
HGW86 20SC + Admire Pro	10.2 fl oz + 0.6 fl oz/1000 plants, GTD	0.25 b	4.00 bc	6.50 abc	0.18 b	0.94 d	4.48 de
HGW86 20SC + Admire Pro + Coragen	13.5 fl oz + 0.6 fl oz/1000 plants + 5 fl oz, GTD + GTD + TPW	0.50 b	2.00 c	2.50 c	0.11 b	0.55 d	1.04 e
Admire Pro + Coragen	0.6 fl oz/1000 plants + 5 fl oz, GTD + TPW	1.75 b	5.25 bd	4.75 bc	0.24 b	2.93 bcd	5.96 cd
Admire Pro + Coragen	0.6 fl oz/1000 plants + 7 fl oz, GTD + TPW	1.75 b	5.75 bc	5.00 bc	0.46 b	3.93 bcd	4.63 de
Brigadier	21.8 fl oz, TPW	1.75 b	5.25 bc	7.00 ab	0.76 b	5.23 b	8.74 bc
Brigadier	25.6 fl oz, TPW	1.50 b	6.25 b	9.25 a	0.44 b	3.24 bcd	7.35 bcd

Green peach aphid

GPA populations were too low at both locations for meaningful comparisons to be made to date.

Tobacco budworm

Tobacco budworm populations at the Upper Coastal Plain Research Station were too low to compare prior to July 2013. However, larger populations were present at the Lower Coastal Plain Research Station, and some, but not all, treatments including Coragen applied at transplant had significantly lower TBW densities than untreated control plots (Figure 7). There were higher TBW populations over time, but there was no significant interaction between TBW density and time.

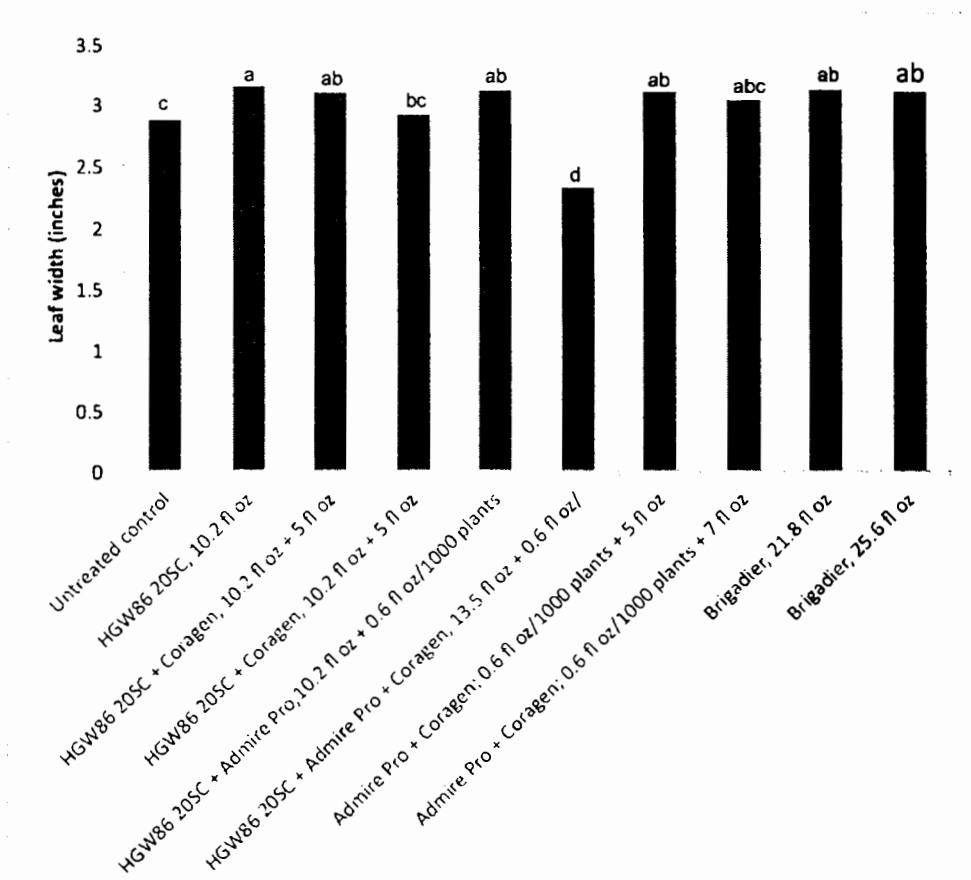


Figure 5. Width of the widest leaf in inches averaged over two observation dates, 3 and 4 weeks after transplant. Values indicated by the same letter are not significantly different from one another ($\alpha=0.05$) via Fisher's Protected LSD.

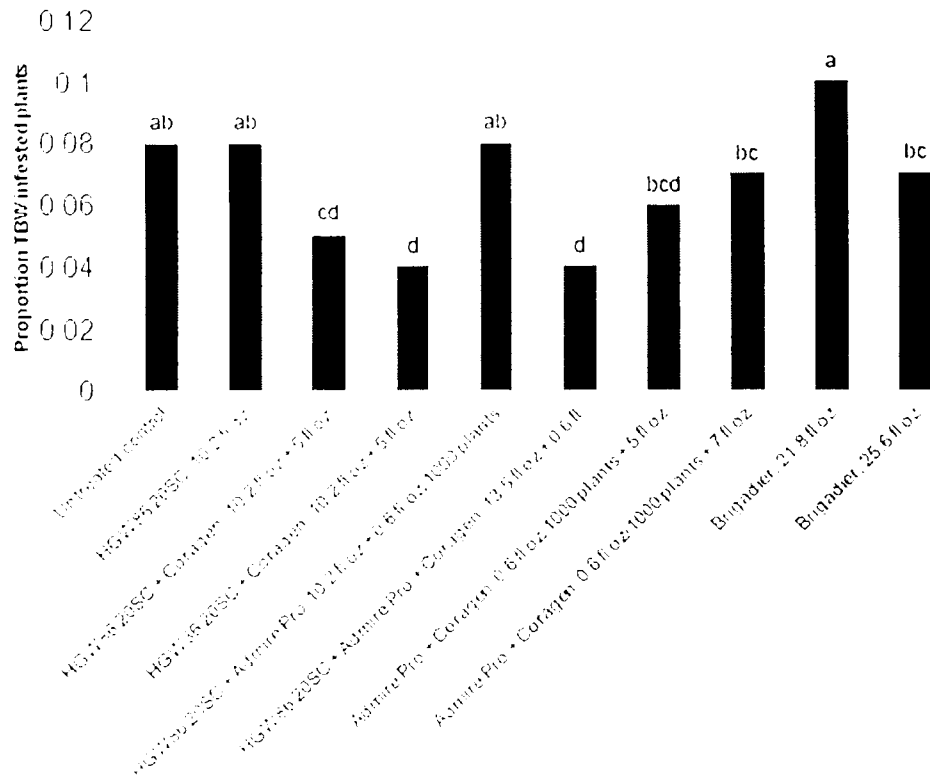


Figure 7. Proportion TBW infested plants at the Lower Coastal Plain Research Station, Kinston, NC across all sample dates. Values indicated by the same letter are not significantly different from one another ($\alpha=0.05$) via Fisher's Protected LSD.

Effects of systemic imidacloprid on tobacco budworm infestation and parasitism rates in flue-cured tobacco

Upper & Lower Coastal Plain Research Stations

Principle Investigator

Sally Taylor

Graduate Advisor

Dr. Clyde Sorenson

Purpose

To assess how systemic imidacloprid treatments influence both the level of tobacco budworm infestations and the instance of its parasitism by the hymenopteran parasitoids, *Toxoneuron nigriceps* and *Campoletis sonorensis*, in North Carolina tobacco systems.

Treatments

- | | | |
|----------------------|---------------------|-------------------------|
| 1. Untreated control | | |
| 2. Admire Pro | 0.8 oz/1,000 plants | Greenhouse application |
| 3. Admire Pro | 0.8 oz/1,000 plants | Transplant water drench |

Locations:

Upper Coastal Plain Research Station

Rocky Mount, NC

Lower Coastal Plain Research Station

Kinston, NC

Organically grown tobacco seedlings were treated with Admire Pro (0.8 fl oz/1,000 plants imidacloprid) in the greenhouse 2 days before transplant or at plant using a transplant water treatment. Untreated controls were isolated in self-contained float beds prior to transplant. Treatments were assigned in a randomized block design.

At both stations, infestation percentages were calculated from the first appearance of tobacco budworm in the plots until either the end of insect activity or the flowering of the tobacco plants at which time these infestations are no longer economically-significant. Tobacco budworms at and above the halfway point of the 3rd instar were collected and reared in the laboratory to assess for parasitism rates by species.

2012 Results

The average initial infestation rates do not differ significantly between treatments. Despite comparable numbers of 1st instar budworms infesting the three different treatments, significantly higher numbers of 3rd instar or larger larvae were collected from the insecticide treated plots. This suggests that parasitism, predation or a combination of both is decreasing the number of larvae reaching maturity in tobacco not treated with imidacloprid. At time of publication, 2013 infestations were still active, and we are still collecting data. The 2012 results were consistent with the same trial carried out in 2011.

Parasitism summary to date

The rate of parasitism by *T. nigriceps* was significantly higher in the control when compared to both of the systemic treatments in tobacco budworms collected in 2012. In

2011, the parasitism rate was higher in the control for this species, but not significantly so. In both 2012 and 2011, the rates of parasitism by *C. sonorensis* were significantly higher in the control than in the two systemic treatments. This result is consistent with toxicological findings from our lab that suggest that the *C. sonorensis* species is more susceptible to lethal topical exposure to the tested compound.

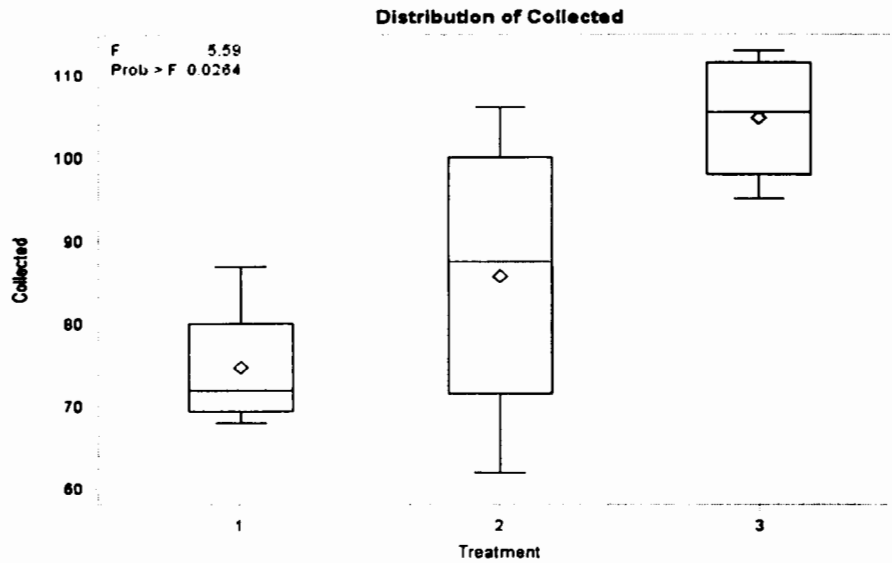


Figure 1. Number of third instar or older tobacco budworms collected from Kinston by treatment in 2012. Treatment 1- untreated; 2, greenhouse application; 3, transplant water.

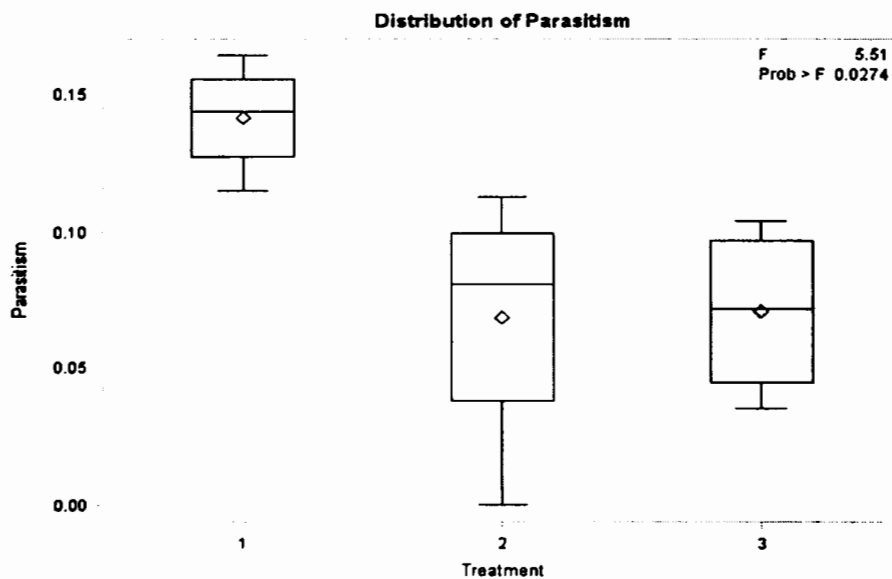


Figure 2. Percentage rates of parasitism by *T. nigriceps* of tobacco budworms collected from Kinston by treatment in 2012. Treatment 1- untreated; 2, greenhouse application; 3, transplant water.

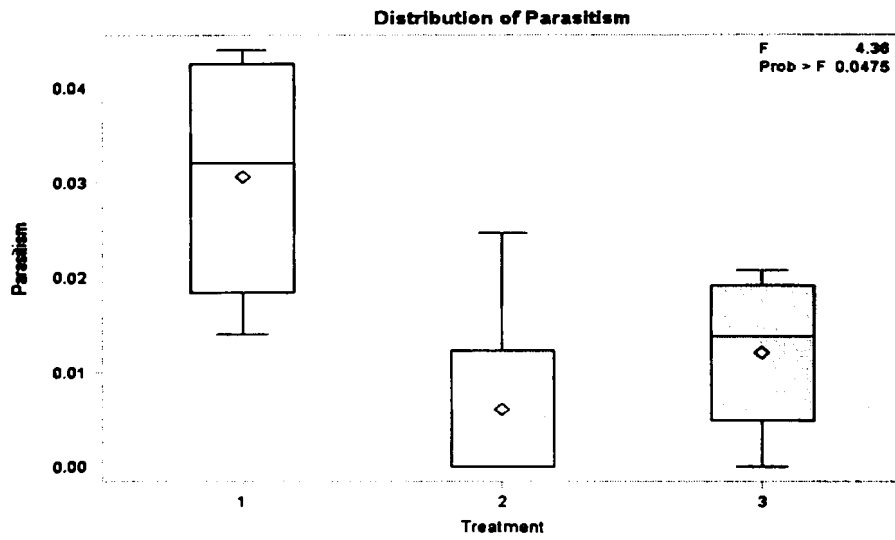


Figure 3. Percentage rates of parasitism by *C. sonorensis* of tobacco budworms collected from Kinston by treatment in 2012. Treatment 1- untreated; 2, greenhouse application; 3, transplant water.

2015 March Board Meeting Trial - Franklin County

78	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
15	23	17	4	7	20	16	22	1	18	13	2	6	21	11	8	12	3	19	9	24	14	14	14	14	14	14	10
49	80	53	52	50	54	56	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72				
19	24	14	23	8	3	21	18	11	12	5	4	7	17	22	6	16	20	1	2	15	10	19	9				
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49			
18	23	11	14	19	8	17	9	4	2	12	10	3	1	13	16	15	16	16	22	7	21	20	6				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
20	3	10	16	22	12	15	19	24	6	8	5	18	11	2	19	21	14	29	7	17	4	1	24				

3/Jul/2013 (2013_BSvar_Franklin) AOV Means Table Page 1 of 1

Entry No.	Entry Name	Percent Dis 6/19/2013	Percent Dis 7/3/2013
1	GL 338	25 b	55 b
2	K 346	3 c	3 e
3	GL 368	1 c	1 e
4	PVH 2254	15 bc	46 bcd
5	PVH 2110	4 c	27 b-e
6	CU 124	4 c	17 cde
7	PVH 2275	27 b	59 b
8	NC 925	1 c	12 cde
9	CU 144	7 c	17 cde
10	CC 901	0 c	3 e
11	GL 395	4 c	12 cde
12	CU 110	1 c	9 de
13	CC 143	1 c	4 e
14	CC 1063	0 c	4 e
15	PVH 2248	4 c	17 cde
16	CC 33	3 c	9 de
17	CC 35	3 c	22 cde
18	K 326	5 c	48 bc
19	CC 304	2 c	14 cde
20	GF 157	2 c	34 b-e
21	NC 938	1 c	2 e
22	NC 939	3 c	3 e
23	GL 362	19 bc	58 b
24	1071	83 a	91 a

**The Evaluation of Conservation Tillage Methods in Flue-Cured Tobacco
Oxford Tobacco Research Station-2013**

407 4	406 2	405 6	404 1	403 3	402 7	401 5	10 ft
307 3	306 1	305 7	304 5	303 2	302 6	301 4	
201 5	202 1	203 7	204 3	205 6	206 2	207 4	45 ft
101 1	102 2	103 3	104 4	105 5	106 6	107 7	
16 ft							

Treatments:

- 1 Strip-Tillage, Sukup Plow-Low Impact (Sukup plow twice-1=Low Impact 2=Aggressive)
- 2 Strip-Tillage, Sukup Plow-High Impact (Sukup plow twice-1=Aggressive 2=Aggressive)
- 3 Strip-Tillage, Standard Equipment-Low Impact (Conventional Plow twice-1=Low Impact 2=Low Impact)
- 4 Strip-Tillage, Standard Equipment-High Impact (Conventional Plow twice-1=Low Impact 2=High Impact)
- 5 Strip-Tillage, Standard Equipment-High Impact (Conventional Plow twice-1=Aggressive 2=Aggressive)
- 6 Strip-Tillage, No secondary tillage season long (No secondary tillage will occur)
- 7 Conventional Tillage (Conventional Plow three to four times as needed)

**Evaluation of the Effects of Different Nitrogen Sources on Yield, Quality,
Chemical, and Sensory Characteristics of Flue-cured Tobacco
Oxford Tobacco Research Station
Oxford, NC**

Rep IV

403 100% Nitrogen From 15.5-0-0 50% at Transplanting 50% at Layby 1	402 100% Nitrogen From 34-0-0 50% at Transplanting 50% at Layby 2	401 100% Nitrogen from UAN (28%) 50% at Transplanting 50% at Layby 3
301 100% Nitrogen From 15.5-0-0 50% at Transplanting 50% at Layby 1	302 100% Nitrogen From 34-0-0 50% at Transplanting 50% at Layby 2	303 100% Nitrogen from UAN (28%) 50% at Transplanting 50% at Layby 3

Rep III

Small alley

Rep II

203 100% Nitrogen From 15.5-0-0 50% at Transplanting 50% at Layby 1	202 100% Nitrogen From 34-0-0 50% at Transplanting 50% at Layby 2	201 100% Nitrogen from UAN (28%) 50% at Transplanting 50% at Layby 3
101 100% Nitrogen From 15.5-0-0 50% at Transplanting 50% at Layby 1	102 100% Nitrogen From 34-0-0 50% at Transplanting 50% at Layby 2	103 100% Nitrogen from UAN (28%) 50% at Transplanting 50% at Layby 3

Rep I

Design: Randomized complete block

Plot size: 8-rows, 32' wide and 40' long. All plots to be harvested.

Variety: CC 27 (GH plants). Transplanted: 5-10-13

Fertilization: Research station to apply potassium using 0-0-22. Project leader will apply the various nitrogen sources.

North Carolina State University

Evaluate Nitrogen Sources on Yield, Quality & Chemical Effects on FC Tobacco

Title No. 2: Loren Fisher Matthew Vann Joe Priest Scott Whitley
Trial ID: RJRO-13 **Location:** Oxford, NC **Trial Year:** 2013
Protocol ID: **Investigator:** Joseph A Priest
Project ID: **Study Director:** Loren Fisher
 Sponsor Contact: Marlene Adams

Reps: 4 **Plots:** 32 by 40 feet

Trt No.	Treatment Name	Amt Product to Measure	Rep 1	2	3	4
1	100% NITROGEN FROM CALCIUM NITRATE (15.5-0-0) 50% NITROGEN AFTER TRANSPLANTING 50% NITROGEN AT LAYBY	NA for Unit NA for Unit NA for Unit	101	203	301	403
2	100% NITROGEN FROM AMMONIUM NITRATE (34-0-0) 50% NITROGEN AFTER TRANSPLANTING 50% NITROGEN AT LAYBY	NA for Unit NA for Unit NA for Unit	102	202	302	402
3	100% NITROGEN FROM UAN (28%) 50% NITROGEN AFTER TRANSPLANTING 50% NITROGEN AT LAYBY	NA for Unit NA for Unit NA for Unit	103	201	303	401

Sort Order: Treatment

2013 OFFICIAL VARIETY TEST
 OXFORD TOBACCO RESEARCH STATION, OXFORD, NC
 O-OVT

REP I			REP II			REP III			47 entries replicated three times in one-row plots with 20 harvested plants in each plot.		
Plot	Entry		Plot	Entry		Plot	Entry				
101	1		201	3		301	10				
102	2		202	15		302	29				
103	3		203	29		303	37				
104	4		204	38		304	12		Rep I - Plots 101-147		
105	5		205	37		305	41		Rep II - Plots 201-247		
106	6		206	11		306	2		Rep III - Plots 301-347		
107	7		207	7		307	25				
108	8		208	42		308	23				
109	9		209	35		309	16				
110	10		210	1		310	40				
111	11		211	27		311	32				
112	12		212	10		312	19				
113	13		213	8		313	26				
114	14		214	26		314	47				
115	15		215	4		315	43				
116	16		216	43		316	3				
117	17		217	41		317	4				
118	18		218	32		318	42				
119	19		219	34		319	44				
120	20		220	25		320	11				
121	21		221	2		321	34				
122	22		222	9		322	38				
123	23		223	22		323	21				
124	24		224	5		324	36				
125	25		225	24		325	20				
126	26		226	23		326	14				
127	27		227	17		327	39				
128	28		228	45		328	15				
129	29		229	30		329	33				
130	30		230	44		330	1				
131	31		231	39		331	7				
132	32		232	19		332	9				
133	33		233	28		333	45				
134	34		234	21		334	27				
135	35		235	36		335	18				
136	36		236	47		336	17				
137	37		237	40		337	8				
138	38		238	16		338	6				
139	39		239	31		339	31				
140	40		240	18		340	22				
141	41		241	46		341	13				
142	42		242	33		342	5				
143	43		243	20		343	28				
144	44		244	13		344	46				
145	45		245	12		345	30				
146	46		246	14		346	35				
147	47		247	6		347	24				

2013 NORTH CAROLINA FLUE-CURED TOBACCO VARIETY TEST										
Commercial Varieties										
Trt. No	Variety or Line	Generation or Year of Release	Pedigree	BS	GW	FW	RK	Bn. Sp.	Virus	Sponsor
1	NC 471	2003	Hybrid	R	R				TMV	Raynor
2	CC 700	2005	Hybrid	R	R		TCN/R			CC
3	Speight 168	1996	Coker 371G X Spl. G 118	H	H		R			SPT
4	GL 338	2009	Hybrid	R	R					GL
5	K 346	1988	McNair 926 x 80241	H	H		R			GL,Rickard
6	GL 368	2009	Hybrid	R	R					GL
7	PVH 2254	2011	Hybrid	R	R				TMV	Rickard
8	NC 291	1997	Hybrid	R	R		TCN/R		PVY/TEV	CC
9	NC 297	1998	Hybrid	R	R		R		TMV	GL
10	NC 95	1961	(C-139XBel.4-30)x(C-139XHicks)	L	H	M				NC
11	PVH 2110	2005	Hybrid		R		M.inco			Rickard
12	Speight 225	2003	(SP 168 X K 346)(SPA-95 X (SPA-95 X SP 168)	R	R		R			SPT
13	NC 72	1996	Hybrid	H	L		R			Rickard
14	PVH 1452	2006	Hybrid	R	R		TCN/R			Rickard
15	CU 124	2012	Hybrid							SC
16	PVH 2275	2010	Hybrid		R		R1		PVY/TEV	Rickard
17	NC 925	2010	Hybrid	R			R			NC
18	CU 144	2012	Hybrid							SC
19	Speight 227	2003	(SP 151X K 346)(SP 202 X K 346)	R	R		R			SPT
20	CC 901	2011	Hybrid	R	R		R			CC
21	GL 395	2010	Hybrid	R	R		R			GL
22	NC 71	1995	Hybrid	H	M		R			Rickard
23	CC 67	2008	Hybrid	R	R		TCN/R		TMV	CC
24	CU 110	2010	Hybrid							SC
25	CC 143	2012	Hybrid	R	R		R			CC
26	CC 1063	2011	Hybrid	R	R		R			CC
27	PVH 2248	2010	Hybrid		R		R1			Rickard
28	CC 27	2003	Hybrid	R	R		TCN/R		TMV	CC
29	CC 33	2008	Hybrid	R	R		M.j/R			CC
30	CC 35	2007	Hybrid	R	R		M.j/R			CC
31	K 326	1981	McNair 225 (McNair 30 x NC 95)	L	L		R			G,C,R,R
32	PVH 1118	2004	Hybrid	R	R		TCN/R			Rickard
33	NC 2326	1965	(Hicksx9012)(Hicks)Hicks)Hicks)	L	Su	M				NC
34	Speight 220	2002	(K-346 X SP 117)(SP 118 X K 346)	R	R		R			SPT
35	NC 299	2001	Hybrid	R	R		TCN/R			CC
36	CC 304	2010	Hybrid	R	R		R		TMV	CC
37	NC 196	2002	Hybrid	R	L		R			GL
38	GF 157	2011	Hybrid	R	R		R			GF
39	CC 13	2005	Hybrid	R	R		M.j/R			CC
40	GF 318	2008	Hybrid	R	R		R			Raynor
41	NC 92	2007	Hybrid	R	R		TCN/R			Rickard
42	NC 606	1998	NC 729 X NC 82	R	R		R			Raynor
43	Speight 236	2005	(SP 168 X SP 196)(SP 179 X SP 177)	R	R		R			SPT
44	CC 37	2006	Hybrid	R	R		TCN/R	M.j/R	TMV	CC
45	NC 938	2012	Hybrid	R	R		R		TMV	NC
46	NC 939	2012	Hybrid	R	R		TCN/R			NC
47	GL 362	2012	Hybrid	R	R		R		PVY	GL

¹Resistance; H - High; M - Moderate; L - Low; R - Resistance; T - Tolerant; Su - Susceptible
Diseases: BS - Black Shank; GW - Granville Wilt; FW - Fusarium Wilt; RK - Root Knot; Bn. Sp. - Brown Spot;
TMV - Tobacco Mosaic Virus; PVY - Potato Virus 'y'; TSMV - Tomato Spotted Wilt Virus;
TCN - Tobacco Cyst Nematode; TEV - Tobacco Etch Virus; M.j. - Meloidogyne javanica

2013 ADVANCED BREEDING LINES TEST
 OXFORD TOBACCO RESEARCH STATION, OXFORD, NC
 O-OVTA

REP I			REP II			REP III			
Plot	Entry		Plot	Entry		Plot	Entry		9-entries replicated three times
101	1		201	8		301	6		one-row plots with 20 harvested
102	2		202	3		302	9		plants in each plot.
103	3		203	1		303	4		
104	4		204	5		304	2		Rep I - Plots 101-109
105	5		205	6		305	5		Rep II - Plots 201-209
106	6		206	2		306	3		Rep III - Plots 301-309
107	7		207	9		307	8		
108	8		208	7		308	1		
109	9		209	4		309	7		

2013 Advanced Breeding Lines

2013 NORTH CAROLINA FLUE-CURED OFFICIAL TOBACCO VARIETY TES										
Advanced Breeding Lines										
Trt. No	Variety or Line	Generation or Year of Release	Pedigree	BS	GW	FW	RK	Bn. Sp.	Virus	Sponsor
1	NC 2326	1965	(Hicks X 9102)(Hicks)(Hicks)Hicks)	L	Su	M				NC
2	NC 95	1961	(C-139 X Bel. 4-30)X(C-139 X Hicks)	L	H	M				NC
3	K 326	1981	McNair 225(McNair 30 X NC 95)	L	L		R			GL
4	CU 185	F1	Hybrid							SC
5	CU 206	F1	Hybrid							SC
6	RJR 216	F1	Hybrid	R	R		R			RJR
7	CU 177	F1	Hybrid							SC
8	CU 179	F1	Hybrid							SC
9	CU 210	F1	Hybrid							SC

¹Resistance; H - High; M - Moderate; L - Low; R - Resistance; T - Tolerant; Su - Susceptable Diseases: BS - Black Shank; GW - Granville Wilt; FW - Fusarium Wilt; RK - Root Know; Bn. Sp. - Brown Spot; TMV - Tobacco Mosaic Virus; PVY - Potato Virus 'y'; TSMV - Tomato Spotted Wilt Virus; TCN - Tobacco Cyst Nematode; TEV - Tobacco Etch Virus; M.j. - Meloidogyne javanica

2013 REGIONAL FARM TEST
 OXFORD TOBACCO RESEARCH STATION, OXFORD, NC
 O-RFT

REP I	
Plot	Entry
101	1
102	2
103	3
104	4
105	5
106	6
107	7
108	8
109	9
110	10
111	11
112	12
113	13
114	14
115	15
116	16

REP II	
Plot	Entry
201	13
202	3
203	9
204	14
205	4
206	6
207	7
208	10
209	12
210	16
211	8
212	1
213	11
214	5
215	2
216	15

REP III	
Plot	Entry
301	3
302	13
303	5
304	4
305	8
306	9
307	16
308	10
309	14
310	15
311	12
312	11
313	2
314	6
315	7
316	1

REP IV	
Plot	Entry
401	2
402	4
403	15
404	10
405	12
406	1
407	13
408	6
409	11
410	8
411	7
412	5
413	3
414	16
415	9
416	14

REP V	
Plot	Entry
501	8
502	10
503	16
504	7
505	12
506	13
507	4
508	14
509	5
510	11
511	6
512	15
513	1
514	2
515	9
516	3

REP VI	
Plot	Entry
601	4
602	14
603	13
604	15
605	3
606	11
607	6
608	16
609	9
610	1
611	12
612	10
613	7
614	8
615	5
616	2

16 entries replicated six times in one-row plots with 20 harvested plants in each plot.

2013 RFT Pedigree

2013 FLUE-CURED REGIONAL FARM TEST										
GEORGIA, SOUTH CAROLINA, NORTH CAROLINA, AND VIRGINIA										
Trt. No	Variety or Line	Generation or Year of Release	Pedigree	BS	GW	FW	RK	Bn. Sp.	Virus	Sponsor
1	NC 2326	1965	(Hicks X 9102)(Hicks)(Hicks)Hicks)	L	Su	M				NC
2	NC 95	1961	(C-139 X Bel. 4-30)X(C-139 X Hicks)	L	H	M	R			NC
3	K 326	1981	McNair 225(McNair 30 X NC 95)	L	L		R			GL
4	CU 171	F1	Hybrid							SC
5	AOV 212	F1	Hybrid	R					TMV	AO
6	CU 186	F1	Hybrid							SC
7	CU 159	F1	Hybrid							SC
8	NCEX61	F1	Hybrid							NC
9	GLEX 398	F1	Hybrid	R	R		R			GL
10	PXH 1	F1	Hybrid	R	R					Rickard
11	NCEX60	F1	Hybrid							NC
12	GLEX 328	F1	Hybrid	R	R		R		TMV	GL
13	NCEX59	F1	Hybrid							NC
14	PXH 7	F1	Hybrid	R		R	M.inco	M.ar	TMV/PVY	Rickard
15	NCEX58	F1	Hybrid							NC
16	PXH 13	F1	Hybrid	R	R		M.inco			Rickard

¹Resistance; H - High; M - Moderate; L - Low; R - Resistance; T - Tolerant; Su - Susceptible
Diseases: BS - Black Shank; GW - Granville Wilt; FW - Fusarium Wilt; RK - Root Know; Bn. Sp. - Brown Spot;
TMV - Tobacco Mosaic Virus; PVY - Potato Virus 'y'; TSMV - Tomato Spotted Wilt Virus;
TCN - Tobacco Cyst Nematode; TEV - Tobacco Etch Virus; M.j. - Meloidogyne javanica

2013 REGIONAL SMALL PLOT TEST
 OXFORD TOBACCO RESEARCH STATION, OXFORD, NC
 O-RSP

REP I		REP II		REP III		
Plot	Entry	Plot	Entry	Plot	Entry	
101	1	201	13	301	21	27 entries replicated three times one-row plots with 20 harvested plants in each plot.
102	2	202	21	302	24	
103	3	203	6	303	20	
104	4	204	4	304	19	Rep I - Plots 101-127
105	5	205	7	305	25	Rep II - Plots 201-227
106	6	206	14	306	17	Rep III - Plots 301-327
107	7	207	9	307	2	
108	8	208	23	308	7	
109	9	209	3	309	26	
110	10	210	17	310	6	
111	11	211	27	311	4	
112	12	212	22	312	8	
113	13	213	24	313	23	
114	14	214	8	314	13	
115	15	215	1	315	27	
116	16	216	26	316	10	
117	17	217	11	317	16	
118	18	218	20	318	5	
119	19	219	25	319	22	
120	20	220	12	320	18	
121	21	221	5	321	12	
122	22	222	2	322	3	
123	23	223	15	323	1	
124	24	224	19	324	14	
125	25	225	18	325	11	
126	26	226	16	326	15	
127	27	227	10	327	9	

2013 RSP Pedigree

2013 NORTH CAROLINA FLUE-CURED SMALL PLOT TEST											
GEORGIA, SOUTH CAROLINA, NORTH CAROLINA, AND VIRGINIA											
Trt. No	Variety or Line	Generation or Year of Release	Pedigree	BS	GW	FW	RK	Bn. Sp.	Virus	Sponsor	
1	NC 2326	1965	(Hicks X 9102)(Hicks)Hicks)Hicks)	L	SU	M				NC	
2	NC 95	1961	(C-139XBel.4-30)x(C-139XHicks)	L	H	M	R			NC	
3	K 326	1981	McNair 225 (McNair 30 X NC95)	L	L		R			GL	
4	RJR 217	F1	Hybrid	R	R		R			RJR	
5	NCEX57	F1	Hybrid	R	R		R			NC	
6	XHN 55	F1	Hybrid	R		R	M.inco	M.aren	TMV/PVY	Rickard	
7	NCEX54	F1	Hybrid	R	R		TCN/R			NC	
8	CU 208	F1	Hybrid							SC	
9	NCEX56	F1	Hybrid	R	R		R			NC	
10	GLEX 309	F1	Hybrid	R	R		R			GL	
11	NCEX40	F1	Hybrid	R	R		TCN/R			NC	
12	CU 203	F1	Hybrid							SC	
13	CCEX 22	F1	Hybrid	R	R		R			CC	
14	NCEX55	F1	Hybrid	R	R		R			NC	
15	XHN 54	F1	Hybrid	R		R	M.inco	M.aren	TMV/PVY	Rickard	
16	CCEX 18	F1	Hybrid	R	R		R			CC	
17	NCEX36	F1	Hybrid	R	R		TCN/R			NC	
18	CU 204	F1	Hybrid							SC	
19	CCEX 52	F1	Hybrid	R	R		R			CC	
20	PXH 16	F1	Hybrid	R	R		M.inco			Rickard	
21	RJR 215	F1	Hybrid	R	R		R			RJR	
22	CU 170	F1	Hybrid							SC	
23	PXH 18	F1	Hybrid	R		R	M.inco	M.aren	TMV/PVY	Rickard	
24	CU 45	F1	Hybrid							SC	
25	GLEX 394	F1	Hybrid	R	R		R			GL	
26	XHN 61	F1	Hybrid	R	R	R	M.inco	M.aren	TMV	Rickard	
27	GF 164	F1	Hybrid	R			R			GF	

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2014 TOBACCO TOUR

JULY (Dates to be announced)

North Carolina
Cooperative Extension Service
NORTH CAROLINA STATE UNIVERSITY
COLLEGE OF AGRICULTURE & LIFE SCIENCES

Published By
THE NORTH CAROLINA COOPERATIVE EXTENSION SERVICE

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