



Efficacy of non-fumigant and/or fumigant products for tobacco nematode management in Virginia

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49th Tobacco Workers Conference,
January 2020

Justification

- Growers often dependent on nematicides to limit crop losses on susceptible cultivars
- Most previously standard nematicides no longer available.
- Telone increasingly expensive and hard to get when needed.

Materials & Methods

- Small plot field experiments: 2012, 2014-2019
- Virginia Tech So. Piedmont AREC, Blackstone VA.
- Randomized complete block design, 5-6 replications.
- 3-row plots, 12.2m long on 1.2m centers, all data from center row.

Materials & Methods: *Data Collection*

- *G. t. solanacearum* population densities:
 - Juveniles in roots ~6 weeks after transplanting
- Cured leaf yield

Nematicide Products Tested, 2014-2019

2014-2019	Years Tested
1,3-dichloropropene (Telone II)	2014-2019
Fluazaindolizine (Salibro)	2014, 2016, 2018, 2019
Fluensulfone (Nimitz)	2016-2019
Fluopyram (Velum Prime)	2015-2019

Nematicide Application Method, 2014-2019

Abbreviation	Application Method
Frow	Single shank row fumigation
PPI	Broadcast preplant incorporation
PPI-B	Preplant incorporated spray in 0.3-0.4m band centered on row
TPW	Transplant water

Fluazaindolizine (Salibro)

Treatment	Rate/A	Application Method	TCN Juveniles/g of Feeder Root in July			
			<u>2019</u>	<u>2018</u>	<u>2016</u>	<u>2012</u>
Untreated	---	---	93 abc	---	225 ab	5 ab
Salibro	62-68 fl oz	PPI	118 ab	---	192 abc	6 ab
Telone II	9-11 gal	FRow	163 a	---	96 def	3 ab

Fluazaindolizine (Salibro)



Treatment	Rate/A	Application Method	Yield (lb/Acre)				
			<u>2019</u>	<u>2018</u>	<u>2016</u>	<u>2014</u>	<u>2012</u>
Untreated	---	---	2,302 a	2,526 a-d	2,284 g	2,782 bc	3,168 b-f
Salibro	62-68 fl oz	PPI	2,004 a	2,718 a-d	2,622 c-g	2,650 cde	3,119 b-f
Telone II	9-11 gal	FRow	2,603 a	2,512 a-d	3,366 a	3,018 a	3,168 a

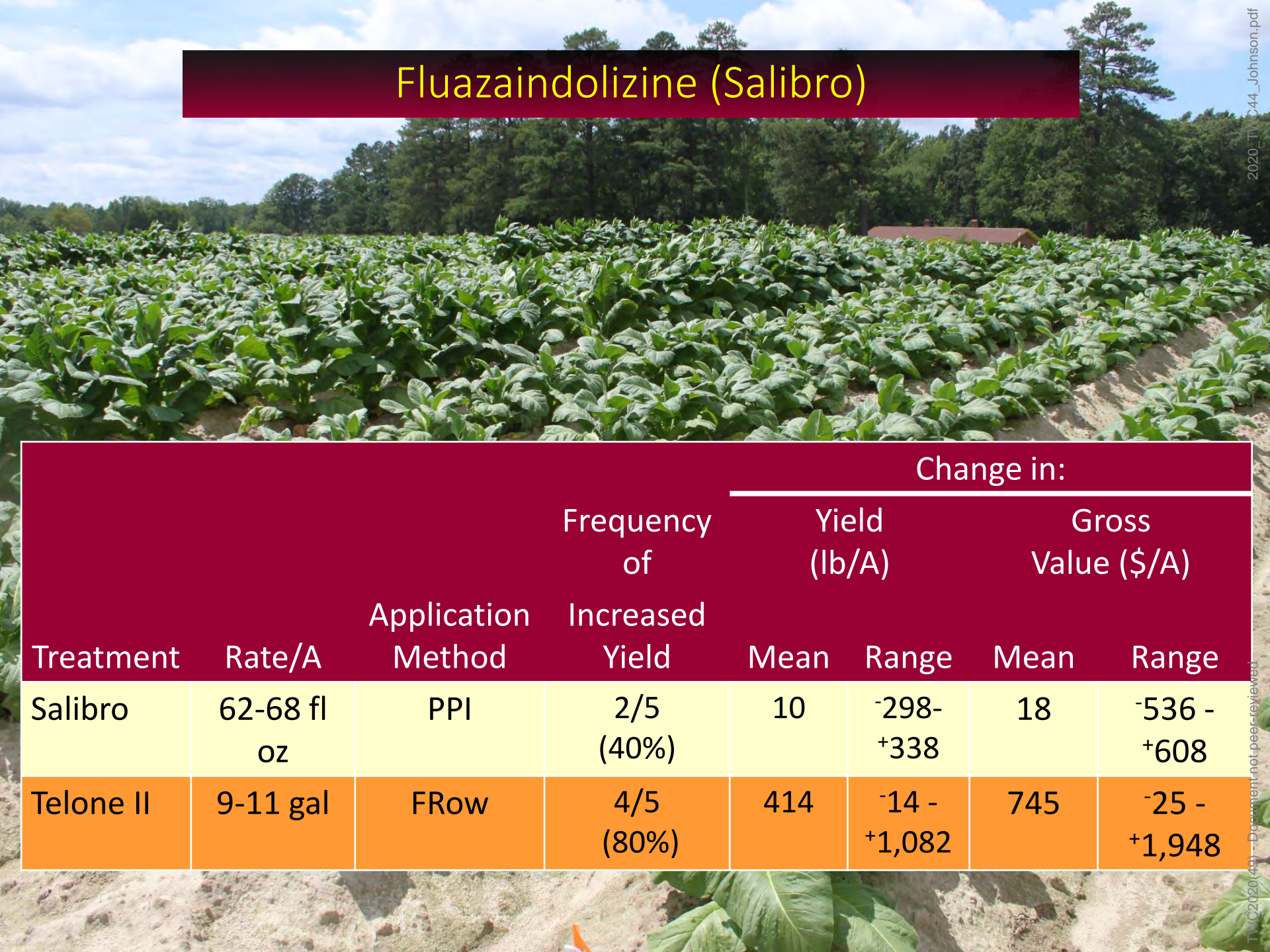
Fluazaindolizine (Salibro)



Treatment	Rate/A	Application Method	Frequency Of Increased Yield	Change in Yield			
				(lb/A)		% Increase	
				Mean	Range	Mean	Range
Salibro	62-68 fl oz	PPI	2/5 (40%)	10	-298- +338	3	-13 - +15
Telone II	9-11 gal	FRow	4/5 (80%)	414	-14 - +1,082	17	-1 - +47

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Fluazaindolizine (Salibro)



Treatment	Rate/A	Application Method	Frequency of Increased Yield	Change in:			
				Yield (lb/A)		Gross Value (\$/A)	
				Mean	Range	Mean	Range
Salibro	62-68 fl oz	PPI	2/5 (40%)	10	-298- +338	18	-536 - +608
Telone II	9-11 gal	FRow	4/5 (80%)	414	-14 - +1,082	745	-25 - +1,948

Fluensulfone (Nimitz)

Treatment	Rate/A	Application Method	TCN Juveniles/g of Feeder Root in July			
			<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>
Untreated	---	---	93 abc	---	6.0 a	225 ab
Nimitz	5-6 pt	PPI	69 abc	---	6.4 a	---
Nimitz	1.7 pt	Banded PPI	142 a	---	7.9 a	223 ab
Telone II	9-11 gal	FRow	163 a	---	6.9 a	96 def

Fluensulfone (Nimitz)

Treatment	Rate/A	Application Method	Yield (lb/Acre)			
			<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>
Untreated	---	---	2,302 a	2,526 a-d	2,543 ab	2,284 g
Nimitz	5-6 pt	PPI	2,516 a	2,363 bcd	2,625 ab	---
Nimitz	1.7 pt?	Banded PPI	2,496 a	2,971 abc	2,547 ab	3,079 abc
Telone II	9-11 gal	FRow	2,603 a	2,512 a-d	2,779 ab	3,366 a

Fluensulfone (Nimitz)

Treatment	Rate/A	Application Method	Frequency Of Increased Yield	Change in Yield			
				<u>(lb/A)</u>		<u>% Increase</u>	
				Mean	Range	Mean	Range
Nimitz	5-6 pt	PPI	2/3 (67%)	-40	-417 to +214	-1	-15 to +9
Nimitz	1.7 pt	PPI-Band	3/4 (75%)	296	+4 to +795	9	0 to +21
Telone II	9-11 gal	FRow	3/4 (75%)	384	-83 to +1,082	17	-3 to +47

Fluensulfone (Nimitz)

Treatment	Rate/A	Application Method	Frequency of Increased Yield	Change in:			
				<u>Yield (lb/A)</u>		<u>Gross Value (\$/A)</u>	
				Mean	Range	Mean	Range
Nimitz	5-6 pt	PPI	2/3 (67%)	-40	-417 to +214	-\$491	-\$751 to +385
Nimitz	1.7 pt	PPI-B	3/4 (75%)	296	+4 to +795	\$404	\$7 to \$359
Telone II	9-11 gal	FRow	3/4 (75%)	384	-83 to +1,082	\$506	-149 to +1,948

Fluopyram (Velum Prime)

Treatment	Rate/A	Application Method	TCN Juveniles/g of Feeder Root in July				
			2019	2018	2017	2016	2015
Untreated	---	---	93 abc	---	6.0 a	225 ab	75 b
Velum Prime	6.0-6.5 fl oz	TPW	80 abc	---	8.9 a	76 f	75 b
Telone II	9-11 gal	FRow	163 a	---	6.9 a	96 def	68 c

Fluopyram (Velum Prime)

Treatment	Rate/A	Application Method	Yield (lb/A)				
			2019	2018	2017	2016	2015
Untreated			2,302 a	2,780 a	2,543 ab	2,284 g	2,500 l
Velum Prime	6.0-6.5 fl oz	TPW	2,531 a	2,438 a	2,877 ab	2,809 b-f	3,182 b-h
Telone II	9-11 gal	FRow	2,603 a	2,697 a	2,779 ab	3,366 a	3,606 abc

Fluopyram (Velum Prime)

Treatment	Rate/A	Application Method	Frequency of Increased Yield	Change in Yield			
				(lb/A)		% Increase	
				Mean	Range	Mean	Range
Velum Prime	6.0-6.5 fl oz	TPW	4/5 (80%)	286	-342 to +682	12%	-12% to +27%
Telone II	9-11 gal	FRow	5/6 (83%)	528	-83 to +1,106	22%	-3% to +44%

Fluopyram (Velum Prime)



Treatment	Rate/A	Application Method	Frequency Of Increased Yield	Change in:			
				Yield (lb/A)		Gross Value (\$/A)	
				Mean	Range	Mean	Range
Velum Prime	6.0-6.5 fl oz	TPW	4/5 (80%)	286	-342 to +682	\$514	-\$342 to \$682
Telone II	9-11 gal	FRow	5/6 (83%)	528	-83 to +1,106	\$681	-\$83 to \$1,106



Summary & Conclusions

	Yield Increase:	
Treatment	Frequency	%
Salibro, PPI	2 of 5 years	3
Telone II	4 of 5 years	17
Nimitz, PPI	2 of 3 years	-1
Nimitz, PPI-B	3 of 4 years	9
Telone II, FRow	3 of 4 years	17
Velum Prime, TPW	4 of 5 years	12
Telone II, FRow	5 of 6 years	22

Summary & Conclusions

- Optimizing non-fumigant nematicide application placement and timing could improve performance (nematode control)

Acknowledgements

- Philip Morris International
- Virginia Tobacco Board
- DuPont (now Corteva)
- Bayer Crop Science
- ADAMA
- Marrone Bio Innovations
- Valent BioScience