

Use of Chlorantraniliprole for Worm Control in Burley Tobacco

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Chlorantraniliprole

- Anthranilic diamide
- Worm specific
- Very safe to non-target organisms
- Short harvest interval (1 day)
- Systemic in plant
- Foliar application
 - Residual control of undetermined length
- Transplant water
 - Up 6 to 7 weeks worm control ???

Tennessee Insecticide Trials 2010 - 2011

University of Tennessee Research
and Education Center at
Greeneville

2010 Treatments

Product	A. I.	Rate of Formulation per Ac	Rate AI lbs per Ac	Method of Application
Coragen SC 1.67	Chlorantraniliprole	3.5 ou	0.045	Foliar
Coragen SC 1.67	Chlorantraniliprole	5 ou	0.066	Foliar
Coragen SC 1.67	Chlorantraniliprole	7 ou	0.091	TPW
Belt SC 4	Flubendiamide	3 ou	0.095	Foliar
Tracer 4	Spinosad	2 ou	0.062	Foliar
Orthene 97	Acephate	0.75 lb	0.730	Foliar
Untreated	-	-	-	-

Procedure 2010

- TN 90 LC at 7100 plants/ac
- Transplanted May 20
- Imidicloprid and acephate TPW
- Standard production practices
- Topped July 30
- Harvested August 27

Procedure 2010

- Foliar sprays based on thresholds
- First foliar sprays applied June 25
 - budworm and hornworm
 - none applied to Coragen TPW
- Foliar spray applied July 16 to Coragen TPW
 - Tracer at 2.0 ou/ac
- Second foliar sprays applied July 23
 - budworm
 - none applied to Coragen tpw

Hornworm Counts – 2010

	June 25	June 30	July 7	July 22	July 29
	-----Worms per 30 plants-----				
Coragen foliar 3.5 ou	5.25 b	0 c	0 b	0	0
Coragen foliar 5 ou	4.75 b	0 c	0 b	0.25	0.25
Belt 3 ou	6.50ab	0 c	0.5 b	0	0
Tracer 2 ou	4.75 b	0 c	0 b	0	0
Orthene 0.75 lb	6.00 b	0 c	0 b	0	0
Coragen TPW 7 ou	1.25 c	1.5 b	0.5 b	0	0
Untreated Check	8.25 a	5.5 a	2.75 a	0.75	9.25

Tobacco set May 20, 2010

First foliar sprays applied June 25, none applied to Coragen tpw

Foliar spray of Tracer at 2.0 ou/ac applied July 16 to Coragen tpw

Second foliar sprays applied July 23, none applied to Coragen tpw

Means followed by the same letter not sig diff P = 0.10

Budworm Counts – 2010 all Reps

	June 25	June 30	July 7
	-----Worms per 30 plants-----		
Coragen foliar 3.5 ou	3.25	0.75	0.50
Coragen foliar 5 ou	2.75	2.00	0.75
Belt 3 ou	3.00	2.25	2.50
Tracer 2 ou	3.50	1.25	0.25
Orthene 0.75 lb	3.50	1.25	0
Coragen TPW 7 ou	3.25	5.25	4.00
Untreated Check	3.50	6.25	4.00

Tobacco set May 20, 2010

First foliar sprays applied June 25, none applied to Coragen tpw

Foliar spray of Tracer at 2.0 ou/ac applied July 16 to Coragen tpw

Second foliar sprays applied July 23, none applied to Coragen tpw

Means followed by the same letter not sig diff P = 0.10

Budworm counts by rep for Coragen in transplant water - Greeneville TN 2010

Rep	June 25	June 30	July 7	July 15	Aver.
	-----live worms per 30 plants-----				
1	0	4	5	3	3
2	1	3	3	3	3.3
3	4	4	2	4	3.5
4	8	10	6	6	7.5

Budworm counts for untreated check versus Coragen in transplant water, with and without rep 4 included

	June 25	June 30	July 7	July 15
Average of 4 reps				
Untreated	3.5	6.25	4.0	3.5
Coragen in tpw	3.25	5.25	4.0	4.0
Average of reps 1-3				
Untreated	4.0	5.67	3.67	4.33
Coragen in tpw	1.67	3.67	3.33	3.33

Budworm Counts 2010

Rep 4 Deleted

	June 25	June 30	July 7	July 22
	-----worms per 30 plants-----			
Coragen foliar 3.5 ou	3.7	0.7 c	0.7 cd	4.7
Coragen foliar 5 ou	3.3	2.7 bc	1.0bcd	3.0
Belt 3 ou	3.0	2.7 bc	2.7abc	1.7
Tracer 2 ou	1.7	0.7 c	0 d	5.3
Orthene 0.75 lb	4.0	1.3 c	0 d	3.3
Coragen TPW 7 ou	1.7	3.7 b	3.3 a	2.3
Untreated Check	4.0	5.7 a	3.7 a	4.7

Tobacco set May 20, 2010

First foliar sprays applied June 25, none applied to Coragen tpw

Foliar spray of Tracer at 2.0 ou/ac applied July 16 to Coragen tpw

Second foliar sprays applied July 23, none applied to Coragen tpw

Means followed by the same letter not sig diff P = 0.10

Tobacco Yields – Greeneville

2010 Rep 4 Removed

	Yield (lbs/ac)
Coragen foliar 3.5 ou	2693
Coragen foliar 5 ou	2763
Belt 3 ou	2797
Tracer 2 ou	2878
Orthene 0.75 lb	2853
Coragen TW 7 ou	2566
Untreated Check	2377

No sig diff between trt P = 0.10

2010 Conclusions

- Hornworm
 - All foliar treatments gave equal control
 - Coragen TPW gave good control for at least 50 days
- Budworm
 - Foliar treatments generally equally effective
 - Two sprays needed for all foliars
 - Coragen TPW appeared to give some control for 40 days, but problems in one rep made results less clear

2011 Treatments

Product	A. I.	Rate of Formulation per Ac	Rate AI lbs per Ac	Method of Application
Coragen SC 1.67	Chlorantraniliprole	5 ou	0.066	TPW
Coragen SC 1.67	Chlorantraniliprole	7 ou	0.091	TPW
Coragen SC 1.67	Chlorantraniliprole	5 ou	0.066	Soil at layby
Coragen SC 1.67	Chlorantraniliprole	7 ou	0.091	Soil at layby
Coragen SC 1.67	Chlorantraniliprole	5 ou	0.066	Foliar
Belt SC 4.0	Flubendiamide	2 ou	0.063	Foliar
Orthene 97	Acephate	0.75 lb	0.730	Foliar
Untreated	-	-	-	-

Procedure 2011

- KT 209 LC at 7100 plants/ac
- Transplanted June 6
- Imidicloprid and acephate TPW
- Standard production practices
- Topped August 24
- Harvested September 21

Procedure 2011

- Foliar sprays based on thresholds
- Layby based on time from transplanting and thresholds
- Tobacco set June 6
- First foliar sprays and layby July 18
 - hornworm
- General foliar spray August 19
 - budworm

Hornworm Counts – 2011

	July 15	July 22	Aug 5	Aug 18
	-----Worms per 30 plants-----			
Coragen 5 oz trans	0 b	0 b	0 b	0.25
Coragen 7 oz trans	0 b	0 b	0.25 b	0
Coragen 5 oz layby	1.75 ab	0.75 b	0.25 b	1.0
Coragen 7 oz layby	2.25 ab	0.5 b	0.5 b	1.0
Coragen 5 oz foliar	1.5 ab	0 b	0 b	0.5
Belt 2 oz foliar	2.75 a	0 b	0 b	0.25
Orthene 0.75 lbs foliar	3.0 a	0 b	0.25 b	3.25
Untreated Check	3.5 a	1.75 a	1.25 a	2.0

Tobacco set June 6

First foliar sprays and layby applied July 18

General foliar spray applied on August 19

Means followed by the same letter not sig diff P = 0.10

Budworm Counts – 2011

	July 15	July22	July 29	Aug 11	Aug 18
-----Worms per 30 plants-----					
Coragen 5 oz trans	0.5	0.75	0.25 b	1.5 abc	9.5
Coragen 7 oz trans	0.25	1.25	0 b	1.75abc	8.5
Coragen 5 oz layby	0.5	1.5	0.25 b	2.25abc	13.0
Coragen 7 oz layby	0	1.0	0.25 b	3.0 ab	9.0
Coragen 5 oz foliar	0	1.0	0 b	0.5 c	9.75
Belt 2 oz foliar	1.25	0.75	0 b	1.0 c	13.75
Orthene 0.75 lbs foliar	0.25	0.25	0 b	1.75abc	10.75
Untreated Check	1.75	2.25	1.5 a	3.5 a	11.5

Tobacco set June 6

First foliar sprays and layby applied July 18

General foliar spray applied on August 19

Means followed by the same letter not sig diff P = 0.10

Tobacco Yields – Greeneville 2011

	Yield (lbs/ac)
Coragen 5 oz/A trans	2286 ab
Coragen 7 oz/A trans	2432 a
Coragen 5 oz/A layby	2105 ab
Coragen 7 oz/A layby	2047 ab
Coragen 5 oz/A foliar	2293 ab
Belt 2 oz/A foliar	2119 ab
Orthene 97 0.75 lbs/A foliar	2288 ab
Untreated Check	1991 b

Means followed by the same letter not sig diff P = 0.10

2011 Conclusions

- Lower pressure than 2010
- Hornworm
 - Coragen TPW had significant effect for at least 60 days
 - Coragen soil applied at layby had significant effect for at least 17 days
 - All foliar treatments were equally effective
 - One foliar application gave control at least until near topping
 - Pressure was low after first foliar application

2011 Conclusions

- Budworm
 - Pressure light, threshold not reached until near topping
 - Foliar treatments equally effective, but pressure too light for good test
 - Coragen TPW gave small but sig reduction in budworm 53 days after transplanting
 - Coragen Layby gave small but sig reduction in budworm 11 days after layby
 - No effect of soil applied, either TPW or layby, 66 days after transplanting, 24 days after layby