

Potential for Phytotoxicity of Snapshot 2.5TG
(Isoxaben + Trifluralin) on
Candytuft (*Iberis sempervirens* 'Snowflake')

By

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Project: Interregional Research Project #4
Project Number 24841A – August 25, 2005

Donors/Supporters:
Hines Horticulture, Vacaville CA

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TRIAL:	
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IR-4 ORNAMENTAL DATA REPORTING FORM

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Location of Trial	University of California, Davis CA
TRIAL TYPE: (field, container, greenhouse, etc)	Field Container
Chemical - Common Name	Isoxaben + Trifluralin
- Formulation	2.5TG
- Batch Number	
- Product	Snapshot 2.5TG
- EPA Registration Number	62719-175
- Manufacture	Dow AgroSciences
USE INFORMATION	
- Plant Common Name	Candytuft
- Plant Scientific Name	<i>Iberis sempervirens</i> 'Snowflake'
- Pest (s)	Weeds
Soil Type or Type of Potting Mix: UC Mix	a)%Sand: 35 b)%Silt: c)%Clay: d)%OM: 65 e)%pH: 6.5
Enter each DATE for:	Seedling: Emergence: Transplanting: 6/20/2005
Enter each SPACING for:	Plant or Pot: 6 inches Row: 6 inches
Enter each SIZE for:	Pot: 6-inch Plot: 50 sq ft
Experimental Design:	Randomized complete block (3 blocks X 3 reps)
Number of Reps:	9 reps total for each treatment

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APPLICATION PARAMETERS¹

Type of Application: (aerial, ground, foliar, drench, ppi, chemigation, broadcast, directed, etc)	Broadcast over the top
Number of Applications:	2, 30 days apart
Application Type:	manual shaker container
Nozzle Type/Size:	
Nozzle Pressure:	
Delivery Rate:	
Calibration Date(s):	

APPLICATION SUMMARY

APPLICATION DATE	RATES (a.i./A) (Be sure to provide units)	Brief Description of Growth Stage (Dormant, New Growth Present, Bud, etc)
June 30, 2005	0, 2.5, 5, 10 lb. a.i./A	Vegetative, actively growing
July 29, 2005	0, 2.5, 5, 10 lb. a.i./A	Vegetative, actively growing

1 RAINFALL/IRRIGATION RECORDS: INCLUDE RAINFALL/IRRIGATION INFORMATION (printouts, IR-4 forms, etc.)

See Table 1 for environmental conditions. The plants were watered daily with tap water using a drip irrigation system delivering 1 gallon per hour.

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OTHER PESTICIDES, FERTILIZER, LIME AND ADJUVANTS USED:

PRODUCT	AMOUNT	DATE
Osmocote 19-6-12	0.5 tsp per 6-inch pot	7/6/2005

NARRATIVE SUMMARY OF METHODS AND RESULTS:

Materials and Methods

Plant Material and Culture. Liners of *Iberis sempervirens* 'Snowflake' were received from Hines Horticulture on April 22, 2005. These were transplanted to 6-inch pots containing UC Mix on June 20, 2005 and grown on in a greenhouse for 10 days. The 8-week experiment took place in an outdoor nursery and began on June 30, 2005. Environmental conditions during the experiment are summarized in Table 1. Osmocote (19-6-12) controlled release fertilizer was added on July 6, 2005 at the rate of 0.5 teaspoon per 6-inch pot. The plants were watered daily with tap water using a drip irrigation system delivering 1 gallon per hour. Applications of pesticides as part of a normal pest management program were made as needed (see above).

Experimental Procedure. Thirty-six plants were randomly chosen and individually tagged for treatment with 0 (Control), 2.5 (1X), 5 (2X), or 10 (4X) lb. ai/A Snapshot 2.5TG with 9 replicates per treatment. These dosages were prescribed in IR4 Ornamental Protocol 05-001 dated 1/05 (Appendix A). The plants received the first foliar spray application on June 30, 2005 and the second application 4 weeks later on July 29, 2005. The plants were arranged in a randomized complete block design with 3 blocks and 3 treatment replicates per block (Figure 1). Phytotoxicity ratings and plant height and width measurements were taken at day 0, 3, 7, 14, 28, 31, 35, 42 and 56. Visual phytotoxicity evaluations were based on a numerical rating scale ranging from 0 (no injury) to 10 (complete kill) (Table 2). Plant height (cm) was measured from the container soil surface to the top of the leaf canopy.

Plant width (cm) was measured twice along perpendicular lines at the widest part of the plant, resulting in W_1 and W_2 . For each observation a canopy volume index was calculated so as to be able to determine if canopy volume was affected by the application of Snapshot 2.5TG. The calculation was made as $H*W_1*W_2$, where H is the height and W_1 and W_2 are two width measurements. The usefulness of this index is based on the fact that many of the models for such a volume calculation are of the form $a*H*W_1*W_2$. The constant "a" depends on the assumption of the shape of the canopy. Since analyses of variance are scale-independent, the conclusion will thus be for the volume of the plant canopy.

Statistical Analysis. The data were analyzed using Proc GLM of the Statistical Analysis System (SAS). The phytotoxicity and change in mean value from the starting plant height, width and volume index were analyzed for significant differences using t-tests.

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Results

All plants in the experiment were healthy during the first 4 weeks of the trial. During the second half of the trial, plants in the control group and the treatment groups died contributing to large standard errors for mean values.

During the first 4 weeks Snapshot had no significant effect on the change in phytotoxicity index (Table 3, Figure 2, Appendix B). Also, the levels of phytotoxicity index were generally so low as to be inconsequential. During the second half of the trial, the phytotoxicity index means were substantially greater, but there was no statistically significant difference between the control and any of the treatments.

The plants did not grow in height during the trial in any of the treatments (Table 4, Figures 2 and 3, Appendix B). The average width increase was 3.75 cm and the plants in the 1X treatment grew significantly less in width. The plants in the 4X treatment did not grow in width; this mean width increase of 0 cm is significantly less than the width increase of the control and 1X treatments. The volume index showed a significant difference in growth between the control and the Snapshot treatments.

Discussion

While no conclusive evidence was found for Snapshot causing phytotoxicity on *Iberis*, we did find a significant reduction in plant growth attributable to Snapshot.

GOOD RESEARCH PRACTICE STATEMENT:

I acknowledge that I have read and followed the IR-4 Research protocol and completed this trial following good agricultural practice, or reported any deviations (note any changes from authorized protocol in narrative).

SIGNATURE (PRINCIPAL INVESTIGATOR) _____

Date Completed:

If submitted, using e-mail, please provide e-mail address and send confirming receipt.

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Table 1. Environmental conditions during the experiment to evaluate the phytotoxicity of Snapshot 2.5TG on *Iberis sempervirens* 'Snowflake'.

Date	Sol Rad (Ly/day)	Max Air Temp (°F)	Min Air Temp (°F)	Avg Air Temp (°F)	Avg Vap (mBars)	Avg wSpd (MPH)	Precip (in)	CIMIS ETo (in)	Avg Rel Hum (%)	Dew Pt (°F)
6/30/2005	386	96.9	--	83	16.6	5.6	0	0.27	43	58.2
7/1/2005	725	97.1	59.4	76.5	16.7	4.5	0	0.29	54	58.4
7/2/2005	721	92	55.1	71.9	15.7	4.8	0	0.27	59	56.7
7/3/2005	717	90.5	53.4	71.8	14.7	4.3	0	0.27	55	54.8
7/4/2005	710	94.2	56.4	75.4	15.2	4.2	0	0.28	51	55.9
7/5/2005	701	89.6	57.1	71.5	15.2	5.9	0	0.28	57	55.7
7/6/2005	689	93.3	56.4	73.1	15.8	5.6	0	0.28	57	56.9
7/7/2005	686	90.2	58.3	71.8	14.5	6.5	0	0.29	54	54.5
7/8/2005	686	85.7	54.3	68.8	14.5	6.7	0	0.26	60	54.5
7/9/2005	681	83.2	57.6	69.3	15.1	8.2	0	0.27	62	55.7
7/10/2005	686	87.1	54.9	71.5	14.7	4.9	0	0.26	56	55
7/11/2005	688	93.5	58.9	76.9	17.4	4.5	0	0.28	55	59.5
7/12/2005	690	98.9	61.9	80.3	16.8	4.1	0	0.28	48	58.6
7/13/2005	685	99.7	62.8	80.5	16.5	3.9	0	0.29	46	58.1
7/14/2005	682	100.8	60.6	80.9	16.6	4.1	0	0.29	46	58.2
7/15/2005	683	102	63.5	82.2	15.4	3.9	0	0.29	41	56.2
7/16/2005	689	102.9	60	80.9	15.3	4	0	0.29	43	56
7/17/2005	687	101.8	63.2	81.1	16.7	4.3	0	0.29	46	58.4
7/18/2005	677	95.2	59.2	75.6	17.6	4.9	0	0.27	58	59.9
7/19/2005	678	93.1	58	74	16.8	4.9	0	0.26	58	58.5
7/20/2005	706	98.8	54.9	75.7	14.7	4.4	0	0.27	49	55
7/21/2005	409	87.7	61.3	71.9	13.8	7.5	0	0.2	52	53.1
7/22/2005	706	93.1	55.8	73.3	12.8	3.7	0	0.25	46	51.2
7/23/2005	702	101.5	58	81.2	13.2	4.1	0	0.3	36	51.8
7/24/2005	687	99.5	62.2	80.6	14.9	5	0	0.3	42	55.3
7/25/2005	689	99.3	57.9	76.4	14.3	4.4	0	0.27	46	54.1
7/26/2005	676	99	58.9	78.6	14.1	4.6	0	0.29	42	53.8
7/27/2005	680	95.1	55.9	75	14.4	4.4	0	0.27	49	54.3
7/28/2005	641	93.6	57.3	74.5	13.7	5.1	0	0.27	47	52.9
7/29/2005	633	96.2	59.6	75.6	13.4	5.5	0	0.28	44	52.4
7/30/2005	655	98.2	59.3	77.2	14.4	4.6	0	0.27	45	54.3
7/31/2005	675	99.4	57.7	77.5	14.6	4.3	0	0.28	45	54.6
8/1/2005	689	100.7	57.1	77	12.2	5.4	0	0.29	38	49.8
8/2/2005	665	93.3	53.8	72.6	13.3	4.3	0	0.26	49	52.1
8/3/2005	661	94.4	53.4	74.1	13.6	4.6	0	0.27	47	52.8
8/4/2005	654	97.8	56.7	76.3	14.2	3.7	0	0.26	46	53.9
8/5/2005	658	100.1	58.8	78.2	14.1	3.6	0	0.26	43	53.7
8/6/2005	647	102.6	57	77.7	13.8	4.2	0	0.27	42	53.1
8/7/2005	636	101.3	59.8	78.8	14.2	4	0	0.27	42	53.9
8/8/2005	573	92.2	59.6	73.8	14.9	4.8	0	0.23	52	55.2
8/9/2005	641	99	57.6	75.5	14.8	4.4	0	0.26	49	55.1
8/10/2005	650	94.6	55.8	74.5	14	4.2	0	0.26	48	53.6
8/11/2005	640	97.7	53.2	76	13	3.6	0	0.26	43	51.6
8/12/2005	640	97.6	57.4	75.5	13.8	4.8	0	0.27	46	53.1
8/13/2005	552	81.6	53.7	66.6	13.5	5.7	0	0.2	61	52.6
8/14/2005	613	84.7	54.3	67.1	14.2	5.9	0	0.23	62	53.8
8/15/2005	546	81.1	56.4	69	13.9	6.6	0	0.23	57	53.3
8/16/2005	579	94	62.3	76.1	14.7	4.8	0	0.25	48	54.9
8/17/2005	608	89.8	55.7	70.6	13.7	5.8	0	0.25	54	53
8/18/2005	611	79.8	54.4	65.1	14.1	8.9	0	0.23	67	53.7
8/19/2005	609	83.1	52.7	65.9	13.6	5.9	0	0.22	63	52.8
8/20/2005	608	88.8	51.3	69.7	13.1	3.9	0	0.22	53	51.8
8/21/2005	613	91.9	53.5	71.2	13.5	4.2	0	0.24	52	52.6
8/22/2005	609	95.3	50.1	73.3	13.6	4	0	0.24	48	52.7
8/23/2005	609	95.1	54.7	72.3	13	5.6	0	0.25	48	51.6
8/24/2005	607	89.2	52.9	70.7	12.4	6.9	0	0.26	48	50.2
8/25/2005	601	90.2	53.1	70.8	10.1	4.5	0	0.24	39	44.8

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Table 2. Numerical plant damage rating scale used for phytotoxicity determinations.

Rating	Description of plant damage
0	No damage
1	No visible damage but unintended (non-permanent) impact
2	Slight leaf/tissue damage (curling leaves, necrosis, etc.)
3	Marginal chlorosis on some leaves (damage on up to 10% of plant)
4	10% – 20% of plant damaged
5	Significant damage to much of plant (30% - 40%)
6	40% – 60% of plant damaged
7	Chlorosis or necrosis on most of plant (60% - 70%)
8	Abscised leaves, branch dieback
9	Tissue severely damaged (80% - 100% of plant)
10	Complete kill

Table 3. Phytotoxicity ratings over 8 weeks for *Iberis sempervirens* ‘Snowflake’ treated with 0 (Control), 2.5 (1X), 5 (2X), or 10 (4X) lb. ai/A Snapshot 2.5TG, applied at weeks 0 and 4. Different letters within a column indicate significant differences between treatments (P < 0.05). “Yes”/”No” refer to significant treatment effects at the 5% level. Means ± SE (n = 9)

Phytotoxicity Effect of Snapshot on Iberis								
Phytotoxicity Index Increase from beginning of trial until:								
Treatment	Day 3	no	1 week	no	2 weeks	no	4 weeks	no
0X	0.11 ± 0.26	a	0.00 ± 0.29	a	0.11 ± 0.39	a	0.44 ± 0.50	a
1X	0.00 ± 0.00	a	0.00 ± 0.00	a	0.33 ± 0.29	a	1.33 ± 0.99	a
2X	0.00 ± 0.24	a	0.22 ± 0.32	a	0.33 ± 0.47	a	0.78 ± 0.83	a
4X	0.22 ± 0.15	a	0.33 ± 0.17	a	0.33 ± 0.17	a	1.67 ± 0.41	a
Phytotoxicity Index increase from beginning of trial until:								
Treatment	Day 3 of week4	no	5 week	no	6 weeks	no	8 weeks	yes
0X	1.11 ± 1.14	a	1.44 ± 1.12	a	1.67 ± 1.13	a	2.11 ± 1.03	b
1X	1.67 ± 1.07	a	2.22 ± 1.02	a	2.44 ± 1.00	a	3.67 ± 0.94	ab
2X	1.78 ± 1.38	a	2.44 ± 1.36	a	2.78 ± 1.29	a	4.56 ± 1.17	ab
4X	2.56 ± 0.50	a	4.44 ± 1.12	a	4.78 ± 1.06	a	5.89 ± 0.92	a

Table 4. Plant height, width and volume changes over 8 weeks for *Iberis sempervirens* ‘Snowflake’ treated with 0 (Control), 2.5 (1X), 5 (2X), or 10 (4X) lb. ai/A Snapshot 2.5TG, applied at weeks 0 and 4. Different letters within a column indicate significant differences between treatments (P < 0.05). “Yes”/”No” refer to significant treatment effects at the 5% level. Means ± SE (n = 9)

Growth Effect of Snapshot on Iberis						
Increase by week 8 of:						
Treatment	Height (cm)	no	Average Width (cm)	yes	Volume Index	yes
0X	-0.44 ± 0.74	a	3.75 ± 0.69	a	860.64 ± 232.08	a
1X	-1.22 ± 1.21	a	1.75 ± 0.66	b	224.96 ± 76.46	b
2X	-3.11 ± 2.16	a	2.42 ± 0.62	ab	217.19 ± 264.51	b
4X	-0.83 ± 0.58	a	-0.03 ± 0.58	c	-43.58 ± 101.67	b

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Figure 1. *Iberis sempervirens* 'Snowflake' plants were arranged in a randomized complete block design with 3 blocks and 3 treatment replicates per block for the experiment to evaluate the phytotoxicity of Snapshot 2.5TG.

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Species: *Iberis* -- Material: Snapshot

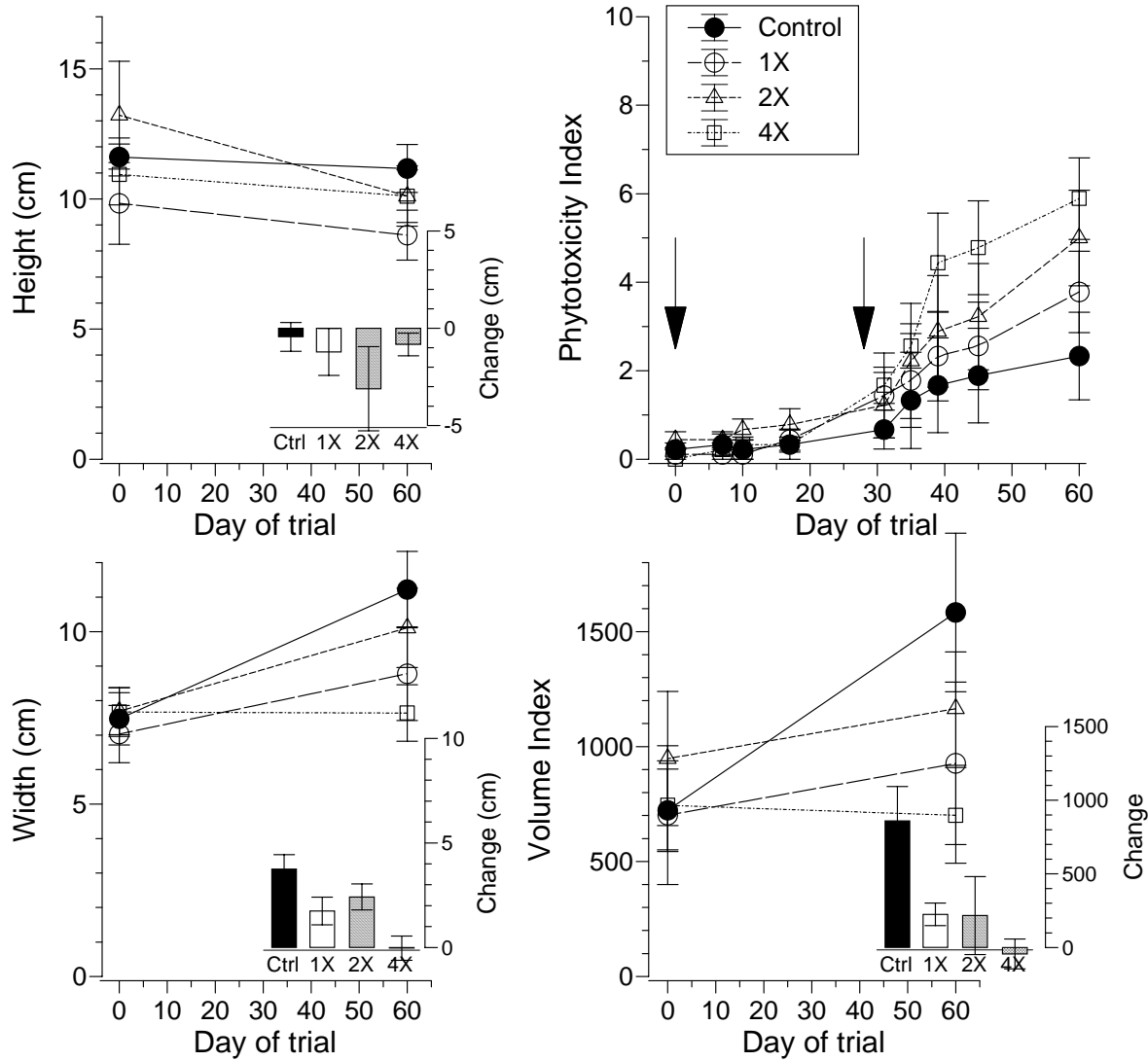


Figure 2. Summary of results for *Iberis sempervirens* 'Snowflake' treated with 0 (Control), 2.5 (1X), 5 (2X), or 10 (4X) lb. ai/A Snapshot 2.5TG, applied at weeks 0 and 4 (arrows). Both means and cumulative changes over time are plotted for phytotoxicity index, plant height, plant width and plant volume index. Histograms show changes over the 8-week trial period. SE bars shown. (n = 9)

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Block A



Block B



Block C

CONTROL 1X 2X 4X

Figure 3. *Iberis sempervirens* 'Snowflake' plants 8 weeks after treatment with 0 (Control), 2.5 (1X), 5 (2X), or 10 (4X) lb. ai/A Snapshot 2.5TG, applied at weeks 0 and 4.

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Appendix A

Phytotoxicity to herbaceous perennial plants with pre-emergent applications of Pendulum, Pennant Magnum, and Snapshot

Ornamental Protocol Number: 05-001

Objective: Determine phytotoxicity of Pendulum, Pennant Magnum, and Snapshot to unlabelled perennial plants commonly grown in nurseries.

Experimental Design:

Plot Size: Must be adequate to reflect actual use conditions.

Replicates: Minimum of 3 replications (preferably 4) with 3 pots per replicate

Application Instructions: Two applications made approximately 4 weeks apart with the first application within 7 days of potting. Plant materials must have broken dormancy prior to first application. For liquid applications, use a minimum of 20 gal per acre. Applications should be made over the top of the plants using application equipment consistent with conventional commercial equipment. Please see table below for instructions for post-application irrigation.

Plant Materials: See attached list of plant materials. Plants grown in field containers are preferred to in-ground.

Evaluations: Record phytotoxicity on a scale of 0 to 10 (0 = No phytotoxicity; 10 = Complete kill) at 3, 7, 14, and 28 days after each application. If phytotoxicity is observed in treated plants, take pictures comparing treated and untreated plant material.

Recordkeeping: Keep detailed records of weather conditions including temperature and precipitation, soil-type or soil-less media, application equipment, application volume per acre, irrigation, liner size, plant height & width, and plant growth stage at application and data collection dates.

Treatments:

Product	Rate	Post-Application Irrigation Instructions
Pendulum 2G (pendimethalin)	2.0 lb ai/A	Follow with sufficient overhead irrigation to wash Pendulum from the foliage to reduce the chance of injury
	4.0 lb ai/A	
	8.0 lb ai/A	
Pennant MAGNUM 7.62EC (s-metalochlor)	2.5 lb ai/A	Follow with sufficient overhead irrigation to wash Pennant Magnum from the foliage to reduce the chance of injury
	5.0 lb ai/A	
	10.0 lb ai/A	
Snapshot 2.5TG (isoxaben+trifluralin)	2.5 lb ai/A	Follow with sufficient overhead irrigation to wash Snapshot from the foliage to reduce the chance of injury
	5.0 lb ai/A	
	10.0 lb ai/A	
Untreated	--	--

For labels, materials, and any required adjuvants contact:

Pendulum - BASF, Kathie Kalmowitz, 919-785-9659, email: kalmowk@basf-corp.com
 Pennant Magnum - Syngenta, Dave Ross, 336-632-6411, david.ross@syngenta.com
 Snapshot - Dow AgroSciences, Mike Melichar, 317-337-4982, mwmelichar@dow.com

Reports:

Report must include a brief summary paragraph of results, a summary table with appropriate statistical analyses, a section on experimental design and materials and methods, with raw data and recordkeeping information as listed above included as appendices. If pictures were taken, please include them.

An electronic report is preferred but not required. If the report is provided electronically, the basic report can be sent in MS Word or WordPerfect, the recordkeeping information as pdf or other electronic documents, and the raw data in MS Excel or other suitable program such as ARM.

Please direct questions to: Cristi Palmer, IR-4 HQ, Rutgers University, 681 US Hwy 1 S, North Brunswick, NJ 08902-3390, Phone 732-932-9575 x629, palmer@aesop.rutgers.edu OR Ely Vea, 308 Aston Forest Lane, Crownsville, MD 21032, Phone & FAX#: 410-923-488, E-mail: evvea@comcast.net.

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Appendix B

Phytotoxicity Report Form for Snapshot on Iberis																	
Treatment	Block	Rep	Phytotoxicity at week									Plant Size at week 0			Plant Size at week 8		
			day			day						Height	Width1	Width 2	Height	Width1	Width 2
			0	3	1	2	4	3	5	6	8	(cm)	(cm)	(cm)	(cm)	(cm)	(cm)
Control	A	1	0	0	0	0	1	1	1	1	2	14	10	11.5	12	11.5	13
Control	A	2	1	0	0	0	0	0	0	0	0	11.5	6.5	5	10.5	10	10
Control	A	3	0	0	0	0	1	1	1	2	1	9.5	7.5	8	13	14	12
Control	B	1	0	2	2	3	4	10	10	10	10	11	5	4	8.5	5	3
Control	B	2	1	1	0	0	0	0	0	0	2	12	7	5.5	9.5	14	11
Control	B	3	0	0	0	0	0	0	0	0	1	10	7	5.5	7.5	11.5	10
Control	C	1	0	0	0	0	0	0	0	0	1	8.5	8	6.5	9.5	11	10
Control	C	2	0	0	0	0	0	0	2	3	2	12.5	12	11	14.5	20	13
Control	C	3	0	0	0	0	0	0	1	1	2	15.5	8.5	6	15.5	14	9
Mean			0.2	0.3	0.2	0.3	0.7	1.3	1.7	1.9	2.3	11.6	7.9	7.0	11.2	12.3	10.1
1X	A	1	0	0	0	1	1	1	1	1	2	5	5.5	5	7	6.5	4.5
1X	A	2	0	0	0	0	0	0	1	1	2	7.5	5.5	6.5	10.5	9	8
1X	A	3	0	0	0	0	0	0	0	1	2	12	9	8	10.5	10.5	10
1X	B	1	0	0	0	0	1	2	2	2	4	8.5	6	5.5	7	9	6.5
1X	B	2	1	1	1	0	0	2	2	2	3	10	7	5.5	11	9	7
1X	B	3	0	0	0	2	9	10	10	10	10	7.5	5.5	6	3	4.5	2.5
1X	C	1	0	0	0	0	0	0	0	0	1	5	4.5	4	6.5	7	5.5
1X	C	2	0	0	0	1	1	1	2	3	6	20	14	10.5	11.5	19	16
1X	C	3	0	0	0	0	1	0	3	3	4	13	10	8.5	10.5	14	9.5
Mean			0.1	0.1	0.1	0.4	1.4	1.8	2.3	2.6	3.8	9.8	7.4	6.6	8.6	9.8	7.7
2X	A	1	0	0	0	0	0	1	1	1	1	17	7.5	7.5	14	11.5	9
2X	A	2	1	0	0	0	0	1	1	4	4	7	7	7	11.5	11	8.5
2X	A	3	1	0	0	0	1	2	2	2	3	16	7	12	13.5	15	11
2X	B	1	0	1	1	1	0	0	1	2	7	5	6	6.5	5	5	4.5
2X	B	2	1	1	1	1	0	0	1	1	3	11.5	9	6	11.5	11	7.5
2X	B	3	1	1	1	0	0	0	0	2	4	8.5	4	3.5	5.5	7	5
2X	C	1	0	1	2	3	6	9	10	10	10	17	9	7	11	11.5	7
2X	C	2	0	0	0	0	0	0	1	1	3	12	10.5	7	12.5	14	12
2X	C	3	0	0	1	2	4	9	9	9	10	25	12	10	6.5	20	11.5
Mean			0.4	0.4	0.7	0.8	1.2	2.2	2.9	3.2	5.0	13.2	8.0	7.4	10.1	11.8	8.4
4X	A	1	0	0	0	1	3	3	3	4	4	15.5	11	10	16.5	13	9
4X	A	2	0	1	1	0	2	3	8	8	6	7.5	6.5	5	7.5	5	3.5
4X	A	3	0	1	1	1	3	3	4	4	4	6	5.5	4.5	8	6	5
4X	B	1	0	0	0	0	3	4	5	6	9	13	10	5	11	7	3.5
4X	B	2	0	0	0	0	0	0	0	0	3	10	10.5	6	8	10.5	9
4X	B	3	0	0	1	1	2	4	9	9	9	16	14	7	13.5	11.5	10
4X	C	1	0	0	0	0	1	3	8	8	10	12	10	9	9	7	6.5
4X	C	2	0	0	0	0	1	3	3	3	3	8	6.5	4.5	8.5	8.5	7
4X	C	3	0	0	0	0	0	0	0	1	5	10.5	7	6	9	9.5	6
Mean			0.0	0.2	0.3	0.3	1.7	2.6	4.4	4.8	5.9	10.9	9.0	6.3	10.1	8.7	6.6