

Evaluations of Eight Herbicide Combinations Applied over Seven Months in Development of a Container Season Long Weed Control Program

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Abstract. Two positive developments in the nursery/landscape industry pertaining to weed control have occurred in the past five years. First, three new granular herbicides garnered their first EPA registrations including: [Biathlon (oxyfluorfen + prodiamine) (OHP, Inc., Mainland, PA); Marengo G (indaziflam) (Bayer Crop Science Inc, Research Triangle Park, NC); and, FreeHand 1.75G (dimethenamid-p + pendimethalin) (BASF Corporation, Research Triangle Park, NC). The availability of so many new herbicides for nursery/landscape use is unparalleled in the past 20 years. Second, spray nozzle technologies developed by the late Dr. John Ahrens, have become more popular in ornamental operations giving rise to liquid pre-emergence herbicide formulations versus granule applications being utilized. These liquid applications versus granules are conducted as dormant applications and can make significant cost savings for the nursery or landscape operation. Savings occur as liquid formulations cost less than granules. Liquid applications also offer more uniformity than granules which reduces waste and most significantly, in terms of savings, the reduction of time spent applying liquids versus granules or the labor savings. Although these liquid applications are becoming more common, there have been no studies to compare the impact of liquids to traditional granular applications throughout the season. Part of the reason for lack of evaluations has been the absence of registrations for dormant applications in enclosed structures. However, three benefits of dormant applications have been noted: 1) Utilization of nursery staff in winter which is traditionally a "down-time" labor-wise versus spring; 2) Insurance that applications will be completed before germination, versus waiting for spring when conflicting operations take precedence; and, 3) Optimized control of weeds that are active in cold weather specifically problematic perennials or biennial weeds and winter annuals. To this end, phytotoxicity and efficacy were evaluated on ten species of common container grown plants at two locations Willoway Nurseries, Inc. Huron, OH 44839 and Klyn Nurseries, Inc., Perry, OH 44081-9675 with over the top applications on dormant growth (March 20, 2015 or April 9, 2015), in full growth (June 12, 2015 or July 17, 2015) and acclimating growth (September 10, 2015 or September 11, 2015), respectively. Application were also conducted on March 24, 2015 at a third location Cottage Gardens, Inc., Perry, OH 44081; however, evaluations were discontinued in mid-May at Cottage due to complications unrelated to treatments.

The species at Willoway Nurseries included *Spirea japonica* 'Magic Carpet' (1 gal – 2.57 L)(starting dry wt – 89 g), *Viburnum* X Juddi (1 gal – 2.57 L), *Berberis thunbergii* 'Arto Rose Glow' (1 gal – 2.57 L); *Rhododendron* 'Nova Zembla' (1 gal – 2.57 L) (starting dry wt – 65 g); and, *Ilex Xmeserve* 'China Boy' (1 gal – 2.57 L)(starting dry wt – 93 g). Ninety-three grams of rice hulls had been previously applied by Willoway staff to each container to create an approximate ½ inch deep surface layer. For the *Rhododendron* 'Nova Zembla' Broadstar G at 100 lb/ac had been applied two weeks prior to experimental treatments. All treatments were applied over the rice hulls at Willoway. The species at Klyn Nurseries included *Spirea bumalda* 'Goldflame' (3 gal), *Juniperus scopulorum* 'Blue Arrow' (1 gal – 2.57 L), *Taxus Xmedia* 'Coles Select' (4"); *Ilex Xmeserve* 'Blue Prince' (1 gal – 2.57 L); and, *Buxus* 'Green Gem' (1 qt). At Klyn's applications were made directly to the container substrate surface and no previous herbicides had been applied.

Introduction. Individual herbicides are usually investigated at different points in time in the growing season; however, what nursery growers require are herbicide programs for the season. They also want to know the impact of consequential applications made over the year on their container crops. In this study we choose three timings or *Rounds* for herbicide applications with various herbicides utilized at each Round. The first Round was conducted on dormant application stock. By utilizing a dormant application, only three applications were required in the year. Three applications makes the program economical for the grower. The objectives of this study were to evaluate efficacy and phytotoxicity in on-site nursery containers over the year at two locations and find dormant applications that could carry through into late spring (June or early July) before in-season applications were required. The goals were to provide much needed information to growers regarding the development of environmental sound herbicide programs for container stock, determine overall program efficacy and phytotoxicity comparisons, evaluate mode of action rotations and optimize application timings for superior efficacy.

Materials and Methods. At Willoway the following herbicides were applied on March 20, 2015 (Round #1) (Table 1) to dormant plants. SureGuard [Flumioxazin 51% (Nufarm Americas Inc., Alsip, IL, 60803)] at 6 oz/ac as treatments #2 and #5; [Marengo SC (Indaziflam 7.4% by wt., (OHP, Inc., Mainland, PA, 19451)] at 7 oz/ac as treatments #3 and #7 and at 15 oz/ac for treatment #4; Snapshot 2.5 TG [Trifluralin + Isoxaben, (Dow AgroSciences)] at 200 lb/ac was treatment #6; and, a new Gallery SC formulation [Isoxaben 45.5%, (Dow AgroSciences, Indianapolis, IN)] at 0.5 lb/ac combined with Dimension 2EW [Dithiopyr 24%, (Dow AgroSciences)] at 1.0 lb/ac as treatment #8. Treatment #1 was an untreated control. The Gallery/Dimension treatment was included as a standard and due to its gaining market share in landscape applications. The June 12, 2015 (Round #2) (Table 2) applications at Willoway consisted Biathlon [Oxyfluorfen

+ Prodiamine, (OHP, Inc.)) at 100 lb/ac as treatments #2, #3 and #5; Marengo G (Indaziflam 0.0224% a.i.) at 200 lb/ac for treatments #5 and #7; Showcase [Trifluralin + Isoxaben + Oxyflurofen, (Dow AgroSciences) at 200 lb/ac as treatment #6; and, Snapshot 2.5 TG at 200 lb/ac as treatment #8. Treatment #1 was again, an untreated control. The final applications on September 10, 2015 (Round #3) (Table 3) at Willoway included Marengo G at 200 lb/ac for treatment #2 and #6; FreeHand 1.75G [Dimethenamid-p + pendimethalin (BASF Corporation, Research Triangle Park, NC 27709)] at 150 lb/ac as treatment #3; SureGuard at 6 oz/ac as treatment #4; Gallery/Dimension at the rates listed above as treatment #5; Biathlon 100 lb/ac as treatment #7; and Showcase 200lb/ac as treatment #8. Treatment #1 was again, an untreated control. Evaluations of phytotoxicity consisted of visual ratings at all evaluation dates on a scale of 0-10 with 0 being no phytotoxicity, 10 death, and ≤ 3 commercially acceptable. Efficacy was also visually rated at the same time as phytotoxicity on a scale of 0-10 with 0 being no control, 10 perfect control, and ≥ 7 commercially acceptable. Treatment means of phytotoxicity and efficacy were separated using LSmeans ($\alpha = 0.05$) in SAS® Proc Mixed.

Evaluations were conducted at 6 weeks after the first treatment (WA1T), 8, 10, 12, 18, 22, 25, and 28 (WA1T); 6, 10, 13 and 16 weeks after the second treatment (WA2T) and 4 weeks after the third treatment (WA3T). The period of the trial, at Willoway was March 20 to October 9, 2015 or eight months. At the conclusion of the trial final height and plant diameter (an average of two perpendicular measurements W1 and W2, and destructive samples were taken for three of eight treatments (#1, 5 and 8). From these measures growth index (GI), Fullness (F) and root and shoot dry weight, (RDW) and (SDW), respectively, were completed. Growth index was calculated as $GI = \pi(Ht)(r^2)$, where Ht. is final height, r is half of the average of W1+W2, π was “ π ” or 3.14159. Fullness was calculated as SDW divided by Ht. Four plants per the three destructive sampled treatments were separated by roots and shoots for RDW and SDW, respectively, washed to remove all substrate and dried at 67°C for 2 days and weighed. The eight sequential treatment combinations, inclusive of all three rounds included:

1. Untreated Control
2. SureGuard 6oz + Biathlon G 100 lb/ac + Marengo G 200#/ac
3. Marengo SC 7 oz/ac + Biathlon G 100 lb/ac + FreeHand 150 lb/ac
4. Marengo SC 15 oz/ac + Biathlon G 100 lb/ac + SureGuard 6 oz/ac
5. SureGuard 6 oz/ac+ Marengo G 200 #/ac + Gallery/Dimension
6. Snapshot 200 #/ac + Showcase 200 #/ac + Marengo G 200#/ac
7. Marengo SC 7 oz/ac + Marengo G 200 #/ac + Biathlon G 100 lb/ac
8. Gallery/Dimension + Snapshot 200 #/ac + Showcase 200#/ac

There were seven groups of herbicides used at Willoway Nurseries, Groups 14, 21, 29, 15+3, 14+3, 21+3, 21+3+14. With these seven and picking three to represent a sequential treatment order, 56 combinations were possible. The seven groups of herbicides included Group 14, protoporphyrinogen oxidase (PPO) inhibitor (Oxyfluorfen or Flumioxazin); Group 21 and 29, cell wall synthesis inhibitors (CI), (Isoxaben or Indaziflam), respectively; Group 3 and 15 mitosis inhibitor (MI), (Dithiopyr, Trifluralin, Proflam, Pendimethalin and Dimethenamid-p). However, since these seven groups only represented five modes of action (MoA's), 35 potential combinations of MoA's existed. Of these 35, seven sequential treatments rotating MoA's were tested:

1. Control
2. Group 14 + (14+3) + 29
3. Group 29 + (14+3) + Group (15 +3)
4. Group 29 + (14+3) + 14
5. Group 14 + 29 + (21+3)
6. Group (21+3) + (21 + 3 + 14) + 29
7. Group 29 + 29 + (14+3)
8. Group (21+3) + (21+3) + 14

At Klyn Nurseries the herbicides applied on April 9, 2015 (Round #1) were the same as for Willoway. The July 17, 2015 (Round #2) applications at Klyn differed in two ways, Snapshot 2.5 TG replaced Biathlon in treatment #3, and Showcase replaced Snapshot 2.5 TG in treatment #8. The final applications on September 11, 2015 (Round #3) differed with FreeHand 1.75G replacing Gallery + Dimension in #3, and SureGuard replacing Showcase in treatment #8. Treatment #1 was, as at Willoway, an untreated control in all three rounds. At Klyn evaluations were conducted at 3 weeks after the first treatment (WA1T), 5, 7, 11, 13, 17, 19, 21, 24 and 29 (WA1T); at 1, 3, 5, 8 and 9 weeks after the second treatment (WA2T); and, at 5 weeks after the third treatment (WA3T). The period of the trial, at Klyn was April 9 to October 15, 2015 or seven months. Evaluations of phytotoxicity consisted of visual ratings at all evaluation dates on a scale of 0-10 with 0 being no phytotoxicity, 10 death, and ≤ 3 commercially acceptable. Efficacy was also visually rated at the same time as phytotoxicity on a scale of 0-10 with 0 being no control, 10 perfect control, and ≥ 7 commercially acceptable. Treatment means of phytotoxicity and efficacy were separated using LSmeans ($\alpha = 0.05$) in SAS® Proc Mixed.

At the conclusion of the trial final height and plant diameter (an average of two perpendicular measurements W1 and W2, and destructive samples were taken for five of eight treatments (#1, 4, 5, 7 and 8). From these measures growth index (GI), Fullness (F) and root and shoot dry weight, (RDW) and (SDW), respectively, were

completed. Growth index was calculated as $GI = \pi(Ht)(r^2)$, where Ht. is final height, r is half of the average of W1+W2, π was “ π ” or 3.14159. Fullness was calculated as SDW divided by Ht. Four plants per the three destructive sampled treatments were separated by roots and shoots for RDW and SDW, respectively, washed to remove all substrate and dried at 67°C for 2 days and weighed. and the listing of the eight sequential treatment combinations, inclusive of all three rounds, included (Variations from Willoway are marked in bold):

1. Control
2. SureGuard 6oz + Biathlon G 100 lb/ac + Marengo G 200#/ac
3. Marengo SC 7 oz/ac + **Snapshot + Gallery/Dimension**
4. Marengo SC 15 oz/ac + Biathlon G 100 lb/ac + SureGuard 6 oz/ac
5. SureGuard 6 oz/ac+ Marengo G 200 #/ac + Gallery/Dimension
6. Snapshot 200 #/ac + Showcase 200 #/ac + Marengo G 200#/ac
7. Marengo SC 7 oz/ac + Marengo G 200 #/ac + Biathlon G 100 lb/ac
8. Gallery/Dimension + **Showcase 200#/ac + SureGuard 12 oz/ac.**

There were six groups of herbicides used in this study at Klyn Nurseries, Groups 14, 21, 29, 14+3, 21+3, 21+3+14. With these six and picking three to represent a consequential treatment, 20 combinations were possible. The six groups included Group 14, protoporphyrinogen oxidase (PPO) inhibitor (Oxyfluorfen or Flumioxazin); Group 21 and 29, cell wall synthesis inhibitors (CI), (Isoxaben or Indaziflam), respectively; and Group 3 mitosis inhibitor (MI), (Dithiopyr, Trifluralin, Prodiamine). Since these six groups only represented five modes of action (MoA's) 10 potential combinations of consequential treatments existed and of these seven were tested (Variations from Willoway are marked in bold):

1. Control
2. Group 14 + (14+3) + 29
3. Group 29 + **(21+3) + (21 +3)**
4. Group 29 + (14+3) + 14
5. Group 14 + 29 + (21+3)
6. Group (21+3) + (21 + 3 + 14) + 29
7. Group 29 + 29 + (14+3)
8. Group (21+3) + **(21+3+14) + 14**

Table 1. Willoway Season Long Phytotoxicity Round 1 Means

***Spirea japonica* 'Magic Carpet,' 1 gal—2.57 L**

Treatment	Rate/ac	6 WA1T	8 WA1T	10 WA1T	12 WA1T	Average	No. Alive/ Start
Control	--	0a	1.33a	1.08a	1.08a	0.87a	
SureGuard	6 oz	0a	1.92a	2.08ab	1.67b	1.42a	
Marengo SC	7 oz	0a	6.5b	9ef	8.5ef	6c	
Marengo SC	15 oz	0a	7.08b	9.92f	9.92f	6.73c	
SureGuard	6 oz	0a	5.25b	6c	5.25c	4.12b	
Snapshot	200 lb	0a	1.75a	2.92b	2.5b	1.79a	
Marengo SC	7 oz	0a	6.25b	7.5d	7.33d	5.27bc	
Gallery/Dimension	(1.0+0.5lb ai)	0a	7.33b	7.58de	7.42de	5.58bc	

***Viburnum X Juddi*, 1 gal—2.57 L**

Treatment	Rate/ac	6 WA1T	8 WA1T	10 WA1T	12 WA1T	Average	No. Alive/ Start
Control	--	0a	1a	2.42a	2.08ab	1.38a	12/12
SureGuard	6 oz	0a	4.5b	4b	3.5b	3b	11/12
Marengo SC	7 oz	0a	3.75b	7.08c	6.58cd	4.3bc	9/12
Marengo SC	15 oz	0a	4.75b	7.83d	7.5d	5.02cd	7/12
SureGuard	6 oz	0a	5.67c	5.25bc	5.17c	4.02bc	10/12
Snapshot	200 lb	0a	1.08a	1.83a	1.5a	1.10a	11/12
Marengo SC	7 oz	0a	4.75b	5.92c	5.58c	4.06bc	10/12
Gallery/Dimension	(1.0+0.5lb ai)	0a	8.58d	7c	7.83d	5.85d	6/12

***Berberis thunbergii* 'Arto Rose Glow,' 1 gal—2.57 L**

Treatment	Rate/ac	6 WA1T	8 WA1T	10 WA1T	12 WA1T	Average	No. Alive/ Start
Control	--	0a	0a	0.83a	0.83a	0.42a	
SureGuard	6 oz	0a	0a	0.75a	0.83a	0.79ab	
Marengo SC	7 oz	0a	0a	3.83b	3.92c	1.94b	
Marengo SC	15 oz	0a	0a	7.67c	7.92d	3.90c	
SureGuard	6 oz	0a	0a	1.67a	1.67a	0.83ab	
Snapshot	200 lb	0a	0a	3.17b	3.33bc	1.62ab	
Marengo SC	7 oz	0a	0a	1.42a	1.25a	0.67ab	
Gallery/Dimension	(1.0+0.5lb ai)	0a	0a	1.83a	1.83ab	0.92ab	

***Rhododendron* 'Nova Zembla,' 1 gal—2.57 L**

Treatment	Rate/ac	6 WA1T	8 WA1T	10 WA1T	12 WA1T	Average	No. Alive/ Start
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Control	--	0a	0a	1.5a	1.25a	0.69a	
SureGuard	6 oz	0a	0a	3.75cd	3.33b	1.77abc	
Marengo SC	7 oz	0a	0a	5.17d	4.33cd	2.38bc	
Marengo SC	15 oz	0a	0a	6d	5.25d	2.81bc	
SureGuard	6 oz	0a	0a	3.6c7	3.25b	1.73abc	
Snapshot	200 lb	0a	0a	2.1ab7	2ab	1.04ab	
Marengo SC	7 oz	0a	0a	4.58c	4.42cd	2.25bc	
Gallery/Dimension	(1.0+0.5lb ai)	0a	0a	3.42bc	3bc	1.60abc	

Ilex Xmeserve 'China Boy,' 1 gal—2.57 L

Treatment	Rate/ac	6 WA1T	8 WA1T	10 WA1T	12 WA1T	Average	No. Alive/ Start
Control	--	0a	1.08a	2.67a	1.83a	1.40a	
SureGuard	6 oz	0a	5.67cd	5.5bc	4.67bc	3.96bc	
Marengo SC	7 oz	0a	4.17b	6c	4.92bc	3.77b	
Marengo SC	15 oz	0a	6.08d	7.67d	7.5d	5.31c	
SureGuard	6 oz	0a	4.58bc	2.5a	2.17a	2.31a	
Snapshot	200 lb	0a	4.42bc	5.17bc	4.33b	3.48b	
Marengo SC	7 oz	0a	4.92bcd	5.92c	6.08cd	4.23bc	
Gallery/Dimension	(1.0+0.5lb ai)	0a	5bcd	4.25b	3.67b	3.23b	

Table 2. Willoway Season Long Phytotoxicity Round 2 Means***Spirea japonica* 'Magic Carpet,' 1 gal—2.57 L**

Treatment	Rate/ac	18 WA1T/ 6 WA2T	22 WA1T 10 WA2T	25 WA1T 13 WA2T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	
SureGuard + Biathlon G	6 oz + 100 lb	0a	0a	0.45a	0.1ab5	
Marengo SC + Biathlon G	7 oz + 100 lb	6.42c	7b	0a	4.47c	
Marengo SC + Biathlon G	15 oz + 100 lb	9.17d	9.17c	0a	6.11d	
SureGuard + Marengo G	6 oz + 200 lb	1.45ab	0.67a	0.25a	0.79ab	
Snapshot + Showcase	200 lb + 200 lb	0a	0a	0.5a	0.17ab	
Marengo SC + Marengo G	7 oz + 200 lb	5.5c	6b	2.33b	4.61c	
Gallery/Dimension + Snapshot	(1.0+0.5lb ai) + 200 lb	2.92b	1.42a	0.18a	1.51b	

***Viburnum X Juddi*, 1 gal—2.57 L**

Treatment	Rate/ac	18 WA1T/ 6 WA2T	22 WA1T 10 WA2T	25 WA1T 13 WA2T	Average	No. Alive/ Start
Control	--	2.67a	1.83ab	0.2ab	1.57ab	
SureGuard + Biathlon G	6 oz + 100 lb	1.42a	2.58b	0.18ab	1.39ab	
Marengo SC + Biathlon G	7 oz + 100 lb	5.18c	5.27c	1.11ab	3.85b	
Marengo SC + Biathlon G	15 oz + 100 lb	5c	4.5c	0a	3.17b	
SureGuard + Marengo G	6 oz + 200 lb	1.67ab	2.5b	0a	1.39ab	
Snapshot + Showcase	200 lb + 200 lb	1.33a	0.83a	0a	0.72a	
Marengo SC + Marengo G	7 oz + 200 lb	3.2b	3b	1.64b	2.61b	
Gallery/Dimension + Snapshot	(1.0+0.5lb ai) + 200 lb	6c	8d	0.86ab	4.95c	

***Berberis thunbergii* 'Arto Rose Glow,' 1 gal—2.57 L**

Treatment	Rate/ac	18 WA1T/ 6 WA2T	22 WA1T 10 WA2T	25 WA1T 13 WA2T	Average	No. Alive/ Start
Control	--	0.83a	0.83a	0a	0.55a	
SureGuard + Biathlon G	6 oz + 100 lb	2ab	3.17b	2.55b	2.57c	
Marengo SC + Biathlon G	7 oz + 100 lb	3.58c	4.58b	2.12b	3.43c	
Marengo SC + Biathlon G	15 oz + 100 lb	9.18d	9.09d	5c	7.76d	
SureGuard + Marengo G	6 oz + 200 lb	1.55a	0.91a	0.6a	1.02ab	
Snapshot + Showcase	200 lb + 200 lb	3.33cb	3.33b	0a	2.22bc	
Marengo SC + Marengo G	7 oz + 200 lb	3.58c	3.67b	3b	3.42c	

Gallery/Dimension + Snapshot	(1.0+0.5lb ai) + 200 lb	3.75c	4.33b	2.6b	3.56c	
<i>Rhododendron</i> 'Nova Zembla,' 1 gal—2.57 L						
Treatment	Rate/ac	18 WA1T/ 6 WA2T	22 WA1T 10 WA2T	25 WA1T 13 WA2T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	
SureGuard + Biathlon G	6 oz + 100 lb	0.42a	2c	1.92c	1.45ab	
Marengo SC + Biathlon G	7 oz + 100 lb	0.5ab	3.83d	1.58bc	1.97b	
Marengo SC + Biathlon G	15 oz + 100 lb	2.58c	3.58d	4.42d	3.53c	
SureGuard + Marengo G	6 oz + 200 lb	1.92bc	0.5ab	0a	0.81ab	
Snapshot + Showcase	200 lb + 200 lb	0a	4.17d	0.33ab	1.5b	
Marengo SC + Marengo G	7 oz + 200 lb	1.42abc	0.5ab	0.25ab	0.72ab	
Gallery/Dimension + Snapshot	(1.0+0.5lb ai) + 200 lb	0a	1.75bc	0.17a	0.64ab	
<i>Ilex Xmeserve</i> 'China Boy,' 1 gal—2.57 L						
Treatment	Rate/ac	18 WA1T/ 6 WA2T	22 WA1T 10 WA2T	25 WA1T 13 WA2T	Average	No. Alive/ Start
Control	--	0.92a	0a	0a	0.31a	
SureGuard + Biathlon G	6 oz + 100 lb	4bc	3.25b	0.17a	2.47b	
Marengo SC + Biathlon G	7 oz + 100 lb	5c	4.67b	4.73d	4.8c	
Marengo SC + Biathlon G	15 oz + 100 lb	5c	3.75b	4.2c	4.32c	
SureGuard + Marengo G	6 oz + 200 lb	1.42a	0.5a	2b	1.31ab	
Snapshot + Showcase	200 lb + 200 lb	2.36ab	1a	1.1ab	1.49ab	
Marengo SC + Marengo G	7 oz + 200 lb	4.75bc	4.17b	3.08bc	4c	
Gallery/Dimension + Snapshot	(1.0+0.5lb ai) + 200 lb	3.42b	4.25b	2.64b	3.44bc	

Table 3. Willoway Season Long Phytotoxicity Round 3 Means***Spirea japonica* 'Magic Carpet,' 1 gal—2.57 L**

Treatment	Rate/ac	28 WA1T/ 16 WA2T/ 4 WA3T	GI	Fullness	RDW	SDW	No. Alive/ Start
Control	--	0a					
SureGuard + Biathlon G + Marengo G	6 oz + 100 lb + 200 lb	0a					
Marengo SC + Biathlon G + FreeHand	7 oz + 100 lb + 150 lb	3.8c					
Marengo SC + Biathlon G + SureGuard	15 oz + 100 lb + 6 oz	5c					
SureGuard + Marengo G + Gallery/Dimension	6 oz + 200 lb + (1.0+0.5lb ai)	1.55b					
Snapshot + Showcase + Marengo G	200 lb + 200 lb + 200 lb	0a					
Marengo SC + Marengo G +Biathlon G	7 oz + 200 lb + 100 lb	3.78c					
Gallery/Dimension + Snapshot + Showcase	(1.0+0.5lb ai) + 200 lb + 200 lb	0a					

***Viburnum X Juddi*, 1 gal—2.57 L**

Treatment	Rate/ac	28 WA1T/ 16 WA2T/ 4 WA3T	GI	Fullness	RDW	SDW	No. Alive/ Start
Control	--	0a					
SureGuard + Biathlon G + Marengo G	6 oz + 100 lb + 200 lb	2bc					
Marengo SC + Biathlon G + FreeHand	7 oz + 100 lb + 150 lb	2.14bc					
Marengo SC + Biathlon G + SureGuard	15 oz + 100 lb + 6 oz	3.29c					
SureGuard + Marengo G + Gallery/Dimension	6 oz + 200 lb + (1.0+0.5lb ai)	1a					
Snapshot + Showcase + Marengo G	200 lb + 200 lb + 200 lb	0a					
Marengo SC + Marengo G +Biathlon G	7 oz + 200 lb + 100 lb	0a					
Gallery/Dimension + Snapshot + Showcase	(1.0+0.5lb ai) + 200 lb + 200 lb	1.25ab					

***Berberis thunbergii* 'Arto Rose Glow,' 1 gal—2.57 L**

Treatment	Rate/ac	28 WA1T/ 16 WA2T/ 4 WA3T	GI	Fullness	RDW	SDW	No. Alive/ Start
Control	--	0a					
SureGuard + Biathlon G + Marengo G	6 oz + 100 lb + 200 lb	1.45ab					
Marengo SC + Biathlon G + FreeHand	7 oz + 100 lb + 150 lb	1.89b					

Marengo SC + Biathlon G + SureGuard	15 oz + 100 lb + 6 oz	5c					
SureGuard + Marengo G + Gallery/Dimension	6 oz + 200 lb + (1.0+0.5lb ai)	1.55b					
Snapshot + Showcase + Marengo G	200 lb + 200 lb + 200 lb	0.88ab					
Marengo SC + Marengo G +Biathlon G	7 oz + 200 lb + 100 lb	2.18b					
Gallery/Dimension + Snapshot + Showcase	(1.0+0.5lb ai) + 200 lb + 200 lb	1.4ab					

Rhododendron 'Nova Zembla,' 1 gal—2.57 L

Treatment	Rate/ac	28 WA1T/ 16 WA2T/ 4 WA3T	GI	Fullness	RDW	SDW	No. Alive/ Start
Control	--	0a					
SureGuard + Biathlon G + Marengo G	6 oz + 100 lb + 200 lb	1.58bc					
Marengo SC + Biathlon G + FreeHand	7 oz + 100 lb + 150 lb	2bc					
Marengo SC + Biathlon G + SureGuard	15 oz + 100 lb + 6 oz	2.33c					
SureGuard + Marengo G + Gallery/Dimension	6 oz + 200 lb + (1.0+0.5lb ai)	1.92bc					
Snapshot + Showcase + Marengo G	200 lb + 200 lb + 200 lb	0a					
Marengo SC + Marengo G +Biathlon G	7 oz + 200 lb + 100 lb	0.7ab5					
Gallery/Dimension + Snapshot + Showcase	(1.0+0.5lb ai) + 200 lb + 200 lb	0a					

Ilex Xmeserve 'China Boy,' 1 gal—2.57 L

Treatment	Rate/ac	28 WA1T/ 16 WA2T/ 4 WA3T	GI	Fullness	RDW	SDW	No. Alive/ Start
Control	--	0a					
SureGuard + Biathlon G + Marengo G	6 oz + 100 lb + 200 lb	4.08cd					
Marengo SC + Biathlon G + FreeHand	7 oz + 100 lb + 150 lb	4.5d					
Marengo SC + Biathlon G + SureGuard	15 oz + 100 lb + 6 oz	2.78c					
SureGuard + Marengo G + Gallery/Dimension	6 oz + 200 lb + (1.0+0.5lb ai)	0.75ab					
Snapshot + Showcase + Marengo G	200 lb + 200 lb + 200 lb	1.2ab					
Marengo SC + Marengo G +Biathlon G	7 oz + 200 lb + 100 lb	3.73c					
Gallery/Dimension + Snapshot + Showcase	(1.0+0.5lb ai) + 200 lb + 200 lb	1.64b					

Table 4. Klyn Season Long Phytotoxicity Round 1 Means

Spirea bumalda 'Goldflame,' 3 gal

Treatment	Rate/ac	3 WA1T	5 WA1T	7 WA1T	11 WA1T	13 WA1T	Average	No. Alive/ Start
Control	--	0.58a	0a	0a	0a	0a	0.12a	12/12
SureGuard	6 oz	5.92b	5.17b	3.33b	2.83b	2.83b	4.02b	12/12
Marengo SC	7 oz	6.42b	7.08cd	6.83c	5.92c	6.83d	6.62c	10/12
Marengo SC	15 oz	8.21c	8.42d	8.33d	7.83d	8.17d	8.19d	10/12
SureGuard	6 oz	6.63b	5.67b	4.42b	3.5b	3.5bc	4.74b	12/12
Snapshot	200 lb	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	7 oz	5.8b3	4.83b	4.42b	3.67b	4.5c	4.65b	11/12
Gallery/Dimension	(1.0+0.5lb ai)	6.92bc	6.33c	3.09b	2.67b	2.5b	4.30b	12/12

Juniperus scopulorum 'Blue arrow,' 1 gal—2.57 L

Treatment	Rate/ac	3 WA1T	5 WA1T	7 WA1T	11 WA1T	13 WA1T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	0a	0a	12/12
SureGuard	6 oz	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	7 oz	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	15 oz	0a	0a	0a	0a	0a	0a	12/12
SureGuard	6 oz	0a	0a	0a	0a	0a	0a	12/12
Snapshot	200 lb	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	7 oz	0a	0a	0a	0a	0a	0a	12/12
Gallery/Dimension	(1.0+0.5lb ai)	0a	0a	0a	0a	0a	0a	12/12

Taxus Xmedia 'Coles Select,' 4 in

Treatment	Rate/ac	3 WA1T	5 WA1T	7 WA1T	11 WA1T	13 WA1T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	0a	0a	12/12
SureGuard	6 oz	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	7 oz	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	15 oz	0a	0a	0a	0a	0a	0a	12/12
SureGuard	6 oz	0a	0a	0a	2.08b	2b	0.82a	12/12
Snapshot	200 lb	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	7 oz	0a	0a	0a	0a	2.42b	0.48a	12/12

Gallery/Dimension	(1.0+0.5lb ai)	0a	0a	0a	0a	0a	0a	12/12
<i>Ilex Xmeserve 'Blue Prince,' 1 gal—2.57 L</i>								
Treatment	Rate/ac	3 WA1T	5 WA1T	7 WA1T	11 WA1T	13 WA1T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	0a	0a	12/12
SureGuard	6 oz	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	7 oz	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	15 oz	0a	0a	0a	0a	0a	0a	12/12
SureGuard	6 oz	0a	0a	0.83a	0.83a	0.83a	0.05a	12/12
Snapshot	200 lb	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	7 oz	0a	0a	0.83a	0.83a	0.83a	0.05a	12/12
Gallery/Dimension	(1.0+0.5lb ai)	0a	0a	0a	0a	0a	0a	12/12
<i>Buxus 'Green Gem,' 1 qt</i>								
Treatment	Rate/ac	3 WA1T	5 WA1T	7 WA1T	11 WA1T	13 WA1T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	0a	0a	12/12
SureGuard	6 oz	0a	1a	0a	0a	0a	0.2a	12/12
Marengo SC	7 oz	0a	1a	2.25b	1.83b	2.75b	1.57b	12/12
Marengo SC	15 oz	0a	1a	3b	3b	2.92b	1.98b	12/12
SureGuard	6 oz	0a	1a	0a	0.17a	0.17a	0.27a	12/12
Snapshot	200 lb	0a	0a	0a	0a	0a	0a	12/12
Marengo SC	7 oz	0a	1a	0a	1.75b	1.75b	0.9a	12/12
Gallery/Dimension	(1.0+0.5lb ai)	0a	1a	0a	0a	0a	0.2a	12/12

Table 5. Klyn Season Long Phytotoxicity Round 2 Means

Spirea bumalda 'Goldflame,' 3 gal

Treatment	Rate/ac	17 WA1T/ 1 WA2T	19 WA1T 3 WA2T	21 WA1T 5 WA2T	24 WA1T 8 WA2T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	0a	12/12
SureGuard + Biathlon G	6 oz + 100 lb	0a	0a	0a	0a	0a	12/12
Marengo SC + Snapshot	7 oz + 200 lb	4.67	4.5bc	5bc	5.58c	4.94c	9/12
Marengo SC + Biathlon G	15 oz + 100 lb	5.42	5.67c	6bc	6c	5.77c	9/12
SureGuard + Marengo G	6 oz + 200 lb	0.17	0a	0a	0a	0.04a	12/12
Snapshot + Showcase	200 lb + 200 lb	1.92	3.42b	3.58b	3.58b	3.13b	12/12
Marengo SC + Marengo G	7 oz + 200 lb	3.5	4.58bc	5.42c	6c	4.88c	10/12
Gallery/Dimension + Showcase	(1.0+0.5lb ai) + 200 lb	0a	0a	0a	0a	0a	12/12

Juniperus scopulorum 'Blue arrow,' 1 gal—2.57 L

Treatment	Rate/ac	17 WA1T/ 1 WA2T	19 WA1T 3 WA2T	21 WA1T 5 WA2T	24 WA1T 8 WA2T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	0a	12/12
SureGuard + Biathlon G	6 oz + 100 lb	0a	1.5b	1a	1a	0.88a	12/12
Marengo SC + Snapshot	7 oz + 200 lb	0a	1.08a	1a	1a	0.77a	12/12
Marengo SC + Biathlon G	15 oz + 100 lb	0a	0a	0a	0a	0a	12/12
SureGuard + Marengo G	6 oz + 200 lb	0a	0a	0a	0a	0a	12/12
Snapshot + Showcase	200 lb + 200 lb	0a	0a	0a	0a	0a	12/12
Marengo SC + Marengo G	7 oz + 200 lb	0a	0a	0a	0a	0a	12/12
Gallery/Dimension + Showcase	(1.0+0.5lb ai) + 200 lb	0a	1.83b	2b	2b	1.46a	12/12

Taxus Xmedia 'Coles Select,' 4 in

Treatment	Rate/ac	17 WA1T/ 1 WA2T	19 WA1T 3 WA2T	21 WA1T 5 WA2T	24 WA1T 8 WA2T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	0a	12/12
SureGuard + Biathlon G	6 oz + 100 lb	0a	0a	0a	0a	0a	12/12
Marengo SC + Snapshot	7 oz + 200 lb	0a	0a	0a	0a	0a	12/12
Marengo SC + Biathlon G	15 oz + 100 lb	0a	3.67b	4b	4b	2.92b	12/12
SureGuard + Marengo G	6 oz + 200 lb	0a	4.08b	4.25b	4.25b	3.15b	12/12
Snapshot + Showcase	200 lb + 200 lb	0a	3.67b	4b	4b	2.92b	12/12
Marengo SC + Marengo G	7 oz + 200 lb	0a	2.92b	3b	3b	2.23b	12/12

Gallery/Dimension + Showcase	(1.0+0.5lb ai) + 200 lb	0a	1a	1a	1a	0.75a	12/12
<i>Ilex Xmeserve 'Blue Prince,' 1 gal—2.57 L</i>							
Treatment	Rate/ac	17 WA1T/ 1 WA2T	19 WA1T 3 WA2T	21 WA1T 5 WA2T	24 WA1T 8 WA2T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	0a	12/12
SureGuard + Biathlon G	6 oz + 100 lb	0a	0a	0a	0a	0a	12/12
Marengo SC + Snapshot	7 oz + 200 lb	0a	0a	0a	0a	0a	12/12
Marengo SC + Biathlon G	15 oz + 100 lb	0a	4.67c	5c	5c	3.67b	12/12
SureGuard + Marengo G	6 oz + 200 lb	0.83a	4.25c	4bc	4bc	3.27b	12/12
Snapshot + Showcase	200 lb + 200 lb	0a	2.75b	3b	3b	2.19b	12/12
Marengo SC + Marengo G	7 oz + 200 lb	0.83a	2.5b	2.67b	3b	2.25b	11/12
Gallery/Dimension + Showcase	(1.0+0.5lb ai) + 200 lb	0a	0a	0a	0a	0a	12/12
<i>Buxus 'Green Gem,' 1 qt</i>							
Treatment	Rate/ac	17 WA1T/ 1 WA2T	19 WA1T 3 WA2T	21 WA1T 5 WA2T	24 WA1T 8 WA2T	Average	No. Alive/ Start
Control	--	0a	0a	0a	0a	0a	12/12
SureGuard + Biathlon G	6 oz + 100 lb	0a	1.58b	1a	1a	0.9ab	12/12
Marengo SC + Snapshot	7 oz + 200 lb	0a	3bc	3.08bc	4.17b	2.56b	11/12
Marengo SC + Biathlon G	15 oz + 100 lb	0a	2bc	2b	3.08b	1.77b	11/12
SureGuard + Marengo G	6 oz + 200 lb	0a	0a	0a	0a	0a	12/12
Snapshot + Showcase	200 lb + 200 lb	0a	0a	0a	0a	0a	12/12
Marengo SC + Marengo G	7 oz + 200 lb	0a	3.25cd	3bc	3b	2.31b	12/12
Gallery/Dimension + Showcase	(1.0+0.5lb ai) + 200 lb	0a	3.92d	3.58c	2.75b	2.56b	12/12

Table 6. Klyn Season Long Phytotoxicity Round 3 Means***Spirea bumalda* 'Goldflame,' 3 gal**

Treatment	Rate/ac	29 WA1T/ 9 WA2T/ 5 WA3T	GI	Fullness	RDW	SDW	No. Alive/ Start
Control	--	0a	3806.33d	5.11bc	111	75	12/12
SureGuard + Biathlon G + Marengo G	6 oz + 100 lb + 200 lb	0.17a	NA	NA	NA	NA	12/12
Marengo SC + Snapshot + Gallery/Dimension	7 oz + 200 lb +(1.0+0.5lb ai)	6.08cd	NA	NA	NA	NA	9/12
Marengo SC + Biathlon G + SureGuard	15 oz + 100 lb + 6 oz	8.58e	645.01a	4.05a	85	36.5	5/12
SureGuard + Marengo G + Gallery/Dimension	6 oz + 200 lb + (1.0+0.5lb ai)	4.75bc	1836.07b	4.26a	81.5	57	11/12
Snapshot + Showcase + Marengo G	200 lb + 200 lb + 200 lb	0a	NA	NA	NA	NA	12/12
Marengo SC + Marengo G +Biathlon G	7 oz + 200 lb + 100 lb	3.42b	2581.26c	5.42c	90.25	67	10/12
Gallery/Dimension + Showcase + SureGuard	(1.0+0.5lb ai) + 200 lb +6 oz	6.67d	1269.18b	4.65b	87.75	48.25	11/12

***Juniperus scopulorum* 'Blue arrow,' 1 gal—2.57 L**

Treatment	Rate/ac	29 WA1T/ 9 WA2T/ 5 WA3T	No. Alive/ Start
Control	--	0a	12/12
SureGuard + Biathlon G + Marengo G	6 oz + 100 lb + 200 lb	0a	12/12
Marengo SC + Snapshot + Gallery/Dimension	7 oz + 200 lb +(1.0+0.5lb ai)	0a	12/12
Marengo SC + Biathlon G + SureGuard	15 oz + 100 lb + 6 oz	0a	12/12
SureGuard + Marengo G + Gallery/Dimension	6 oz + 200 lb + (1.0+0.5lb ai)	0a	12/12
Snapshot + Showcase + Marengo G	200 lb + 200 lb + 200 lb	0a	12/12
Marengo SC + Marengo G +Biathlon G	7 oz + 200 lb + 100 lb	0a	12/12
Gallery/Dimension + Showcase + SureGuard	(1.0+0.5lb ai) + 200 lb +6 oz	0a	12/12

***Taxus Xmedia* 'Coles Select,' 4 in**

Treatment	Rate/ac	29 WA1T/ 9 WA2T/ 5 WA3T	GI	Fullness	RDW	SDW	No. Alive/ Start
Control	--	0a	297.72b	3.48b	33.75	34.25	12/12
SureGuard + Biathlon G + Marengo G	6 oz + 100 lb + 200 lb	0a	NA	NA	NA	NA	12/12
Marengo SC + Snapshot + Gallery/Dimension	7 oz + 200 lb +(1.0+0.5lb ai)	2b	214.32a	3.98b	29.67	27	12/12
Marengo SC + Biathlon G + SureGuard	15 oz + 100 lb + 6 oz	1.17a	NA	NA	NA	NA	12/12

SureGuard + Marengo G + Gallery/Dimension	6 oz + 200 lb + (1.0+0.5lb ai)	0.25a	164.74a	3.07a	24.75	25.25	12/12
Snapshot + Showcase + Marengo G	200 lb + 200 lb + 200 lb	1.67b	NA	NA	NA	NA	11/12
Marengo SC + Marengo G +Biathlon G	7 oz + 200 lb + 100 lb	0a	NA	NA	NA	NA	12/12
Gallery/Dimension + Showcase + SureGuard	(1.0+0.5lb ai) + 200 lb +6 oz	0a	203.84a	2.96a	31.5	28.25	12/12

Ilex Xmeserve 'Blue Prince,' 1 gal—2.57 L

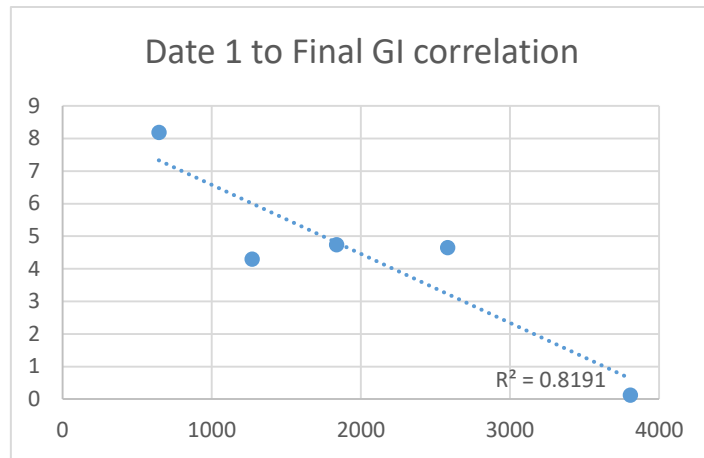
Treatment	Rate/ac	29 WA1T/ 9 WA2T/ 5 WA3T	GI	Fullness	RDW	SDW	No. Alive/ Start
Control	--	0a	1578.39c	3.33a	33	54	12/12
SureGuard + Biathlon G + Marengo G	6 oz + 100 lb + 200 lb	0a	NA	NA	NA	NA	12/12
Marengo SC + Snapshot + Gallery/Dimension	7 oz + 200 lb +(1.0+0.5lb ai)	0a	NA	NA	NA	NA	12/12
Marengo SC + Biathlon G + SureGuard	15 oz + 100 lb + 6 oz	0a	1340.41a	4.45b	36.3	60	12/12
SureGuard + Marengo G + Gallery/Dimension	6 oz + 200 lb + (1.0+0.5lb ai)	0.92a	1493.24b	3.60a	37	56.67	12/12
Snapshot + Showcase + Marengo G	200 lb + 200 lb + 200 lb	1a	NA	NA	NA	NA	12/12
Marengo SC + Marengo G +Biathlon G	7 oz + 200 lb + 100 lb	0.83a	NA	NA	NA	NA	11/12
Gallery/Dimension + Showcase + SureGuard	(1.0+0.5lb ai) + 200 lb +6 oz	0a	1653.79c	4.09ab	36	59.67	12/12

Buxus 'Green Gem,' 1 qt

Treatment	Rate/ac	29 WA1T/ 9 WA2T/ 5 WA3T	GI	Fullness	RDW	SDW	No. Alive/ Start
Control	--	0a	132.34b	2.40a	20.25	19.75	12/12
SureGuard + Biathlon G + Marengo G	6 oz + 100 lb + 200 lb	0a	NA	NA	NA	NA	12/12
Marengo SC + Snapshot + Gallery/Dimension	7 oz + 200 lb +(1.0+0.5lb ai)	3.33bc	NA	NA	NA	NA	11/12
Marengo SC + Biathlon G + SureGuard	15 oz + 100 lb + 6 oz	3.5c	77.21a	2.64a	18.75	17.75	11/12
SureGuard + Marengo G + Gallery/Dimension	6 oz + 200 lb + (1.0+0.5lb ai)	0.83a	113.98b	2.65a	18.67	19	12/12
Snapshot + Showcase + Marengo G	200 lb + 200 lb + 200 lb	0a	NA	NA	NA	NA	12/12
Marengo SC + Marengo G +Biathlon G	7 oz + 200 lb + 100 lb	1.5b	67.77a	2.37a	19.75	16	11/12
Gallery/Dimension + Showcase + SureGuard	(1.0+0.5lb ai) + 200 lb +6 oz	2.08b	79.73a	2.69a	22.6	18	11/12

Table 7. Klyn Nursery - *Spirea bumalda* 'Goldflame' 3 gal – 2015 Season Long Trial

Treatment	Av 3-13 WA1T	No. Alive/ Start	Av 17- 24 WA1T 8 WA2T	No. Alive/ Start	29 WA1T/ 9 WA2T/ 5 WA3T	GI	No. Alive/ Start
<i>Control</i>	0.12	12/12	0	12/12	0	3806.33	12/12
<i>SureGuard + Biathlon G + Marengo G</i>	4.02	12/12	0	12/12	0.17	NA	12/12
<i>Marengo SC + Snapshot + Gallery/Dim</i>	6.62	10/12	4.94	9/12	6.08	NA	9/12
<i>Marengo SC 15+ Biathlon G + SureGuard</i>	8.19	10/12	5.77	9/12	8.58	645.01	5/12
<i>SureGuard + Marengo G + Gallery/Dim</i>	4.74	12/12	0.04	12/12	4.75	1836.07	11/12
<i>Snapshot + Showcase + Marengo G</i>	0	12/12	3.13	12/12	0	NA	12/12
<i>Marengo SC + Marengo G +Biathlon G</i>	4.65	11/12	4.88	10/12	3.42	2581.26	10/12
<i>Gallery/Dim + Showcase + SureGuard</i>	4.30	12/12	0	12/12	6.67	1269.18	11/12



Snapshot + Showcase + Marengo G

Control



Table 8. Klyn Nursery – Taxus Xmedia ‘Coles Select,’ 4 in– 2015 Season Long Trial

Treatment	Av 3-13 WA1T	No. Alive/ Start	Av 17- 24 WA1T 8 WA2T	No. Alive/ Start	29 WA1T/ 9 WA2T/ 5 WA3T	GI	No. Alive/ Start
Control	0	12/12	0	12/12	0	297.72	12/12
SureGuard + Biathlon G + Marengo G	0	12/12	0	12/12	0	NA	12/12
Marengo SC + Snapshot + Gallery/Dim	0	12/12	0	12/12	2	214.32	12/12
Marengo SC 15+ Biathlon G + SureGuard	0	12/12	2.92	12/12	1.17	NA	12/12
SureGuard + Marengo G + Gallery/Dim	0.82	12/12	3.15	12/12	0.25	164.74	12/12
Snapshot + Showcase + Marengo G	0	12/12	2.92	12/12	1.67	NA	11/12
Marengo SC + Marengo G +Biathlon G	0.48	12/12	2.23	12/12	0	NA	12/12
Gallery/Dim + Showcase + SureGuard	0	12/12	0.75	12/12	0	203.84	12/12

Table 9. Klyn Nursery – Buxus ‘Green Gem,’ 1 qt – 2015 Season Long Trial

Treatment	Av 3-13 WA1T	No. Alive/ Start	Av 17- 24 WA1T 8 WA2T	No. Alive/ Start	29 WA1T/ 9 WA2T/ 5 WA3T	GI	No. Alive/ Start
Control	0	12/12	0	12/12	0	132.34	12/12
SureGuard + Biathlon G + Marengo G	0.2	12/12	0.9	12/12	0	NA	12/12
Marengo SC + Snapshot + Gallery/Dim	1.57	12/12	2.56	11/12	3.33	NA	11/12
Marengo SC 15+ Biathlon G + SureGuard	1.98	12/12	1.77	11/12	3.5	77.21	11/12
SureGuard + Marengo G + Gallery/Dim	0.27	12/12	0	12/12	0.83	113.98	12/12
Snapshot + Showcase + Marengo G	0	12/12	0	12/12	0	NA	12/12
Marengo SC + Marengo G +Biathlon G	0.9	12/12	2.31	12/12	1.5	67.77	11/12
Gallery/Dim + Showcase + SureGuard	0.2	12/12	2.56	12/12	2.08	79.73	11/12





Viburnum Willoway

<i>Treatment</i>	Average 6-12 WA1T	No. Alive/ Start	Average 8-25 WA1T 6-13 WA2T	No. Alive/ Start	Average 28 WA1T/ 16 WA2T/ 4 WA3T	GI	No. Alive/ Start
<i>Control</i>	1.38a	12/12	1.57ab	11/12	0a	1399	10/12
<i>SureGuard + Biathlon G + Marengo G</i>	3b	11/12	1.39ab	11/12	2bc	NA	11/12
<i>Marengo SC + Snapshot + Gallery/Dim</i>	4.3bc	9/12	3.85b	8/12	2.14bc	NA	7/12
<i>Marengo SC 15+ Biathlon G + SureGuard</i>	5.02cd	7/12	3.17b	7/12	3.29c	NA	7/12
<i>SureGuard + Marengo G + Gallery/Dim</i>	4.02bc	10/12	1.39ab	10/12	1a	1643	10/12
<i>Snapshot + Showcase + Marengo G</i>	1.10a	11/12	0.72a	11/12	0a	1362	11/12
<i>Marengo SC + Marengo G +Biathlon G</i>	4.06bc	10/12	2.61b	9/12	0a	NA	8/12
<i>Gallery/Dim + Showcase + SureGuard</i>	5.85d	6/12	4.95c	5/12	1.25ab	NA	4/12