



MATHERS ENVIRONMENTAL SCIENCE SERVICES, LLC.

Abstract #3. Evaluations of Eight Herbicide Combinations Applied over Eight Months in Development of a Container Season Long Weed Control Program

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. Applications 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.

The damaged caused by many of the liquid dormant applications remained with the plants through the season. Often dramatically reducing their growth. Some of the reductions were not noticeable until the final evaluation were conducted, GI and weights were collected. However, several of the dormant granular applications were quite safe and offered excellent weed control well into late June early July. This was a very interesting trial, contains essential information for the industry and is the first of its kind (to the knowledge of the authors).