Flumioxazin,a new herbicide for per-emergence control of groundsel, bittercress and liverwort in nursery container production

Mario Lanthier, Sonja Peters, Candace Lester
CropHealth Advising & Research P.O. Box 28098 Kelowna, B.C. Canada www.crophealth.com

Flumioxazin is a new pre-emergent herbicide registered in the United States as Chateau, Broadstar, Sureguard and others.

Trials were conducted across Canada in 2005 and 2006 to generate efficacy and phytotoxicity data to support registration.

This poster is a summary of results from trials at commercial nurseries at the B.C.Coast, B.C. Interior, and Alberta, sponsored by Valent U.S.A. Corporation.

Picture: The experimental set-up was a controlled, randomized complete block design of 5 treatments, 4 replicates, 5 hosts.

Treatments were applied twice. The first application was made on a weed-free surface to verify pre-emergence efficacy against target weeds.

About 84 days later, a second application was made over-the-top of host plants to verify phytotoxicity. Plant injury was host-specific (such as *Spiraea*, *Hydrangea*) or related to herbicide granules not washed away from plant foliage.

Picture: Manual application of granular herbicide on the container surface.

In 2006, seeds of groundsel and bittercress were manually placed on the container surface at the start of the trial to ensure uniform weed pressure.

The seeds had been collected from naturally-maturing blooming weeds, and counted into paper packages.

Liverwort was inoculated by placing heavily-infested containers next to trial containers to obtain natural spread.

Picture: Manual seeding of groundsel in a *Buxus* container on day of herbicide application.

Groundsel (*Senecio vulgaris*) is an annual or winter annual that flowers from June to late autumn. It is a serious weed pest across North America in nursery container production as currently-registered pre-emergent herbicides provide poor control.

Picture: Container-grown *Viburnum* at 55 days after treatment.
Left is untreated, right is Broadstar 0.42 g a.i./ha. Note the groundsel in untreated.

Table: Number of trials (total of 25) with > 80% control compared to untreated

Treatment Broadstar 0.25G	21 to 35 DAT	42 to 56 DAT	80 to 84 DAT
0.21 kg a.i. / ha	19	16	7
0.42 kg a.i. / ha	24	19	16
0.84 kg a.i. / ha	25	23	25

Bittercress (also called snapweed, *Cardamine hirsuta*) is a winter annual in the wild but germinates year-round in nurseries where it is supplied with daily irrigation and regular fertilisation. It is also common in container production.

Picture: Container-grown *Rhododendron* at 64 days after treatment.
Left is untreated, right is Broadstar 0.42 g a.i./ha. Note the bittercress in untreated.

Table: Number of trials (total of 21) with > 80% control compared to untreated

Treatment Broadstar 0.25G	21 to 35 DAT	42 to 56 DAT	80 to 84 DAT
0.21 kg a.i. / ha	8	10	8
0.42 kg a.i. / ha	10	15	15
0.84 kg a.i. / ha	11	21	18

Liverwort (*Marchantia polymorpha*) is a bryophyte that has thallose form and abundant underground rhizoids. It provides a breeding ground for fungus gnat pests and prevents the proper movement of water and fertilizer into the growing media.

Picture: Container-grown *Juniperus* at 41 days after treatment.
Left is Broadstar 0.42 kg a.i./ha, right is Ronstar label-rate. Note the liverwort mat.

Table: Number of trials (total of 15) with > 80% control compared to untreated

Treatment Broadstar 0.25G	21 to 35 DAT	42 to 56 DAT	80 to 84 DAT
0.21 kg a.i. / ha	12	11	5
0.42 kg a.i. / ha	14	14	9
0.84 kg a.i. / ha	14	15	9

Poster presentation at the annual meeting of the Canadian Weed Science Society
Victoria, British Columbia, November 2006

Briggs and Whitwell 2003 “Preemergent Bittercress Control in Creeping Phlox (*Phlox subulata*)” J. Environ. Hort. 21(1): 24-29.
Cross and Skroch 1992 “Quantification of Weed Seed Contamination and Weed Development in Container Nurseries“ J Environ. Hort. 10(3):159-161.
Schofield 2000 “Field Guide to Liverwort Genera of Pacific North America” University of Washington Press. Seattle WA.