

Pre-emergent Herbicide Toxicity Evaluation

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Nature of Work: Herbicide injury to herbaceous perennials are common in the nursery industry. Rapidly growing spring plugs, the many kinds of plants and variation in application rates all contribute to the chance of injury. Four pre-emergent herbicides were applied to eleven perennial crops in one gallon pots, 15 days after the plugs were planted. These herbicides were applied at two times (2X) the recommended rate. Plants were monitored for phytotoxicity symptoms.

On May 15, 1998 the herbicides Snapshot 2.5 TG (isoxaben + trifluralin), Regal Kade G (prodiamine), Regal Star G (prodiamine + oxadiazon) and XL (surflan + benefin) were applied to the established perennial plugs. All herbicides were applied at 400 # / acre (2X rate) while no herbicide was applied to the control plants. Fourteen plants were used for each replication. The plants were observed on May 27, June 5, June 26 and July 8, 1998.

The perennials used this trial included:

Chrysanthemum superbum 'Snow Lady'
Dianthus 'Saul's White'
Digitalis mertonensis
Echinacea purpurea
Gaura 'Whorling Butterflies'
Hemerocallis 'Sunny Delight'
Hosta undulata 'Albo-marginata'
Kniophofia 'Border Ballet'
Sedum 'Autumn Joy'
Veronica 'Goodness Grows'
Veronica 'Sunny Border Blue'

Results and Discussion: Snapshot 2.4 TG reduced the height of *Veronica* 'Goodness Grows' (Figure 1), *Veronica* 'Sunny Border Blue' (Figure 2) and of *Chrysanthemum superbum* 'Snow Lady' (Figure 3). Delayed flowering also occurred on 'Snow Lady' (Figure 4). Injury to *Digitalis mertonensis* included severe leaf browning and plant death (Photo 1).

Regal Kade G caused little toxicity with only slight leaf streaking on *Hosta*. Plants showed no permanent effects. This material appeared very safe at this high rate.

Regal Star G delayed flowering on Snow Lady (Figure 4). It caused necrotic spots on *Kniophofia* and *Hemerocallis* where the granules accumulated in the leaf axils (Photo 2). *Veronica* 'Sunny Border Blue' exhibited some leaf puckering and twisting that did not affect the quality of the plants.

XL delayed flowering on *Chrysanthemum superbum* 'Snow Lady' and slight leaf puckering of

Veronica ‘Sunny Border Blue’. The leaf puckering did not affect plant quality.

Figure 1. Herbicide Toxicity On Veronica ‘Goodness Grows’

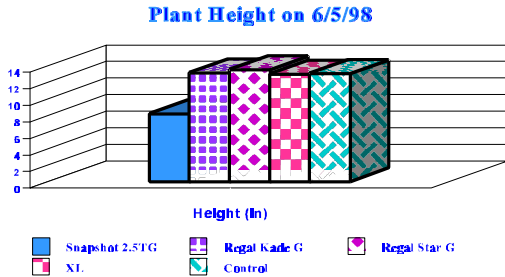


Figure 2. Herbicide Toxicity On Veronica ‘Sunny Border Blue’

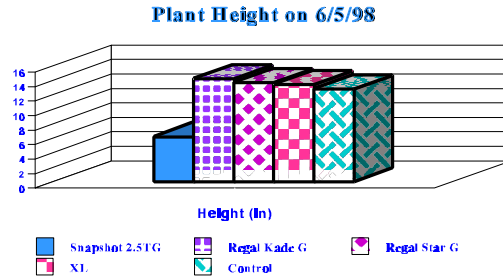


Figure 3. Herbicide Toxicity On Shasta Daisy ‘Snow Lady’

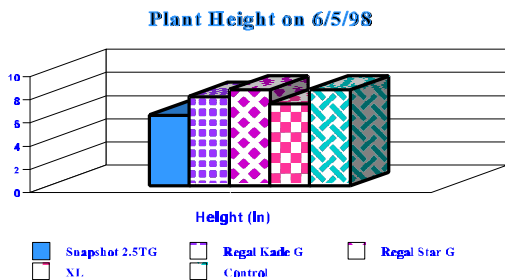
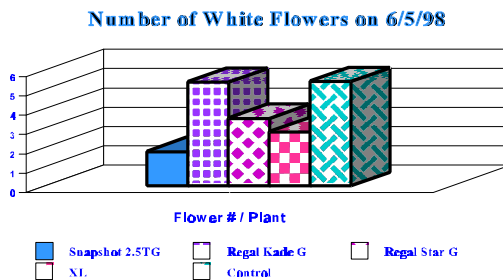


Figure 4. Herbicide Toxicity On Shasta Daisy ‘Snow Lady’



Significance to the Industry: The pre-emergent herbicides Snapshot 2.5 TG, Regal Kade G, Regal Star G, and XL were applied at a 2X rate to various perennials. The Snapshot severely injured the *Veronicas*, *Chrysanthemum superbum* ‘Snow Lady’ and *Digitalis mertonensis*. No injury was seen on the *Dianthus*, *Echinacea*, *Gaura*, *Hemerocallis*, *Hosta*, *Kniophofia* and *Sedum*. Regal Kade G caused light streaks of brown in the *Hosta* leaves which soon became inconspicuous. Regal Kade G caused no injury to any of the other perennials tested. Regal Star G delayed flowering on the *Chrysanthemum superbum* ‘Snow Lady’. It caused injury to *Kniophofia* and *Hemerocallis* where the granules accumulated in the leaf axils. No injury was observed on any of the other tested perennials. XL caused delayed flowering on the *Chrysanthemum superbum* ‘Snow Lady’ and slight leaf puckering on *Veronica* ‘Sunny Border Blue’. No injury was observed on any of the other perennials tested.

Regal Kade G, Regal Star G and XL all appeared to be safe on most of the crops tested. Observations on weed control effectiveness were not included in this study.

