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THE USE OF PRE-EMERGENCE HERBICIDES TO CONTROL CHICKWEED IN NEWLY-BUDDED CRABAPPLES

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The dormant buds on newly-budded crabapple trees are susceptible to injury or even death if they are smothered by common chickweed (*Stellaria media*) during the winter and in the early spring. The chickweed can grow over the bud, shutting out light and reducing air movement around the bud. There are many preemergence herbicides that will control

common chickweed, but the effect of these herbicides on the growth and development of the bud into a saleable crabapple tree is not known. For this reason an evaluation of several preemergence herbicides for control of chickweed and their effect on the growth of newly-budded crabapples was made.

MATERIALS AND METHODS

Test plots were established at a commercial nursery in Vincennes, Indiana, on September 16, 1982. Buds of *Malus* 'Indian Magic' were budded on spring-planted apple rootstocks in August, 1982. At the time of treatment the buds were dormant but the rootstock was in full leaf.

The herbicides and rates used are given in Table 1. Application was made with a CO₂ powered sprayer delivering 27 g.p.h. of spray at 30 p.s.i. in a 30 in. band. The herbicides were applied to the base of the trees and the new bud union. Environmental conditions at spraying were clear sky, air temperature was 69°F, and soil surface temperature was 70°F, with a light 10 mph wind.

Table 1. Herbicides and rates used for chickweed control

Common name	Trade name	lb/A product
oryzalin	Surflan	2 $\frac{2}{3}$ & 5 $\frac{1}{3}$
diphenamid	Enide	8 & 16
DCPA	Dacthal	8 & 16
napropamide	Devrinol	8 & 16

A randomized complete block design was used with 3 replications. Weed control ratings were made on November 15, 1982 and March 30, 1983. Also on March 30, 1982, weed biomass was sampled from a one square foot area of each plot. Normal weed control practices in the nursery were followed after March 30, 1983 and included cultivation and hand hoeing of the plots. On November 18, 1983, the trees were harvested with the bare-root tree digger, all the soil was removed from the roots, and the trees were placed in storage. On November 22, 1983, the average fresh weight per tree, the height from the bud union to the main shoot tip, and the root vigor of 10 trees from each plot were determined.

RESULTS AND DISCUSSION

The herbicides varied in their effectiveness for controlling chickweed (Table 2). The initial weed control rating showed that the high rate of oryzalin provided the best control while diphenamid at either rate was nearly as good. Long term control with both rates of oryzalin was satisfactory until March, 1983, with the high rate giving 100% control. The high rates of

diphenamid and napropamide gave nearly as good control as the oryzalin treatments (Table 2). Weed weights for all weed species present indicated there were no differences among the oryzalin, diphenamid, and the high rate of napropamide and DCPA treatments, and that these treatments were superior to all other herbicide treatments (Table 2). However, visual observations indicated that the oryzalin treatments were superior to all others.

Table 2. Effectiveness of herbicides in controlling weeds.

Herbicide	Treatment lb/A	Percent control of chickweed		Total weed growth g/sq ft
		11/15/82	3/30/83	
check	0	0	0	271 ab ¹
oryzalin	2 $\frac{2}{3}$	67	88	43 d
oryzalin	5 $\frac{1}{2}$	92	100	41 d
diphenamid	8	82	68	85 d
diphenamid	16	80	95	140 bcd
DCPA	8	37	0	274 abc
DCPA	16	78	73	62 d
napropamide	8	40	23	323 a
napropamide	16	72	88	116 cd

¹ Numbers followed by the same letter are not significantly different at the 5% level

No herbicide treatment adversely affected the growth of the crabapples. There was no effect on the survival and development of the buds (data not shown). Average weight per plant in all herbicide treatments was equal to or better than in the check. Also, the height and root development of trees in the herbicide treatments were comparable to that of trees in the untreated check (Table 3).

Table 3. Growth of crabapple when treated with preemergence herbicides for chickweed control.

Herbicide	Treatment lb/A	Height (inches)	Root rating ¹	Weight oz/tree
check	0	51.2	3.7	10.9
oryzalin	2 $\frac{2}{3}$	48.4	4.3	11.9
oryzalin	5 $\frac{1}{3}$	54.1	4.3	13.6
diphenamid	8	52.4	4.0	16.3
diphenamid	16	53.0	4.0	14.6
DCPA	8	59.2	5.0	22.5
DCPA	16	58.3	4.3	20.9
napropamide	8	58.5	4.3	17.7
napropamide	16	58.9	4.3	18.0

¹ Rating: 1, poor to 5, best

CONCLUSIONS

Chickweed was effectively controlled by use of preemergence herbicides and there was no effect on subsequent growth of the budded crabapples. Also, bud survival was not

affected. Oryzalin at 2 $\frac{2}{3}$ lb/A provided very satisfactory control, while high rates of diphenamid, DCPA, and napropamide also controlled chickweed, but the use rates of these herbicides was higher than that recommended on the product label.

JAMES COARTNEY: Why did you not use a low rate of Princep which would be effective and enhance any of those materials?

PHILIP CARPENTER: The nursery wanted us to use the minimum amount of herbicide and we thought we could do without it. We have been very satisfied with Princep plus Surflan in the fall with very good results.

RALPH SHUGERT: Is there a reason why you did not use Kerb?

PHILIP CARPENTER: We primarily look at Kerb as a perennial grass killer.

RALPH SHUGERT: But it will work on chickweed at 2 lb AIA.

AN INEXPENSIVE METHOD OF DWARF SPRUCE PROPAGATION

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Dwarf spruce, such as *Picea glauca* 'Conica' and *Picea abies* 'Nidiformis', are slow growing conifers which are also slow to root from cuttings. To propagate these unique plants many methods have been used: summer-winter cuttings, grafting, mist, etc. We use a method which is easy to do, easy to maintain, takes no added heat, uses no misting, and the structure is economical to build. A cold frame with sash is used (no plastic) inside a shade house which has snowfence for shade covering (40% shade). The cold frame must have the sash absolutely tight fitting.

The rooting medium used is a sand-peat mixture with the fine washed sand (plaster type) put on a level bottom of top soil of a sandy nature, then the peatmoss is applied over the top of the 6 in. fine sand layer. The peat moss (2 in.) is watered and thoroughly mixed with the fine sand. The top of