

## **BITTERCRESS (*CARDAMINE* SPP.) BIOLOGY AND CONTROL FOR NURSERIES**

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Bittercress competes with the crop for water and nutrients. The presence of bittercress in the container reduces salability of crop and increases the chance that the weed will spread to other containers and other areas of the nursery.

There are primarily two species of bittercress (*Cardamine* spp.) that that are problems for nurseries in California. Lesser-seeded bittercress (*C. oligosperma*) is an annual that can grow to 12 inches (30 cm) tall but is usually found in the 3-5" range (7-13 cm). The stems branch from the soil line as a rosette. Leaves are lobed. Seedlings are bright green with leaves that are somewhat heart-shaped. The plant has small white flowers with 4 petals and narrow, 0.5 to 0.75 inch (1.3 - 1.9 cm) long seed pods. The other common bittercress species, hairy bittercress (*C. hirsuta*) is similar but has fewer, lobed or kidney-shaped leaflets.

The optimum environment for bittercress growth is cool and moist. It is more prevalent in the winter but can be found year-round in most nurseries in California due to heavy irrigation and the shade provided by the crop canopy. Optimal temperatures for growth are between 45 and 85°F.

The tiny seeds can be expelled several yards from the pod at maturity often landing in nearby containers, plastic tubing, or in potting media. The seed has been shown to stick to the soil on the outside of plastic containers and be moved throughout the nursery. The seed can also be easily carried in irrigation water. Seeds do not have a dormancy period and may germinate immediately. This, combined with the short life cycle (6 weeks), can result in a heavy weed population rather quickly.

**Cultural control:** Because of the short lifecycle of this weed and lack of dormancy of the seeds, it is important to monitor all areas for this weed. Not only should containers be inspected but also areas surrounding containers. Water should not be allowed to flow over this weed when draining since this will spread the seeds. Also, recycled water should be treated or screened to avoid reintroduction of this weed. Irrigation tubes should be wiped before replacing in an uncontaminated container because seeds could be present on the tubing and pots should be washed on the outside to remove any seeds that are stuck to the sides.

**Chemical control:** Postemergence herbicides can be used to control bittercress in areas surrounding the containers but there is no selective material for use in a container. Preemergence herbicides are effective but care must be taken that the herbicide is applied prior to seed germination. Where bittercress is known to be problem, the herbicide must be applied as soon as possible and reapplied as needed. Over time, this will reduce the bittercress population. Preemergence herbicides effective for controlling bittercress include flumioxazin, isoxaben, oxadiazon, and oxyfluorfen, and oryzalin (see table below). Growers often need to combine handweeding with preemergence herbicides for complete control. For postemergence control, it is important to kill the plant prior to flowering. Directed sprays of contact or systemic herbicides are effective but care must be taken not to injure the crop. Sureguard (flumioxazine) is a newer material with postemergence activity that may be sprayed over the top. As with any postemergence herbicide that you have not tried, it is imperative to test this material on a few plants and observe for crop injury for at least 3 weeks before trying it on a larger scale.

Preemergence herbicides, rates and percent bittercress control 30 and 60 days after treatment. (DAT)1.

	<b>Herbicide Rate (lbs ai/A)</b>	<b>% Bittercress Control 30 DAT</b>	<b>60 DAT</b>
Gallery	0.5	99	100
Snapshot DF	2	100	100
SnapshotTG	2.5	97	99
Ronstar	2	100	100
Predict	2.4	100	100
OH-2	3	95	98
Factor	1	100	100
Rout	3	100	100
Stakeout	1	100	100
Surflan	3	100	100
Kerb	1	82	87
So. Weed			
Grass	3	78	83
Control	--	0	0
LSD (P > 0.05)		8.5	13.5

1Bachman and Whitwell, undated.

### **References**

Altland, J. 2003. Bittercress. [http://oregonstate.edu/dept/nursery-weeds/weedspeciespage/bittercress/bittercress\\_page.html](http://oregonstate.edu/dept/nursery-weeds/weedspeciespage/bittercress/bittercress_page.html)

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