

Weed Control both in Containers and Field
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A Summary of Years of Research and Practice

Weeds have been defined in various ways, but my favorite definition is that “a weed is a thoroughly successful plant”. In spite of all that you do to discourage weeds, they grow and flourish and continue to cause problems and restrict growth of crops. Controlling weeds in field nursery stock is challenging, but in containers the problem is even more challenging. **NOTE – The same herbicides that work well in containers work well in the field and the same emphasis that water solubility should be one ppm or less applies to field stock as well as in containers.**

Consider that no plant is native to a container, as a container is a totally artificial environment created for our convenience. What works in mother nature's soil rarely works the same way in the unique environment of a container.

The “mix or growth medium” in a modern container nursery contains NO field soil, but rather a mix of pine bark, sand, peat or other material. Because of the ever-present perched water table at the bottom of the container, coarse materials are necessary to provide drainage and avoid root suffocation from excess water, while retaining sufficient water to support the crop between irrigation cycles. Further, because we have restricted the root system of the plant to the volume of the container, and that volume is generally quite limited relative to the root system the plant would develop in the landscape, water must be reapplied frequently. The water loss from the container is also accelerated by the fact that the temperature of the growth medium in the container is typically from 20 to 50 degrees warmer than in soil in a landscape, and this heat “cooks” out the water and restricts root growth. The end requirement is that lots of water, applied frequently, is necessary to grow plants in containers.

In my early research trying to sort out the factors involved and most effective ways to control weeds in containers, two key points surfaced: 1) the high content of organic matter in the growth medium (pine bark, peat, etc.) binds or adsorbs (like iron shavings sticking to a magnet) substantial quantities of herbicides, thus the rates must be higher than for the same herbicide applied in the field, and 2) the more water soluble the herbicide, the faster it moves downward through the mix and the greater likelihood of damaging the crop.

From over 30 years of study in this area, my suggestions are as follows and they apply to both weed control in containers and in the field:

- A) Use only preemerge herbicides with water solubilities LESS than ONE PPM.
- B) The compounds currently available that fit this requirement are:
 - Treflan (trifluralin) @ 0.3 ppm water solubility
 - Goal (oxyfluorfen) @ 0.1 ppm
 - Ronstar (oxadiazon) @ 0.7 ppm
 - Prowl, Pendulum, Southern WeedGrass Control (pendimethalin) @ 0.5 ppm
 - Barricade, Factor (prodiamine) @ 0.013 ppm
 - Gallery (isoxaben) @ 1.0 ppm
 - Rout – is a combination of Goal and Surflan
 - Snapshot 80 DF – is a combination of Gallery and Surflan
 - Snapshot 2.5 TG – is a combination of Gallery and Treflan
 - Ornamental Herbicide II – is a combination of Goal and Prowl

Surflan (oryzalin) @ 2.6 ppm, appears in Rout and Snapshot 80 DF

I do not recommend Surflan either to be used alone or in combination with other compounds as crop stunting is common.

Factor, Barricade – must be applied at high rates in order to have sufficient herbicide soluble to control weeds. Remember, if too little of the herbicide is soluble weed control will be poor, whereas if too much of the herbicide is soluble weed control may be good but the crop will be stunted.

- C) None of these compounds will last more than about two months on the surface of a container. This is due to the elevated temperature and microbial activity. YOU MUST, watch carefully your calendar and for the presence of the first germination of weed seeds and reapply regularly. In nearly all cases, it is better to reapply a bit early as opposed to wait too long and have to pull weeds by hand. These compounds do, typically, last longer in the field.
- D) The practical sequence that works well is to a) pot up either new liners or shift up plants into larger containers, b) water the plants in WELL by HAND, c) then the next day, apply the preemergent herbicide and d) water it in by sprinkler irrigation. Because of the low water solubility of the suggested compounds, they do not move below about inch deep into the growth medium. Since nearly all weed seeds require light to germinate, it is essential that the herbicide remain on the surface where it is needed and away from the roots of the crop. Keep this in mind relative to incorporation of herbicides in the field: the deeper the herbicide is incorporated, the more contact it will have with the roots of your crop plants and the further away from the soil surface where the weed seeds germinate.

Sanitation and control of weeds anywhere near plants being grown in containers is also a critical part of the weed control program. The more weed seeds available to blow onto your plants in containers, the more likelihood you will have weed problems.

IF you recycle your irrigation water, adherence to a program to use ONLY those herbicides with water solubilities less than one ppm, ANYWHERE on the nursery is my advice. For example, the soil sterilant herbicide Hyvar X has a water solubility of 815 ppm and goes wherever water goes. Roundup is NOT likely to cause problems because it adheres to soil and organic particles very strongly and is broken down quickly by microbes. NEVER, EVER let anyone talk you into using an herbicide at you nursery until you know the water solubility. Further, ALWAYS do a small test area before treating the entire nursery. When reading about results of an herbicide test, look to see if they had a double control. A double control is where one control receives no herbicide and the weeds are allowed to grow, while the second control receives no herbicides but is kept free of weeds. Only with a double control will you know whether or not the herbicides in the test are stunting the crop.

You will always have weeds, but they need not be a major problem.