

Just for the sake of discussion I said that any machine to be worth purchasing must save its price and its cost of operation in terms of labor or personal relations, whatever you want, with in the first season or first year of operation, whichever is less.

MODERATOR JOHNSON: Our second round table discussion was moderated by Bob DeWilde.

**WEED CONTROL IN POTTING SOILS,  
SEED FLATS, BEDS, AND FRAMES**

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Today each nurseryman realizes the economic importance of developing a weed control program for potting soils, seed flats, beds, fields, and frames. Properly executed control programs will reduce production costs, improve quality, as well as increase the number of saleable plants per acre. We apply the epithet "weed" to those unwanted plants which compete with our ornamental plants for water and nutrition.

Essentially there are three ways of controlling weeds:

- (a) Mechanical Control achieved by the use of tools from cultivators, rototillers, flame throwers, and compressed air through the expert use of the hand.
- (b) Physical Control through the use of mulches or physical barriers which prevent weed growth.
- (c) Selective Chemical weed control through the use of chemicals which kill specific weeds without injury to the ornamental crop.

With regard to physical control of weeds, this was the technique used to obtain three year weed control in container grown stock. A black plastic circular disc of two, or four mil polyethylene was cut with a slit to the middle. The disc is placed on the pot so it fits around the base of the plant and extends to the edge of the pot. A little sand is then placed on the polyethylene disc to hold it in place. Only a scattering of easily pulled weeds may appear around the edge of the container during a three year period. The polyethylene disc does not interfere with watering. In practice the disc will reduce the frequency of watering by 50% in some cases.

Numerous mulches were discussed and a list of some of the types discussed appear below. All the mulches listed seemed to have some drawback, but many are used as they are usually cheap to purchase if locally available, although expensive to apply, and they will control weeds particularly if used or mixed with a weed control chemical. Mulches may of course provide some additional benefits by preventing soil erosion, aiding moisture retention, and supplementing the nutrient supply.

## Mulches Used For Weed Control

|   |   |
|---|---|
| Woodchips<br>(stockpiled for 1 year prior to using)     | Peatnut Hulls<br>(possibility of nematodes-sterilize)       |
| Sugar Cane<br>(relatively expensive)                    | Crushed Corn Cobs   |
| Cocoa Hulls<br>(fungus and other problems)              | Swamp Marsh Grass<br>(locally available-problem in digging) |
| Pine Needles<br>(fire hazard, difficult-to-handle)      | Licorice Roots<br>(mushroom flies, high pH)                 |
| Pecan Shells<br>(dfifcult-to-handle due to sharp edges) | Spent Mushroom Soil   |
| Buckwheat Hulls)<br>(difficult to obtain)               | Redwood or Pine Bark  |

Selective chemical weed control is a relatively new science that is being expanded every day. New and often better chemicals are appearing as fast or faster than they can be tested for nursery use.

The activity of these chemicals and the resultant degree of weed control obtained is dependent upon a number of factors such as soil type, soil moisture, soil organic matter, soil and air temperature, humidity, wind movement during application, form of the active chemical (wetable powder, granular, liquid), condition of cultivation, incorporation requirements, types of weeds to be controlled, and the age and variety of ornamental plant upon which the chemical is being used. It can be easily shown that results will vary according to local conditions. It cannot be stressed too strongly that each operator must test chemicals to be used before applying them on a wide basis. Detailed records of all weed control work should be maintained and the manufacturer's recommendations should be closely adhered to. A good program usually starts with healthy weed free plants and with clean potting soil through the use of steam sterilization or chemical soil fumigation with materials as Vapam, methyl bromide, and Dowfume.

This discussion group compiled a list of thirty-eight weeds that are problems in our nursery operations and a list of over thirty chemicals currently in use to control them. In general discussion the factor of "time of application" was found to be quite important. Fall treatments often have practical value and increased effectiveness from several standpoints.

- (a) Low evaporation of volatile chemicals when the temperature is cool.
- (b) Lower bacterial activity that usually cause chemical degradation.
- (c) Fits well into late fall or winter nursery work schedules.

Time of application is also very important with regard to the type of weed you want to control. Some chemicals work quite well when applied on snow in middle of winter, but avoid hard frozen ground where the wind will blow granular materials into small pockets of concentration.

Considerable discussion followed concerning the possible residual problem of Simazine. The low cost, broad spectrum control of this chemical has made it the most popular chemical

in the nursery today, but there was concern about residual effects. This problem can be somewhat minimized or checked upon by some of the following considerations.

- (a) Use of combination chemicals to reduce the level of simazine as well as to control some weeds that are not controlled by simazine. One such chemical combination is amizine.
- (b) Use a charcoal slurry to dip roots of simazine sensitive plants. Or apply charcoal directly in the soil prior to seeding.
- (c) Decrease the amount of active simazine each year it is applied to the same piece of ground.
- (d) Use corn or high organic cover crop rest periods between crops when simazine has been applied for several years.
- (e) Oats may be used as an indicator plant since they are very sensitive to low levels of residual simazine.

Other materials such as Diphenamid, Casaron, and Trifluralin were discussed and since there was considerable interest in a number of other chemicals, your moderator asked Dr. A. M. S. Pridham, Dr. Chico Hiramaki, and several others to continue comments on these chemicals.

Many thanks to Dr. Fred Lanphear for his assistance as recorder.

## GENERAL COMMENTS ON HERBICIDES

### Amizine

post-emergence herbicide - good in large shaped tree plantings where cultivation is difficult Dormant application safer. Applied to established plants only, not on simazine sensitive plants.

### Amitrole

post-emergence herbicide - used as spot treatment for perennial weeds Good for poison ivy control - do not use on nursery plants Never applied at high rates - toxicity remains in the soil for several months

### Allyl Alcohol

Used as a soil drench but not as effective as fumigation.

### Atrazine

pre-emergence and post-emergence - somewhat risky to use in nursery stock due to great solubility.

### Casaron

pre-emergence herbicide - Safe on most general nursery stock Granular material best applied in late fall application. Effective against hard to control perennial weeds such as Wild Chrysanthemum, quack grass, and nutgrass if applied at higher rates.

If applied during period of high temperature it should be watered in or incorporated. Short residual life not usually more than 1 growing season

### CIPC

Fairly good for general nursery use due to safety factor Limited period of weed control Apply in spring or when it is moist

### Chloropicrin

preplanting fumigant

### Diphenamid

pre-emergence herbicide Safe on almost all nursery plants Fairly long lasting control but has limited effectiveness on certain broad-leaf weeds. Can be applied at any time of the year.

### Dacthal

Very good for spring and summer use Limited residual affect. Short period of weed control

### Diuron

Very good control if applied during spring or summer Somewhat selective as to weeds it will kill Also slightly risky to use particularly with broadleaf evergreens

#### Dalapon

Good quack grass control when used 3 months to 1 year before planting. Post-emergence herbicide. Do not apply on nursery stock

#### Diquat

Contact herbicide with similar properties to paraquat. The latter being preferred

#### Dinitro

Post-emergence herbicide - Good contact herbicide. Useful in fall or early spring.

#### Eptam

Pre-emergence herbicide. Must be incorporated into soil and can be used as a pre-planting application. Bare root cuttings may need some protection, but potted liners can be safely used in treated soil.

#### Mylone

pre-planting sterilization - granular material not as effective as other sterilants.

#### Methyl Bromide

Very good pre-plant sterilization procedure. Requires air tight cover. Depending upon dosage, it will control diseases as well as weeds.

#### Paraquat

Excellent contact herbicide and foliage killer. Useful around dormant nursery stock.

#### Stoddard Solvent

Post-emergence herbicide. Good contact herbicide but must be kept off nursery stock foliage. May be used between beds.

#### Sesone

Pre-emergence herbicide - short lasting. May be useful on seedling weeds.

#### Sodium Arsenite

Too risky to use. Other contact herbicides are more generally acceptable

#### Simazine

Pre-emergent herbicide. Very good particularly on narrow leaf evergreens. It is somewhat risky to use on many broadleaf evergreens and certain deciduous species. Long residual activity which tends to create accumulation with repeated usage. Not effective in controlling crab grass. In general, do not use on lilacs, privet, euonymous, honeysuckles or azaleas.

#### Telvar

Pre-emergent herbicide - Similar to Diuron but more risky to use. Many narrow leaf evergreens and larger deciduous plants are tolerant.

#### Vapam

A good pre-plant sterilant - incorporate into soil using water and preferably a plastic sheeting as a seal.

#### Vernam

A pre-plant herbicide similar to EPTC. Must be incorporated into soil.

#### Treflan

Pre-emergent herbicide or as pre-plant treatment when incorporated into soil. Most nursery species appear to be tolerant. Some broadleaf weeds may not be controlled.

#### 2,4-D

Low volatile ester or amide form for spot treatment of field fine weed. Do not apply to foliage of nursery species. Can be used for brush and broadleaf weed control in non-crop areas. Preferably in combination with 2,4,5-T.

#### 2,4,5-T

Similar to 2,4-D. Somewhat better when used for brush control. Do not use on nursery species.

## LIST OF NURSERY WEEDS COMPILED IN ROUND TABLE DISCUSSION

|                    |               |                |               |
|--------------------|---------------|----------------|---------------|
| Carpetweed         | Nightshade    | Wild Garlic    | Saw thistle   |
| Chickweed          | Pigweed       | Wild Artichoke | Wild Oats     |
| Blue Grasses       | Plantain      | Horsetail      | Witch grass   |
| Canada thistle     | Purslane      | Dollar Weed    | Nutgrass      |
| Chrysanthemum weed | Quackgrass    | Horse nettle   | Dock          |
| Crab grass         | Oxalis        | Dodder         | Poison Ivy    |
| Dandelion          | Johnson Grass | Quickweed      | Bind weed     |
| Foxtail            | Burmuda Grass | Pursley        | Morning Glory |
| Lambsquarters      | Milkweed      | Ragweed        |               |
| Mustard            | Spurge        | Smartweed      |               |

MODERATOR JOHNSON: We will now go on to the third round table with Harrison Flint.