

The Weed Wars - by Art Delahey , CPLS Newsletter #93: 2-4

Weeds are segregated into various categories depending upon their growth habits. Annual weeds such as redroot pigweed begin their growth in the spring and mature later in the season after setting seed for next year's crop. Winter annuals germinate in the fall, establish growth which then becomes dormant and survives over winter, then begins growth in early spring, maturing in early summer. Biennials germinate from seed in the first year, produce top-growth but no seed, establish a root system which overwinters to produce new growth and seed the following year. Perennials have root system which survive over winter and establish new top-growth each season to produce seeds before being frozen into dormancy for the winter. As a gardener one must identify and categorize any weed problem in order to be able to establish a sound control program. Manual control (hoeing) will certainly work on annuals but leads to much difficult work and frustration with perennials. Their root systems interwine with those of garden plants which are disrupted through physical removal of the weed.

THE ENEMY - Classes of weeds and examples

Annuals - red-root pigweed, lamb's quater, common groundsel, purslane, chickweed, wild mustard, common peppergrass, round leaved mallow, spear-leaved goosefoot, kochia

Winter Annuals -stinkweed, shepherd's purse, flixweed

Biennials - goat's beard, sweet clover

Perennials - dandelions, Canada thistle, quack grass, brome grass.

Obviously the gardener's approach to weed control depends upon the type and quantity of weeds, the amount of labour, and time to be dedicated, and the objective - eradication or satisfactory control. Depending to these factors the gardener may choose to follow a manual program, a chemical program, or a combination of the two methods. In most lily gardens we opt for the latter.

What are the pros and cons of a chemical control program?

CONS - many herbicides are non-selective (i.e., they kill all vegetation).

- spray drift can seriously damage or kill sensitive plants (tomatoes are a great indicator of the presence of herbicides), the gardener's sensitivity or allergy to chemicals,
- soil residue may prevent the planting of subsequent crops or the build-up may damage growth in following years, and,
- in many cases timing of application is critical.

PROS - used correctly chemicals can eradicate problem weeds.

- labour input is reduced considerably,
- fewer weeds escape to set seed, thereby gradually cleaning up the garden, and,
- elimination of perennial problem can make manual control of annuals much less laborious.

The ALLIES - classes of chemicals

Chemicals can be divided into two main classes - pre-emergent and post-emergent herbicides. As the name suggests pre-emergent chemicals are put on or into the soil prior to growth beginning in the spring. Fall is the usual time of application. They have the advantage of being able to be placed when time allows as the garden is cleaned up. Post-emergent herbicides can be used at various stages of growth depending upon the weeds' most susceptible period of

growth, and the climatic conditions. Timing can be critical with some of the post-emergents so a spell of bad weather will often rule out their use and efficacy. In either case manufacturers' directions should be followed to the letter - more is not better where chemicals are concerned!

PRE-EMERGENT

Triflouralin- tradename Trelfan. Inhibits growth of the roots and shoot tips as weeds germinate and begin to emerge. It must be incorporated into the top 1 to 1.5 inches of soil. Effective on chickweed, purslane, lamb's quarters and red-root pigweed but misses wild mustard and stinkweed. Subsequent use can result in soil build-up and damage to later plantings. It can only be purchased in agricultural quantities - 22.7kg bags - and is applied at 2.25 kg per acre. It has been used successfully on lilies over the years but caution is advised.

Dichlobenil - tradename Carsoron. Available as a granular formation which can be applied either in the fall (preferable) or very early spring. It is simply sprinkled on the soil surface. It is available at garden centers in 2 and 15 kg bags. It is a systemic herbicide absorbed by the emerging weed roots and weeds are controlled before they emerge. Effective against chickweed, purslane, groundsel, knotweed, lamb's quarters, mustard, pigweed, shepherd's purse, dandelion and sow thistle among others - a broader range than Treflan. It is applied at 1 kg per 600 sq ft so there is a greater safety factor than in applying Trelfan.

POST EMERGENT

2,4-D Amine - a systemic herbicide which is absorbed through the foliage and translocated to actively growing areas resulting in twisted growth and subsequent browning. It is sold in various sizes under many tradenames. Vapour drift risk is low, action time takes 7 to 10 days, and risk of tolerant plant injury is low. The writer has used it effectively in removing heavy weed infestations in lilies by directing the spray at the base of the stems. Caution must be used on seedlings. It controls the common annuals excepting chickweed and purslane. Mix at 1.5 ounce per gallon of water.

2,4-D, Mecoprop Dicamba - Trademake Killex, Lawn Weed Doctor. Another systemic herbicide sprayed on actively growing young weeds. It does not vaporize and breaks down in the soil on average in 30 days. This product is effective against chickweed, purslane, dandelions, lamb's quarters, mustard, knotweed, and the top-growth of Canada thistle, and is best used as a lawn and pathway spray rather than directly on lilies.

Bromoxynil + MCPA ester - tradename Buctril M. It is available only in agricultural quantities and formulations. It is the herbicide of choice for common groundsel, and handles most annual and winter annuals. It is not very effective on perennials - kills top growth only. Used at 1 ounce per gallon up to the 8 leaf stage it is effective on groundsel, killing the plant in 3 to 5 days. Caution has to be used to not direct it on lily stems or seedlings as they are susceptible.

Glyphosphate - tradename Roundup, Clear-it, Sidekick. A non-selective herbicide which kills any green plant it touches. It is one of the most effective and safest herbicides on the market. It is odourless, does not vaporize, and dissolves easily in water. Because it is innocuous to living tissue it circulates freely through the plant, reaching all areas before damage is done. It acts by blocking protein manufacture thereby shutting down the plant's normal metabolic processes. Any glyphosphate which lands on soil is tightly bound to the soil particles, so tightly that plant roots cannot detach it, so there is no residue build-up. Soil bacteria attack and naturally destroy it. Since it is highly soluble in water and poorly absorbed in the digestive tract glyphosphate is rapidly excreted from the body, unchanged. Glyphosphate is most effective in early spring on new growth or in the fall when the plant is rapidly building root reserves for the following year. Extreme care should be used in applying it

STRATEGIES AGAINST WEEDS

Manual control - hoe, hoe, hoe! If time and effort are not a concern hoeing and picking weeds will keep them under control. A sharp hoe can do serious damage in a lily bed if one is careless, so the tendency is to hoe after the lilies are up and the weeds are bigger. Perennials are a problem even to the strongest hoe and gardener - top growth control is as good as you can expect.

Chemical controls

1.) pre-emergent - excellent control of winter annuals and some perennials can be accomplished by applying Treflan or Caroson in the fall after the lily bed is cleaned up. Great care must be taken to ensure that the correct rate is applied and that incorporation is properly done in the case of Treflan.

2.) post-emergent -

(a.) winter annuals - spray with 2,4D amine either in the fall when growth is evident, or in the spring prior to the emergence of the lilies. Spraying should be done after lily emergence BUT care has to be taken to keep the spray off the lilies and weeds can be missed.

(b.) summer annuals - spraying summer annuals is not recommended unless you have to, and then only if you have a steady hand and nerves of steel. Chemical spray can hit the young seedlings and wipe them out. If the problem is common groundsel you have no alternative other than a great deal of hoeing. Buctril M to the rescue, spray on a calm day and keep the losses to a minimum - again exercise extreme care!

(c.) perennials - there is no better time and treatment than Roundup in the fall after the lilies have matured (i.e., stems have turned brown) or have been frozen down. Use the correct rate and spray everything - you will not harm the lilies. If necessary Roundup can be used in the spring but control can be limited if lilies emerge early or if it is a dry, hot spring.

SECRETS TO SPRAYING LILIES

Know the area to be covered.

Mix the correct amount of chemical for that area with the correct amount of water.

Use a good quality sprayer in good operating condition. A 1 to 2 gallon hand sprayer is easily carried and contains enough mixture to cover a sizeable area. It must have an adjustable nozzle, filters and a wand long enough to get close to the soil surface without permanently disabling your back. Clean the filters and oil the pressure pump before starting

Spray evenly - walk at a constant rate and move the wand back and forth in a steady rhythm if you are doing a wide area. Keep the wand low and directed at the base of the lilies (stems can ignore most chemicals) and watch for the little seedlings.

PRACTICAL EXPERIENCES

Treflan was used at Riverside Gardens for several years until there was a noticeable residue build-up. This residue coincided with some dry summers and frost to possibly cause a population decline in our plots. Insufficient fertilization could have also contributed. The late Dr. J.M. Bell used Treflan with considerable confidence and satisfaction to control purslane and chickweed.

CPLS McKercher Plot - Common groundsel was introduced into the garden when Andy Dingwall established his original plantings there. It became a very serious problem which had to be kept under control annually, thereby causing a sizeable expense for labour for CPLS. The writer undertook to see if a Buctril M spray program would offset the labour. Two sprayings were done during the summer catching the groundsel prior to the 8 leaf stage. Gramoxone was used on

ocassion to burn out any volunteer grains and grasses from the straw placed between the rows. In the fall the entire plot was sprayed with Roundup to remove the Canada thistle, quack grass and brome grass which had come in with the straw. It also cleaned off the winter annuals although these were not a big problem. In the spring 1999 there were scarcely any growth prior to lily emergence but groundsel was expected as the spring progressed. Future control will involve Buctril M sprayed cautiously during the summer and fall applications of Roundup as warranted.