

Jenny Murphy, Technical and Registration Manager of Aventis Environmental Science, explains the benefits of using Selective Herbicides...

EFFECTIVE selection



All greenkeepers will have this seasonal problem: you want to kill off broad-leaved weeds without damaging the turf. The answer is the application of a Selective Herbicide. These herbicides are weedkillers which suppress or kill undesired plants without damaging valued plants. Therefore the term also applies to the control of weeds in agricultural crops, in shrub beds, and around trees.

Why do we need selective herbicides?

The use of selective herbicides allows efficient removal of weeds from large areas. To remove weeds by hand from the same area would take very much more time and effort. Selective herbicides are therefore one of the most cost-effective tools in a greenkeeper's armoury. Also, as most selective herbicides kill both the foliage and root system, the removal of the weed is complete - giving a much longer lasting kill than if the foliage only is removed by mechanical means.

How do selective herbicides work?

Inquisitive users of selective herbicides may ask the question: the product is sprayed onto both the turf and target weeds, so why is the grass not killed? Well, the term "selective" means that product has been developed to be active against broad-leaved weeds, but is selective to turf - meaning that the turf is unaffected. This selectivity results from physiological and biochemical differences between grasses and broad-leaved plants.

Selective herbicides can be divided into two major groups based on the way in which they act.

1. Contact Acting Selective Herbicides.

These act only upon those leaves which are directly sprayed. They cause scorching of treated plant tissue destroying their capability to produce energy for growth. Their main use is against annual weeds. Ioxynil is an example of a contact acting herbicide.

2. Translocated Selective Herbicides.

Upon application, translocated herbicides are absorbed by the foliage and move throughout the plant, killing both the leaves and root system. Translocated selective herbicides are therefore more effective and give longer-term treatment than contact selective herbicides.

There are many groups of selective herbicides which are translocated, each group killing the weeds by a variety of modes of action:

* Alkanoic & carboxylic acids: these are also known as "phytohormones"

because they disrupt normal plant hormone activity. Typical symptoms are inhibited and deformed growth and ultimately plant death. Examples of these compounds include MCPA, 2,4-D, mecoprop-p, triclopyr, clopyralid and dicamba.

* Anilides: disrupt the production of chlorophyll (the stuff which makes plants green!), giving characteristic bleaching symptoms. The affected leaves cannot photosynthesise (produce energy for growth) and therefore they die. Diflufenican is an anilide.

* Diphenyl ethers: inhibits photosynthesis and respiration and cause rupture of cell membranes. These compounds are quite fast-acting and scorch symptoms appear rapidly on most weeds. Bifenox is a diphenyl ether.

When should you use a selective herbicide?

Application is best carried out during conditions of active growth. This usually happens during the Spring and early Autumn. However broad-leaved weed growth may continue through the summer if conditions remain wet and mild.

Avoiding close mowing three days prior to application ensures maximum leaf area for product uptake. It is advantageous to avoid mowing for three days following application as well, to allow time for uptake and translocation of the active ingredients.

It is important to note that selective herbicides should not be applied if the turf and weeds and under stress, for example during periods of drought, waterlogging or frost, as this may impair herbicide uptake and lead to poor control.

How are selective herbicides applied?

Most are applied as liquids for use through watering cans, knapsack sprayers or tractor mounted sprayers.

Every selective herbicide has an approved label giving essential recommendations on protective clothing to be worn and precautions to be followed during application. In addition the label gives detailed use instructions including dose rates, water volumes and weed spectrum. There may be a range of rates on the product label, according to weed species. It is therefore important that you identify the weeds first then select the appropriate application rate and water volume.

The label recommendations are based on many years' research, and must be followed to ensure safe and effective product usage.

Having selected your rate of appli-

cation, the next essential step is to calibrate your sprayer. Anyone who regularly uses a knapsack or ride-on sprayer should be familiar with the calibration process. Calibration must take into account both the product dose rate, and the volume of water which is stated on the product label.

Applied in the correct dosage and under the correct conditions, selective herbicides represent the most cost-effective solution to weed control in turf.

Getting the best from the products Six point summary -

Identify The Problem

Select the right product for the job by first identifying the main weeds present. Then compare your list against the weeds mentioned on the product label. As a general rule, the more active ingredients a product contains, the wider the weed spectrum will be. For example, if clovers are predominant, you could use a product containing straight mecoprop-p. If several species are present, e.g. daisies, dandelions, buttercups and thistles, you will need a product containing two active ingredients including 2,4-D or MCPA. Three-way products also exist. These usually have a very wide weed spectrum, including difficult weeds such as speedwells. In addition three-way products can be useful if control of uncommon or unusual weeds is required.

Timing

Best results are achieved when the selective herbicide is applied to actively growing turf and weeds. The application of a fertiliser prior to treatment will improve growth, which in turn will speed up herbicide uptake and give good results.

Mowing

Mowing reduces the leaf area and consequently the weeds' ability to absorb the herbicide. Therefore mowing should be avoided for 3-4 days before application where possible. After spraying, a further period of 3-4 days without mowing will allow complete uptake of the herbicide, resulting in better control. Clippings from the first 2-3 mowings following application will contain traces of herbicide. These should not be used for composting unless allowed to rot down for at least 6 months.

Adverse conditions

If adverse conditions prevail, for example periods of drought, flood, frost or very high temperatures, both grass and weeds are under stress and therefore not actively growing. This will adversely affect the uptake of herbicide and the grass may be scorched.

Spray Drift

Avoid drift as much as possible by setting the nozzle at the recommended height and working under conditions of light breeze only. Use the correct nozzle and avoid high pressures which create small droplets that are more likely to drift. Small amounts of selective herbicide may cause damage to adjacent broad-leaved vegetation.

Calibration

Ensure equipment is properly calibrated before use.



From top: Chafer grub; Leatherjacket; Daisy; Dandelion; Wormcasts