

Proper Herbicide Application Can Help Your Bottom Line

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Background Information

Before any application can be contemplated one must have sufficient information to make informed decisions. Weed Records can be an important tool to allow one to make these decisions with regard to which herbicide to use, rate of application, method of application and timing. One should be aware of which species are present, their density, and distribution. Are they annuals or perennials? Recordings of weeds present need to be taken at several times during the year. I prefer January for winter weeds, June for summer annuals, and perhaps an additional notation of weeds present in September. Weed records are particularly helpful in planning preemergence herbicide applications.

Site conditions

Site conditions determine to a large extent the probability of a successful application. Site uniformity could be one of the factors contributing to the weedy nature of the site. The long-term solution might lie in improving the uniformity of irrigation, fertility, slope, or turf species. Soil texture and organic matter has an effect on the activity of soil-applied herbicides (more active in sandy soils low in organic matter). Nutrient status of the soil helps to determine which weeds will be present (e.g. clovers under low nitrogen) and how competitive the turf will be.

Disease and insect pressure also affect the competitive ability of the turf. The extent of turf use or wear also affects the competitive ability of the turf and may help to determine which weeds will become problems (e.g. knotweed in compacted soil). Soil moisture determines whether weeds and turf will be under stress, which in turn can affect the outcome of herbicide application. Long-term soil moisture can determine which weeds are present (sedges and *poa* favored by moist conditions).

Time of the year determines which annual weeds will be present and the growth status of perennial weeds. Time of the year is also important in planning the use of preemergence herbicides (e.g. crabgrass preemergence herbicides must be applied by February in most of the warmer regions of California). The age of the weeds is important particularly when using postemergence herbicides (annuals are most easily controlled when in the early seedling stages—older weeds may require higher rates of application or not be controlled at all).

The Application

Granules: Periodically check to uniformity of equipment by operating the equipment over a clean uniform surface. Observe the distribution of granules and the overlap. Make sure that no illegal herbicide residues are left in the process. Do periodic calibration checks. Lay out a large sheet or tarp of known area. Operate the granular applicator over the sheet. Weigh the

granules from the known area and determine if the uniformity and rate of application are as desired. The following example used a 10x20 ft sheet.

Example: 10X20ft = 200ft sq if deposit 75 grams of granules
 $75/454 = 0.165$ lbs $200/43560 = 0.00459$ acres
 $200/1000 = 0.2$ (for per 1000 ft sq)
rate/acre = $0.165/.00495 = 40$ lbs/A
rate/1000 ft sq = $0.165/.2 = .83$ lbs/1000 ft sq

There are various types of granular applicators used in turf. These vary from gravity-flow-gated types, spinning plate types, and air-flow types. Commonly, fertilizer spreaders do double duty as granular applicators. Granules and fertilizers vary in size and density and have varying ballistic characteristics. Therefore, re-calibrating the applicator for various formulations would seem to be prudent.

Sprayers: Hose end sprayers are often used in turf for applying fungicides and insecticides. In my opinion they have no place in the safe and accurate application of herbicides. Check sprayer nozzles for uniformity of flow rate, spacing along the boom, height and overlap. Check sprayer for proper boom pressure, tank agitation and leaks. Operate sprayer at proper speed and make sure that skips and improper overlaps are avoided. Make sure that the sprayer is accurately calibrated to apply the proper rate. An excellent description of sprayer calibration is contained in the first chapter of *Turfgrass Pests* University of California publication 4053.

The some of the most common difficulties that are seen with herbicide spray applications are:

- Wrong herbicide selected
- Wrong rate used
- Non-uniform application
 - Varying nozzle sizes
 - Varying pressures
 - Varying speed
 - Overlaps and skips
- Insufficient tank agitation
- Drift of herbicide to sensitive species
- Spray volume wrong for particular herbicide

All of these difficulties are easily avoidable.

Overall

For best results—keep turf healthy and dense. Do this by selection of competitive turf species, proper management, and occasional “touch ups” with herbicides. *Herbicides should be used to supplement good management.* Know when to hold ‘em or fold ‘em. Sometimes it’s best to “walk away”. Very weedy turf may need complete renovation and a new start with a better management program.