

Weeds in Paradise: The View from the Street

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The average Southern California neighborhood bears little resemblance to anything that might be called “natural”. Paradise was lost centuries ago, after all of us began to arrive and make changes. Our benign Mediterranean climate plus the miracle of irrigation allows urban Californians to enjoy growing plants from all over the world. Our yards and gardens feature Australian shrubs, African turfgrasses, European trees, Chinese groundcovers and jungle tropicals from Brazil. With these plants come weeds from all over the world that are suited to growing along with those plants. Regardless of how many natives the community master plan calls for, the view from the street is not of the native landscape. The view from the street is largely of non native turf and ornamentals and the non native weeds that travel with them.

The sources of weeds in the urban landscape are varied. It might be accurate to say that humankind has been growing and selecting weeds in our yards and homes since before the dawn of agriculture. In modern times, dryland weeds such as Russian thistle (*Salsola tragus L.*) and Telegraphplant (*Heterotheca grandiflora Nutt.*) may dominate prior to development but tend to disappear in irrigated culture as do natives in general. New and smaller weeds such as Spurge (*Euphorbia sp.*), creeping yellow woodsorrel (*Oxalis corniculata L.*) and sowthistle (*Sonchus sp.*) arrive and become established. Often these weeds are introduced in soil transfers or with nursery ornamentals as the new site is landscaped. Woodsorrel seed is spread quickly from lawn to lawn by mowing crews, while sowthistle seed blows in on the wind. The weeds first occupy and then defend niches where they elude control measures by the landscaper and other pests. Small populations of weeds go unnoticed at first, or control measures are reactive and incomplete. A few seasons go by while the weeds reproduce and become resident on the site. It becomes clear that the weeds are as well or better adapted to the site than what we’re trying to grow. After all, they volunteered to be there. Sooner or later, mixed in with everything else, weeds begin to look “natural”.

Weed populations change seasonally and over the years. Weeds that are present in new landscapes may disappear seasonally as better adapted species move in. In winter lawns, annual bluegrass (*Poa annua L.*) occupies shady areas that six months later may be in full sun and filled with crabgrass (*Digitaria sp.*). When crabgrass dies out in November, the annual bluegrass returns. A dense infestation of crabgrass is not typical in new lawns, but is common in older lawns where the desired turf has suffered. In low maintenance lawns and parks, weeds may be the turf, providing green vegetative cover at a mowing height even when the original turfgrass has dwindled to a small percentage of the total. Kikuyugrass (*Pennisetum clandestinum Hocst.*) is an invasive perennial weedgrass that outcompetes all other turfgrasses under coastal conditions. Although not considered to be a high quality turf, kikuyugrass is so competitive that some golf courses have given up fighting it and started cultivating it. The weed has been domesticated, just barely.

Weed control in the ornamental landscapes of California is accomplished through multiple means. Weeds like nutsedge (*Cyperus sp*) can be reduced through shading with competitive plants and keeping irrigation on the light side. Conversely, nutsedge is almost impossible to eradicate when soils are constantly wet during warm weather and direct sunlight reaches the soil. A variety of pre-emergence herbicides are available in sprayable and granular forms to control annual weeds in turf and ornamentals, but they will not control all weeds and may be ineffective against perennials. After weeds emerge, hand weeding, hoeing, mowing, and weed whipping are part of the regular maintenance at many commercial and residential properties. Non-selective, post-emergence spraying with glyphosate is a standard practice for weed control almost any time of year.

With herbicides, applicators need to know how to measure and apply them accurately and at the right time. Timing applications for maximum effect is one of the great arts in weed science. Simply put, applications should be made when the weed is or soon will be at a susceptible stage of growth for maximum effect from the herbicide, usually when the weed is a seedling or young plant. Applications made outside this window of opportunity may miss the weed or catch it at a stage when it is no longer as susceptible to the treatment, resulting in decreased weed control. Application timing must also consider any effects on the turf or ornamentals, which may not be tolerant of the treatment at all times of the year.

**A Generalized Annual Herbicide Application Plan
for Turf and Landscapes in Southern California**

	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
<u>Irrigated Landscapes</u>	----- pre -----						--- pre -----					
	----- post -----											
<u>Non-Irrigated Landscapes</u>	----- pre -----						--- pre -----					
	----- post -----											
<u>Cool Season Turf</u> (tall fescue, perennial rye)	----- pre -----						--- pre ---					
	----- post -----						--- post ---					
<u>Warm Season Turf</u> (bermudagrass, Kikuyugrass, not overseeded)	----- pre -----						--- pre ---					
	----- post -----											
Pre = good time to apply pre-emergence herbicides Post = good time to apply post-emergence herbicides												

Urban weed management programs often follow a generalized plan for herbicide use. The concept is that windows of opportunity for weed control occur with a predictable frequency during the year. Over the years, applications made during these windows stand a better chance of success than do applications made outside the window. This is based on weed behavior, growth stage or condition of the turf and ornamentals, climate patterns, and synergy with other plant care operations. Over the long term, weed control *programs* always outperform weed control *treatments*.

Application accuracy is a major challenge among the irregularly shaped terrain of a golf course or landscape. Where booms cannot go, applicators spread granules or drag hoses and power spray with various guns and nozzles. Preparing to spray, herbicides are often mixed in the tank as a percent solution or at a fixed rate per volume of water. This makes things simple for the applicator, but does nothing to address the question of how much product is being applied over a given area, which is how the label sees it. Applicators who mix the same way but apply widely differing amounts of spray per area will often get widely differing results. So, is it best to spray to glisten, to wet, or to drown? The answer varies with the herbicide and type of job, but always involves knowing how much active ingredient is being applied over how many square feet (or hectares) of area. One simple exercise that all spray crews should try is the 1/128 of an acre calibration method.

The 1/128th of an Acre Calibration Method

- 1) **Measure off a flat area 18.5 x 18.5 feet. This is 342 square feet, approximately 1/128th of an acre.**
- 2) **Pressure up your sprayer and spray it just like you would in the field. Time yourself while doing this.**
- 3) **Spray into a bucket for the same number of seconds it took you to spray the area.**
- 4) **Measure the volume of water in the bucket.**

The Solution: The number of fluid ounces in the bucket is equal to what you would be spraying in gallons per acre. There are 128 fluid ounces in one gallon of water. So, whatever you spray on 1/128th of an acre in fluid ounces is equal to what you would spray in gallons per acre.

Example: If you spray 20 seconds and collect 50 oz of water, you know:

- 1) You spray at the rate of 50 gallons per acre.
- 2) If you spray 1/128th of an acre in 20 seconds, then you spray one acre in $20 \times 128 = 2560$ seconds, or about 43 minutes.
- 3) If Apocalypse herbicide is supposed to go out at 2 qts/A, you would add 2 quarts of Apocalypse to a little more than 50 gallons of water (*don't want to run short!*) and spray all of it on one acre of ground.

That's not all there is to it, but it's a good start!