WEED CONTROL RATES, MIXTURES, AND APPLICATION TECHNIQUES

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Combination of several phenoxy herbicides for a broadspectrum control such as Trimec and Trexan will generally give excellent annual broadleaved weed control even at low rates. To get season-long annual broadleaf weed control, a repeat application may be needed to control plants germinating later in the season. However this type of low rate applications with follow up repeat treatment will often give poor control of perennial weeds such as dandelion.

Herbicide rate selection is vital to effective turf weed control. Specific weed species are generally easy to control with proper herbicide treatments. However, turf herbicides are often sold as mixtures to facilitate broadspectrum control. This broad spectrum approach will generally give excellent results but the applicator should read the herbicide label to ascertain if the proportion of the different herbicides in the mixture meets the rate of a specific herbicide required for control of a specific problem weed. If the proper rate of a specific herbicide is used for the most common problem weed the broadspectrum combination will normally give satisfactory overall results.

Perennial broadleaf weeds may survive low application rates of phenoxy herbicides as well as excessively high rates. When excessive rates of phenoxy herbicides like 2,4-D are applied they may act like a contact type herbicide such as Paraquat. Contact type herbicides only kill the vegetation above ground and do not kill the root material. This allows perennial weeds to grow back from root reserves.

Use of pesticide-fertilizer combinations are growing in popularity because of decreased application costs. Herbicide combinations also can increase the spectrum of weed control. Incompatibility must be considered when making these combinations. There are basically three types of incompatibility: timing, chemical, and physical. Most effective time of application of each pesticide and/or fertilizer must be considered before making a tank mix single application. Chemical compatibility can only be determined by actual application of the tank mix to plant material and evaluation of the results.

Physical compatibility can be checked by mixing pesticide, fertilizer or other carriers in proportions that will actually be applied. Once the combination has been mixed it should be monitored for up to one day to observe any separation or precipitation that may occur. If after one hour the mixture does separate but shaking reforms the mixture, the combination can be used with vigorous agitation. Each batch of fertilizer and each water source should be checked for compatibility as fertilizers may vary in mixing properties and water pH and mineral content influence compatibility.

If more than one pesticide is to be mixed with liquid fertilizer or water, the pesticides should be premixed in liquid fertilizer or water and tested for compatibility by mixing appropriate proportions of all components. The combination should be thoroughly agitated before each additional pesticide is added, and a mixing order should be followed. Generally, unless label directions state otherwise, add the pesticides being tested in the following order: first--wettable powders, second--flowables, third--water solubles, fourth--surfactants and emulsifiable concentrates. Spray tanks should be at least half filled with carrier before the pesticide premixes are added. If the mixture foams excessively, separates or becomes syrupy, do not apply the mixture. Compatibility agents are available which may be added to improve mixing ability.

Even if all components appear compatible, the field tank mixture will require constant, vigorous agitation to prevent separation or improper pesticide distribution in the tank. Do not store pesticide mixtures overnight unless they are constantly agitated. Best results are obtained by applying the entire mixture in one day.

Many pesticides and fertilizer combinations are labeled for tank-mix applications and a grower can legally tank mix any separately labeled pesticides and fertilizers unless the label prohibits this type combination. However, the user or applicator assumes responsibility for performance and other problems resulting from non-labeled combinations.

Application techniques can also greatly influence the degree of control from herbicide treatments. Postemergence herbicides must contact the weed leaf surface and remain there to be effective. High application volume may result in large portions of the herbicide actually ending up at the soil surface rather than on the weed leaf surface. One specific example would be the use of Roundup (glyphosate) in a turf renovation operation. Roundup should not be applied in over 60 gal/A or 1.4 gal/1000 sq. ft. of water or its effectiveness drops rapidly because not enough Roundup remains on the plant.

Volume of carrier and herbicide applied depends upon sprayer pressure, speed of travel and nozzle size. Nozzle size is probably the most important factor as low pressures should be used to reduce drift and spray speed is usually dictated by the type of equipment. Proper nozzle size must be selected to allow uniform coverage and application without excessive nozzle plugging. Nozzles also must be calibrated regularly to adjust for increased gallonage output due to wear.

The three nozzles most commonly used for herbicide applications are the tapered edge-flat fan spray nozzle, the flood nozzle, and the whirl chamber nozzle.

The advantages of the tapered edge-flat fan nozzle are: a) a wide range of spray angles and spray volumes are available, b) applications with good uniformity are possible, and c) nozzles are relatively inexpensive and fit in standard nozzle assemblies. The disadvantage of the tapered edge-flat fan nozzle is greater susceptibility to plugging than the flood or whirl chamber nozzles.

The advantages of the flood nozzles are: a) quite resistant to plugging and b) the nozzle has a 120 degree spray angle which allows placement of the nozzles close to the ground and at a wider spacing than tapered edge-flat fan nozzles. However, the tapered edge-flat fan nozzle is available in a spray angle as wide as 110 degrees which allows a low placement. The disadvantages of the flood nozzle are: a) poor uniformity of application, b) high variability between nozzles, and c) spray pattern is greatly affected by changes in spray pressure. The flood nozzle should not be used with a sprayer that adjusts application rates by changing spray pressure. Maintaining at least 100 percent overlap is essential to achieve acceptable uniformity of application and any reduction in spray pressure will cause a decrease in overlap.

The advantages of the whirl chamber nozzle are: a) quite resistant to plugging, b) resistant to wear, c) available in a 120 degree spray angle, d) spray angle is relatively insensitive to spray pressure, and e) a version of the whirl chamber nozzle called "Raindrop type RA" is available. This nozzle produces a larger, more uniform sized droplet than other nozzles and would be a good nozzle to use for application of herbicides which cause problems with drift. The Raindrop nozzle would also be good for application of incorporated herbicides especially on a hot windy day. More herbicide would reach the soil with less volatility and drift with the large droplets from the Raindrop nozzle as compared to other nozzles. The disadvantage of the whirl chamber nozzle is they do not fit in standard nozzle assemblies.