

SUGGESTED WEED IDENTIFICATION GUIDES FOR TURF AND LANDSCAPE INDUSTRIES

Weeds of Southern Turfgrass

Publication Distributions Center
IFAS Building 664
P. O. Box 110011
University of Florida
Gainesville, Florida 32611
(904-392-1764)
\$8.00 / Particularly useful for weeds of turf and landscapes in the Coastal Plain but appropriate for turf throughout Southeastern US. Color photographs and brief descriptions of each species.

Weeds of the Northeast

Cornell University Press
P.O. Box 6525
Ithaca, NY 14851_6525
607-277-2211
\$29.95 (+ shipping) / Appropriate to the Northern tier of the US (south to North Carolina) and southern Canada. About 300 species are covered. Several color photographs and drawings for each species, descriptions, and identification keys.

Weeds of the West

University of Wyoming
U.W. Coop. Extension Service Bulletin Room
University of Wyoming
PO Box 3313
Laramie WY 82071-3313
\$24.50 / A full color guide focused primarily on weeds of western US agriculture. Multiple color photos of each weed and brief descriptions are included. There is no key.

Weed ID Guide

Southern Weed Science Society
1508 West University Ave.
Champaign, IL 61821_3133
\$97.00 (includes all six sets of weed sheets, index and a binder)
CD_ROM Weeds of the United States is \$120 A 'high-end' and relatively expensive resource, this is available in notebook form (so it can be continually updated) and also a CD_ROM. High quality photographs with brief descrip-

tions. No key is included.

Color Atlas of Turfgrass Weeds

Ann Arbor Press
310 North Main Street
P.O. Box 20
Chelsea Michigan 48118
800-487-2323
\$79.95 (plus shipping) / A color guide to turfgrass weeds. This guide covers weeds

of warm-season and cool-season areas. Several photographs of each species and brief descriptions. Control guidelines are included.

NEWSS web site

<http://www.ppws.vt.edu/newss/newss.htm>
The Northeastern Weed Science Society web site has a listing of internet sources for weed identification guides.

How to get maximum control of summer weeds

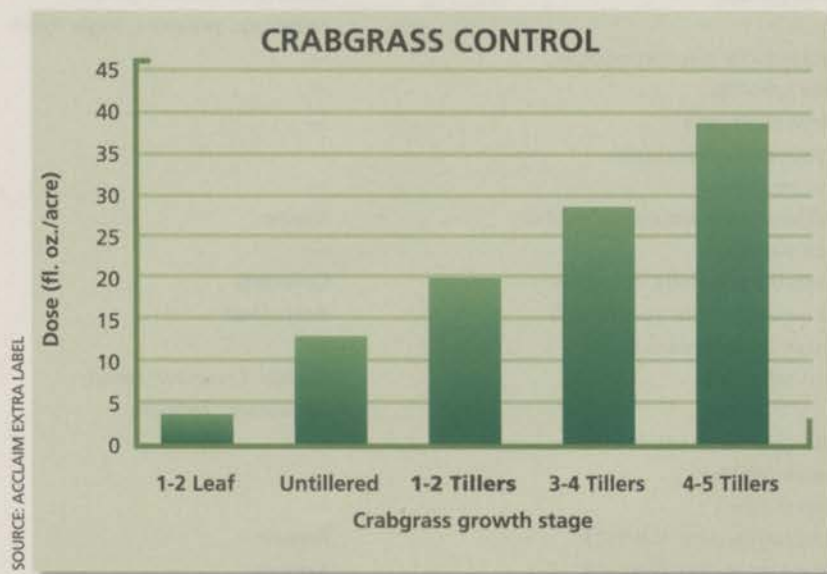
Maximum control of summer annual weeds with preemergence herbicides can be achieved by following these basic guidelines:

- 1. Apply the product at the recommended time and rate.** Weather varies from year to year and it may be necessary to apply earlier than normal. Reference to 30-day weather forecasts can help with this decision.
- 2. Apply the product before rain is expected or water it in with two inches of irrigation water.** Numerous instances of poor weed control occur each year because of the lack of rain or an irrigation event within seven days of preemergence application. Additionally, irrigating-in the herbicide is an excellent method to prevent losses due to volatility and lateral herbicide leaching. Turfgrass preemergence herbicides essentially do not leach in downward direction beyond a depth of one to three inches due to binding to soil colloids and organic matter. But they can move laterally, particularly if heavy rainfall occurs shortly after application. Thus, irrigation will usually improve weed control and will help to prevent lateral movement.
- 3. Calibrate all application equipment.** Uniform application is critical to achieving good weed control.
- 4. If fertilizer/herbicide formulations are to be used, select a product that has uniform particle size.** Be sure the product is applied with a sufficient number of particles to ensure even, uniform application. Also, be sure that the herbicide load is sufficient to apply the recommended rate of the product. Johnson and Murphy (1993) showed that dithiopyr rates can be reduced if applied on a dry granular carrier (Table 3). However, with most other preemergence herbicides the amount of active ingredient applied per acre should be the same either for sprayable or dry formulations.
- 5. Delay mowing until after a rainfall or irrigation event.** Studies have shown that mowing and bagging operations can remove significant quantities of a preemergence herbicide if conducted before the herbicide is moved into the soil by rain or irrigation water.
- 6. Properly maintain the turfgrass.** Following recommended cultural practices that promote normal turfgrass growth and development will enable the turfgrass to compete with weeds. The first line of defense against weed infestations has been, and probably always will be, a thick, healthy, properly maintained turfgrass. Adherence to recommended soil fertility and pH levels, proper irrigation, controlling other pests, and mowing at the correct height and frequency will improve the effectiveness of most chemical weed control programs.

Why herbicides fail

1. Not reading and/or following label specifications
2. Improper weed identification
3. Improper herbicide selection
4. Improper method of application
5. Improper timing of application
6. Unfavorable temperature and/or moisture conditions affecting poor weed growth
7. Age and growth stage of the weed plant — young vs. mature target weed
8. Temperature too hot or too cold
9. Skipped area — spot treating/poor overlapping resulting in poor coverage
10. Foliage not wet — product failed to penetrate leaf hairs
11. Low concentration of mix — not enough active ingredient to manage weed
12. High concentration of herbicide killed the top, not the roots
13. Wind drift — failure to deliver herbicide to the target
14. Rain following application washed off treatment
15. Product too old — deactivated
16. Product caked — spoiled
17. Product separated into layers
18. Chemical and/or physical incompatibility
19. Alkaline (high pH of water) hydrolysis and herbicide degradation
20. Droplet size too large — some herbicides perform better if particle size is finer
21. Improper mixing sequence while using multiple products
22. Insufficient agitation while mixing
23. Past residue in the tank
24. Improper tank cleaning — herbicide residues are difficult to rinse
25. Failure to agitate or shake product containers to mix ingredients before using
26. Failure to add surfactant as needed
27. Weed is difficult to control — morphological, waxy cuticle
28. Failure to incorporate into soil, if required
29. Too much organic matter such as mulch ties up herbicide
30. Product is a contact herbicide and not translocated
31. Pre-emergent activity only
32. Post-emergent activity only
33. Poor systemic activity — foliar vs. root absorbed
34. High temperature closed the stomata opening
35. Large number of weed seeds remains viable in soil for a long time
36. Open bare ground — no mulch or other cover
37. Not post watered in, if needed
38. Water quality of mix — muddy water ties up some herbicides
39. Weed resistance from repeated use of a specific herbicide-resistant biotypes
40. Host plant age — newly planted vs. established trees and shrubs
41. Winter annual weeds in established plantings may need fall or early winter application
42. Booster application not received
43. Booster application not complimentary — e.g. Princep followed by Ronstar
44. Application of herbicide over top of plants may cause injury
45. A combination of pre- and post-herbicides may be needed
46. Insufficient time for the herbicide to act — activity may start in a few days, weeks or may be delayed for a year
47. Weeds blown or carried from nearby areas
48. Susceptible plants — some ground covers may not be labeled
49. Plant with deep growing parts in soil — rhizomes or tubers
50. High weed pressure — too many weed seeds: crabgrass, dandelion or annual bluegrass

— Bal Rao, Ph.D.



As crabgrass grows, higher herbicide doses are required to obtain control. This chart illustrates the doses of Acclaim Extra recommended to control different sized crabgrass plants.