

BROADLEAF WEED CONTROL UPDATE

D.S. Gardner and J. R. Street, Dept. of Horticulture and Crop Science, The Ohio State University

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Several new herbicide active ingredients and combination products have been introduced to the market during the past few years. Perhaps most notable was Imprelis™. However, sales of the product were suspended in August 2011 due to concerns about possible non-target injury on pines, spruces, and other ornamental species. It is unclear at the time of this writing if, or when, Imprelis will again be made available for use on turfgrass. There have been many other herbicides introduced for broadleaf weed control in the past few years. In fact, the number of active ingredients registered for broadleaf weed control in turfgrass has doubled since the year 2000. This article will review those newer herbicides that can be used on cool season turfgrasses (released since 2010). You should always consult the label prior to use to verify that the product is safe for your type of turf.

NEWER ACTIVE INGREDIENTS FOR BROADLEAF WEED CONTROL

Florasulam

This is a newer postemergence herbicide from Dow AgroSciences that is marketed as Defendor™ herbicide. It is currently available in a co-pack with Dimension™ 2EW. Defendor herbicide is not intended for use during the summer months but rather Dimension and Defendor™ should be applied together in the spring and this can either be with one application or with split applications

about 8 weeks apart. Florasulam works well in cooler temperatures. It has a very low use rate compared to most other herbicides used in turfgrass. Defendor™ can be used safely on all major turfgrasses and should be applied at typical preemergence crabgrass timing. To prevent dandelion flowering, application should be made prior to dandelion bloom. Weeds controlled include dandelion, white clover, common and mouse-ear chickweed, mustard, and shepherd's purse. Because it is meant to go out with Dimension, the application is made considerably earlier than other broadleaf herbicides. However, florasulam results in very long lasting control. Research conducted at The Ohio State University shows that a single application of Defendor™ herbicide will give >90% control of both dandelion and white clover for 84 days. On plots receiving sequential applications control was still nearly 100% at 98 days after the initial application. An application on March 31 resulted in a 100% decrease in dandelion bloom. This product may be an excellent choice in areas that are sensitive to the application of 2,4-D.

Chelated iron

Fiesta® herbicide contains a proprietary chelated iron that, when applied to turf, acts as a selective postemergence herbicide against a wide spectrum of broadleaf weeds. Control is very rapid, with nearly 100% burn down achieved often within 24 hours. It is important to note that this is a contact herbicide. Preliminary results at The Ohio State University suggest that when using this product to achieve long term weed control, the total amount of Fiesta applied over a season is at least as important as the schedule of the applications. Best results thus far have been with three applications of an 8% solution applied at 2.5 gallons per 1000 square feet at 21 day intervals. This has resulted in excellent control of dandelion, white clover and ground ivy and good control of broadleaf plantain for up to 70 days. Since burn down is so rapid, the amount of control is actually longer than with a traditional herbicide that might take up to 28 days to achieve control. This product is legal to use in Canada, where there is a ban on pesticide use in turf and will be an important tool for turfgrass managers in locations in the United States that are under similar restrictions. The product can discolor the turfgrass by turning it dark green or even black if used in hot weather. Because of this, it should be used in cooler weather (50-65°F) to reduce the potential

darkening of the turfgrass.

NEWER COMBINATION PRODUCTS FOR BROADLEAF WEED CONTROL

There are many other combination herbicides registered for use in turfgrass. Table 1 provides a summary of those combination products that can be used on cool season turfgrass. Some of the other more recent additions to this list include 4 Speed® (2,4-D, MCPP, dicamba, and pyraflufen), 4 Speed XT® (2,4-D, dicamba, triclopyr, and pyraflufen), and T-Zone® (2,4-D, dicamba, triclopyr, and sulfentrazone). Each provides excellent control of broadleaf weeds.

2DQ

This product contains 2,4-D, dicamba and quinclorac. Even though this product contains quinclorac, the rate is lower so it will not have activity on crabgrass. The quinclorac in this formulation serves strictly as a broadleaf herbicide. The performance of this herbicide is comparable to many of the three way herbicides on the market, such as Trimec, Escalade 2 or Triplet.

Last Call™ Herbicide

This is a new combination herbicide from NuFarm that contains the active ingredients dicamba, fluroxypyr and fenoxaprop. Because it contains fenoxaprop it has activity not only on broadleaf weeds, but also on crabgrass. Fenoxaprop is typically thought to be more active on leaf stage crabgrass than on tillering crabgrass.

However, our research suggests that Last Call can be effective against crabgrass that is in the 1-2 or even 2-4 tiller stage at application. It is labeled for golf fairways and roughs, residential and commercial turfgrass and sports fields and is safe on Kentucky bluegrass, perennial ryegrass, tall fescue, fine fescue and zoysiagrass. Do not use on desirable bermudagrass or creeping bentgrass. In fact, Last Call is also labelled for selective removal of bermudagrass. Another important note with this product is that tank-mixing it with 2,4-D may reduce the effectiveness of Last Call. Do not apply Last Call within 21 days of a 2,4-D application, or 5 days before a 2,4-D application. Consult the label for specifics.

Change Up™ Herbicide

Another new combination herbicide from NuFarm, Change Up contains the active ingredients MCPA, fluroxypyr and dicamba. Control of broadleaf weeds is very good with this formulation and this is a good product to consider in areas that are sensitive to the use of 2,4-D. You should use the 1.25 pts per acre rate on creeping bentgrass. But, do not use on golf course putting greens or tees.

Combination Herbicides Containing Quinclorac

Many newer combination products have been formulated in an attempt to control both broadleaf weeds and grassy weeds postemergence with a single application. Some of these products also will control yellow nutsedge. Quinclorac is of course not new, but increasingly quinclorac is appearing in combination products, not just for crabgrass control, but also for broadleaf weed control, particularly clover. Products that control both crabgrass and broadleaf weeds include Quincept® (2,4-D, dicamba, and quinclorac), Onetime® (MCPP, dicamba and quinclorac), Q4® (2,4-D, dicamba, sulfentrazone, and quinclorac) and Solitaire® (quinclorac and sulfentrazone). Spring time turfgrass establishment from seed has always been a challenge because of competing weed pressure, particularly crabgrass. However, SquareOne®, which combines quinclorac and carfentrazone, is labeled for and can be effective when establishing turfgrass from seed.

TIMING OF APPLICATION OF BROADLEAF HERBICIDES

Turfgrass managers typically will apply broadleaf herbicides in the spring for the control of weeds such as dandelion, white clover, and the plantains. Ironically, this can result in large bare patches that are filled in by annual grasses, such as crabgrass, and annual broadleaf weeds, such as spurge. In addition, weed control tends to be less effective with springtime applications. Dandelions, white clover, and several other key lawn weeds, are perennials. That is, they persist from year to year via an underground storage structure that may or may not include a taproot.

It is probably not possible or practical to tell a client in April to hold off on dandelion control until November. However, fall always has, and will continue to be, the best time of year to control perennial broadleaf weeds (Figure 1). Fall herbicide applications offer several advantages over springtime applications. Most annual ornamental plants and vegetables have reached maturity and leaves of trees and shrubs are beginning to turn color and fall off the plant. Therefore, the chance of non-target injury due to drift is greatly reduced. Also, winter annual weeds such as henbit and common chickweed are controlled if the application is done after they germinate. But, the major advantage of fall applications is effectiveness of control.

Perennial weeds typically generate new vegetative growth in the early spring, flowers in late spring or early summer, and then persist into fall.

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During the spring, when the weed is generating new vegetative growth, it uses carbohydrates stored over winter in the underground storage structures. To bring these materials to the generating leaves, the plant translocates the carbohydrates from below ground upward. In order to get effective control the herbicide must translocate throughout the root system and the underground structures. If you apply herbicides in the spring they must move against this upward translocation stream. Spring applied herbicides are almost never as effective as they could be, because the herbicide can't as effectively reach all of the below ground structures of the weed. During the fall, the weed begins to store carbohydrates for over-winter and for next year's growth. When this occurs, the translocation stream is downward. Herbicides applied when the plant is actively translocating carbohydrates underground are also more effectively moved into the roots and storage structures, resulting in better overall control of below ground structures.

In most situations you will encounter annual and perennial broadleaf weeds in the same turf stand. However, in rare instances in a mature lawn (or if you are seeding a lawn), you may encounter a turf area with annual broadleaf weeds only. If this is the case, then fall application of herbicides are probably not warranted since annual weeds are at the end of their life cycle. The only situation in which you would target annual weeds in the fall is if their cover is so great as to interfere with good growth of the turfgrass. Annual broadleaf weeds and annual grassy weeds are more appropriately controlled using preemergence herbicides applied in the spring. If, however, you encounter a significant percentage of perennial weeds, then fall is the best time to spray. While not all-inclusive, Figure 1 accounts for a significant percentage of the perennial broadleaf weeds present in most lawns.

The key to maximizing control of perennial broadleaf weeds is to apply the right herbicides at the right time of year.

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Figure 1. Most of our difficult broadleaf weed problems in turfgrass are caused by perennials. Oftentimes, best control of perennial broadleaf weeds can be achieved with a late fall herbicide application.

PERENNIAL BROADLEAF WEEDS

FIGURE INCLUDES RECOMMENDED TIMING OF HERBICIDE APPLICATION FOR BEST CONTROL.



White Clover
Trifolium repens
Fall



Dandelion
Taraxacum officinale
Late spring or fall



Wild Violet
Viola papilionacea
Spring or fall



Blackseed Plantain
Plantago rugelii
Fall



Buckhorn Plantain
Plantago lanceolata
Fall



Canada Thistle
Cirsium arvense
Fall



Mouse ear Chickweed
Cerastium vulgatum
Fall



Curly Dock
Rumex crispus
Fall



Ground Ivy
Glechoma hederacea
Fall

Table 1. Broadleaf Herbicides and Combination Products

Products	2,4-D	2,4-DP	MCPA	MCPP	Dicamba	Clopyralid	Fluroxypyr	Quinclorac	Triclopyr	Carfentrazone	Sulfentrazone	Pyrflufen	Fenoxaprop ¹
Formula 40, Dymec, Weedone LV4, Weedar 64, LESCO A-4D, Weedestroy AM-40, Opti-Amine, Hardball, Barrage HF													
MCPP 4-Amine, Turfgro MCPP 4K, Mecomec 2.5, Mecomec 4 2 Plus 2													
Banvel, Diablo, Vanquish													
Four-Power Plus, Super D Weedone													
Trimec Classic, Trimec 899, Trimec 992, Trimec LAF-637, Strike 3, Three Way Selective, Trimec Bent, Bent Selective, Triplet WS, Triplet SF, Trexsan, Mec-Amine-D, Mec Amine-BG, Trimec Plus, 3-D													
MCPA 4-Amine													
Tri-Power, Trimec Encore													
Weedone DPC, Turf D-DP													
Trimec Turf Ester, Super Trimec, Brushmaster													
Three Way Ester, Tri-ester, Tri-amine, Dissolve, Spoiler													
Tri-ester II, Tri-amine II													
Turflon Ester Ultra, Triclopyr 4													
Chaser, Chaser 2, Turflon II amine													
Cool Power, Horsepower, Three-Way Ester II, Eliminate													
Lontrel													
Chaser Ultra													
Confront, 2-D													
Momentum													
Battleship													
Millenium Ultra 2, Millenium Ultra Plus													
Spotlight													
Chaser Ultra 2													
Tailspin													
Battleship III													
Change Up													
Last Call													
Momentum FX, Momentum FX2													
Escalade 2													
Strike Three Ultra 3													
Drive, Drive XLR8, Quinclorac 75 DF, QuinPro, Eject 75DF													
Onetime													
Quincept, Momentum Q, 2DQ													
Quicksilver, Quicksilver T & O													
Shutout													
Speedzone													
Powerzone													
Dismiss													
Surge, SureZone													
Q4, Q4 Plus													
Octane													
Solitaire													
4 Speed, Redzone 2													
4 Speed XT													
T-Zone													

Note: Not all products mentioned are still currently for sale. Mention of trade name is for example only and does not constitute endorsement over other products which may be similar. ¹fenoxaprop included in combination products but is a grassy herbicide

Figure 2. Common winter annual broadleaf weeds of the Midwest.



Common Chickweed –

Stellaria media

(Glabrous leaves are rounded at the base and pointed at the tip. Small white flowers with deeply notched petals)

Henbit –

Lamium amplexicaule

(Square stems. Terminal leaves attached directly to main stem. Lower leaves on short branches)

Hairy Bittercress –

Cardamine hirsuta

(Long narrow siliques [seed pods] explosively disperse seed up to 10 feet. Alternately arranged round leaflets)

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You should also consult the label to determine if the addition of a surfactant is warranted. The best time to apply herbicides is generally around the same time that the last mowing and fertilization of the year occurs (November, and, depending on weather conditions, even into the first two weeks of December in the Midwest). Air temperatures should be consistently in the 40's and 50's. Many university trials have proven that the best control of perennial broadleaf weeds occurs if they are sprayed at this time. There are a couple of things to remember about late fall herbicide applications. The plant is not metabolizing as quickly, and you will not see the dramatic burn down and twisting, epinasty that you normally see with an application in warmer weather. However, while it may not appear as though the application was effective, if you return to that

spot next spring the weed will be dead and not coming back. Also, most broadleaf herbicides come in either amine or ester formulations. This is true of the phenoxy herbicides, including 2,4-D and MCP, and the pyridinoy herbicides such as triclopyr. The ester formulation tends to penetrate the weed tissue better, resulting in more complete control. This is especially true as temperatures cool in the fall. Ester formulations should be your choice when spraying in temperatures below 60 degrees. The caveat to esters is that they are very volatile and should be avoided when temperatures are warmer than 65 to 70 degrees. Remember that postemergence herbicides are most effective if applied during sunny weather with no rainfall within 24 hours of application. Another important advantage of fall broadleaf herbicide applications is that you can get good control of germinated winter annual broadleaf weeds (Figure 2).

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