

January 2002

## FOXTAIL (pigeongrass) CONTROL IN SMALL GRAINS – 2002

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Making the decision on whether to control foxtail in small grains is not always easy. Research has shown that infestations of foxtail often will not decrease wheat and barley yields, however; heavy foxtail infestations can cause harvest problems (especially when straight combining) and can cause dockage when the grain is delivered to the elevator.

There are some situations when the cost of a herbicide treatment for foxtail control is not justified. They would include:

1. When foxtail infestations are light - Less than 20 plants/ft<sup>2</sup>.
2. When the foxtail emerges after the crop is in the 3 to 4-leaf stage. This is especially true for barley. Once the small grain is in the 3 to 4-leaf stage, it can usually out compete foxtail, thereby making a herbicide treatment unnecessary. However, if the foxtail population is heavy (30 plants/ft<sup>2</sup> or more) control may be needed.

Moisture stress is another factor that complicates this situation. Weeds will generally cause greater yield losses under drought conditions, therefore foxtail control would be more important in droughty fields.

Spring wheat variety is also a factor. Research has shown that the spring wheat variety "2375" does not compete well with foxtail. Therefore, it is more important to control foxtail in "2375" fields than in fields planted to other varieties.

Making the decision on whether to apply a herbicide for foxtail control is more complicated when the foxtail is emerging with or shortly after the small grain; as is the case in many fields this year. Some of the options to consider for foxtail control this year are:

1. If the foxtail infestation is heavy, and is emerging with the small grain, consider harrowing or rotary hoeing as soon as possible. See the University of Minnesota Weed Science Web Site for results of recent research on non-chemical control of foxtail in small grains.  
Web site: <http://www.agro.agri.umn.edu/rp/appliedweeds/>
2. If a harrow or rotary hoe is not an option, then consider a herbicide. If wild oats are also in the field, the herbicides of choice are Hoelon, Cheyenne, Tiller, Puma, Discover, and Everest. Hoelon needs to be applied to small foxtail (1 to 3-leaf). If wild oats are not present, then Stampede EDF can also be considered.
3. If the foxtail infestation is light to moderate, then it may be possible to wait and see if the crop will be able to out compete foxtail. If foxtail is still a problem by the time the small grain is in the 5 to 6-leaf stage, then Tiller, Cheyenne, Puma and Discover can be used for control.

The following is a more in depth discussion on the control options for foxtail.

### **Foxtail Control:**

It is important to consider all methods of foxtail control. Harrowing or rotary hoeing the field can be an effective method of foxtail control if it is done when foxtail is just emerging. Once foxtail is in the 2 to 3-leaf stage, harrowing or rotary hoeing will not give effective foxtail control. Small grains can be harrowed or rotary hoed until the 3 to 4-leaf stage with little effect on yield.

Once it is decided that foxtail needs to be controlled with a herbicide, there are currently three postemergence herbicides to choose from.

### **PREMERGENCE FOXTAIL CONTROL:**

#### **Treflan (trifluralin):**

**Treflan** can be applied at 0.5 to .075 lb/A in the fall preplant incorporated or preemergence incorporated in the spring for foxtail control in spring wheat, durum and barley. Treflan can be applied preplant incorporated in the spring to barley only. Treflan in the spring should be applied preemergence and shallowly incorporated twice at right angle with a harrow. The small grain should be seeded 2 to 2.5 inches deep to permit incorporation above the seed.

Far-Go may be applied in combination with trifluralin (Treflan) at 0.5 to 0.75 lb/A for wild oat and foxtail control in spring wheat, durum, and barley in the spring after seeding. A combination of Far-Go and trifluralin is available as a package mix called Buckle. Buckle can be applied in the fall or spring to land that will be planted to barley or durum.

### **POSTEMERGENCE FOXTAIL CONTROL:**

#### **Achieve (tralkoxydim):**

**Achieve** is labeled for control of foxtail and wild oats in barley. **Due to crop injury potential, Achieve is NO LONGER labeled for use in spring wheat and durum in Minnesota.**

Apply Achieve to barley in the 2 to 6-leaf stage. Apply Achieve to 1 to 6-leaf wild oat. Achieve use rate is 0.44 to .60 lb/A. Use the high rate when soil is dry and weeds are large. Apply Achieve in at least 10 gpa by ground or 5 gpa by air. Always add Supercharge adjuvant to the spray solution at 4 pts/100 gals of water (0.5% v/v). Ammonium sulfate at 15 lbs/100 gals of water can also be added.

Numerous broadleaf herbicides can be tank-mixed with Achieve. Achieve can be tank-mixed with MCPA ester, Bronate, Buctil, Curtail M, and Stinger. Achieve can be tank mixed with 2, 4-D ester when ammonium surfactant is added. DO NOT tank mix with amine formulations of labeled herbicides. DO NOT tank mix with sulfonyleurea herbicides.

Achieve can cause barley injury under cool, wet conditions. DO NOT apply Achieve to barley that has a heavy dew.

#### **Discover (clodinafop):**

**Discover** is labeled for postemergence control of foxtail and wild oats in spring wheat and durum. Discover is **NOT** labeled for use in barley and winter wheat. Apply Discover from the 2 leaf-stage until

the emergence of the 4<sup>th</sup> tiller of spring wheat and durum. Apply when foxtails are in the 1 – 5-leaf stage.

Discover is sold in a case that contains the herbicide and DSV adjuvant packaged in separate containers and treats 40 to 50 acres depending on the use rate. Discover must always be applied with the DSV adjuvant. DO NOT add any additional adjuvant. Apply Discover at 4.0 fl oz/A plus DSV adjuvant at 12.8 fl oz/A for green foxtail and yellow foxtail control

Discover can be tank-mixed with most broadleaf herbicides for green foxtail and wild oat control. However, always follow the label of the tank-mix broadleaf herbicide. For green foxtail and wild oat control, Discover can be tank-mixed with Starane, Starane+Sword, Bronate, Bronate Advance, Buctril, Curtail, Curtail M, Harmony Extra, Harmony GT, Harmony GT + MCPA, 2,4-D amine, MCPA amine and ester, Stinger, Curtail, Banvel, and Clarity. Apply Discover in a minimum spray volume of 5 gpa by ground and 3 gpa by air.

For yellow foxtail control, Discover can be tank-mixed with Bronate, Buctril, and Harmony GT.

Wheat injury can occur when air temperatures are below 40 F during the period 48 hours before and after a Discover application. Do not graze livestock or feed forage or hay from treated areas for a minimum of 30 days following a Discover application. Do not apply Discover within 60 days of harvest.

University of Minnesota research has shown that spring wheat and durum tolerance to Discover is good to excellent. Discover has provide good to excellent wild oat control in research plots.

#### **Everest (flucarbazone):**

**Everest** is labeled for foxtail and wild oat control in spring wheat and durum. Everest is **NOT** labeled for use in barley. Apply Everest from the 1 to 6-leaf stage of spring wheat and durum. Apply when green and yellow foxtail is in the 1 to 4-leaf stage.

The use rate of Everest is 0.41 oz/A for green foxtail control and 0.61 oz/A for yellow foxtail suppression. Spring wheat and durum tolerance is fair to good. For optimum foxtail control and crop safety, Everest must be tank-mixed with a surfactant and a broadleaf herbicide listed on the label. Apply a non-ionic surfactant at 1 qt/100 gallon or 0.25% v/v. Always tank-mix Everest with 2,4-D amine or ester, Buctril, Bronate, Bronate Advance, Curtail, Curtail M, Harmony Extra + 2,4-D amine or ester, Harmony GT + 2,4-D amine or ester, or MCPA amine. See label for rates and tank-mixing instructions. Do NOT tank-mix Everest with any broadleaf herbicide not list on the label.

Everest does have soil activity and recropping restrictions. Sugarbeets, barley, canola, and potatoes should not be planted until 9 months after application. Field peas can be planted 11 months after application. See label for additional recropping restrictions.

University of Minnesota research has shown that Everest will provide good green foxtail control and fair yellow foxtail control. Everest can cause wheat injury under adverse weather conditions.

#### **Hoelon (diclofop):**

Hoelon can be applied to all varieties of wheat, barley and durum. Hoelon should be applied when foxtails are in the 1 to 4-leaf stage. For best control, research has shown that Hoelon should be applied

before the 3-leaf stage, especially when using the 2 pt/A rate. Hoelon can be applied at 2 to 3.3 pts/A (0.75 to 1.25 lb/A) in spring wheat and durum, and 2 to 2.67 pts/A (0.75 to 1.0 lb/A) in barley. Do not use over 2.67 pts/A in barley, as barley injury will result.

When using the 2 pt/A rate of Hoelon in spring wheat and durum, the addition of 1 qt/A of crop oil concentrate has been shown to increase wild oat control. DO NOT use crop oil concentrate on barley. When wild oat plants have reached the 3 to 4-leaf stage and/or plants are under moisture stress, the higher labeled rates should be used. Cool temperatures following application increase wild oat control with Hoelon.

Wild oat control with Hoelon will be reduced when wild oats are growing under moisture stress. Increasing the rate used can somewhat overcome this problem.

**Hoelon has the potential to give severe barley injury under cool, wet conditions.** The Hoelon label states not to apply Hoelon to barley if daily minimum temperatures reach 40°F or less for three consecutive days before application. Also to not apply when moisture content of the field is at field capacity. Hoelon should also be applied to barley before tillering.

It is important to carefully select the proper broadleaf herbicide to tank mix with Hoelon. Many broadleaf herbicides, when tank mixed with Hoelon, decrease the grass control of Hoelon. Hoelon can be tank mixed with Buctril (bromoxynil) or a low rate of MCPA ester (0.05 lb/A) plus Buctril. Do Not tank mix Hoelon with any other broadleaf herbicide. If a broadleaf herbicide is used, separate the Hoelon treatment and the broadleaf treatment by a minimum of 5 days.

The 2001 growing season will be the last season that Hoelon will be available, as Aventis will no longer be producing Hoelon.

#### **Puma (fenoxaprop + safener):**

**Puma** is labeled for control of foxtail and wild oats in spring wheat, durum, and barley. Crop tolerance to Puma is good to excellent, with spring wheat having greater tolerance than durum or barley.

Apply Puma to wheat and barley from the 2-leaf up to 6-leaf stage. Do not apply to barley after jointing. For greatest crop safety – do not apply to wheat after jointing. Puma will control susceptible grass weeds in the 2-leaf to 2-tiller stage. Apply Puma in at least 10 gpa by ground and 5 gpa by air. Puma can be tank-mixed with numerous broadleaf herbicides, but it is important to follow label restrictions to avoid a reduction in grass control.

Puma use rate is .33 to .67 pt/A. Puma at .33 pt/A controls green foxtail, foxtail millets, and volunteer corn, at .4 pt/A controls yellow foxtail and proso millet, at .67 pt/S controls wild oat and barnyardgrass.

Numerous broadleaf herbicides can be tank-mixed with Puma but it is important to follow label restrictions. For control of green foxtail, Puma at .33 pt/A can be tank-mixed with Buctril, Bronate, Bronate Advance, MCPA ester, Curtail M, Stinger, Starane, Express, Harmony Extra, Harmony GT, Banvel, Clarity, and Tordon. Puma at .4 pt/A can be tank-mixed with MCPA ester, Stinger, Starane, Curtail M, Banvel, Clarity, Peak, and Tordon for yellow foxtail control. Puma at 0.67 pt/A can be tank mixed with Buctril, Bronate, Bronate Advance, Curtail M, Stinger, Starane, MCPA ester, Harmony Extra, Harmony GT, Peak, and Tordon. Puma can also be tank-mixed with Furadan, Sevin XLR Plus, Mancozeb, Tilt, or Benalate. DO NOT apply Puma to corn, tame oats, or rye. Do NOT apply Puma

within 60 days of wheat harvest or 57 days of barley harvest.

Research at the University of Minnesota has shown that Puma will good to excellent control of green and yellow foxtail with good crop safety.

### **Stampede EDF:**

Apply Stampede to foxtail in the 1 to 3-leaf stage and at the 2 to 5-leaf stage of hard red spring wheat or the 2 to 4-leaf stage of durum, oats, and barley. It is important to apply Stampede to small foxtail for effective control.

To decrease crop injury, Stampede EDF should always be tank mixed with MCPA ester. The use rate is 1.25 lb/A of Stampede EDF and 0.5 pt/A of MCPA ester. A 25 lb bag of Stampede EDF will treat 20 acres.

Many producers do not like to use Stampede because temporary yellowing of the crop usually occurs within three days of application. Research at the University of Minnesota has shown that this yellowing will not cause a yield loss. The will grow out of this injury within 7 to 10 days.

It is important to following the mixing instructions for Stampede EDF. This formulation may not mix with water as readily as other dry flowables.

### **Tiller (fenoxaprop + MCPA ester + 2,4-D ester):**

Tiller is labeled for postemergence foxtail control in hard red spring wheat and barley. The use rate for Tiller is as follows:

- 1.0 pt/A for green foxtail control.
- 1.2 pts/A for yellow and green foxtail control.
- 1.7 pts/A for fields with mixed populations of foxtail and wild oats.

Apply Tiller after the spring wheat begins to tiller ( 3-4 leaf stage) but prior to jointing stage (6-leaf stage). Tiller will control larger foxtail (3-leaf to 2-tillers) and can be applied later than other postemergence herbicides used for foxtail control in hard red spring wheat. In University of Minnesota research, Tiller has given good to excellent control of both yellow and green foxtail. DO NOT apply Tiller to durum wheat, oats or rye. DO NOT apply more than one application of Tiller per season.

Spring wheat tolerance to Tiller is Fair - Good. Barley tolerance to Tiller is only fair. DO NOT apply Tiller to barley that is stressed. Always use the lowest rate possible to reduce crop injury.

Tiller can be tank mixed with some broadleaf herbicides for additional broadleaf weed control, however, it is important to carefully select the proper broadleaf herbicide. Many broadleaf herbicides, when tank mixed with Tiller will decrease the grass control of Tiller. The following is a summary of the tank mixing options for Tiller, however, it is important to also read and follow all restrictions on the label. For control of green foxtail, Tiller at 1 pt/A can be tank mixed with Banvel, Buctril, MCPA ester, Stinger, and Tordon. Tiller at 1.2 pts/A, for green foxtail control, can be tank mixed with Harmony Extra and Express. However, in fields with mixed populations of green and yellow foxtail, Tiller applied at 1.2 - 1.7 pts/A, can be tank mixed with Stinger, MCPA ester, Tordon, and Banvel. DO NOT apply Banvel after the 5-leaf stage, and since Tiller should not be applied until the 3-leaf stage, the time when Banvel and Tiller

can be tank mixed is very short. DO NOT apply Tiller + Banvel (dicamba) on barley due to the potential for crop injury.

There were several cases of hard red spring wheat injury due to Tiller applications last year. The injury was associated with cool, wet weather conditions and late applications. In most cases, the spring wheat recovered from this injury, and there was no yield loss. To decrease the crop injury potential, DO NOT apply Tiller after jointing stage. Read the label for additional restrictions or precautions.

**Cheyenne (fenoxaprop + MCPA ester + thifensulfuron + tribenuron):**

Cheyenne is labeled for postemergence control of foxtails and wild oats and most annual broadleaf weeds in hard red spring wheat. Cheyenne is **NOT** labeled for use in durum wheat, barley or oats.

Apply Cheyenne to spring wheat from the 3-leaf stage to the end of tillering (6-leaf stage). DO NOT apply after jointing. Apply when grass weeds are 4 inches tall or less. DO NOT tank mix Cheyenne with any other herbicide, additive, or fertilizer. See the label for mixing instructions.

Cheyenne can NOT be applied by air.