Dallisgrass Control Options without MSMA

J.T. Brosnan, Ph.D.
University of Tennessee
Dallisgrass

Beard 2002; Elmore and Cudney 2001; Holt, 1956; Piper 1924
MSMA Update

Will continue beyond June 31, 2013 for golf courses, sod farms, and highway rights-of-way.

NAS review of inorganic arsenic

Expected to take up to 41 months

Use directions from 2009 can be followed

October 2012 Letter from OAPTF
MSMA continues to be on the market

In a September 14, 2012, letter to the Organic Arsenical Products Task Force (Task Force), the U.S. Environmental Protection Agency (EPA) confirms that under the terms of the 2009 agreement with EPA, the sale, distribution, and use of MSMA products labeled for golf course, sod farms, and highway rights-of-way will continue for at least three years. Regarding cotton -- the 2009 Agreement with EPA provides for unconditional re-registration for use of MSMA on cotton.

Under the terms of the agreement between EPA and the Task Force, EPA is required to provide to the Task Force a written determination regarding EPA's review of certain scientific information submitted by the Task Force to EPA. EPA has indicated that its review of this information will occur after the risk assessment of inorganic arsenic is completed under the EPA Integrated Risk Information System (IRIS) program. Additionally, Congress has directed that the IRIS assessment of inorganic arsenic be further peer reviewed by the National Academy of Sciences. These scientific processes and the peer review are expected to take a minimum of three years to complete.

Thank you for your support of our products, and the faith you have shown in our continued commercial relationship!

Frequently Asked Questions Regarding Changes in EPA Agreement on MSMA - October 2012

http://www.oaptf.com
Use Directions

- Golf courses (existing)
  - Spot treatment only (spot = 100 sq. ft.)
  - No more than 25%
- Sod farms
  - Two broadcast applications per crop
  - 25-ft buffer strip from water
The Turfgrass Industry Officially Loses MSMA

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A. J. Patton

Introduction

Monosodium methanearsonate (MSMA) is a commonly used herbicide in warm-season climates. Since the 1960s, this product has been used to manage infestations of various crabgrass species (Digitaria spp.) as well as goosegrass (Eleusine indica) and dallisgrass (Paspalum dilatatum) in warm-season turf. MSMA, an organic arsenical herbicide, contains an organic form of the element arsenic. In its organic form, arsenic is relatively inorganic, the source of the arsenic found, and that there was no way to conclusively say that the arsenic was from applications of MSMA.

Final Ruling on MSMA Use for Turfgrass Weed Management

On September 30, 2009, the EPA announced the final decision regarding the use of MSMA for agricultural and turfgrass weed management.
Lawn Care and Sports Turf
Options in Tall Fescue Limited to Fluazifop
Early and Late Postemergence Control of Dallisgrass in Tall Fescue

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Abstract
Dallisgrass (Paspalum dilatatum Poir.) is a problematic turfgrass weed throughout the southern United States. A two-year study was conducted evaluating applications of fluazifop at 105 g/ha, mesotrione at 280 g/ha, and fluazifop + mesotrione at 105 + 280 g/ha, respectively, for control of dallisgrass in tall fescue (Festuca arundinacea). Treatments were applied in early spring shortly after dallisgrass broke dormancy [< 160 growing degree days (GDD_{10C})] and early summer well after dallisgrass broke dormancy (> 500 GDD_{10C}). Yearly accumulated GDD_{10C} values were calculated using a base temperature of 10°C beginning on 1 January. Applied at < 160 GDD_{10C} in 2008, a single application of fluazifop provided 73% control of dallisgrass at 28 days after treatment (DAT) and 90% control at 76 DAT. When applied at > 500 GDD_{10C} in 2008, a single application of fluazifop only provided 46% and 0% control of dallisgrass at 28 and 76 DAT, respectively. Similar trends were also observed with sequential applications each year. Dallisgrass control with fluazifop + mesotrione was not greater than fluazifop alone at either timing. These data suggest dallisgrass is more susceptible to fluazifop when emerging out of dormancy in early spring.
Growing Degree Days

\[ \text{GDD}_{10\degree C} = \left( \frac{T_{\text{max}} + T_{\text{min}}}{2} \right) - T_{\text{base}} \]

\[ T_{\text{base}} = 10\degree C \]

Beginning 1 January

**Measures Accumulation of Heat**

McMaster and Wilhelm, 1997
2011 Cumulative GDD_{10C} Accumulation in Knoxville, TN
2011 Cumulative GDD$_{10C}$ Accumulation in Knoxville, TN
**Cooling Degree Days**

\[ \text{CDD}_{22^\circ \text{C}} = T_{\text{base}} - \left[ \frac{(T_{\text{max}} + T_{\text{min}})}{2} \right] \]

\[ T_{\text{base}} = 22^\circ \text{C} \]

Beginning 1 August

**Measures Accumulation of Cooling**
2011 Daily Temperature in Knoxville, TN

Average Temperature (°F)

1/1/11  2/1/11  3/1/11  4/1/11  5/1/11  6/1/11  7/1/11  8/1/11  9/1/11  10/1/11  11/1/11  12/1/11
2011 Daily Temperature in Knoxville, TN
2011 Daily Temperature in Knoxville, TN
### Herbicide Application Timing

<table>
<thead>
<tr>
<th>Timing</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 GDD</td>
<td>7 April</td>
<td>22 March</td>
</tr>
<tr>
<td>175 GDD</td>
<td>22 April</td>
<td>14 April</td>
</tr>
<tr>
<td>375 GDD</td>
<td>18 May</td>
<td>12 May</td>
</tr>
<tr>
<td>775 GDD</td>
<td>15 June</td>
<td>13 June</td>
</tr>
<tr>
<td>5 CDD</td>
<td>8 Sept.</td>
<td>9 Sept.</td>
</tr>
</tbody>
</table>
Applications of Fluazifop in Summer will Injure Tall Fescue
Minimal Control with HPPD herbicides
How soon can I seed?

- Refer to product label
- Fluazifop (sold as Fusilade II) has a two-week interval
- Fluazifop (sold as Ornamec) has no interval
Why do we see better control in spring and fall?
Small Plants in Spring
2011 Daily Temperature in Knoxville, TN
2011 Daily Temperature in Knoxville, TN
2011 Daily Temperature in Knoxville, TN
What about in bermudagrass?
Many Herbicides Labeled for Dallisgrass Suppression
“Suppression means significant activity, but not always at a level considered acceptable for commercial weed control. Repeat in 4 to 6 weeks”

--- Monument Herbicide Product Label
Sequential Applications Are Required to Control Dallisgrass
## Sulfonylurea Herbicides Offer Suppression

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Active Ingredient</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revolver</td>
<td>foramsulfuron</td>
<td>4.4 to 35.2 fl oz (1.5 to 2.0 fl oz/gallon as spot)</td>
</tr>
<tr>
<td>Certainty</td>
<td>sulfosulfuron</td>
<td>Language about MSMA mixtures 2.0 oz/A + NIS</td>
</tr>
<tr>
<td>Monument</td>
<td>trifloxysulfuron</td>
<td>0.53 oz + NIS</td>
</tr>
<tr>
<td>Katana</td>
<td>flazasulfuron</td>
<td>Not claimed on label</td>
</tr>
</tbody>
</table>
New Products for Control in Bermudagrass
Tribute Total

Thiencarbazone (9.9%) + foramsulfuron (19.8%) + halosulfuron (30.8%)

Bermudagrass Only, 15 ft buffer

1 to 3.2 oz/A (6.4 oz year), Use NIS or MSO

Residual in Soil (see label)
Maturity

• Delay overseeding for 8 weeks after treatment
• Delay bermudagrass seeding for 3 months
• Don’t apply to newly established seeded stands for 1 month
• Delay applications to newly sprigged/sodded turf for 2 weeks
Other labeled targets
Smooth Crabgrass Control (3-5 tiller) with Tribute Total

Application 13 July 2012 in Knoxville, TN
Yellow Nutsedge Control with Sequential Apps. of Tribute Total

Treatments Applied
23 May 2011 with NIS on 4 wk interval
Sequential Applications Are Required to Control Dallisgrass
Treatments Applied Sequentially on 22 September 2011 on 4 wk interval with MSO and AMS surfactant.
Tribute Total (3.2 fl oz) 2X
MSMA (2 lb ai) 2X
Tribute Total (3.2 fl oz) + Celsius/Revolver April

Treatments Applied Sequentially on 22 September 2011 on 4 wk interval with MSO and AMS surfactant
Celsius WDG

Thiencarbazone (8.7%) + iodosulfuron (1.9%) + dicamba (57.4%)

2.5 to 4.9 oz/A (7.4 yearly)

B, C, St. A, Z

Residual in Soil (see label)
Dallisgrass Control with Fall Applications

![Graph showing Dallisgrass Control with different fall applications.](image)

- **MSMA fb Revolver**
- **Celsius (4.9) + Revolver (17.2) 2 app**
Sequential Applications Are Required to Control Dallisgrass
Program Approaches
Tribute Total (3.2 oz/A, 2x in fall 2011)
Tribute Total (3.2 oz/A, 2x in fall, 1x in spring)

23 August 2012
23 August 2012

Benefit to Timely Spring Application

Tribute Total (3.2 oz/A, 2x in fall, 1x in spring)
Treatments Applied Sequentially on 22 September 2011 on 4 wk interval with MSO and AMS surfactant
Non-Selective Options
Late Season Glyphosate

- Bermudagrass will go dormant before dallisgrass
- Window to apply glyphosate in fall
- Label says 5 to 44 fl oz/A
- Bermudagrass must be completely dormant otherwise green-up will be delayed in spring
Check Stolons in Canopy
Conclusion

• Continued use for golf, sod, ROW
• Lawn care, sports turf use ends in June
• Applications in early spring
• Applications in early fall (72 F) trigger
• Program approaches
Sequential Applications Are Required to Control Dallisgrass
Winter Annual Weeds Are On The Way
Saturday, August 25, 2012

Temperatures have begun to cool across much of Tennessee over the past few weeks with overnight lows falling below 60 degrees in certain locations. This cooler weather, combined with the elevated levels of soil moisture experienced across the eastern region of the state, will create a hospitable environment for the germination of winter annual weeds such as

Annual Bluegrass
Poa annua

The FUTURE of Turfgrass Weed Science

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http://www.tennesseeturfgrassweeds.org
Sound Good? But how does a Mobile Weed Manual work?
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Sound Good? But how does a Mobile Weed Manual work?

<table>
<thead>
<tr>
<th>Active ingredient</th>
<th>atrazine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name ex</td>
<td>AAtrax 4L and 90DF</td>
</tr>
<tr>
<td>Herbicide Rate</td>
<td>1 to 2 lb</td>
</tr>
<tr>
<td>Labeled Turfgrass</td>
<td>Bermudagrass (Dormant), Centipedegrass, Zoysiagrass</td>
</tr>
<tr>
<td>Remarks and Precautions</td>
<td>- Provides PRE and early post control of annual bluegrass and PRE control of certain broadleaf weeds</td>
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</tbody>
</table>

**SEE LABEL**
Sound Good? But how does a Mobile Weed Manual work?

<table>
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<tr>
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<th>atrazine</th>
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</thead>
<tbody>
<tr>
<td>Product name ex</td>
<td>AAtrex 4L and 90DF</td>
</tr>
<tr>
<td>Herbicide Rate</td>
<td>1 lb (152 lb)</td>
</tr>
<tr>
<td>Labeled Turfgrass</td>
<td>Bermudagrass (Dormant), Centipede grass, Zoysiagrass</td>
</tr>
<tr>
<td>Remarks and Precautions</td>
<td>• Provides PRE and early post control of annual bluegrass and PRE control of certain clover species.</td>
</tr>
</tbody>
</table>

![AAtrex 4L label](image)

**Restrict Use Pesticide**

Syngenta