Nutsedge
Half onion, half potato(e), half man!

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Objectives

1. Identification characteristics of sedges.
2. Life cycle.
3. Control options
Nutsedge

1. Not “nutgrass”
2. Not a grass
3. Leaves are in ranks of “three” (grass = two)
4. Leaves are triangle in the shoots (grasses rolled or folded)
5. Base of the plant is a “basal bulb” like an onion
6. Storage organ is a “tuber” like a potato
GRASS

SEDGE

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BASAL BULBS
GRASS

Tiller

Crown

Roots

SEDGE

Bulbils
Single eye sprouting from underground tuber (first growth)

Mother plant sending out “pioneer rhizomes” (first ½ growing season)
1. Flower heads (purple vs yellow)
2. Leaves (yellow is skiinnier – not dependable)
3. Corms or tubers (potato-e)

**YELLOW**: small, round, “BB” like, light color, no odor, edible, *born on single terminal chain*

**PURPLE**: larger, oblong, dark color, scally, *smells like mahogony*, nums the lips, born on connecting chains (*multiple corms on the same underground string*).
PURPLE: nutlets are in "chains"

YELLOW: nutlets, = one per chain only!
YELLOW

Purple
CHEMICAL CONTROL CHRONOLOGY

- MSMA
- BASAGRAN
- IMAGE ( + MSMA)
- MANAGE
- DISMISS
- CERTAINTY
- MONUMENT
- KATANA
- CELERO (imazosulfuron)

PREMIX COMBINATION PRODUCTS

- DISMISS SOUTH (Dismiss & imazethypyr)
- TRIBUTE TOTAL (Revolver & Manage & Thiencarbazone)
- SOLITAIRE (Dismiss & Drive)
Nutsedge Herbicides

• Old Old School   MSMA or DSMA  @ 14 day intervals
• Old School Image *(imazaquin)*
• Old School  Image plus MSMA

MSMA = burns the foliage. Repeat apps till the cows leave !

Image: Foliar and soil absorbed, burns foliage, multiple apps to “kill the basal bulb”. No minimal nutlet activity.
Nutsedge Herbicides

- Tank mix of Image (0.5 lb ai.a) plus MSMA (3.0 lbs. ai.a) is better than either alone.
Nutsedge Herbicides

• Medium School = Sedgehammer (halosulfuron) “old Mange”
• Foliar uptake mostly, let dry on leaves.
• Safe on all turfgrass species (big on cool season turfs!)
• Big improvement over Image
• At comparable “x” rates, not as effective as newer S.U. active ingredients.
Nutsedge Herbicides

New(er) School = Certainty (*sulfosulfuron*)

Shoot uptake, some root uptake. More active than Manage. 30 day interval repeats. Not for COOL SEASON GRASSES (beats up ryegrass – not a transition aid though!) Controls other weeds as well.
Nutsedge Herbicides

New School = Katana (flazosulfuron)

Foliar uptake.
Not For COOL SEASON GRASSES (also used to fully get rid of ryegrass)
Low rate for yellow, high rate for purple.
4 week repeat apps on label
Controls other weeds as well
Nutsedge Herbicides

**New School** = Monument (*trifloxsulfuron*)
Not for COOL SEASON GRASSES
Foliar uptake primarily
Controls other weeds also
4-6 week interval
• Revolver (foramsulfuron)
• Manage (halosulfuron)
• Thiencarbazone

Only for warm season grasses!
Sulfentrazone PLUS Pursuit (imazethapyr)

For warm season turf only, Purple and yellow nutsedge are controlled.
# Comparison of Herbicides for Nutsedge Control

<table>
<thead>
<tr>
<th>Image*</th>
<th>Dismiss South*</th>
<th>SedgeHammer*</th>
<th>Monument*</th>
<th>Certainty*</th>
<th>Katana*</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 DG imazaquin</td>
<td>FL imazethapyr</td>
<td>75 WDG halosulfuron</td>
<td>75 WG trifloxsulfuron</td>
<td>75 WDG sulfosulfuron</td>
<td>25 WDG flazasulfuron</td>
</tr>
<tr>
<td>0.5 lb Al/A</td>
<td>0.062 lb Al/A</td>
<td>0.026 lb Al/A</td>
<td>0.096 lb Al/A</td>
<td>0.046 lb Al/A</td>
<td></td>
</tr>
<tr>
<td>11.4 oz/A</td>
<td>1.3 oz/A</td>
<td>0.56 oz/A</td>
<td>1.25 oz/A</td>
<td>3 oz/A</td>
<td></td>
</tr>
<tr>
<td>0.26 oz/1000ft²</td>
<td>0.03 oz/1000ft²</td>
<td>0.013 oz/1000ft²</td>
<td>0.028 oz/1000ft²</td>
<td>0.068 oz/1000ft²</td>
<td></td>
</tr>
<tr>
<td>No limit stated</td>
<td>No limit stated</td>
<td>4 applications</td>
<td>1.7 oz/A total</td>
<td>2.66 oz/A total/year</td>
<td></td>
</tr>
<tr>
<td>No limit stated</td>
<td>5.3 oz/A total</td>
<td>Tribune Total*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9 oz/A per season</td>
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</tbody>
</table>
Celero - Valent
(imazosulfuron) 75 WDG

8 to 14 ounce prod/acre (0.38 to 0.66 lbs. AI/A)

Shoot and leaf uptake
Add ¼% v/v NIS

Sit on leaf 24 hours, the water in before NEXT MOW.
Celero
(imazosulfuron) 75 WDG

Safe on established......

Fine fescue
Kentucky bluegrass
Perennial ryegrass
Tall fescue

Safe on established......

Bermudagrass
Zoysiagrass
St. Augustine
Celero
(imazosulfuron) 75 WDG

Purple nutsedge    Yellow nutsedge
Burr clover
Chickweed
Henbit
Common purslane
Parsley piert
Timing of First Applications

Transition use rates are usually lower than nutsedge control rates

<table>
<thead>
<tr>
<th></th>
<th>Transition rate</th>
<th>Nutsedge rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monument</td>
<td>0.1 – 0.35 oz/A</td>
<td>0.56 oz/A</td>
</tr>
<tr>
<td>Certainty</td>
<td>1.25 – 2.0 oz/A</td>
<td>1.25 oz/A</td>
</tr>
<tr>
<td>Katana</td>
<td>0.5 – 1.5 oz/A</td>
<td>3.0 oz/A</td>
</tr>
</tbody>
</table>
Timing of First Applications

Use MSMA (golf courses only)
- Can begin applications earlier in spring with ryegrass still present
- Apply every 2-4 weeks
  - Plus mow low
- Weaken nutsedge before summer applications of IMI / SU chemistries
  - Initiate IMI / SU applications in July and make only 2-3 treatments
- Shorter daylength
Timing of First Applications

Sulfentrazone (Dismiss CA*)

• Begin applications earlier in spring with ryegrass still present
• 4 – 8 oz/A (0.125 – 0.25 lb AI/A) on cool-season
• 8 – 12 oz/A (0.25 – 0.38 lb AI/A) on warm-season
• Burns and reduces sedge for 1-3 weeks
• Weaken nutsedge during April, May, June before summer applications of IMI / SU chemistries
  • Plus mow low
• Initiate other chemistry applications in July
## Timing of First Applications

<table>
<thead>
<tr>
<th>Sulfentrazone Nutsedge Control (%)</th>
<th>17 May</th>
<th>02 Jun</th>
<th>09 Jun</th>
<th>23 Jun</th>
<th>18 Jul</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.125 + 0.125</td>
<td>18</td>
<td>3</td>
<td>3</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>0.25 + 0.25</td>
<td>32</td>
<td>0</td>
<td>20</td>
<td>32</td>
<td>0</td>
</tr>
<tr>
<td>0.375 + 0.375</td>
<td>35</td>
<td>3</td>
<td>35</td>
<td>53</td>
<td>0</td>
</tr>
</tbody>
</table>

Applied on 09 May and 09 June
Included NIS, Latron CS-7 at 0.25% v/v
Plan of attack
Plan of attack cut bulb of first plants you see!!
Plan of attack think like a sedge!
Plan of attack think like a sedge!
TURF IS YOUR BUSINESS
Advances in Chemical Control of Nutsedge in Turfgrass

• Discovery of acetolactate synthase-inhibiting herbicides in the 1980’s
• ALS enzyme in plants stopped
  – production of 3 amino acids reduced
  – valine, leucine, isoleucine
• Imidazolinone and sulfonylurea (SU) herbicides
Advances in Chemical Control of Nutsedge in Turfgrass

- Imidazolinone chemistry
  - *Image* herbicide
    - Uptake into plants through roots and shoots
    - Translocated to the growing points
    - Effective when combined with MSMA

- Sulfonylurea chemistry
  - *SedgeHammer*, *Monument*, *Certainty*, *Katana* herbicides
    - Uptake into plants through roots and shoots
    - Translocated to the growing points
Advances in Chemical Control of Nutsedge in Turfgrass

- Imidazolinone chemistry
  - *Image* herbicide (imazaquin)
    - Immediately stops plant growth
    - Causes yellowing or chlorosis in 3-7 days
      - Burns with MSMA
    - Complete death of nutsedge in 2 weeks
  - *Dismiss* *South* (imazethapyr)
    - Combination with sulfentrazone
Advances in Chemical Control of Nutsedge in Turfgrass

- Imidazolinone chemistry
  - *Image* herbicide
    - Effective rate at 0.5 lb AI/A
      - 0.26 oz product (70DG)/1000 ft²
      - 11.4 oz product (70DG)/A
    - Add adjuvant (non-ionic surfactant)
    - Combine with MSMA
      - 2 to 3 lb AI/A
Advances in Chemical Control of Nutsedge in Turfgrass

- Sulfonylurea chemistry
  - *SedgeHammer* herbicide
    - Effective rate at 0.062 lb AI/A
    - 1.3 oz product (75WG)/A
    - 0.03 oz product (75WG)/1000ft²
    - Add non-ionic surfactant at 0.25 to 0.5%(v/v)
  - *Tribute Total*
    - Combination with foramsulfuron & thiencarbazone
Advances in Chemical Control of Nutsedge in Turfgrass

- Sulfonylurea chemistry
  - *Monument* herbicide
    - Effective rate at 0.026 lb AI/A
      - 0.56 oz product (75WG)/A
      - 0.013 oz product (75WG)/1000ft²
    - Add adjuvant
      - Non-ionic surfactant at 0.25 to 0.5% (v/v)
      - Methylated seed oil (MSO)
      - Crop oil concentrate (COC)
Advances in Chemical Control of Nutsedge in Turfgrass

- Sulfonylurea chemistry
  - *Certainty* herbicide
    - Effective rate at 0.06 lb AI/A
      - 0.75 to 1.25 oz product (75 WDG)/A
      - 0.8 gm product (75 WDG)/1000 ft²
    - Add adjuvant
      - Non-ionic surfactant at 0.25 to 0.5% (v/v)
  - Add MSMA
Advances in Chemical Control of Nutsedge in Turfgrass

• Sulfonylurea chemistry
  – *Katana* herbicide
    • Effective rate at 0.047 lb AI/A
      – 3.0 oz product (25 WDG)/A
      – 0.068 oz product (25 WDG)/1000ft²
    • Add adjuvant
      – Non-ionic surfactant at 0.25 to 0.5% (v/v)
Advances in Chemical Control of Nutsedge in Turfgrass

• Imidazolinone and sulfonylurea chemistries
  – Repeat applications needed in severe infestations during a growing season
  – More than 1 year to significantly reduce populations
  – Turfgrass may be injured
    • Seedhead suppression
Key search words:
Nutsedge paulkie pima county parks ceu seminar paul baker paulbaker yellow purple old school new school shade