

Final Report

- Title:** Postemergence Control of Purple Nutsedge (*Cyperus rotundus* L.) in Bermudagrass Turf in the Coachella Valley
- Objectives:** Compare experimental and commercial products and formulations for to control of purple nutsedge in bermudagrass turf.
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- Location:** Marrakesh Country Club
Palm Desert, CA
Orlando Delgado, Golf Course Superintendent
- Experimental Design:** Randomized complete block with three replications
- Plot Size:** 5 ft by 10 ft
- Species/Cultivar:** Hybrid Bermudagrass 'Tifway II'
Purple Nutsedge (*Cyperus rotundus* L.)
- Mowing Height:** 1.5 inches
- Application Information:** CO₂ Bicycle Sprayer
TeeJet 8002 DG Nozzles
3 Nozzles
19" Nozzle Spacing
21" Boom Height
Speed: 2 mph
Output: 30 GPA
Pressure: 40 psi at tank
Calibration: 732 ml/nozzle/minute

Application Dates: Initial application of all treatments was made on 9/3/2009; treatment 14 was re-applied on 9/10/2009; treatments 14, 15, and 22 were re-applied on 9/21/2009; treatments 14 and 16 were re-applied on 9/24/2009; treatments 1-15, 17, 22, and 23 were re-applied on 10/1/2009.

Data Collected: Turf phytotoxicity (1-9 scale with 1 = dead turf, 6 = minimally acceptable turf and 9 = no phytotoxicity); percent sedge control compared to control.

Results:

- ✓ In general, all treatments provided effective control of purple nutsedge except Tower applied alone and MSMA (Table 1). At least one repeat application was typically beneficial for extending duration of sedge control.
- ✓ Tower is a preemergence herbicide with activity on yellow nutsedge. Tower generally provided a slight additive effect in controlling purple nutsedge when tank-mixed with other herbicides, especially with Monument at the lower rate.
- ✓ Octane did not increase efficacy of either Sedgehammer or the experimental compound from Gowan.
- ✓ Two applications of Monument at 15 g/A provided better sedge control after 11 weeks compared to two applications at 10 g/A.
- ✓ Treatments containing Velocity caused injury to bermudagrass within one week following application; however, turf recovered within three weeks after application (Table 2).
- ✓ Study area was overseeded with perennial ryegrass on 10/6/09, nearly 5 WAIT (weeks after initial treatment) of herbicides. Hence, no additional bermudagrass phytotoxicity ratings were recorded.

Table 1. Control of purple nutsedge following single or multiple applications of herbicides in 2009. Palm Desert, CA.

| Trt | Name | Rate | Timing (WAIT) | Control (0-100%) | | | | | |
|-----|--|--|---------------|------------------|-------------|-------------|-------------|-------------|-------------|
| | | | | 1 WAIT | 3 WAIT | 4 WAIT | 7 WAIT | 9 WAIT | 11 WAIT |
| 1 | GWN-9861 | 13.5 oz/1000 ft ² | 0, 4 | 10.0 | 76.7 | 93.3 | 93.3 | 86.7 | 90.0 |
| 2 | GWN-9861 Tower 6EC | 13.5 oz/1000 ft ² 32 oz/A | 0, 4 0, 4 | 10.0 | 100.0 | 100.0 | 100.0 | 100.0 | 95.0 |
| 3 | GWN-9861 Octane 2SC | 13.5 oz/1000 ft ² 1.5 oz/A | 0, 4 0, 4 | 13.3 | 100.0 | 98.3 | 99.3 | 98.3 | 96.7 |
| 4 | Sedgehammer 75WDG | 1.33 oz/A | 0, 4 | 16.7 | 100.0 | 96.7 | 100.0 | 100.0 | 98.3 |
| 5 | Sedgehammer 75WDG Tower 6EC | 1.33 oz/A 32 oz/A | 0, 4 0, 4 | 10.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 6 | Sedgehammer 75WDG Octane 2SC | 1.33 oz/A 1.5 oz/A | 0, 4 0, 4 | 10.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 7 | Tower 6EC | 32 oz/A | 0, 4 | 10.0 | 6.7 | 13.3 | 20.0 | 6.7 | 13.3 |
| 8 | Monument 75WG | 10 g/A | 0, 4 | 10.0 | 83.3 | 93.3 | 96.7 | 98.3 | 85.0 |
| 9 | Monument 75 WG Tower 6EC | 10 g/A 32 oz/A | 0, 4 0, 4 | 10.0 | 86.7 | 98.3 | 100.0 | 100.0 | 100.0 |
| 10 | Monument 75WG | 15 g/A | 0, 4 | 13.3 | 86.7 | 100.0 | 100.0 | 100.0 | 100.0 |
| 11 | Monument 75WG Tower 6EC | 15 g/A 32 oz/A | 0, 4 0, 4 | 10.0 | 96.7 | 100.0 | 100.0 | 100.0 | 96.7 |
| 12 | Certainty 75WDG | 1.25 oz/A | 0, 4 | 13.3 | 96.7 | 100.0 | 100.0 | 93.3 | 100.0 |
| 13 | Certainty 75WDG Tower 6EC | 1.25 oz/A 32 oz/A | 0, 4 0, 4 | 13.3 | 90.0 | 96.7 | 100.0 | 100.0 | 100.0 |
| 14 | V10142 | 10.7 oz/A | 0, 1, 2, 3, 4 | 10.0 | 93.3 | 96.7 | 100.0 | 100.0 | 98.3 |
| 15 | V10142 | 10.7 oz/A | 0, 2, 4 | 10.0 | 96.7 | 93.3 | 100.0 | 96.7 | 98.3 |
| 16 | V10142 | 10.7 oz/A | 0, 3 | 10.0 | 86.7 | 90.0 | 100.0 | 100.0 | 100.0 |
| 17 | V10142 | 10.7 oz/A | 0, 4 | 10.0 | 93.3 | 100.0 | 100.0 | 98.3 | 100.0 |
| 18 | V10142 | 21.4 oz/A | 0 | 10.0 | 100.0 | 100.0 | 100.0 | 100.0 | 86.7 |
| 19 | V10142 Tower 6EC | 21.4 oz/A 32 oz/A | 0 0 | 13.3 | 83.3 | 93.3 | 100.0 | 100.0 | 91.7 |
| 20 | V10142 Velocity 17.6SG | 10.7 oz/A 57 g/a | 0 0 | 13.3 | 100.0 | 96.7 | 96.7 | 96.7 | 93.3 |
| 21 | V10142 Velocity 17.6SG Tower 6EC | 10.7 oz/A 57 g/A 32 oz/A | 0 0 0 | 20.0 | 96.7 | 100.0 | 100.0 | 98.3 | 98.3 |
| 22 | MSMA 6 Plus | 4 pints/A | 0, 2, 4 | 10.0 | 73.3 | 73.3 | 56.7 | 40.0 | 36.7 |
| 23 | MSMA 6 Plus | 4 pints/A | 0, 4 | 10.0 | 53.3 | 63.3 | 46.7 | 36.7 | 40.0 |
| 24 | Untreated Control | | | 0.0 | 20.0 | 6.7 | 6.7 | 0.0 | 0.0 |
| | LSD (0.05) | | | 5.2 | 18.0 | 13.2 | 12.5 | 14.9 | 13.1 |

Table 2. Bermudagrass phytotoxicity following application of herbicides for purple nutsedge control in 2009. Palm Desert, CA.

| Trt | Name | Rate | Timing (WAIT) | Phyto (1-9) | |
|-----|--|--|---------------|-------------|-----------|
| | | | | 1 WAIT | 3 WAIT |
| 1 | GWN-9861 | 13.5 oz/1000 ft ² | 0, 4 | 9.0 | 9.0 |
| 2 | GWN-9861 Tower 6EC | 13.5 oz/1000 ft ² 32 oz/A | 0, 4 0, 4 | 8.3 | 9.0 |
| 3 | GWN-9861 Octane 2SC | 13.5 oz/1000 ft ² 1.5 oz/A | 0, 4 0, 4 | 8.7 | 9.0 |
| 4 | Sedgehammer 75WDG | 1.33 oz/A | 0, 4 | 9.0 | 9.0 |
| 5 | Sedgehammer 75WDG Tower 6EC | 1.33 oz/A 32 oz/A | 0, 4 0, 4 | 9.0 | 9.0 |
| 6 | Sedgehammer 75WDG Octane 2SC | 1.33 oz/A 1.5 oz/A | 0, 4 0, 4 | 9.0 | 9.0 |
| 7 | Tower 6EC | 32 oz/A | 0, 4 | 8.3 | 9.0 |
| 8 | Monument 75WG | 10 g/A | 0, 4 | 8.7 | 9.0 |
| 9 | Monument 75 WG Tower 6EC | 10 g/A 32 oz/A | 0, 4 0, 4 | 8.3 | 9.0 |
| 10 | Monument 75WG | 15 g/A | 0, 4 | 8.3 | 9.0 |
| 11 | Monument 75WG Tower 6EC | 15 g/A 32 oz/A | 0, 4 0, 4 | 8.0 | 9.0 |
| 12 | Certainty 75WDG | 1.25 oz/A | 0, 4 | 8.3 | 9.0 |
| 13 | Certainty 75WDG Tower 6EC | 1.25 oz/A 32 oz/A | 0, 4 0, 4 | 8.3 | 9.0 |
| 14 | V10142 | 10.7 oz/A | 0, 1, 2, 3, 4 | 9.0 | 9.0 |
| 15 | V10142 | 10.7 oz/A | 0, 2, 4 | 9.0 | 9.0 |
| 16 | V10142 | 10.7 oz/A | 0, 3 | 8.7 | 9.0 |
| 17 | V10142 | 10.7 oz/A | 0, 4 | 9.0 | 9.0 |
| 18 | V10142 | 21.4 oz/A | 0 | 8.7 | 9.0 |
| 19 | V10142 Tower 6EC | 21.4 oz/A 32 oz/A | 0 0 | 8.0 | 9.0 |
| 20 | V10142 Velocity 17.6SG | 10.7 oz/A 57 g/a | 0 0 | 6.7 | 9.0 |
| 21 | V10142 Velocity 17.6SG Tower 6EC | 10.7 oz/A 57 g/A 32 oz/A | 0 0 0 | 4.0 | 8.3 |
| 22 | MSMA 6 Plus | 4 pints/A | 0, 2, 4 | 7.0 | 9.0 |
| 23 | MSMA 6 Plus | 4 pints/A | 0, 4 | 8.7 | 9.0 |
| 24 | Untreated Control | | | 9.0 | 9.0 |
| | LSD (0.05) | | | 0.8 | NS |

Treatment mean differences in columns equal to or greater than Least Significance Difference (LSD) are significantly different, Fisher's Protected LSD, $P=0.05$.

WAIT (weeks after initial treatment).

Treatments 4-7 included a non-ionic surfactant 0.5% v/v.

Treatments 8-23 included a non-ionic surfactant 0.25% v/v.

Sedgehammer is halosulfuron and GWN-981 is an experimental compound from Gowan.

Tower is dimethenamid from BASF.

Octane is pyraflufen-ethyl from SePro.

Monument is trifloxysulfuron from Syngenta.

Certainty is sulfosulfuron from Monsanto.

Velocity is bispyribac-sodium and V10142 is an experimental compound from Valent.

MSMA 6 Plus is monosodium acid methanearsonate from Drexel.