

Ultradwarf Bermudagrass Color Enhancement Study at ASU Polytechnic

Study conducted by:

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Treatments:

- 1) Green Lawngr (Becker Underwood)
- 2) Wintergreen Plus (Precision Labs)
- 3) Match Play – Ultradwarf Plus (Pioneer Athletics)
- 4) Match Play – Ultradwarf Super (Pioneer Athletics)

A study comprised of four different painting products is being conducted on a non-overseeded “Mini-Verde” ultradwarf bermudagrass green at the ASU Poly campus practice facility. The four treatments were applied on December 2 and 3, 2009. Each individual treated plot area was 195 ft², measuring 5 ft x 39 ft and each treatment was replicated three times, for a total treated area of 585 ft². All treatments were applied using a CO₂ powered backpack sprayer set at 40 psi and sprayed with a wand with a single TeeJet flat fan 8004 nozzle.

Treatment 1: Green Lawnger	Paint volume	Water volume	Paint Cost/Area *Estimated retail cost is \$48/gal
Spray details/585 ft ²	40oz (0.3gal)	320oz (2.5 gal)	\$14/585 ft ²
Equivalent spray/1000 ft ²	0.5 gal	4.3 gal	\$24/1000 ft ²
Equivalent spray /Acre	22 gal	187 gal	\$1,056/Acre
Equivalent spray / 3 Acres	66 gal	561 gal	\$3,168/3 Acres
Spray Notes: Originally mixed 20oz paint and 160oz water (1:8 paint: water ratio). Had to spray this mix two times to achieve full coverage and desirable color. Each treated area was sprayed in two directions.			

Treatment 2: Wintergreen Plus	Paint volume	Water volume	Paint Cost/Area *Estimated retail cost is \$48/gal
Spray details/585 ft ²	57oz (0.45 gal)	450oz (3.5 gal)	\$22/585 ft ²
Equivalent spray/1000 ft ²	0.77 gal	6 gal	\$37/1000 ft ²
Equivalent spray/Acre	33.5 gal	261 gal	\$1,608/Acre
Equivalent spray/ 3 Acres	100.5 gal	784 gal	\$4,824/3 Acres
Spray Notes: Originally mixed 19 oz paint and 150 oz water (1:8 paint: water ratio). Had to spray this mix three times to achieve full coverage and desirable color. Each treated area was sprayed in two directions.			

Treatment 3: Match Play Ultradwarf Plus	Paint volume	Water volume	Paint Cost/Area *Estimated Retail cost is \$28-35/gal (used \$30/gal for cost calculations)
Spray details/585 ft ²	60oz (0.47 gal)	8 gal	\$14.10/585 ft ²
Equivalent spray /1000 ft ²	0.8 gal	13.7 gal	\$24/1000 ft ²
Equivalent spray /Acre	34.8 gal	596 gal	\$1,044/Acre
Equivalent spray / 3 Acres	104.5 gal	1788 gal	\$3,135/3 Acres
Spray Notes: Paint is more viscous than other products and requires constant agitation. The original mix only contained 34 oz of paint (instead of the full 60 oz needed) in 4 gal water. The remaining 26 oz of paint was mixed in 4 gal water and sprayed again to achieve desired color. Each treated area was sprayed in two directions.			

Treatment 4: Match Play Ultradwarf Super	Paint volume	Water volume	Paint Cost/Area* Estimated retail cost is \$28-35/gal (used \$30/gal for cost calculations)
Spray details/585 ft ²	60 oz (0.47 gal)	4 gal	\$14.10/585 ft ²
Equivalent spray /1000 ft ²	0.8 gal	6.9 gal	\$24/1000 ft ²
Equivalent spray /Acre	34.8 gal	300.5 gal	\$1,044/Acre
Equivalent spray / 3 Acres	104.5 gal	901.5 gal	\$3,135/3 Acres
Spray Notes: Paint is more viscous than other products and requires constant agitation. Following the Ultradwarf Plus application, we employed better agitation with the Ultradwarf Super treatment and was successful with spraying ½ the water volume. We only needed to spray this recipe one time. Each treated area was sprayed in two directions.			

Tifeagle green – East Spray date: 2 December, 2009		Green Lawnger Green size ~ 5,500 ft ²	
<u>Green Lawnger Spray Hawk Application</u>	Paint volume	Water volume	Paint Cost/Area* Estimated retail cost is \$48/gal
Spray details/5,500 ft ²	3.6 gal	30 gal	\$173/5,500 ft ²
Equivalent spray/1000 ft ²	0.65 gal	5.45 gal	\$31/1000 ft ²
Equivalent spray /Acre	28.3 gal	238 gal	\$1,358/Acre
Equivalent spray / 3 Acres	85 gal	713 gal	\$4,080/3 Acres
Spray Equipment	<ul style="list-style-type: none"> • Diaphragm Pump with Accumulator (Dampening) Diaphragm w/ 6.5 HP Motor • Jet Agitation • 200 psi at spray tank & 30-40 psi at Spray Hawk • Spray Hawk <ul style="list-style-type: none"> ○ 10in. spacing between nozzles ○ 10in. height from ground ○ 9 nozzles • 1st Pass: Tee Jet AIXR 11004 nozzles • 2nd Pass: Tee Jet AIXR 11006 nozzles 		
Spray Notes: This application did not look as desired after 2 passes. Inadequate pressure was observed upon activating the spray hawk nozzles on occasion. Following the application, it was determined to 'clean up' the green with the hand spray gun (spray details are provided in the following table).			

<u>Green Lawnger Spray Gun Application</u>	Paint volume	Water volume	Paint Cost/Area* Estimated retail cost is \$48/gallon
Spray details/5,500 ft ²	1.5 gal	20 gal	\$72/5,500 ft ²
Equivalent spray/1000 ft ²	0.27 gal	3.6 gal	\$13/1000 ft ²
Equivalent spray /Acre	11.9 gal	158 gal	\$571/Acre
Equivalent spray / 3 Acres	36 gal	475 gal	\$1,728/3 Acres
Spray Equipment	<ul style="list-style-type: none"> • Diaphragm Pump with Accumulator (Dampening) Diaphragm w/ 6.5 HP Motor • Jet Agitation • 200 psi at spray tank • Spray Gun w/ Tee Jet 8008 EVS Nozzle 		
Spray Notes: This application was made to 'clean up' the inconsistent spray pattern as observed following the use of the spray hawk.			

<u>Sum of Spray Hawk and Spray Gun Applications</u>	Paint volume	Water volume	Paint Cost/Area* Estimated retail cost is \$48/gallon
Spray details/5,500 ft ²	5.1 gal	50 gal	\$245/5,500 ft ²
Equivalent spray/1000 ft ²	0.93 gal	9 gal	\$45/1000 ft ²
Equivalent spray /Acre	40 gal	392 gal	\$1,920/Acre
Equivalent spray / 3 Acres	120 gal	1176 gal	\$5,760/3 Acres

Mini-Verde green- East Match Play Ultra dwarf Plus Spray date: 2 December, 2009 Green size ~ 2,400 sq. ft.			
Match Play Ultradwarf Plus	Paint volume	Water volume	Paint Cost/Area* Estimated retail cost is \$28-35/gal (used \$30/gal for cost calculations)
Spray details/2,400 ft ²	1.7 gal	15 gal	\$51/2,400 ft ²
Equivalent spray /1000 ft ²	0.7 gal	6.25 gal	\$21/1000 ft ²
Equivalent spray /Acre	30.5 gal	261 gal	\$91.50/Acre
Equivalent spray / 3 Acres	91.5 gal	784 gal	\$2,745/3 Acres
Spray Equipment	<ul style="list-style-type: none"> • Diaphragm Pump with Accumulator (Dampening) Diaphragm • 6.5 HP Motor • Jet Agitation • 200 psi at spray tank • Spray Gun • Tee Jet 8008 EVS Nozzle 		
Spray Notes This application worked very well and was faster than expected. The green was sprayed in two directions with nearly no 'clean-up' spray required.			

Post-application notes and details:

- The evening following spray application, an irrigation cycle was applied at 10-15 minutes. Irrigation was applied with the understanding the water would improve the paint uniformity from a cosmetic perspective. However, the following day, no improvements were observed.
- A white towel was used to determine the amount of 'rub off' from each paint product at 1 hour after application, 2 hours after application and at daybreak the following morning.
 - All paint products 'rubbed off' to some extent one hour after application. The Wintergreen Plus product rubbed off more than the other products.
 - 2 hours after application (on a sunny, dry day), nearly NO paint rubbed off with any product.
 - The following morning, the surface was only slightly moist from either dew, guttation water or residual water from the irrigation cycle. ALL paints rubbed off, but only very slightly with the Match Play and Green Lawngr products. The Wintergreen Plus product rubbed off substantially more than the others.
 - A ball rolled across the painted surfaces did NOT show any signs of 'rub off' at any point after spray application.
- In consideration for golfers, it is recommended to delay play a minimum of 1-2 hours after application (may be more on a very moist and overcast day). It is not recommended to irrigate the evening following application. It is possible golfers kneeling down on the painted surface may see some paint on clothing in the early morning hours the day after application. However, this unfortunate circumstance may be avoided simply by rolling or mowing the greens prior to play.