

Optimal Management Practices for Kikuyugrass Quality and Playing Conditions

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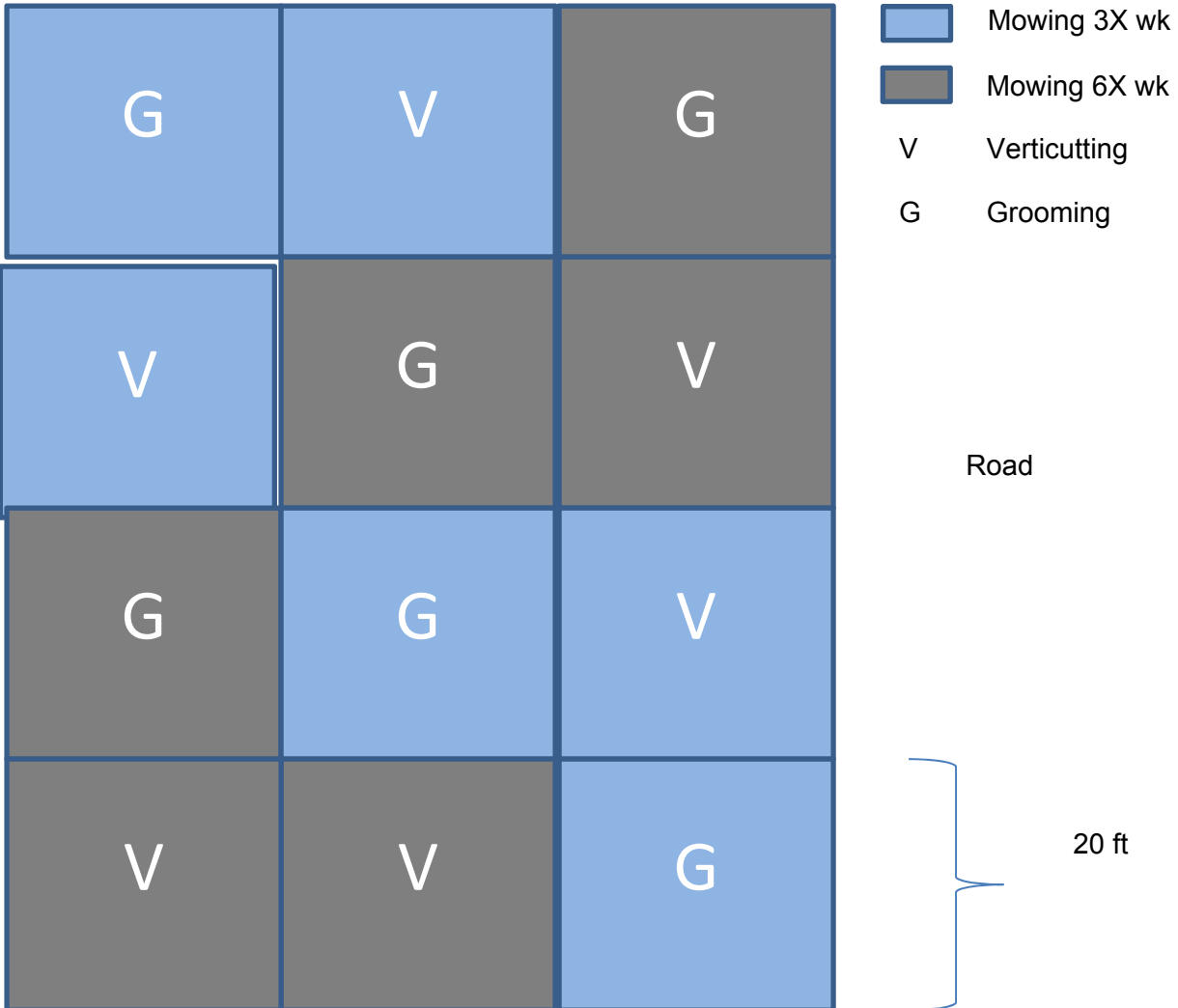
Kikuyugrass (*Pennisetum clandestinum* Hochst. ex Chiov.) is considered either an invasive weed or the desired species on many golf courses and other turf areas along coastal and inland California. As part of a comprehensive project aimed at Kikuyugrass improvement and management, a field study was initiated in August 2011 to identify cultural and chemical practices that are most important for producing quality turf and optimal playing conditions on golf course fairways. The cultivar 'Whittet' was established from sod on a Hanford fine sandy loam. A two-level, five-factor factorial design was used to evaluate mowing frequency (three vs. six times/wk), cultivation (grooming three times/wk vs. verticutting twice/yr), Primo Maxx (0 vs. 0.3 oz/1000 ft² biweekly), nitrogen (2 vs. 5 lbs/1000 ft²/yr), and fungicide treatment (0 vs. monthly preventative applications according to disease activity). Turf quality was assessed visually and by normalized difference vegetation index (NDVI). Turf firmness and ball roll were measured with a Clegg Soil Impact Tester (2.5 kg hammer Gmax) and Pelz meter, respectively.

Location:	UCR Turf Facility
Soil:	Hanford fine sandy loam
Experimental Design:	2 ⁵ Factorial with six replications
Plot Size:	Main plots (mowing frequency and cultivation) are 20 ft x 20 ft; Sub-plots (N, Primo, fungicide) are 5 ft x 5 ft
Sod Established:	25 July 2011
Species/Cultivars	Kikuyugrass 'Whittet'
Fertility:	0.5 lbs N /1000ft ² using a complete fertilizer was applied on August 2. On September 1, 0.5 lb N/ 1000ft ² using NH ₄ SO ₄ was applied to N=5 treatments
Mowing Regime:	0.45 inches 3 days or 6 days/wk using a Baroness walk-behind tee mower
Cultivation Regime:	Grooming (light verticutting) 3 times/wk with verticutting unit on Baroness mower or aggressive verticutting twice annually using a dedicated machine
Irrigation Regime:	Historic ET warm-season/DU
Data Collection:	Turfgrass quality and % brown cover measured visually; Firmness measured with Clegg Soil Impact Tester; Color measured with NDVI; Ball roll measured with Pelz meter; Tension test measured with Ag ops tension cart

Acknowledgments:

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Field Map



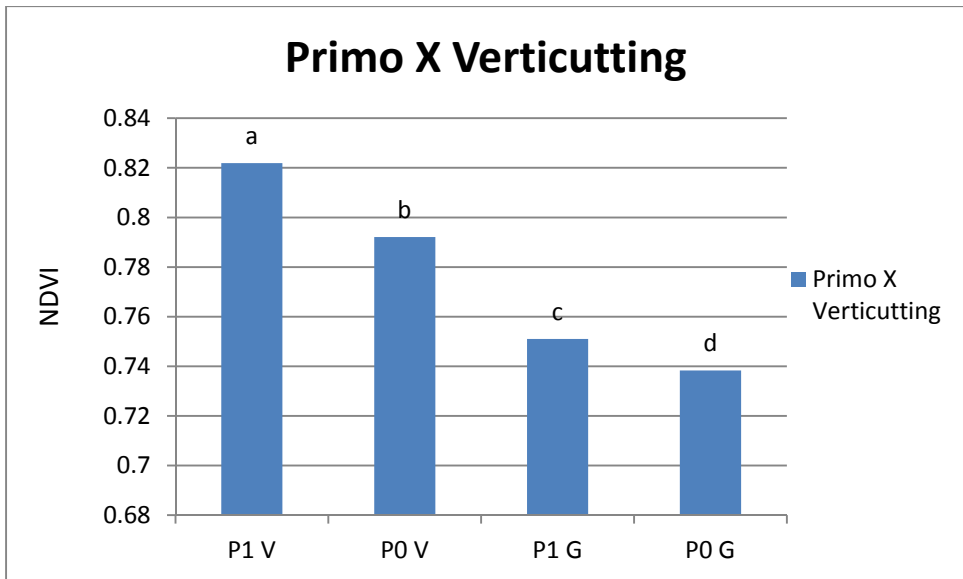


Figure 1. Interaction of Primo (P) application and cultivation on NDVI. Higher values correspond to greener, healthier turf. To date, no verticutting (V) treatment has been applied. Grooming (G) three times/wk resulted in turf thinning and subsequent lower NDVI. Primo helped to improve NDVI. Mean bars underneath the same letter are not significantly different ($\alpha = 0.05$).

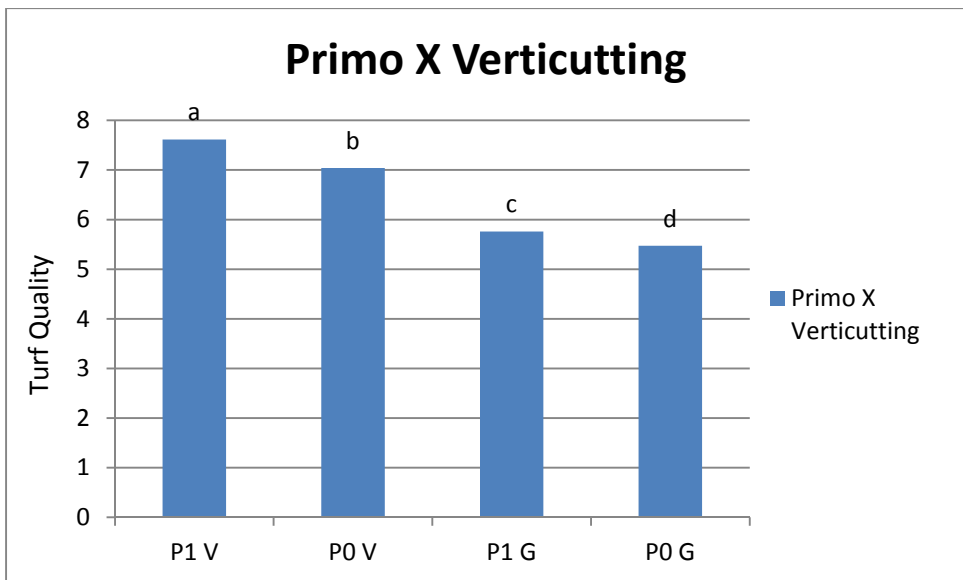


Figure 2. Interaction of Primo (P) application and cultivation on turf quality (1-9, 9 = best). To date, no verticutting (V) treatment has been applied. Grooming (G) three times/wk resulted in turf thinning and subsequent lower turf quality. Primo helped to improve turf quality. Mean bars underneath the same letter are not significantly different ($\alpha = 0.05$).

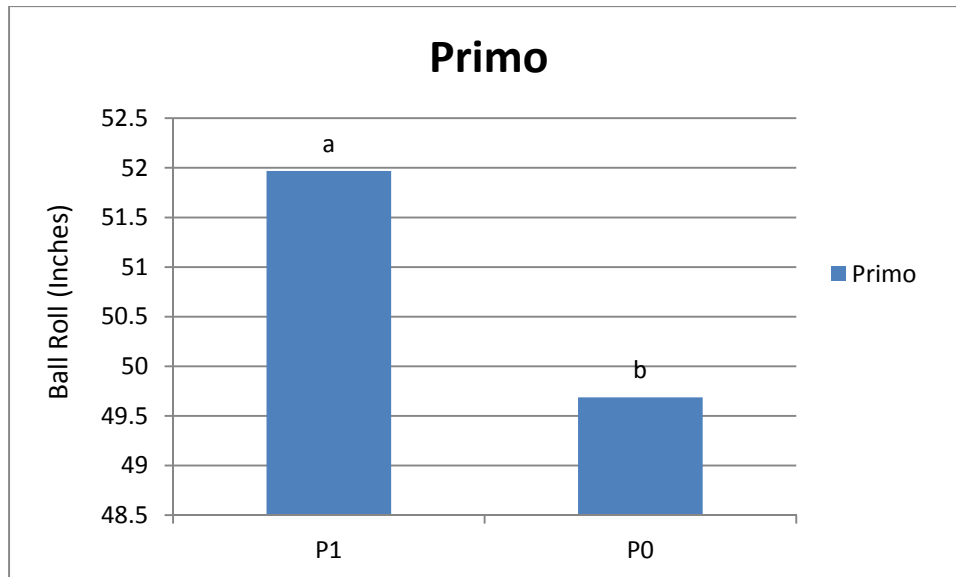


Figure 3. Interaction of Primo application on ball roll. Mean bars underneath the same letter are not significantly different ($\alpha = 0.05$).

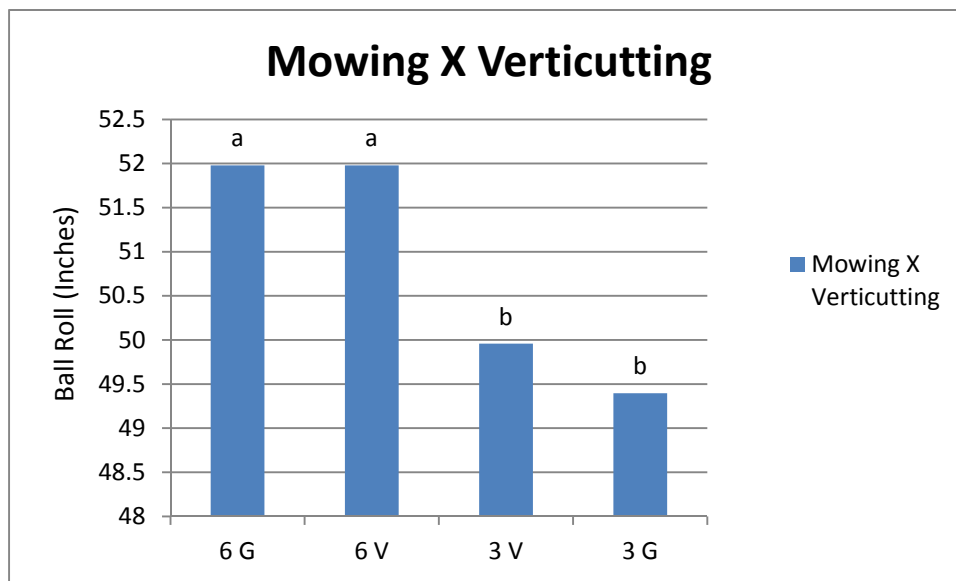


Figure 4. Interaction of mowing frequency and cultivation on ball roll. To date, no verticutting (V) treatment has been applied. Mowing six times/wk resulted in significantly greater ball roll regardless of cultivation practice. Mean bars underneath the same letter are not significantly different ($\alpha = 0.05$).

Preliminary Results:

- ✓ Only six weeks into the start of the experiment, three bi-weekly applications of Primo Maxx have demonstrated great benefits in improving kikuyugras turf quality and ball roll.
- ✓ Although a significant increase in labor, fuel, and time, mowing six times/wk has already resulted in significantly greater ball roll distance on a turf that is often referred to as “Velcro.”
- ✓ Although grooming (light verticutting) three times/wk thus far has resulted in a reduction in turf quality due to stand thinning on relatively immature sod, we predict that this treatment will result in significant overall benefits as the turf matures.