

Washington, D.C. Golf Club: Weed Management Plan, Fall 2014
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Introduction:

Allow me to take you on a walk through our golf course in the nations beautiful capitol of Washington D.C. It is a local hotspot for celebrities and politicians alike. Therefore, our membership often conveys the high expectations associated with the esteemed country club. However, the condition of the course upon our arrival leaves much to be desired. Nonetheless, once amended, it will more than match the aesthetics of our fine district.

Upon approach of a tee, you may notice we utilize bermudagrass for a cover (which must be over-seeded with rye grass in the fall); as it is durable to traffic and can grow just about anywhere. Unfortunately, prostrate spurge and large crabgrass have begun taking over these areas as of late.

Strolling along to the fairway we can see it contains a bermudagrass top as well, and for the same reasons as the tees. However, the weed problems in these fields appear much more complex with a mixture of broadleaves and grasses. In several of the fairways we see patches of dandelion and white clover leading to spots of yellow nutsedge. Moving further into the fairways, we also witness bentgrass and goosegrass taking advantage of the open sunlight meant for our Bermuda grass turf.

If you should happen to hit the ball off the mark and end up in the rough, you will observe small areas infested by mostly broadleaf weeds such as dandelion, plantain, and dallisgrass impeding upon our intended turf stand. This may end up being an easier fix than the fairways for that reason.

These aforementioned weeds of the rough also appear in the secondary rough (which is normally mown only once per year) with the addition of some woody perennials such as smilax, multiflora rose and wild blackberry. Some of these have been establishing for some time and will require mechanical removal to “clean up” our grounds.

Finally, to our once adored greens, these greens are USGA sand-based greens which were sodded to Tye creeping bentgrass just three short years ago. Despite this sodding, annual bluegrass still plagues about a tenth of the area occupied by our entire greens.

In addition to our courses, we maintain a driving range which consists of 10,000 square feet native soil teeing area as well as 15 acres of range land. Both of which have been recently sodded with Latitude-36 bermudagrass (chosen for its increased cold tolerance and esteemed aesthetic value).

Through improving overall turf health and an intensive weed management plan, we believe you will see the location return to its previous grandeur. We intend on devising a two-year weed management plan for this course that won't deviate from our half a million dollar budget. In the end, it will be well worth the money and effort.

Available Management Strategies:

- Exclusion through mowing heights
- Exclusion through moisture regulation
- Fertilization to increase competitiveness of other, more desirable species
- Reducing compaction to favor desirable species
- Pre-emergent herbicides
- Post-emergent herbicides (including plant growth regulators)
- Hand-weeding
- Turf replacement through sodding/plugging

Management Plan:

The primary means of weed prevention and control in a turf system is truly increasing the health and competitiveness of your desired turf species. Therefore, upon receiving results from our soil sampling, we will fine-tune our fertilizer management plan further. For the time being, we have allowed for estimations of the expected fertilization needs. In general, slow-release fertilizers will be the primary form of fertilizer for the majority of the location. Additionally, core-aerification and verticutting will be performed regularly in high traffic

areas during active growth periods. On greens, needle-tining will be performed once a month during periods of high traffic and top-dressing will be performed every other week. Top-dressing will be performed twice a year in other high traffic areas to aid in the decomposition of thatch.

Poa annua removal in putting greens will be achieved through rigorous use of our bentgrass nursery for plugging with various sizes of hole-cutters and hexagonal sod-cutters. In addition, each green will be inspected daily for ball marks. Exposed ground most often leads to the development of algae, moss, or (most frequently) annual bluegrass. Therefore, the repair of damage to the turf will be among daily tasks of the highest priority. In addition to the aforementioned strategies for *Poa* control, paclobutrazol will be used as the primary chemical agent in the reduction of the infestation.

In early March, applications of pre-emergents will resume. On greens, *Bensumec 4LF* will be applied to reduce the emergence of undesirable grassy weeds. Although this chemical is not extremely effective, it does provide added control to the turf system without risk of damage. In tees, fairways and roughs, *Barricade* will be utilized to provide sufficient control of both annual grasses and broadleaf weeds.

As green-up of bermudagrass becomes imminent in early April, *TranXit GTA 25 DF* will be used to transition areas from perennial ryegrass back to bermudagrass once aerification has been performed in high-traffic areas, tees, and fairways. In addition, it should provide further control of annual bluegrass. Applications of *Speed Zone* will again be utilized to provide broadleaf control in affected bermudagrass areas. However, tees will need to be treated with *Weedar 64* to comply with the restrictions of *Speed Zone*. If pre-emergent control of broadleaf weeds appears ineffective, the broadleaf herbicide may be applied wall-to-wall. If broadleaf weeds do become a concern on putting surfaces, *Banvel* will be applied by spot application in greens affected by broadleaf weeds. *Speed Zone* or *Weedar 64* will be used in other spot applications.

In May, continued pre-emergent applications and post-emergent control methods will be necessary to ensure expectations are met. *Dimension Ultra 40WP* will be utilized to provide control of summer annuals in non-bentgrass areas. Bentgrass greens will again receive an

Mar.	G perim.* 0..25 A	Bentgrass	Roundup Pro	Glyphosate	16 oz/A	>95%	\$169 / 2.5gal	\$169.00
Apr.	T, F, R 49 A	Rye/Poa	TranXit GTA 25 DF	Rimsulfuron	2 oz/A	95%	\$266.50 / 5 oz	\$4,797
	F, R* 49 A	Broadleaf weeds	Speed Zone	Carfentrazone, MCP, Dicamba, 2,4-D	4 pts/A	95%	\$29.08 / 20 oz	\$4,188
	T* 3.5 A	Broadleaf	Weedar 64	2,4-D Amine	3 pts/A	95%	\$48.72 / 2.5 gal	\$219.24
	G 4 A	Poa	Trimmit 2SC	Paclobutrazol	16 oz/A	<20%	\$1,025.75 /2.5 gal	\$1,025.7
May	T, F, R* 49 A	Sedges/ Annual grasses	Monument	Trifloxysulfuron	0.53 oz/A	<60%	\$20.30 / .5 g	\$29,918.1
	F, R* 49 A	Crabgrass /Brdlf	Solitare	Sulfentrazone, Quinclorac	28 oz/A	90%	\$137.95 / 1 lb	\$11,834
	T, F, R* 49 A	Sedges/ Crabgrass	Monument 75 WG	Trifloxysulfuron	0.53 oz/A	95%	\$20.30 / .5 g	\$29,918.1
	G 4 A	Poa	Trimmit 2SC	Paclobutrazol	16 oz/A	<20%	\$1,025.75 / 2.5 gal	
June	T, F, R* 49 A	Goosegrass / Poa	Revolver 0.19 SC	Foramsulfuron	17.4 oz/A	<60%	\$587 / 87 oz	\$5,752.6
	G 4 A	Moss / Spurge	Quicksilver	Carfentrazone	6.7 oz/A	<60%	\$145 / 8 oz	\$485.75
	T, F, R* 49 A	Goosegrass / Poa	Revolver 0.19 SC	Foramsulfuron	17.4 oz/A	95%	\$587 / 87 oz	\$5,752.6
	G 4 A	Moss / Spurge	Quicksilver	Carfentrazone	6.7 oz/A	90%	\$145 / 8 oz	\$485.75
July								
Aug.	T, F, R* 49 A	Poa	Revolver 0.19 SC	Foramsulfuron	17.4 oz/A	90%	\$587 / 87 oz	\$5,752.6
Sept.	T, F, R* 49 A	Broadleaf	Weedar 64	2,4-D Amine	3 pts/A	95%	\$48.72 / 2.5 gal	\$219.24
	G 4 A	Poa	Trimmit 2SC	Paclobutrazol	16 oz/A	<20%	\$1,025.75 / 2.5 gal	
Oct.	G 4 A	Poa	Trimmit 2SC	Paclobutrazol	16 oz/A	<20%	\$1,025.75 / 2.5 gal	
	T, F* 33.5 A	Poa	Velocity SG	Bispyribac-sodium	6 oz./A	85%	\$579 / 1 lb	\$7,273
Nov.	T, F, R* 49 A	Broadleaf	Power Zone	Carfentrazone, MCP, Dicamba, MCPA	3 pts/A	95%	\$420 / 2.5 gal	\$3,087
Dec.								
Routine Apps.	Other 16 A	Vegetation, Dallisgrass	Roundup Pro	Glyphosate	1.25 gal/A	99%	\$169 / 2.5 gal	\$1,352
	Spot treat 2 A	Broadleaf	Speed Zone	Carfentrazone, MCP, Dicamba, 2,4-D	4 pts/A	99%	\$29.08 / 20 oz	\$186.11
	3 rd R* 3 A	Woody perennials	Tordon RTU	Picloram, 2,4-D	2 gal/A	90%	\$22.95 / 32 oz	\$550.80
TOTAL								\$118,085.28

(G-Greens, T-Tees, F-Fairways, R-Roughs) (* = as needed)

Calculation: rate x acreage x price/unit= total cost

Example (Monument): 0.53 oz/A X 49 A X \$40.60/g X 454 g/lb X 1 lb/16 oz = \$29,918.10

Year 1 Pre-Emergent Herbicide Applications								
Month	Area Applied (Acres), (G,T,F,R)	Target Pest	Trade Name	Active Ingredient	Rate	Efficacy Expected	Price / unit	Total Cost
Jan.								
Feb.								
Mar.	G 4 A	Poa annua	Bensumec 4 LF	Bensulide	3.125 gal/A	75%	\$135/ gal	\$1,687.5
	T, F, R 49 A	Crab /Brdlf /Poa	Barricade 4FL	Prodiamine	16 oz./A	90%	\$167.5/gal	\$1,025.94
Apr.								
May	T, F, R 49 A	Crab/ Brdlf	Dimension Ultra 40WP	Dithiopyr	0.625 lbs./A	90%	\$155 / 40 oz	\$1,898.75
June	T, F, R 49 A	Crab/ Brdlf	Promate Ronstar 1% plus Fert.	Oxadiazon	400 lbs/A	80%	\$137.95 / 50 lbs.	\$54,076
July								
Aug.	G 4 A	Poa annua	Bensumec 4 LF	Bensulide	3.125 gal/A	75%	\$135/ gal	\$1,687.5
Sept.								
Oct.	T, F, R 49 A	Winter Annuals	Barricade 4FL	Prodiamine	14 oz/A	90%	\$167.5/gal	\$1,025.94
Nov.								
Dec.								
TOTAL								\$61,401.63

(G-Greens, T-Tees, F-Fairways, R-Roughs)

Year 2 Pre-Emergent Herbicide Applications								
Month	Area Applied (Acres), (G,T,F,R)	Target Pest	Trade Name	Active Ingredient	Rate	Efficacy Estimate	Price / unit	Total Cost
Jan.								
Feb.								
Mar.	G 4 A	Poa annua	Bensumec 4 LF	Bensulide	3.125 gal/A	75%	\$135/ gal	\$1,687.5
	T, F, R 49 A	Crab /Brdlf /Poa	Dimension Ultra 40WP	Dithiopyr	0.625 lbs./A	90%	\$155 / 40 oz	\$1,898.75
Apr.								
May								
June	T, F, R 49 A	Crab/ Brdlf	Promate Ronstar 1% plus Fert.	Oxadiazon	400 lbs/A	80%	\$137.95 / 50 lbs.	\$54,076
July								
Aug.	G 4 A	Poa annua	Bensumec 4 LF	Bensulide	3.125 gal/A	75%	\$135/ gal	\$1,687.5
Sept.								
Oct.	T, F, R 49 A	Winter Annuals	Barricade 4FL	Prodiamine	14 oz/A	90%	\$167.5/gal	\$1,025.94
Nov.								
Dec.								
TOTAL								\$60,375.69

(G-Greens, T-Tees, F-Fairways, R-Roughs)

Calculation: rate x acreage x price/unit= total cost

Annual Costs of Turf Health Practices						
<i>Practice</i>	<i>Labor Hours</i>	<i>Cost / Hour</i>	<i>Materials Required / Used</i>	<i>Rate X Frequency</i>	<i>Material Cost / Unit</i>	<i>Total Cost / Year</i>
Bermudagrass Fertilization	50	\$15	Contec DG 18-9-18 + micros	240 lbs / A X 120 A	\$1.56 / lb	\$45,678
Bentgrass Fertilization	120	\$12	Contec DG 18-9-18 + micros	120 lbs / A X 30 A	\$1.56 / lb	\$7056
Aerification	140	\$12	ProCore, 2 AeroCores	N/A	N/A	\$16,680
Verticutting	160	\$12	8 Verticut Reel Units	N/A	N/A	\$6920
Top-dressing	200	\$12	USGA Topdressing Sand	2 ton / A X 130 A	\$50 / ton	\$15,400
TOTAL						\$91,734

Additional Costs / Year					
<i>Method</i>	<i>Labor Hours</i>	<i>Cost / Hour</i>	<i>Materials Required</i>	<i>Cost of Materials</i>	<i>Total Cost / Year</i>
Hand-Weeding	120	\$12	Pocket-knives	\$30	\$1470
Plugging	200	\$12	Cup-Cutters	\$200	\$2600
Sodding	160	\$12	Sod-cutter	\$4000	\$4420
Seeding	40	\$15	Rye seed	\$160,000	\$160,600
Liquid Herbicides	500	\$15	JD ProGator Sprayer	\$46000	\$19,000
	120	\$15	Solo Backpack Sprayer (2)	\$220	\$2020
			PPE	\$2000	\$2000
			Adjuvants	\$3000	\$3000
Dry Applications	40	\$15	Dakota Spreader	\$18,000	\$5100
Irrigation Audits	600	\$15	Irrigation Hardware	\$15,000	\$24,000
TOTAL					\$224,210

Total Costs

<i>Management Method</i>	<i>Year 1 Cost</i>	<i>Year 2 Cost</i>
Pre-Emergent Herbicide	\$61,401.63	\$60,375.69
Post-Emergent Herbicide	\$118,085	\$59,043
Turf Health Practices	\$91,734	\$91,374
Mechanical / Miscellaneous Costs	\$224,210	\$224,210
Total	\$495,430.63	\$435,005.69

2 years later.... (Conclusion):

As you are about to see, the last two years has been very good to our facilities. Upon implementing our weed control system, changes have been drastic. It's the difference between night and day.

Throughout the year now you can see freshly cut bermudagrass (rye in the winter) on our tees. No longer will you be bothered by unsightly prostrate spurge and large crabgrass!

Cut slightly taller is our fairways (also bermudagrass). If you remember, just a couple short years ago these fairways were plagued by a mixture of broadleaves and grass weeds alike. Not anymore! Now all you see is Bermuda leading you all the way to the hole.

Oh no you hit the ball off into the rough? Well, that's bad. However, at least now you won't be bothered by pesky broadleaf weeds when you enter this area! Just thick, lush bermudagrass.

Our secondary roughs have been cleaned up considerably too. Although these areas require some chemical treatments now and again, the woody and broadleaf species have been removed completely.

The greens you ask? There is nearly nothing but dense, highly performing Tyee creeping bentgrass. Annual bluegrass has been reduced to the point of 99% control through removal efforts and improved turf management. These weeds decreased the aesthetic value of our putting surfaces. I think you will agree that our greens can once again be a bragging point for all associated.

Our driving range has been perfect since its establishment, nothing but 15 acres of the new bermudagrass cultivar! Due to its performance, we may begin discussing expanding its use into tees and fairways throughout the course.

Look at what we've accomplished with just a half million dollar budget! We hope you continue to enjoy your time spent here. If there are any special accommodations you would like us to consider, please inform us; we are more than happy to receive any feedback you can provide.