

Mesotrione: Efficacy of Herbicide Combinations on LCO Fertilizer Granulars in Established Cool-Season Turf

Final Report

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A field study was conducted in the summer of 2010 at the Bryden Canyon Golf Course in Lewiston, ID to evaluate the efficacy of herbicide impregnated fertilizers to control broadleaf weeds and annual grass weeds. The site was located on a rough just off of a fairway. Mowing height was approximately 2" and the rough was irrigated so that the turf did not go dormant. Applications were made with a drop spreader on 19 May 10 and by using hand shakers on 30 Jun 10. Individual plot size was 3' x 10' with 4 replications. Turfgrass phytotoxicity was rated 1, 2, 3 and 4 weeks after each treatment date using a scale of 0 to 10, with 0 = no injury and 10 = dead. Phytotoxicity values of 2 or less are considered acceptable turfgrass injury. Percentage of cover of crabgrass and each individual broadleaf weed species was determined in each plot at 0, 3, and 6 weeks after the first application and 2 and 4 weeks after the second application. Total broadleaf weed cover was determined by summing up each individual weed species present in each plot (Table 1). Weed present in this study were: dandelion (*Taraxacum officinale*), bilobed speedwell (*Kickxia eglantine*), white clover (*Medicago alba*), field bindweed (*Convolvulus arvensis*), prickly lettuce (*Lactuca serriola*), redstem filaree (*Erodium cicutarium*), prostrate knotweed (*Polygonum aviculare*), black medic (*Medicago lupulina*), Jim Hill (tumble) mustard (*Sisymbrium altissimum*), and large crabgrass (*Digitaria sanguinalis*). Percent reduction in weed cover was determined by dividing the total percent weed cover in each plot by the initial (19 May) percent weed cover in each corresponding plot.

Following the first (19 May) and second (30 Jun) application of herbicide impregnated fertilizers, turfgrass phytotoxicity was very low (< 1) (Figure 1). These levels are below 2, which is considered acceptable.

Following the AND7010 and AND7016 treatments on 19 May 10 there was an increasing trend of greater reduction in broadleaf weed cover up to 6 WAT (Figure 2 and Table 2). Figures 3 and 4 shows the phytotoxic effects of AND7010 on broadleaf weeds 2 WAT. At this same time AND7016 showed no effect on broadleaf weeds (Figure 4). The reduction of broadleaf weed cover at 6 WAT was only 40 to 60% among these 2 impregnated fertilizer treatments. After the second application (30 Jun 10) of the impregnated fertilizer treatments, reductions in broadleaf weed cover continued to increase up until 8 WAT (14 Jul). By 8 WAT, AND7010 + AND10148 and AND7010 + AND10149 treatments each resulted in approximately 90% reduction in broadleaf weed cover. The impregnated fertilizer treatment that resulted in the lowest reduction (51%) in broadleaf weed cover, at that time, was AND7016 + AND10185. By 10 WAT there appears to be a general decrease in broadleaf weed control as noted by a decrease in the reduction of broadleaf weed cover. Figures 5-8 show what each treatment look like 9 WAT.

Crabgrass emerged in only one herbicide impregnated fertilizer plot and that occurred at 8 WAT (14 Jul). The treatment was AND7010 + AND7039.

Overall, the use of herbicide impregnated fertilizers in this study did not cause any adverse turfgrass phytotoxicity. Reductions in broadleaf weed cover increased in all treatments up to 8 WAT. The impregnated fertilizer treatments which resulted in the highest reduction in broadleaf weed cover 8 WAT were AND7010 + AND10148

and AND7010 + AND10149. In addition, 8 WAT, the only herbicide impregnated fertilizer treatment that showed any crabgrass emergence was AND7010 + AND7039.

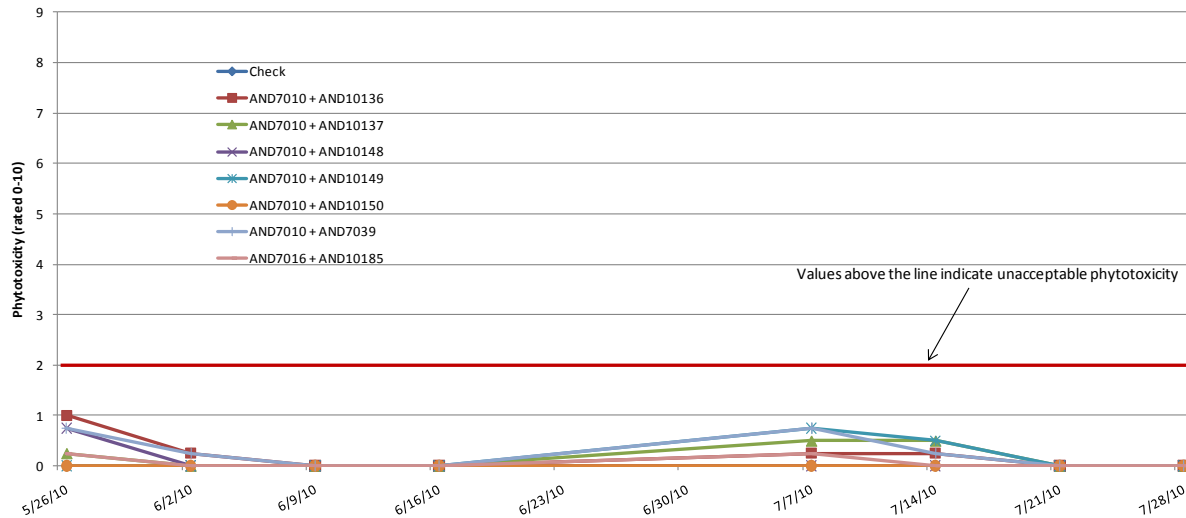


Figure 1. Turfgrass phytotoxicity of herbicide impregnated fertilizer combinations used for broadleaf and annual grass weed control.

Treatment	Total broadleaf weed cover (%)				
	5/19/10	6/9/10	6/30/10	7/14/10	7/28/10
	0 WAT	3 WAT	6 WAT	8 WAT	10 WAT
Check	10.0	10.3	7.5	7.8	4.5
AND7010 + AND10136	15.5	11.3	7.5	3.5	5.5
AND7010 + AND10137	14.8	13.8	9.0	4.3	3.3
AND7010 + AND10148	23.0	18.0	12.3	1.8	3.8
AND7010 + AND10149	13.8	11.5	7.8	1.3	3.3
AND7010 + AND10150	15.3	13.3	8.3	2.8	4.3
AND7010 + AND7039	15.5	12.5	6.3	4.3	5.3
AND7016 + AND10185	23.5	21.3	10.5	10.8	7.0

Table 1. Broadleaf weed cover following treatment with herbicide impregnated fertilizers.

Treatment	Reduction of broadleaf weed cover (%)			
	6/9/10	6/30/10	7/14/10	7/28/10
	3 WAT	6 WAT	8 WAT	10 WAT
Check	17.3	12.3	12.1	16.8
AND7010 + AND10136	29.9	51.7	76.7	62.9
AND7010 + AND10137	13.4	38.3	76.1	74.1
AND7010 + AND10148	21.4	44.1	90.9	78.0
AND7010 + AND10149	10.0	41.5	89.3	75.4
AND7010 + AND10150	15.3	46.6	71.4	57.1
AND7010 + AND7039	8.4	64.5	71.1	35.5
AND7016 + AND10185	2.4	46.2	50.7	64.7

Table 2.

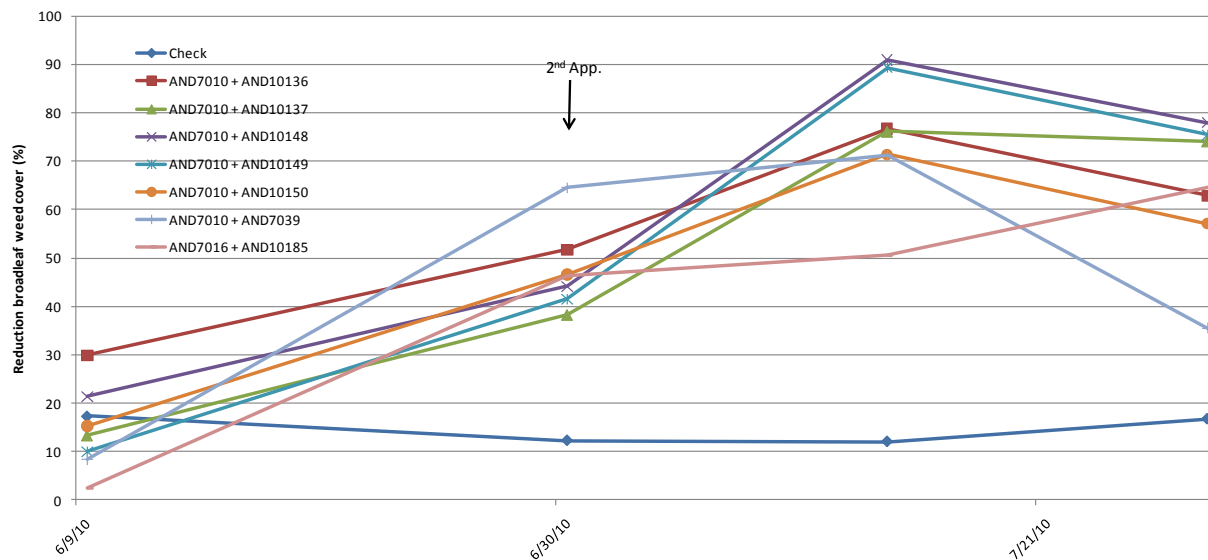


Figure 2. Reduction in broadleaf weed cover following treatment with various herbicide impregnated fertilizer treatments.



Figure 3. The effect of AND7010 2 WAT (1 Jun 2010) on broadleaf weeds at Bryden Canyon Golf Course.

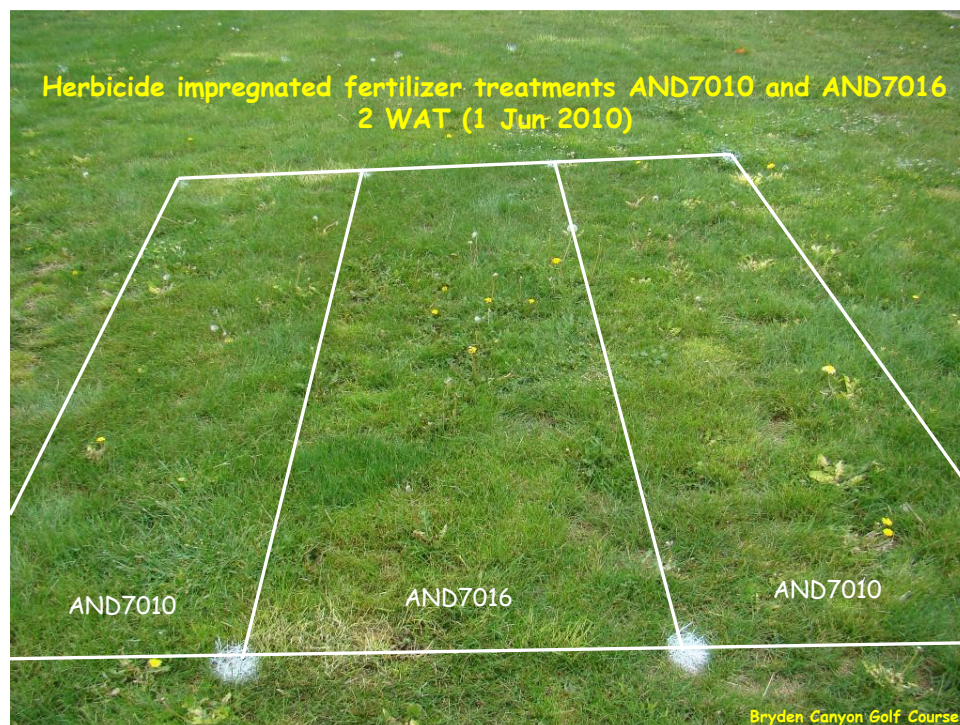


Figure 4. Comparison of AND7010 and AND7016 impregnated fertilizer treatments 2 WAT (1 Jun 2010) at Bryden Canyon Golf Course.

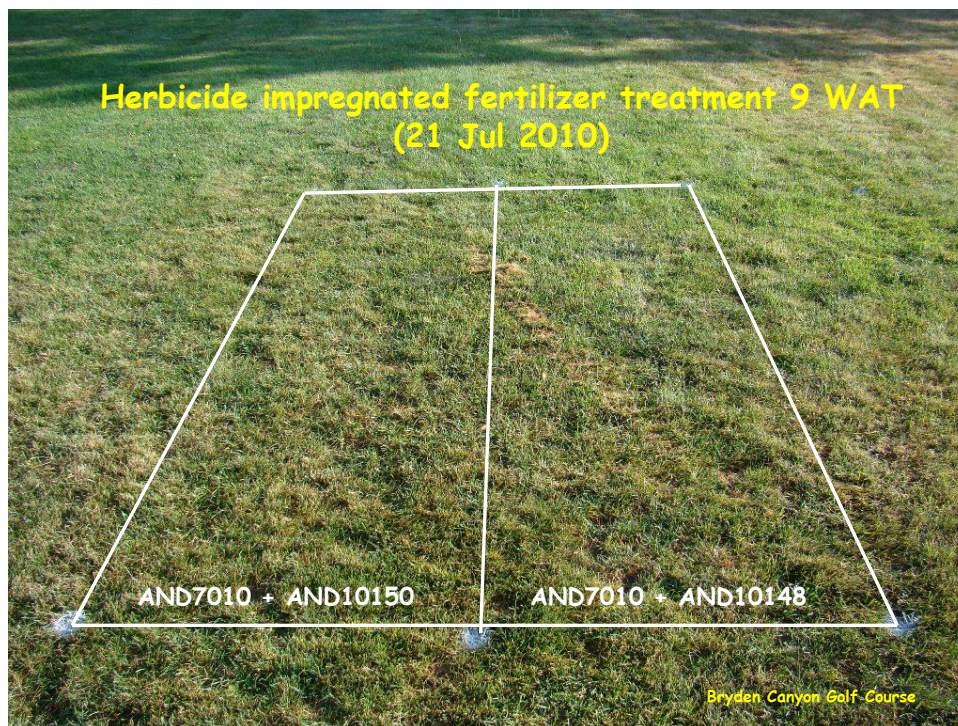


Figure 5. Herbicide impregnated fertilizer treatments 9 WAT (21 Jul 2010) at Bryden Canyon Golf Course.

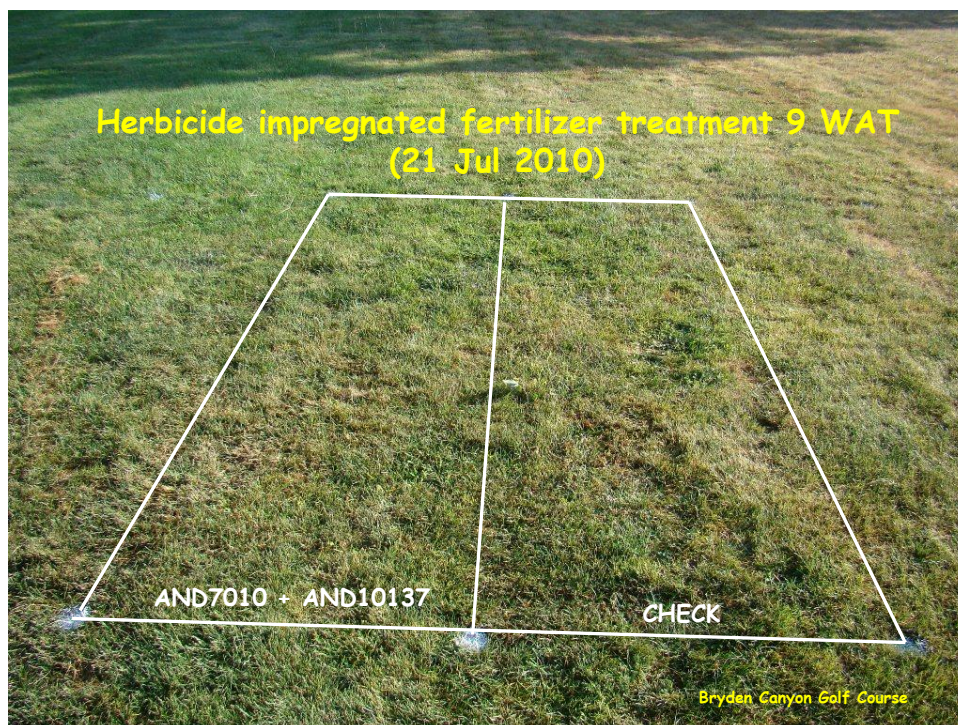


Figure 6. Herbicide impregnated fertilizer treatments 9 WAT (21 Jul 2010) at Bryden Canyon Golf Course.

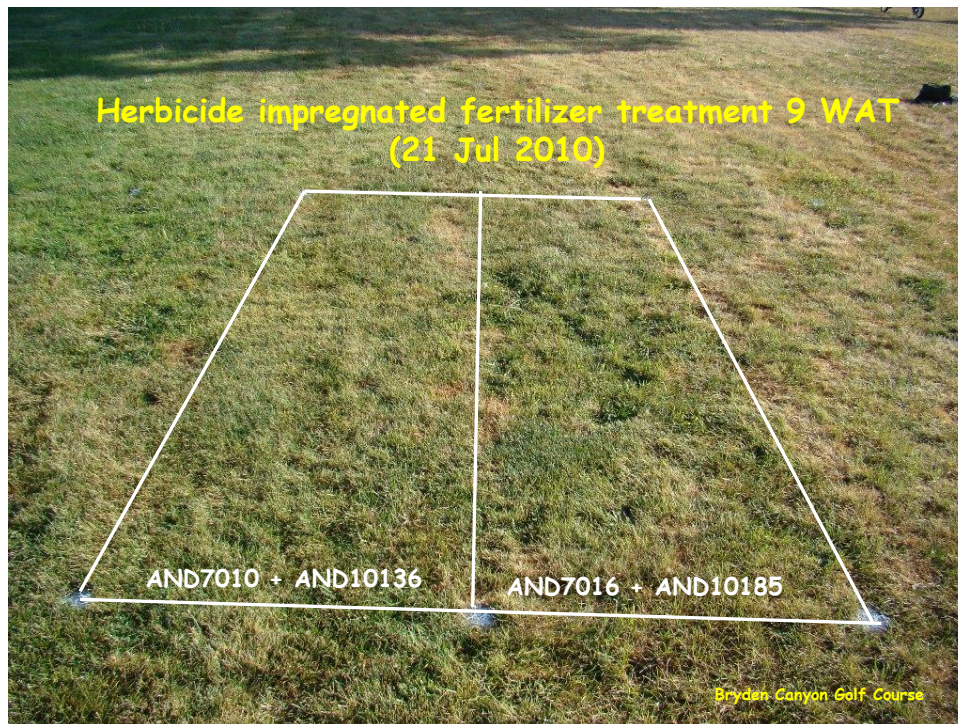


Figure 7. Herbicide impregnated fertilizer treatments 9 WAT (21 Jul 2010) at Bryden Canyon Golf Course.

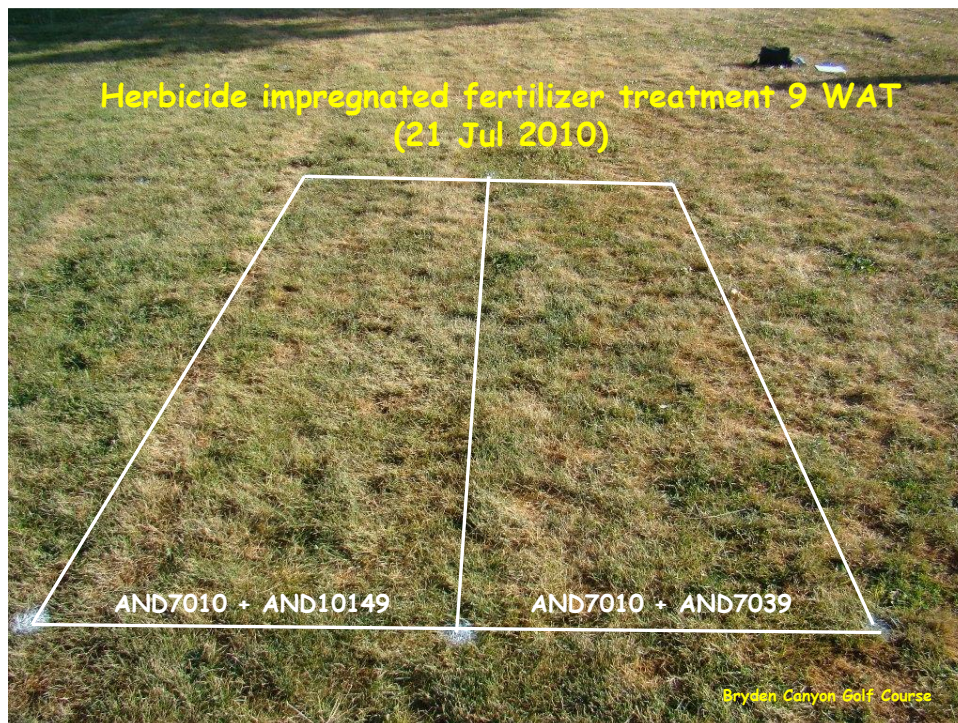


Figure 8. Herbicide impregnated fertilizer treatments 9 WAT (21 Jul 2010) at Bryden Canyon Golf Course.