Discolouration of Kentucky Bluegrass from Velocity SP

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Summary

This test was developed in order to determine whether Velocity SP would discolour Kentucky bluegrass when applied at rates that were safely applied on creeping bentgrass. Applications of the herbicide at double the recommended rate (0.62g/100m^2) caused moderate levels of discolouration to the Kentucky bluegrass which would be considered unacceptable. This discolouration would happen anytime there was sprayer boom overlap when the recommended rate was applied. More extensive testing at lower rates is required to determine the effects of this product when applied to different varieties of Kentucky bluegrass.

Introduction

The product, Velocity SP Herbicide (active ingredient bispyribac-sodium), has been licensed for use in Canada to remove annual bluegrass (*Poa annua*) from creeping bentgrass that is mowed higher than 9mm. An accompanying study was conducted that tested the effectiveness of the herbicide Velocity SP for reduction of annual bluegrass in creeping bentgrass when mowed at putting green height. However, in order for this product to be widely accepted for use the issue of turf discolouration must be dealt with.

The product label states that the tolerance of Kentucky bluegrass, which is closely related to annual bluegrass, is known to vary by variety. The manufacturer recommends that the product should be tested in a number of small areas around the site in order to determine if the herbicide can be used without causing unacceptable injury to the turf. As Kentucky bluegrass is typically used for collar areas that surround putting greens it is important to understand the possible risks of over spraying into these potentially sensitive areas.

This test was developed to determine the extent of discolouration of Kentucky bluegrass turfgrass when the herbicide Velocity SP was applied at rates that would be typically used to remove annual bluegrass from creeping bentgrass putting greens.

Methodology

During the summer of 2009 a test was conducted at the Prairie Turfgrass Research Centre (Olds College, Olds, Alberta) to examine discolouration of Kentucky bluegrass following application of the herbicide Velocity SP. This test was conducted on a Kentucky bluegrass/fine leaf fescue blend that was mowed at a height of 1.9cm (0.75”). Plot sizes were 0.5 X 0.5 meters and were replicated four times in a randomized complete block design. Weekly applications of the herbicide were made for four weeks beginning on August 25 with a compressed air sprayer equipped with Teejet VS 8002E even flat fan nozzles that were calibrated to spray 3L/100m^2.

Table 1 - Treatment list

Product	Application Rate
1. Untreated control	
2. Velocity 1/2X	0.156g/100m^2
3. Velocity 1X	0.31g/100m^2
4. Velocity 2X	0.625g/100m^2

Discolouration of the Kentucky bluegrass, which is an indication of toxicity to the plant from the herbicide, was determined using a 0-5 scale (Table 1). Plots were rated weekly beginning on the first application date and then for an additional six weeks.

Table 1 - Rating scale for discolouration of bentgrass following product applications.

Value	Visible signs observed
0	No turf discolouration evident.
1	Negligible discoloration, distortion and/or stunted growth not evident.
2	Slight discoloration, distortion and/or stunted growth clearly evident.
3	Moderate discoloration and damage, marked distortion and/or stunted growth, recovery expected.
4	Substantial discoloration and damage, substantial distortion and/or stunted growth, some damage irreversible.
5	Majority of plants discoloured and damaged, considerable distortion and/or stunted growth, some plant mortality (<40%).

Results

Some discolouration occurred with all applications of the product. On each of the rating dates following the first application, the highest rate (0.62g/100m^2) had significantly greater discolouration than any of the other treatments. The lowest rate (0.15g/100m^2) was not significantly higher than the untreated control on four of the six rating dates.

The final application of product occurred following rating on week 4. Two weeks after the final application, the discolouration had improved considerably, a trend that was similar in the accompanying study that was conducted on creeping bentgrass. As this trial extended late into the growing season, no further evaluations were conducted after September 29.

Table 2 - Turf discoloration following application of Velocity SP on Kentucky bluegrass.

Application Rate	Prior to Treatment	Week 2	Week 3	Week 4	Week 5	Week 6
	0 – 5 scale					
untreated control	0.0a	0.0b	0.0c	0.0c	0.0c	0.0b
½ x rate (0.15g/100m^2)	0.0a	0.2b	0.7b	1.0b	0.2bc	0.0b
1 x rate (0.31g/100m^2)	0.0a	0.2b	1.0ab	1.0b	0.7b	0.2b
2 x rate (0.62g/100m^2)	0.0a	1.0a	1.5a	3.0a	3.0a	1.2a
$LSD_{0.05}$ =	n/s	0.4	0.6	0.5	0.5	0.6

* Values that have the same letter as a suffix are not significant from each other.

Discussion

This test showed that when Velocity SP is applied at twice the recommended rate that considerable discolouration would occur. Making applications that are twice the recommended rate would happen anytime that there is overlap of sprayer booms. Therefore, an application applied at the recommended rate could cause discolouration that would be considered unacceptable.

The accompanying study showed that making six weekly applications of Velocity SP at the half rate provided acceptable reductions in annual bluegrass populations in creeping bentgrass. In order to determine safety on Kentucky bluegrass further study is warranted.