

Injury to Turf and Weeds Following Application of Mustard Products

M.A. Anderson, J.B. Ross and D.K. Tompkins

Summary

This test was established to determine if there were any injury effects on turfgrass and weeds following the application of two mustard products. Two forms of yellow and oriental mustard were tested at three different rates of application. Injury symptoms were rated on a weekly basis for four weeks following application. There was a small amount of injury to the turf and the dandelions 21 days after application of the product.

Methodology

The trial was established at the Prairie Turfgrass Research Centre located at Olds College, Olds, Alberta. Test plots were laid out on a uniform stand of established Kentucky bluegrass. Both dandelion and white clover was present throughout this location.

Two forms of yellow and oriental mustard meal were tested for potential injury on turfgrass. The first form of mustard meal was produced from the bran of the mustard seed, while the second form was the pulp or cake remaining after the oil had been extracted from the seed. Both forms of each product were compared with an untreated control (Table1). The test plots were 0.5 x 0.5 metres in size and were replicated four times within a randomized complete block design (Table1).

The first test was initiated on May 22nd 2007. However, soon after application of the products a period of high precipitation appeared to have compromised the effect of the products on the turfgrass. A second trial was established on June 7th and data was collected for four weeks following application.

Table 1 - Treatment schedule and application rates for injury study.

Products	Product form		Rate(s)
Yellow mustard	Bran	Low rate	60g/m ²
		Mid rate	120g/m ²
		High rate	240g/m ²
	Cake	Low rate	60g/m ²
		Mid rate	120g/m ²
		High rate	240g/m ²
Oriental mustard	Bran	Low rate	60g/m ²
		Mid rate	120g/m ²
		High rate	240g/m ²
	Cake	Low rate	60g/m ²
		Mid rate	120g/m ²
		High rate	240g/m ²
Untreated control			

The plots were rated weekly for signs of bleaching (white) or chlorosis (yellow) of the turfgrass as well as for signs of injury on the dandelion and white clover present in each plot. To determine the severity of plant injury observed in each plot, a 0-5 injury rating scale was used (Table 2).

Table 2 - Rating scale used for both turf and weeds.

Value	Description of symptoms
0	No symptoms
1	Some chlorotic plants
2	Some chlorotic, some bleached plants
3	Many bleached plants, some dead
4	Mostly dead plants, some bleaching
5	All plants dead

Results

The high rate of yellow mustard cake produced a small amount of injury to the turf, 21 days after application of the product (Table 3).

Table 3 - Presence of injury to turfgrass.

Product	Rate	7 DAT	14 DAT	21 DAT	28 DAT
		0-5 scale			
Untreated control		0a	0a	0b	0a
Yellow mustard foots	60g / m ²	0a	0a	0b	0a
Yellow mustard foots	120g / m ²	0a	0a	0b	0a
Yellow mustard foots	240g / m ²	0a	0a	0b	0a
Oriental mustard foots	60g / m ²	0a	0a	0.3b	0a
Oriental mustard foots	120g / m ²	0a	0a	0b	0a
Oriental mustard foots	240g / m ²	0a	0a	0b	0a
Yellow mustard cake	60g / m ²	0a	0a	0b	0a
Yellow mustard cake	120g / m ²	0a	0a	0.3b	0.3a
Yellow mustard cake	240g / m ²	0a	0a	0.8a	0.3a
Oriental mustard cake	60g / m ²	0a	0a	0b	0a
Oriental mustard cake	120g / m ²	0a	0a	0b	0a
Oriental mustard cake	240g / m ²	0a	0a	0b	0a
LSD _{0.05} =		n/s	n/s	0.3	n/s

There was also a small amount of injury to the dandelion at the high rate of application for the yellow mustard cake (Table 4). There did not appear to be any injury to the clover (Data not shown).

Table 4 - Presence of injury to dandelion.

Product	Rate	7 DAT	0-5 scale			
			14 DAT	21 DAT	28 DAT	
Untreated control		0a	0a	0a	0a	
Yellow mustard foots	60g / m ²	0a	0a	0a	0a	
Yellow mustard foots	120g / m ²	0a	0a	0a	0a	
Yellow mustard foots	240g / m ²	0a	0a	0a	0a	
Oriental mustard foots	60g / m ²	0a	0a	0.3a	0a	
Oriental mustard foots	120g / m ²	0a	0a	0a	0a	
Oriental mustard foots	240g / m ²	0a	0a	0a	0a	
Yellow mustard cake	60g / m ²	0a	0a	0a	0a	
Yellow mustard cake	120g / m ²	0a	0a	0.3a	0a	
Yellow mustard cake	240g / m ²	0a	0a	0.5a	0a	
Oriental mustard cake	60g / m ²	0a	0a	0a	0a	
Oriental mustard cake	120g / m ²	0a	0a	0a	0a	
Oriental mustard cake	240g / m ²	0a	0a	0a	0a	
LSD _{0.05} =		n/s	n/s	n/s	n/s	

The Alberta Association of Colleges and Technical Institutes are gratefully acknowledged for their financial support of this trial.