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Testing alternative formulations of Tordon for use as substitutes for Tordon 22K

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Introduction

Recently, the Dow Chemical Company announced they intend to stop production of Tordon 2K pellets. The loss of this useful product will impact ranchers and weed district personnel in Montana who use the dry material effectively. The ease and convenience of Tordon pellets for hand broadcasting onto pioneer patches of leafy spurge will be lost with the loss of 2K. The purpose of this research was to determine if granular or dry formulations of Tordon could be produced which would provide effective control of leafy spurge.

Methods and materials

Ammonium sulfate fertilizer, complete fertilizer (17-17-17), Tidy Kat[®] cat litter, an organic kitty litter product produced from wood chips in Montana, and autoclaved oat kernels were used as carriers for Tordon. Known amounts of the above materials except oat kernels were placed on plastic sheets and sprayed with Tordon 22K to a point somewhat less than saturated. These impregnated materials were then weighed to calculate the amount of active ingredient absorbed onto their surfaces. Oat kernels were autoclaved to kill them and placed in a beaker with Tordon 22K for 48 hours. The kernels were then allowed to air dry and weighed to determine the amount of active ingredient absorbed.

Research plots were established at Bozeman and Whitehall, Montana in mid-May 1986. The plots were 7 x 25 feet long and arranged in a randomized complete block design with three replications. The dry materials were weighed out and applied to the plots (Table 1). Plots were treated with Tordon 22K and Tordon 2K as standards. The percent leafy spurge control was determined on July 12, 1986, at both locations.

Results and discussion

The most effective treatment for leafy spurge control was Tordon 22K with 84 and 98% control at rates of 0.5 and 1 lb/A respectively (Table 1). All of the impregnated products performed as well as Tordon 2K. Tidy Kat[®] applied at a rate of 1 lb/A provided 94% leafy spurge control.

It appears that effective substitutes could be produced to replace Tordon 2K. However, it appears at this time that the major reason for discontinuing production of 2K is pollution potential. In a second experiment, the off-target movement was measured for each of the above products. Several products, especially ammonium sulfate impregnated with Tordon appear to be as safe as Tordon 22K, the liquid product. Extremely small amounts of precipitation completely dissolved the ammonium sulfate product which permitted downward movement of Tordon. There was no trace of surface, lateral movement using a greenhouse bioassay. While efficacious impregnated products can be produced, it appears that the issue is not product production but off target pollution.

Table 1. The effect of Tordon formulation on leafy spurge control at 2 locations in MT. The experiments were established in May 1986 and rated July 12, 1986.

Tordon Formulation	Active Ingredient	Leafy Spurge Control	
		Rate of Application	
		0.5 lb/A	1.0 lb/A
		%	
22K	2 E.C.	84	98
2K	2%	48	65
Ammonium Sulphate fertilizer	0.43%	37	66
17-17-17 fertilizer	0.43%	35	58
Tidy Kat [®]	2%	37	94
Organic Kitty litter [®]	1%	45	75
Dead oat kernels	1%	43	37
Control	----	0	0