IMPROVING WEED CONTROL WITH A NEW MICRO RATE FORMULA

R. G. WILSON [1]

[1] *Panhandle Research and Extension Center, University of Nebraska, 4502 Avenue I, Scottsbluff, Nebraska, USA*

ABSTRACT

Field studies were conducted near Scottsbluff, Nebraska in 2001 and 2002 to compare weed control, crop injury, and crop yield from a series of phenmedipham plus desmedipham plus triflusulfuron-methyl plus clopyralid treatments applied either broadcast or as an 18 cm wide band over the sugarbeet row. The full-rate of phenmedipham plus desmedipham plus triflusulfuron-methyl plus clopyralid at 185 plus 185 plus 18 plus 101 g ha^{-1} was reduced 25, 50, or 75% to achieve four rates, these four rates were combined with 1.5 or 3% methylated sunflower oil to achieve a total of eight treatments. Each of these treatments plus the full-rate of phenmedipham plus desmedipham plus triflusulfuron-methyl plus clopyralid applied without methylated sunflower oil, were applied three times starting when the crop was in the cotyledon stage of growth. Sugarbeet injury was greatest from the full-rate combined with methylated sunflower oil and declined when herbicide rate was reduced to 50 and 75% of the full-rate. Weed control was greatest with the full-rate and declined when herbicide rate was reduced 75% to achieve the micro-rate. Reducing the herbicide rate 50% resulted in a much smaller decline in weed control and crop injury that was similar to the full-rate without methylated sunflower oil.

INTRODUCTION

A combination of postemergence herbicides known as the micro-rate has become popular in many of the sugarbeet growing areas of the USA. The micro-rate consists of a combination of phenmedipham plus desmedipham plus triflusulfuron-methyl plus clopyralid applied at 44.8 plus 44.8 plus 4.5 plus 22.4 g ha^{-1} in combination with 1.5% per volume of methylated sunflower oil. Herbicide application begins when the first weeds emerge and continues every 5 to 7 days for a minimum of three applications. In some parts of the intermountain west the micro-rate has failed to provide complete control of common lambsquarters (*Chenopodium album* L.)

MATERIALS AND METHODS

Field studies were conducted near Scottsbluff, Nebraska in 2001 and 2002 to compare weed control, crop injury, and crop yield from a series of phenmedipham plus desmedipham plus triflusulfuron-methyl plus clopyralid treatments applied either broadcast or as an 18 cm wide band over the sugarbeet row. The

full-rate of phenmedipham plus desmedipham plus triflusulfuron-methyl plus clopyralid was 185 plus 185 plus 18 plus 101 g ha^{-1} and was reduced by 25, 50, or 75% (micro-rate) to achieve four rates. These four rates were combined with 1.5 or 3% methylated sunflower oil to achieve a total of eight treatments. Each of these treatments were applied three times starting when the crop was in the cotyledon growth stage.

RESULTS

Crop injury, common lambsquarters control, and crop root yield were greatest from broadcast applications compared to band treatments. Sugarbeet injury was greatest from the full rate combined with 1.5 or 3% methylated sunflower oil and was reduced when herbicide rates were reduced to 50 and 75% of the full-rate. Common lambsquarters, redroot pigweed (*Amaranthus retroflexus* L.), and hairy nightshade (*Solanum sarrachoides* Sendtner) control was greatest with the full-rate and declined 14, 20, and 28% respectively, when herbicide rate was reduced 75% to achieve the micro-rate. A 50% reduction in herbicide rate resulted in a compromise between the weed control achieved with the full rate and reduced expense and crop injury achieved with the micro-rate (75% reduction). The half-rate only resulted in a 7, 4, and 4% decline in common lambsquarters, redroot pigweed, and hairy nightshade control respectively, and crop yield was improved with the half-rate compared to the micro-rate. The half-rate may have advantages in those production areas where the micro-rate is providing reduced common lambsquarters control.