

Evaluate Potential Crop Injury from Herbicides Applied the Final Year of Peppermint Production when Rotating to Kentucky Bluegrass Seed or Wheat

Marvin Butler, Rich Affeldt, Jim Carroll, Jim Cloud and Mark Hagman

Abstract

There have been ongoing concerns by growers and fieldmen in about herbicides used in peppermint production carrying over when rotating into Kentucky bluegrass or winter wheat. Symptoms generally appear as Sinbar damage despite lowered rates later in production years with no Sinbar applied the final year of production. Of concern is whether alternative herbicides used in the final year or two in combination with Sinbar is creating a synergistic effect that is causing the observed damage. A research project was established to evaluate four herbicides applied alone and in various combinations to address these concerns. As of early December, no observable effect of these twenty herbicide treatments on Kentucky bluegrass or winter wheat stands has been observed.

Introduction

In central Oregon, there has been grower and fieldmen concern over the last several years about herbicide injury to Kentucky bluegrass and wheat when rotating out of peppermint. Growers typically reduce Sinbar (terbacil) use in older stands to prevent future damage as they rotate out of mint. Rates are generally 1.5 lb/acre the first year, 1 lb/acre the second year, 0.5 lb/acre the third year and no Sinbar applied the fourth or final year.

To offset reduced Sinbar use in older stands, various combinations of Spartan (sulfentrazone), Chateau (flumioxazin), and Command (clomazone) are used for weed control. However, as use of these products has increased rotational problems are becoming more evident. Most of the rotation crop research that was previously conducted with these herbicides was done with each product individually, rather than in combination, as would typically be done in production. The combination of these products is of particular importance, as there is strong local concern that potential synergism may be increasing injury when these herbicides are tank mixed.

This project focuses on soil residual herbicides applied alone and in combination to peppermint that may be causing rotational crop damage to Kentucky bluegrass grown for seed and wheat. Herbicides include Sinbar, Spartan, Chateau and Command applied late winter alone and in various combinations on the final year of mint production. Injury to rotational crops Kentucky bluegrass for seed and wheat will be evaluated.

Methods and Materials

This project is being conducted on a plot of peppermint 80 ft x 120 ft at the Central Oregon Agricultural Research Center (COARC) planted in 2014. A total of 20 treatments were applied February 18, 2015 to 10 ft x 20 ft plots, replicated four times in a randomized complete block design. Herbicides were applied with a CO₂ powered backpack sprayer with a hand-held boom

commonly used for research plots. Due to an anticipated lack of precipitation, the plot area was irrigated with a half inch of water following application using a rain bird sprinkler. However, there was 0.17 inch of precipitation on February 27.

The plot area was managed similar to commercial practices for mint production in central Oregon. At harvest timing, mint was cut and removed from the plot area and Roundup was applied following a post-harvest irrigation. The plot area was rotovated to 3-4 inches and rolled to firm the seed bed prior to planting with an 8 ft Great Plains no-till drill. Kentucky bluegrass was planted August 19 and winter wheat was planted October 9. These two crops were planted perpendicular to herbicide treatments creating 10 ft x 10 ft sub-plots.

Results and Discussion

The tillage practices for removing the mint stand varied from the common commercial practice of discing or discing and ripping followed by cultimulching prior to planting. The small size of the plots is the reason for rotovating rather than discing to minimize soil movement across plots. We do not believe this variation in tillage practice changed the outcome because the tillage depth was consistent with standard commercial practice.

Through early December 2015 there has been no discernable effect on Kentucky bluegrass or winter wheat stands based on herbicide treatments. In commercial fields herbicide damage would have been observed earlier in the fall for Kentucky bluegrass, though symptoms on wheat may be delayed until early spring. This lack of results to date, on Kentucky bluegrass in particular, comes as a surprise to those involved in the project without any clear explanation. All would expect to at least see symptoms from Sinbar applied at 1 lb/acre in February of this year, either alone or in combination with Spartan, Chateau or Command.

Plots will continue to be monitored through spring for herbicide injury. If warranted, wheat stand counts will be taken and fresh biomass samples for both wheat and Kentucky bluegrass will be collected. If no injury is observed, sugar beets will be planted through the plots and used as a highly sensitive indicator crop for Sinbar or other herbicides.

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