

# CULTURAL AND AGRONOMIC MANAGEMENT OF HERBICIDE-RESISTANT KOCHIA IN SASKATCHEWAN

## LIGHT TILLAGE IN THE SPRING, FALL, OR AT BOTH TIMINGS PROMOTE SEEDS TO GERMINATE AND BE CONTROLLED IN THE SPRING BY HERBICIDE APPLICATION OR SEEDING PASS

### Introduction

Herbicide-resistant kochia (*Bassia scoparia*) continues to cause substantial yield losses across Saskatchewan, with resistance to multiple herbicide groups limiting chemical control options. With Group 14 resistance now confirmed in Saskatchewan, producers must increasingly rely on integrated weed management strategies. This Strategic Field Program project evaluates practical cultural and agronomic tools to reduce kochia pressure. Field trials that included 3 objectives were conducted from 2024–2025 at Swift Current (Light Brown soil zone) and Redvers (Dark Grey soil zone).

### Methods

Spring, fall, and combined spring + fall harrowing treatments were evaluated to determine whether light tillage stimulates kochia germination that can subsequently be controlled by herbicide, frost, or seeding operations. Weed density, kochia biomass, crop emergence, and yield were measured annually.

### Results

Initial kochia populations were high and variable (up to 172 plants m<sup>-2</sup> at Swift Current and 866 plants m<sup>-2</sup> at Redvers in 2024), causing 50–80% yield losses. Spring harrowing increased early kochia emergence, but did not significantly affect kochia density, biomass, or plant health by harvest. Fall herbicide applications reduced kochia populations the next spring by 80–95%.

Harrow timing still did not significantly impact kochia density. However, moderate harrow use (1–2 passes over two years) produced numerically higher durum yields in 2025 (1425–1578 kg ha<sup>-1</sup>) than zero or three passes, suggesting possible soil moisture or nutrient effects rather than direct weed suppression.

Overall, light tillage alone was not an effective standalone kochia control strategy. Across sites and objectives, environmental conditions were the dominant driver of crop yield. Light harrowing alone did not significantly reduce kochia populations and an integrated approach combining light tillage, fall herbicide, competitive crops and annual forage harvest systems provides the greatest potential to reduce reliance on herbicides and manage herbicide-resistant kochia sustainably. The project will continue through 2027 to evaluate cumulative multi-year impacts. A full project progress report can be found on [wheatlandconservation.ca](http://wheatlandconservation.ca)

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