

PROJECT REPORT, January 2008
(Funded Proposal)

Title: Evaluation of Weed Suppression Provided by a High-Residue Clover Cover in Conservation-Tillage Corn.

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Introduction: Many corn producers in Alabama have adopted some form of conservation-tillage. Research has shown that by letting winter cover crops grow larger, improvements in soil quality including organic matter, water infiltration and availability, and weed suppression can be attained. However, research has also shown that surface residue can decrease the value/effectiveness of preemergence herbicides. Because winter cereal covers can provide early season weed control when managed properly, the question presents itself; can preemergence herbicides be replaced with a high-residue winter cereal cover crop? If herbicide inputs can be successfully decreased growers could possibly eliminate a herbicide application and gain additional value from their winter cover.

Progress to date: A field study was conducted in roundup ready corn at E.V. Smith and Tennessee Valley Agricultural Experiment Stations. The study was a factorial treatment arrangement consisting of three levels: winter cover (clover present or absent), early season residual (either Atrazine at burndown, at planting, or none), and postemergence herbicide (glyphosate mixed with Atrazine and applied at 12" corn growth stage, glyphosate applied before V8 corn growth stage alone, or none).

The experiment was established at E. V. Smith and Tennessee Valley Experiment Stations in fall 2007. Clover was no-till drilled at both locations at 25 lbs/acre on 10/24/'07 at E.V. Smith and 11/10/'07 at Tennessee Valley. Winter fallow plots and the winter clover cover crop plots were terminated in the spring prior to corn seeding. Corn was established in four row (38 in. spacing) plots 20 ft in length. Each treatment was replicated 4 times. Weed biomass and corn response (corn height and yield) was evaluated. The experiment was lost at Tennessee Valley due to the late freeze, however, the experiment at E. V. Smith recovered from the freeze and yield was harvested.

Results to date: For the conventional variety, yield increased with two herbicide applications vs. a single application in the winter fallow system (Figure 1). The addition of a third herbicide application did not increase yield. However, in the high-residue clover winter cover crop system, the addition of a residual in the burndown application provided yields similar to those with two or three herbicide applications. Similar results were observed in the Roundup Ready system (Figure 2). These preliminary results show that a high-residue clover cover in corn may suppress weeds well enough to eliminate multiple POST herbicide applications.

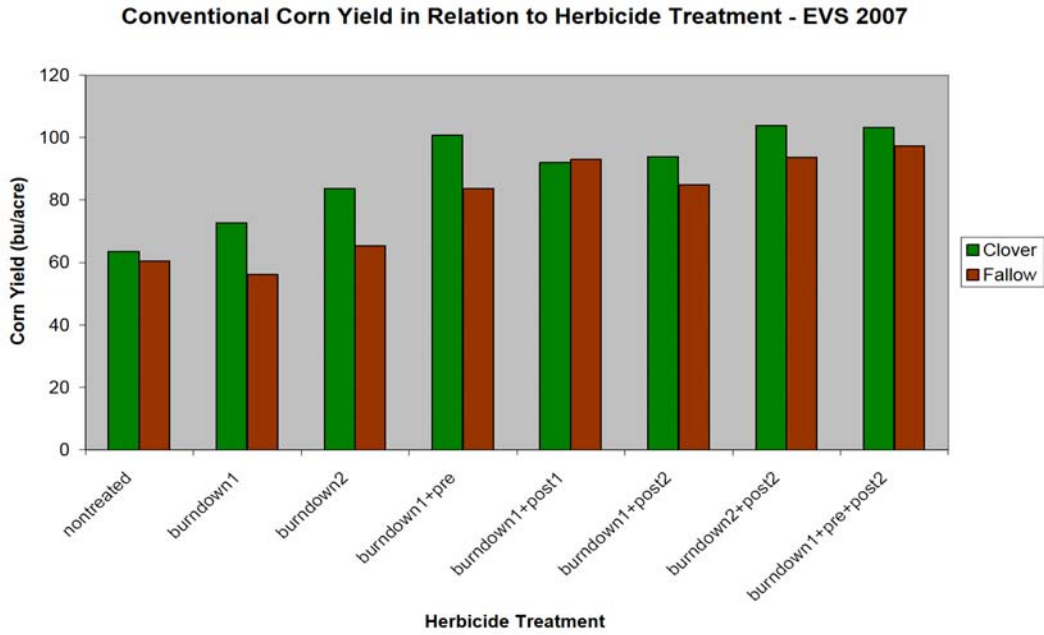


Figure 1.

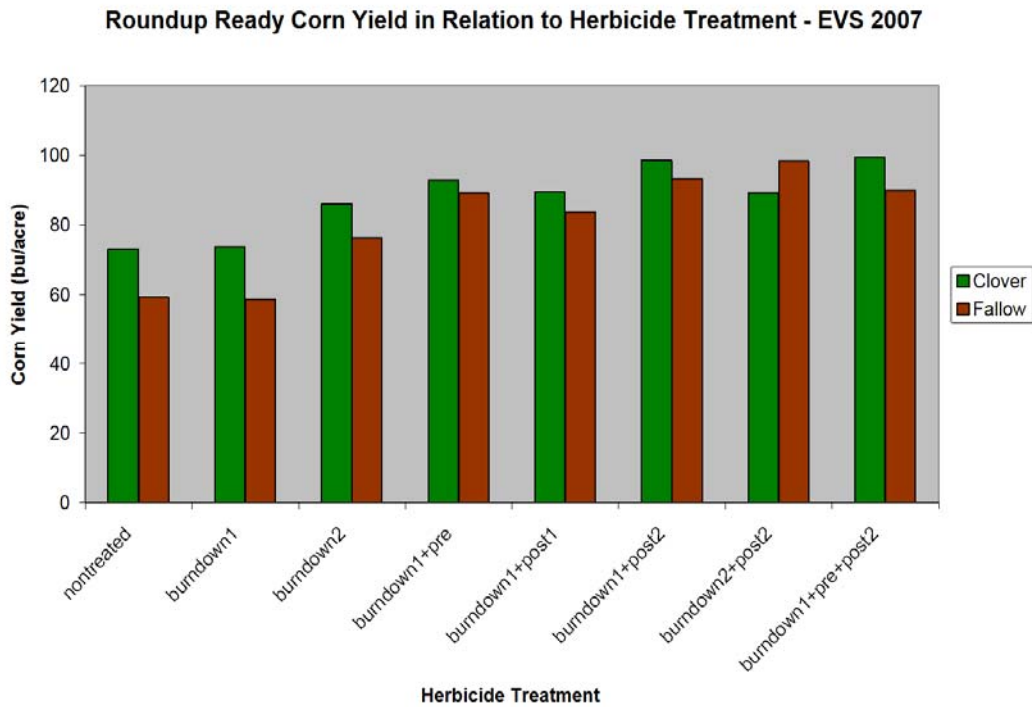


Figure 2.

Early season broadleaf and grass weed control was also improved when a high residue clover cover crop was utilized in both conventional and Roundup Ready systems (Figures 3-10).

Sicklepod Control (18 DAP) in Conventional Corn - EVS 2007

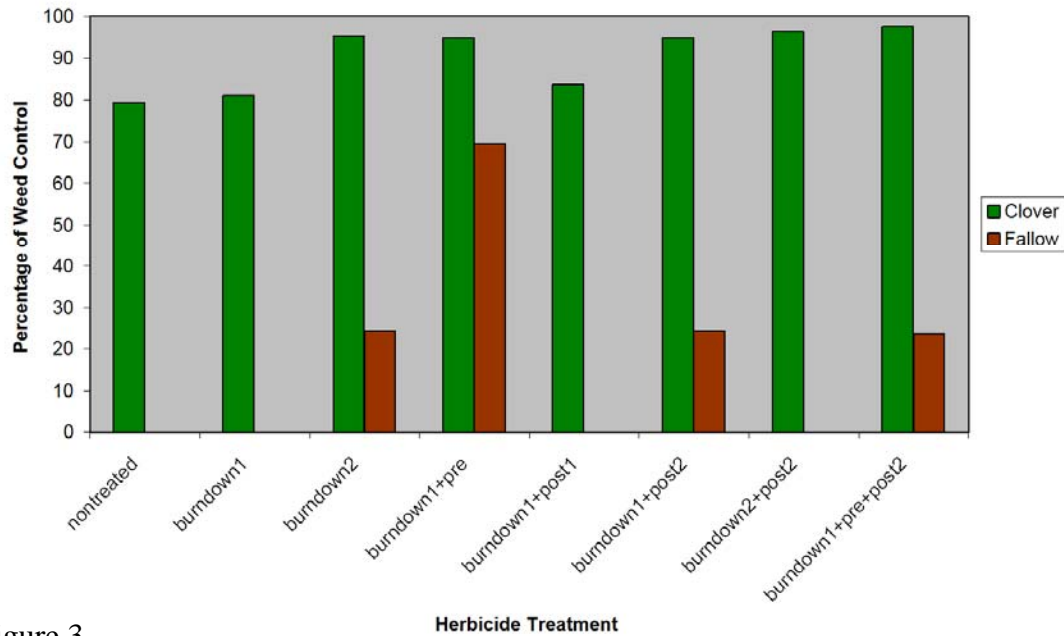


Figure 3.

Sicklepod Control (18 DAP) in Roundup Ready Corn - EVS 2007

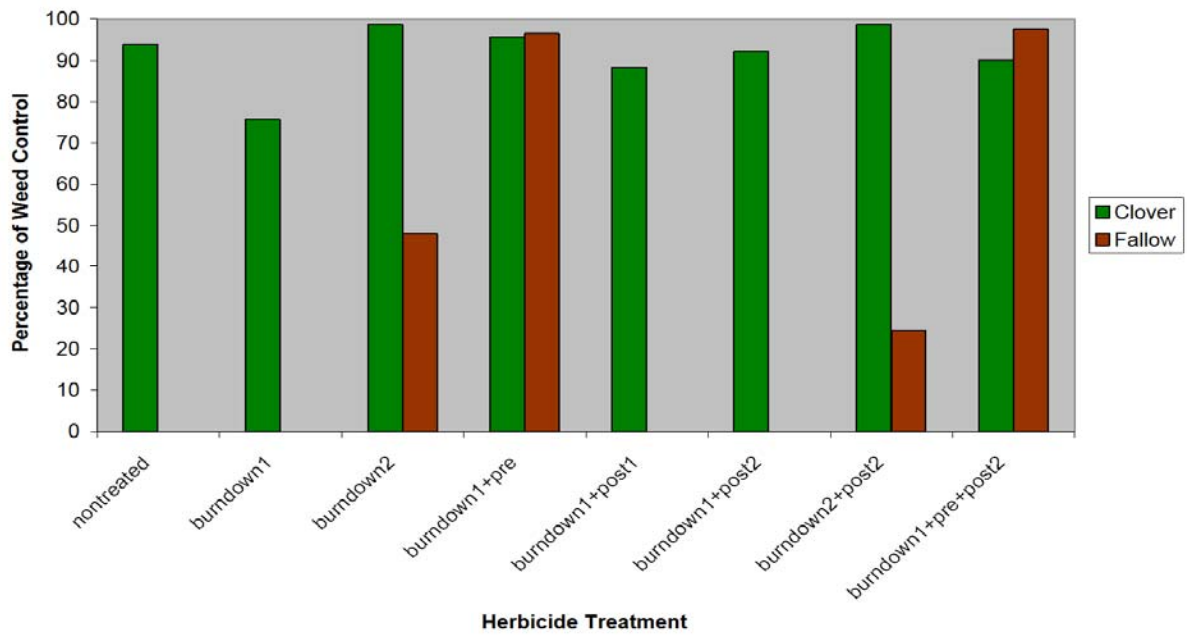


Figure 4.

Tall Morning Glory Control (18 DAP) in Conventional Corn - EVS 2007

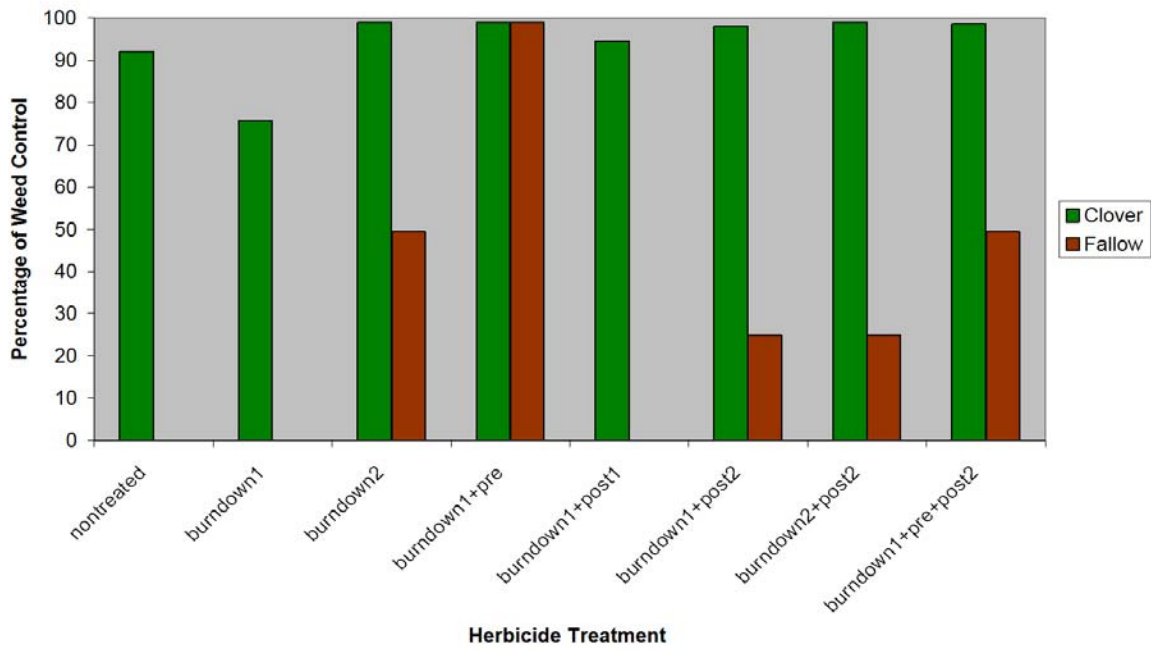


Figure 5.

Tall Morning Glory Control (18 DAP) in Roundup Ready Corn - EVS 2007

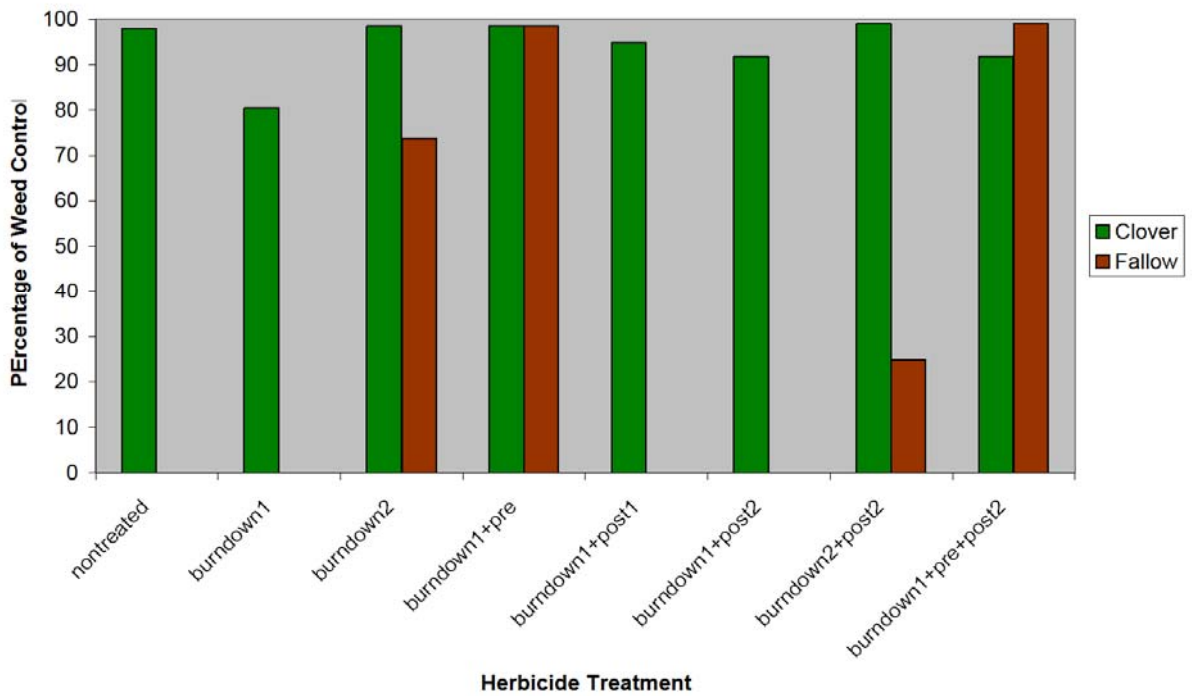


Figure 6.

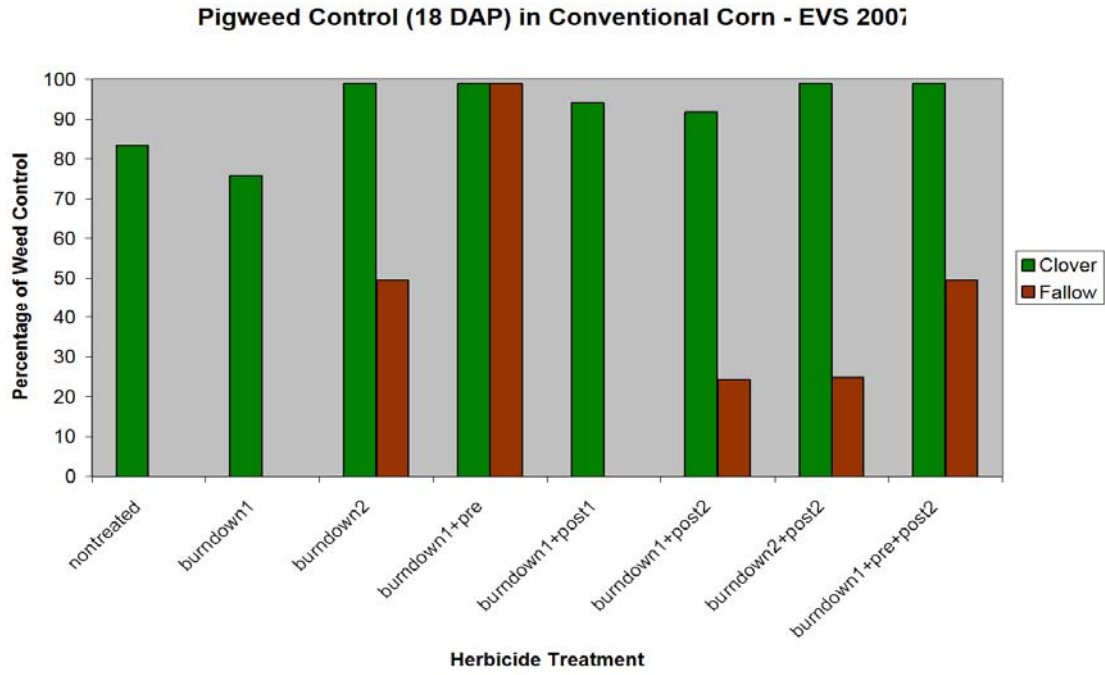


Figure 7.

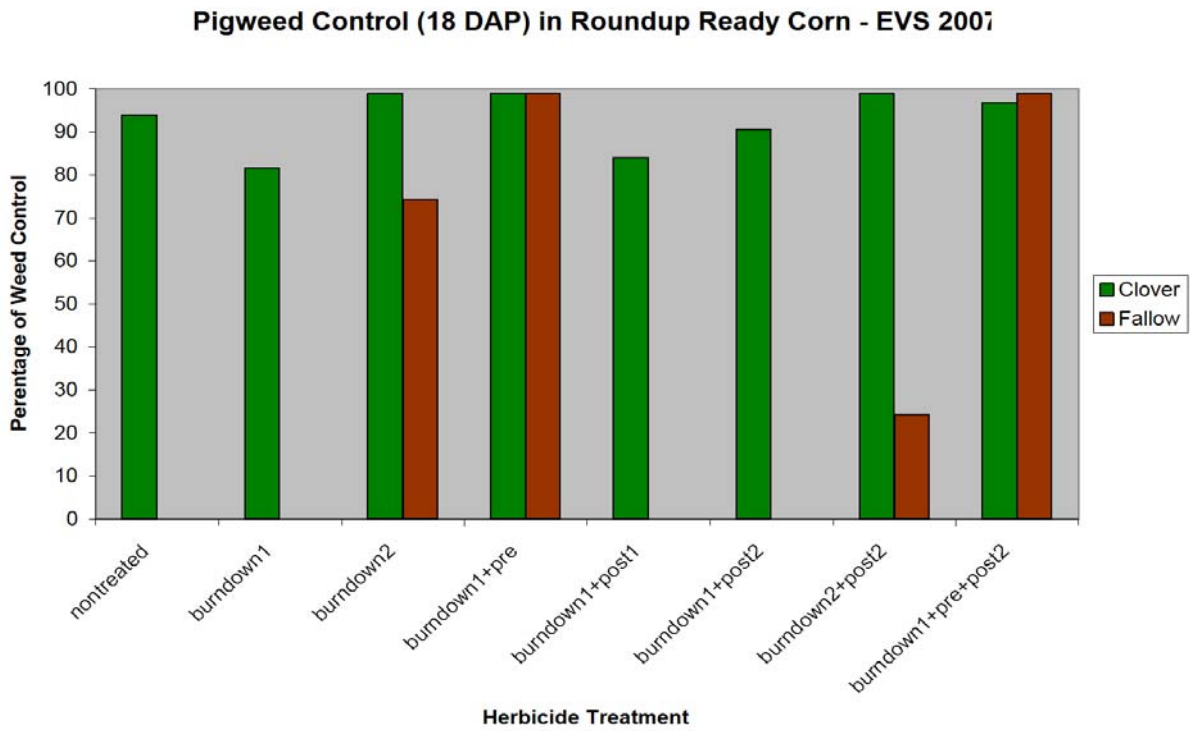


Figure 8.

Large Crabgrass Control (18 DAP) in Conventional Corn - EVS 2007

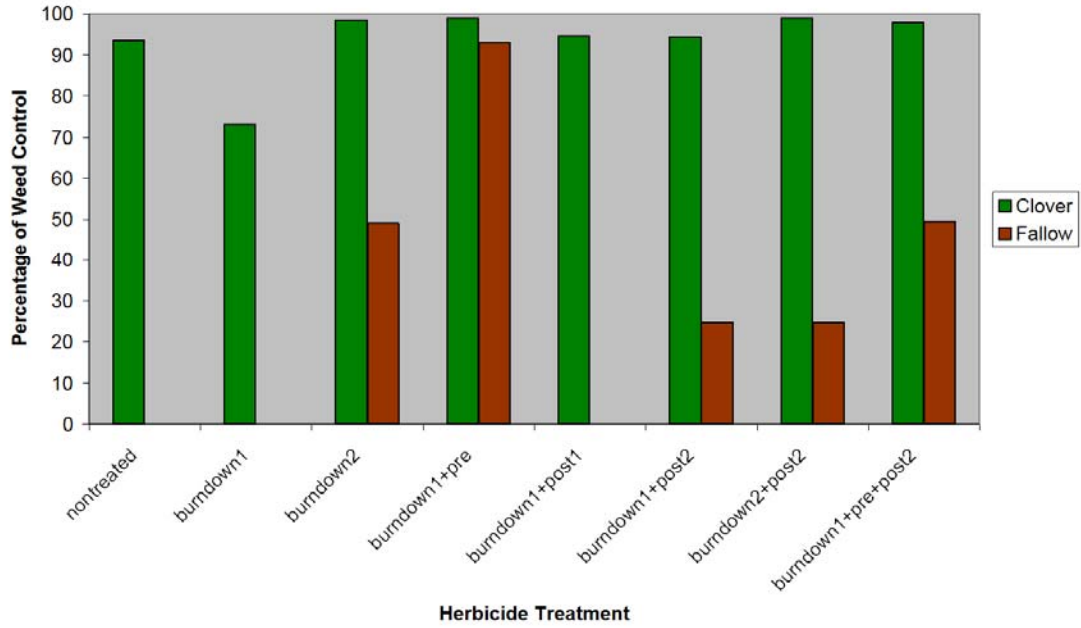


Figure 9.

Large Crabgrass Control (18 DAP) in Roundup Ready Corn - EVS 2007

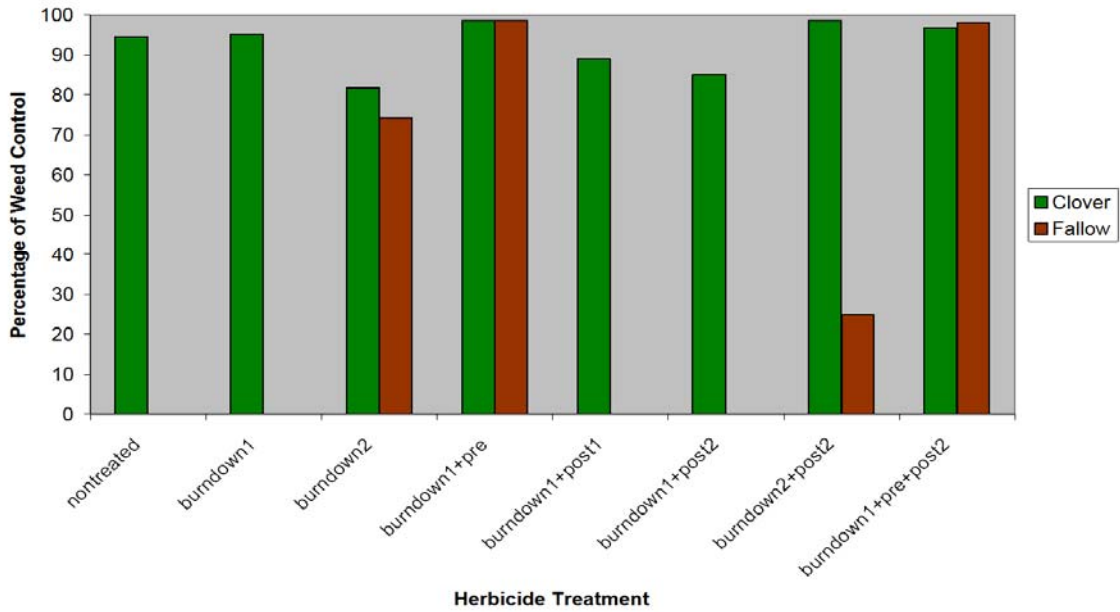


Figure 10.