

Recent Developments in Weed Management in Corn and Sorghums

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Introduction

In California, 670, 000 acres of corn is grown, two-thirds of it planted for silage. The acreage grown for grain is very price dependent. No single weed control regime is effective for all growing conditions. An integrated weed management program utilizes a combination of cultural, mechanical, and chemical methods for consistent, effective weed control. It also helps prevent the development of weed resistance to herbicides and the emergence of a few dominant weeds. Some of the major weeds include pigweed, annual morningglory, purslane, barnyardgrass, and nutsedge.

Cultural practices play an important role in corn weed management. In California, a well-managed corn crop is extremely competitive with most weeds. Good cultural practices, including timely cultivations, often control weeds sufficiently to maximize yields and profit.

Growing corn under no-till or reduced tillage also reduces weeds because the soil is not disturbed, thus reducing the number of seeds that germinate. Preirrigation prior to planting and controlling volunteer cereals and emerged weeds will get the crop off to a good start, although this practice delays planting. For weeds that do emerge, postemergent herbicides can be applied.

Preplant, preemergent, or postemergent herbicides are available that will selectively control most species of weeds in corn. Select an herbicide based on costs, weeds present, stage of corn growth, soil type, succeeding rotation crop, and adjacent crops.

Transgenic Corn. Herbicide-tolerant varieties represent approximately 50% of corn grown in California and provide additional options for weed control. The Roundup Ready technology has provided growers with an excellent tool for managing many annual and perennial grasses. Glyphosate can be applied post emergence so growers can wait and see the weeds present. There are no plant back restrictions. There is substantial fuel savings, as tillage operations are reduced. In Roundup Ready varieties, glyphosate can be applied over the top to corn up to the V8 stage of corn or 24 inches. Drop nozzles are recommended for corn taller than 24 inches. Keep spray out of whorls after corn is 30 inches tall. Rates depend on formulation and weed type and size.

The following herbicides are used in corn:

Pre-Plant: Atrazine, Aatrex, Eradicane, Roundup, Dual Magnum, Outlook, Gramoxone Inteon, Micro-Tech

At Planting: Micro-Tech, Aatrex, Atrazine, Dual Magnum, Prowl H2O, Prowl, Roundup, Gramoxone Inteon, Eradicane

After Planting: Accent, Prowl, glyphosate, 2,4-D, Banvel, Clarity, Distinct, Buctril, Gramoxone Inteon, Sencor, Aatrex, Atrazine, Sandea, Shark, ET, Yukon, Option, Outlook

Weeds not controlled by a pre-plant incorporated herbicide or by cultivation can often be controlled with a postemergent herbicide application, depending on the weed species present and its growth stage. Postemergent herbicides are most effective when applied to weed seedlings.

An over-the-top application can be used, but some products or tank mixes require a directed spray on corn larger than 8 to 12 inches in height to keep the herbicide out of the whorl and to minimize the risk of corn injury. Postemergent herbicides commonly used in corn include 2,4-D, bromoxynil (Buctril), carfentrazone (Shark), dicamba (Banvel, Clarity), dicamba/halosulfuron (Yukon), diflufenzopyr (Distinct), halosulfuron (Sanda), metribuzin (Sencor), nicosulfuron (Accent), and foramsulfuron (Option). It is important, however, to pay close attention to application guidelines on the labels to avoid phytotoxicity to the crop, especially with carfentrazone (Shark). Fig. 1 demonstrates the acreage of various herbicides used in California.

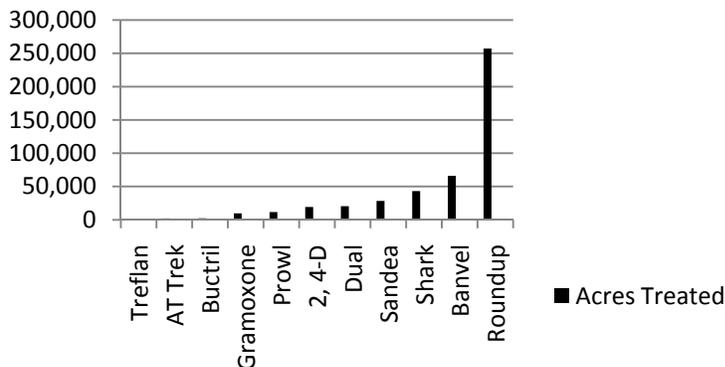


Fig. 1. 2007 Herbicide Usage in California Corn

In Roundup Ready crop systems in other states, weed shifts and weed resistance occurs. Weed shifts occurred when an herbicide program was used repeatedly, resulting in the survival of only weeds that are tolerant of the herbicide. Weed shifts were associated with reduced tillage systems and not rotating herbicides.

A major concern is the development of resistance to glyphosate (Roundup) in lambsquarter, amaranth species, horseweed, and Italian ryegrass in California. Rotating glyphosate-resistant corn with another glyphosate-resistant crop such as cotton or alfalfa will only increase this problem. To help prevent the development of herbicide-resistant weeds and prevent weed shifts from occurring, it is important to incorporate tillage into your weed management practices, as well as alternating herbicides that have a different chemical mode of action.

Grain Sorghum

There are 15,000 acres of sorghum for grain planted in California, while 53,000 acres of sorghum silage is grown as well. Fig. 2. demonstrates the acreage of various herbicides used in grain sorghums in California.

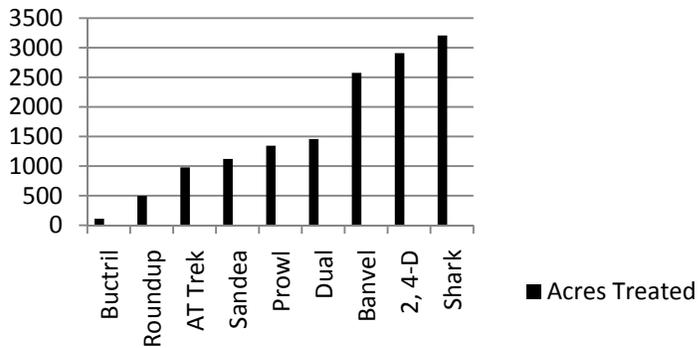


Table 2. 2007 Herbicide Usage in California Sorghum

The following herbicides are registered for use in California.

Pre-Plant Herbicides Used in Sorghum

- *Atrazine*- grasses, broadleaves- (long soil residual)
- *Dual Magnum*- (w Concept treated seed only) barnyardgrass, broadleaves

After Planting

- *Prowl*- preemergent for grasses, pigweeds, lambsquarter, nightshade
- *2,4-D, Banvel, Clarity*, -many broadleaves (watch drift, high temp.)
- *Shark*- contact broadleaves, - some injury
- *Buctril*- contact broadleaves
- *Sandea*- yellow and purple nutsedge
- *Yukon* -nutsedge and broadleaves

Summary

Weed management in sorghums should incorporate resistance management strategies that include, crop rotation, herbicide rotation, and control of weed escapes by tillage or hand.

References:

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