Weed Control in Cereal Crops

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Cereals are grown for grain, hay silage, or covercrop. Approximately 1,000,000 acres of wheat, barley, oats, and triticale were planted last season. Durum wheat, barley utilized for grain and triticale used for silage, planted approximately 100, 000 acres each. Since grains are grown under a wide range of conditions, a wide spectrum of weak species may be present in any given field that has the potential to affect both yield and quality.

Grass weeds are increasing due to lack of crop rotations and more use of dairy manures The major grass weeds in small grains are canarygrass *(Phalaris* minor) and wild oats *(Avena* fatua). Other weeds include Italian Ryegrass *(Lolium multiflorum)*, annual bluegrass *(Poa annua)*, ripgut brome *(Bromus diandrus)*, foxtail barley *(Hordeum jubatum)*, and rabbitsfoot grass *(Polypogon monspeliensis)*. Even light infestations can reduce yields. They can clog up screens in a harvester and can result in a 5 percent loss due to dockage at the elevator. Italian ryegrass, little seed canarygrass, hooded canarygrass *(Phalaris arundinacea)*, and ripgut brome can cause serious yield losses in some fields.

Most competition studies in cereals have been limited to wild oats. Under irrigated conditions studies showed that wild oats reduced yields at 2 oats/square feet. Wild oats populations commonly exceed 10-20 oats per foot. A wild oat competition study conducted in Manitoba in 1988 demonstrated that this weed had the largest impact on yields. If the wild oat emerged behind the wheat emergence, the impact on yield was less.

Deciding whether a weed control application is economical will depend largely on the price of grain and the cost of treatment. Sound economical weed control practices must be followed to maintain California's present high standing in field crop production. Broadleaf weeds in irrigated cereals can be controlled for as little as 2-4 percent of cash costs. When grass weeds are controlled, costs go up to about 10 percent of the total.

Cultural practices primarily for moisture conservation in dryland cereals include fallowing to keep weeds in check. Wild oat populations in dryland grains would be considerably higher if this was not practiced. Weeds should then be controlled by tillage and/or chemically. Fields not under a good crop rotation system have the worst weed problems. Small grains fields planted behind cotton in which good weed control practices were employed are usually clean and often don't require herbicides. Pre-irrigation or waiting for the first rain can be useful some years in germinating weeds that are then removed by tillage prior to planting. However, this is not usually possible following cotton or corn in the San Joaquin Valley. On heavier soils, it may not be possible for fields to dry in time for planting. This practice is most useful in germinating annual grasses. Usually annual broadleaves germinate later, January through March.

For grass control in wheat and barley, Fenoxaprop (Puma) controls wild oat, and canarygrass. It has a wide window of application, providing effective control when applied between the 1-leaf and 6th leaf grass stage. For best control of wild oat, delay application until most wild oat plants have emerged. A tank mixture with bromoxynil allows for a wide range of weed control at an early timing. Fenoxaprop cannot be tank-mixed with phenoxy herbicides because it may reduce grass control when tank mixed. Most growers are applying a carfentrazone application and then coming back 7-10 days with Puma to keep up with early weed competition.

Mesosulfuron (Osprey) is especially effective on Italian ryegrass, ripgut brome, many broadleaf weeds, wild oat, annual bluegrass, little seed and hooded canarygrass. Most California wheat cultivars have good tolerance to the herbicide. However, wheat often turns a lighter green color for a couple weeks following application. It also provides partial control of many other broadleaf weeds. Mesosulfuron can be tank mixed with bromoxynil and may be applied from the 1-leaf to 1-tiller wheat stage and up to the 2-tiller stage of grass weed development. Restrictions on crop rotations are greater than with Fenoxaprop.

Prowl H20 provides suppression of wild oats applied postplant after the 2-leaf stage of wheat**.** It then controls later emerging grasses so long as there is moisture to activate the herbicide. So far our research studies have show about a 50/50 chance of obtaining good weed control since in many cases weeds are rapidly emerging with the small grains.

Corn

Approximately 55 percent of corn in California is Roundup Ready. The advantages include being able to **s**pray OT early then after 24-30" use a directed spray. There are no plantback restrictions. Growers are able to adapt to conservation tillage systems. I do recommend that growers also consider using other herbicides and tillage when appropriate to reduce glyphosate resistance. Other herbicide options include the following.

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, and Distinct.