# Sugarbeet Weed Management Issues for the Different Planting Zones of California

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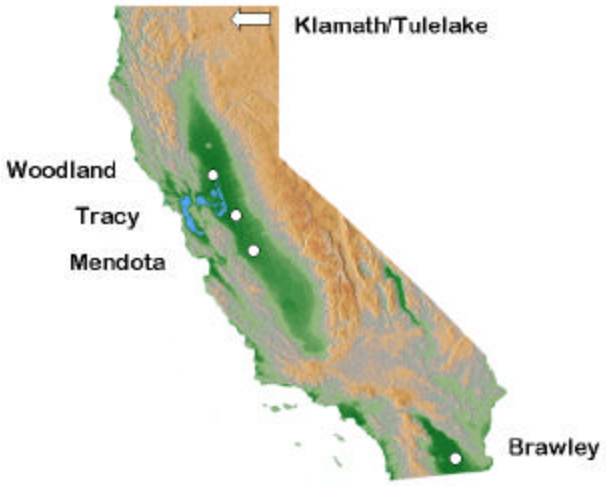
The sugarbeet industry in California has existed for over 100 years. The acreage has been at a low point in recent years due to disease problems, factory closure and general economics of growing the crop. The 2000 expected acreage is 108,000 acres for the growing areas surrounding the 4 remaining factories and the Klamath/ Tulelake area. Weed control continues to be a major contributing factor in the economics of growing sugarbeets. Figure 1. indicates the location of the current growing areas and factories in California.

**Figure 1.**




For each of the three valley factories (Woodland, Tracy and Mendota), there are three planting/harvest periods. This is done to lengthen the harvest time and increase capacity for each factory. By using separate areas, a beet free area utilizing time and space is established to control the virus yellows complex of diseases that commonly occur in the central valley of California.

The Brawley factory area and the Klamath/Tulelake area are completely separate from this time of planting scheme as the climate controls the time of planting and harvest in each of these areas.

**Table 1. Planting and harvest dates for the sugarbeet factories and growing areas in California.**

| Factory Area | Planting Dates | Harvest Dates |
|---|---|---|
| Woodland | Jan-Mar<br>May-Jun | Aug-Sep<br>Mar-Jun |
| Tracy | Oct-Jan<br>Jan-Mar<br>May-Jun | Jul-Aug<br>Aug-Sep<br>Mar-Jun |
| Mendota | Oct-Jan<br>Jan-Mar<br>May-Jun | Jul-Aug<br>Aug-Sep<br>Mar-Jun |
| Brawley | Sep-Oct | Apr-Jul |
| Klamath/Tulelake | Mar-May | Oct-Nov |

Sugarbeet weed management can be viewed from two perspectives of the same issue. One common perspective is to group weed control practices by the weed spectrum, season and growing season. Another is by the timing and application method for the herbicide. The following are some of the conditions for each perspective:

Weed spectrum by season/growing conditions

- Winter/Summer annual weeds
- Cool/Warm temperatures at herbicide application
- Slow/Fast growing weeds and beets.

Timing and method of herbicide application

- Pre/Post emergence herbicides
- Foliar/soil absorption and incorporation of the herbicides

Each of the three planting times for the Central Valley planting areas have their own set of growing conditions that alter weed management strategies.

| **Fall Planting** | **Winter-Spring Planting** | **Spring-Summer Planting** |
|---|---|---|
| •Oct-Jan planting dates<br>•Cooling air and soil temperatures<br>•Winter annual weeds<br>•Slow growing beets and weeds<br>•Possible wet soil conditions for weed control | •Jan-Mar planting dates<br>•Cool-cold soil and air temps early<br>•Warming as the Spring develops<br>•Wet soil conditions a real problem<br>•Winter annual weeds early<br>•Summer annual weeds from layby on | •May-June planting dates<br>•Warm to Hot air and soil conditions<br>•Summer annual weeds<br>•Weeds grow faster than beets<br>•Hot temps are problem for contact herbicides |

Weed management strategies that depend on the time and method of application are fairly specific for each herbicide registered for use in California. The following table is a list of the common herbicides and their use.

| Preplant | | Postplant | | Layby |
|---|---|---|---|---|
| foliar | incorporated | Pre-emergence | Post-emergence | |
| Roundup<br>Paraquat | Roneet<br>Tillam<br>Nortron<br>Pyramin | Nortron<br>Pyramin<br><br>Roundup | Betanex<br>Betenal<br>Betamix<br>B. Progress<br>Upbeet<br>Stinger<br>H 273<br>Poast<br>Prism | Eptam<br>Treflan |

New developments in sugarbeet weed management include the use of transgenic herbicide resistant varieties to Roundup and Liberty. This technology is referred to as Genetically Modified Organisms (GMOs) and has come under much scrutiny by the press and public opinion. In field-testing these products on the specific resistant varieties, either Roundup Ready or Liberty Link, there is a definite advantage in weed control and more importantly reduced crop injury by using this technology. The registration process is proceeding rapidly and clearance for use in California should be coming soon. The problem is that this technology is seemingly not accepted in the sugar marketplace. At this time, Holly Sugar, the owner of all of the factories in California has chosen not to accept any GMO sugarbeets because of a lack of acceptance by their sugar buyers.

An alternative to the GMO technology that is being tested is what is called the Ultra Low Rate (ULR) or Micro-rate technology. This technology uses Mentholated Seed Oil (MSO) as a additive to the standard post emergence herbicide mixture of Betamix Progress, Upbeet and Stinger. Because the MSO greatly increases herbicide penetration into the plants, greatly reduced rates are needed to avoid crop injury. Fortunately, weed control is generally good with the reduced rates and crop injury has been minimized. There are still label restrictions that prevent this usage in California, but it is registered in several states and gaining in popularity because it greatly reduces the cost of the application with less crop injury. One problem experienced in California testing is that the common rates used in the other states missed control of lambsquarter. Further testing to resolve this problem and a supplemental product label will be needed before this ULR technology will be available to California growers.