

Weed Control Q&A: Upland Invaders

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Leaders will summarize new and innovative control news, focusing on thistles and knapweeds (including yellow starthistle), and then field questions. Two of California's experts will discuss some of the new techniques for weed control and where they best fit, as well as their limitations. Participants are encouraged to discuss their current difficult weed problems. Group leaders and other experts in the audience will try to come up with some best management options.

Discussion began with an introduction from Joe:

- Dupont has a new product called KJ44 that is not out yet, but Joe has been doing some testing of the product. It has a 3 month soil residual, works like milestone and lower toxicity than milestone (low risk). It is an auxin like herbicide with a different spectrum than milestone and may work better on shrubs. Milestone has been out for 2 years and has a 2 month soil residual. It has been seen to be 3 times more effective on yellow star thistle than transline and good for control of knapweeds and tuff forbs. To treat the same species, other states are using Tordon and Picloram, but these chemicals are not labeled for California and have a 2 year soil residual (have been found in ground water).
- CDFA is working with Joe on Dalmatian toadflax (*Linaria dalmatica*). There is a biocontrol that has been successful in other states that is being introduced to Hungry Valley, California. CDFA has been successful at keeping Dalmatian toadflax down and hopes this new tool will prove even more successful. The biocontrol is very host specific and thus may not work on the related species, Yellow Toadflax (*Linaria vulgaris*).
- Yellowflag iris (*Iris pseudacorus*) is becoming a problem in wetland areas (Jasper Ridge, Sonoma Co.). It is an ornamental plant that has begun to escape. Joe is working with JP Marie at the Putah Creek Preserve to determine a control. Currently they are using Habitat and finding good results. Monsanto has been using an injection system which is working.
- *Diorhabda elongate* beetle is continuing to be successful in Nevada on controlling tamarisk and there is a plan to introduce it into Cache Creek in California. The beetles introduced will be collected from an area with similar habitat to Cash Creek. The beetle is thought to prefer *T. ramosissima* and *parviflora* spp. Where it has been released, *T. parviflora* is being cut back significantly, so it is hopeful that it will also have the same level of effect on the *T. ramosissima* Cache Creek.
- Ravennagrass (*Saccharum ravennae*) is a problem at Cache Creek (along with Arundo) for which efforts are being made to remove it. The method that appears to work is defoliation every year for 5 years. In areas where this method is working, monitoring is in place to observe what will replace the Ravennagrass. It is advised that once the Ravennagrass is dead, removal of the dead bodies would likely cause unnecessary disturbance. These dead bodies also provide bank stabilization until other species are able to reinvade.

- Journal Release: “Invasive Plant Science and Management”
 - 75% of the articles are from the west. This is likely because of our high level of invasives.
 - Includes invasive alerts in the journal important to California.
 - If you subscribe, you can get the back issues. To get particular articles, Joe can be contacted by email to get a PDF.

Participant questions and comments:

Spotted knapweed (*Centaurea maculosa*): Treatment with milestone for one year will kill the plants, but the seed bank will require repeat treatments. Small patches can be controlled by hand pulling.

Dalmatian toadflax (*Linaria dalmatica*): Dip and clip method works well. Dip the clippers in herbicide and then clip with them. The method is similar to the cut and brush/paint method used on more woody species.

Brachipodium distans: If you can't use fire to treat due to regulations or near by housing and mowing has not worked, there are a few options. 1) Grazing with sheep, cattle, or goats. 2) Change the timing of the mowing because the window for effective mowing is short. If mowing didn't work before, it may be that the window was missed and not that the method doesn't work. 3) Try an organic herbicide. 4) Steaming of the plants with high temp and pressure. There is a company that does it for \$10,000 per visit, but this often has to be repeated 3 or more time.

Common teasel (*Dipsacus fullonum*): In an area that has many rare natives that prevent the use of grazing for control, it might be worth looking into a biocontrol used in the prairie states. Hand digging appears to work for small patches. If you are dealing with Fuller's Teasel (*D. sativus*), you can pour herbicide into the cups of the leaves, but Common Teasel leaves do not have the cupping. The use of mowing for a few years can kill the adult plants and rosettes can then be killed with 1 year's worth of spraying with Roundup. Teasel is a biennial but in Marin Co. it appears to be acting as a perennial. It may also act more like a perennial if you chop the heads and leaves, but leave the roots intact. It has been observed in adjacent fields that those with grazing have fewer or no Teasel compared to those ungrazed. But others have noticed the opposite, which may be a response of the Teasel to the disturbance of the grazers or may be a result of poorly timed grazing. It is agreed that the grazers do in fact eat the plant and cattle are the best option.

Medusa Head (*Euphorbia flanaganii*): Spray it with molasses to lure the cattle in to eat it. This will work in small patches to make the plant attractive and helps keep the cattle selecting for the weed and not the natives. Other options include mowing, flaming, burning in the winter and covering with a tarp. Unfortunately the seed bank life of Medusa Head is about 2 year. It is not a good competitor, but its silica based thatch seems to aid in its persistence. A mowing procedure that has the potential of reducing cover by 99% is to mow then rake out the thatch. The raking exposes the seeds at ground level making them susceptible to burning. Roundup early on is useful in solid patches, but will kill natives too. The herbicide Matrix can now be used in California and has proven

effective on Medusa head. A paper from the UC Davis Extension by Rob Wilson tested many chemical treatments and provides the effectiveness on many plant including Medusa Head. The herbicide Plateau is effective but not yet labeled for California (has been used in sage brush with less damage to sage brush than other herbicides).

Canada thistle (*Cirsium arvense*): It is considered a northern state weed where it spreads quickly, but in the south it might stay small. To control it you can mow just before it goes to flower and repeat this until depletes the root's resources. Milstone also works.

Bermuda grass (*Cynodon dactylon*): If you can't use herbicide because you are near a riparian area, black plastic covering in July and August can kill it. A good resource for more options is wrc.ucdavis.edu Pest Notes web page.

Senecio silestrus and S. jacobia: The species has been seen to move in like bull thistle and since it has wind blown seed, may become a serious problem. It is filling in after fires and persisting. There is a biocontrol, longitosis beetle and the Cinnabar moth, but matching climate of insects to the host site will be important. A Dow chemical called Vista is also working. It is a non-agricultural registered herbicide with a 24 hour soil residual.

Dittrichia graveolens: It was seen first in Santa Clara Co along roadsides and now on the shores of reservoir where the waterline recedes. It appears capable of growing in wet soils. It moves into the wet areas as they dry down. It can come up anywhere there has been disturbance. It is a summer, late season annual. Low mowing preflowering can work with follow up mowing. It has shallow but many roots, which leave it unclear as to where it is getting its water. It is advised that handlers use gloves as 50% of people will get dermatitis (allergy leading to blisters) in 1-2 days after contact.

Fennel (*Foeniculum vulgare*): It is mixing in with natives making it hard to control. Manual removal is effective, but the patches are often too large to do this and the disturbance of pulling might stimulate more seeds to germinate. Suggested that interested parties contact Jennifer Erskine who focused her PhD on Fennel control on Catalina Island. Jessie Elger has been using an herbicide backpack sprayer with Roundup, Garlon. Or Imazapyr in wildlands.

Tumble weed (*Salsola tragus*): Can cause Sabra dermatitis an irritation caused by many plants. It is the result of small hairs or spines getting under the skin and irritates it for several days. It is not due to a chemical.

Poison Oak (*Toxicodendron diversilobum*): Oils may increase in strength with increased CO₂ predicted with global change. Lou Ziska is conducting research on this.

English Ivy (*Hedera helix*): it can be an allergen.

Goat Grass (*Aegilops triuncialis*): Control has been accomplished with Envoy, a grass specific herbicide that kills all grasses but fescue. Hand pulling takes 10 years to get control. Mowing shows mixed results due to the difficulty of timing. Seeds can finish

developing after mowing, so clippings may need to be removed. Hydro-mechanical obliteration, which is like a pressure washer with water has been used, but causes a lot of disturbance to loamy soils. It may work better on hard packed clay. The user can control the impact by adjusting pressure enough to hit annuals and not the natives.

Onion Weed (*Nothoscordum gracile*): An infestation has been found in Santa Barbara. Carl Bell at UC San Diego is a good contact for control information. Zelar has been seen to work, but it can not be used in riparian areas. The root of the plant is 6 inches. Rabbit grazing seems to reduce it so mowing may be effective.

Purple Star Thistle (*Centaurea calcitrapa*): In areas where mowing is not an option, Milestone can work. The revegetation process will likely be difficult in rock hard soils.

Kikuyu Grass (*Pennisetum clandestinum*): Herbicides that may be useful include: Roundup, Rodeo (if near water), and Tricloper. The managers of Torre Pines Golf Course have been dealing with it successfully for awhile, so it may be worth checking in with them. The Pest notes page of UC Davis Extension has further information as well.

Crimson fountain grass (*Pennisetum setaceum*): Check with Dr Jodie Holt's lab for information.

Perennial Pepperweed (*Lepidium latifolium L*): Roundup didn't do anything. After mowing 10% resprouts and 90% of those produced basal leaves and then spraying Roundup on these remaining plants works well. Without mowing first, the Roundup will not reach the roots and thus will not be very effective.

Hedge Parsley (*Torilis arvensis*): Transline will not work, but Roundup and Garlon have been effective for control. Scott Onetio at UC Davis is currently focusing on this spp for his Master's thesis, so may be a good contact.

General Chemical info.

- Clefadem works for grasses
- Roundup is the most used herbicide. If you are trying to control 10 different spp and don't want to change the chemical in the backpack sprayer, Roundup is the chemical to use, but it will kill everything.
- Milestone can be used as a pre-emergence treatment for grasses.
- R11 surfactants are more toxic than thought, Competitor might be a safer alternative. When Competitor is mixed in Trichloper it has been seen to impact non-target grass spp.
- Milestone works on Curly Dock and Picerus, but will affect *Amsinkia* spp. This impact on *Amsinkia* can be reduced when treating Yellow Star Thistle in March.

Other noteworthy reports:

- The chemical extracted from knapweed (Catkin) that was intended to be used to make a natural herbicide was not the chemical the researchers thought it was. Due to this setback this project has been put on hold.

- Joe announced a project for which seven people will be collecting weed control information for non-crop invasions. It will be a Non-crop Weed Control Handbook for 300 spp including information on control. The information will not be site specific so managers will have to consider the characteristics of their sites before applying the handbook information. The projected completion date is 1 year with a revision/update every 2-3 years.
- A common issue is finding plant species to stabilize banks and slopes after weed removal and disturbances such as road building. Salt grass was recommended, but the seed production is often not very successful. The use of Salt Grass plug may be more effective. Ripping of the soil prior to planting will help with establishment. The other recommendation is Barbasilus, but this species needs a good deal of water. It was agreed that we need to educate agencies on how to use natives more often.