

Cal-IPC Symposium 2004
INVASIVE GRASSES WORKING GROUP
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First, we took a poll of the main grasses that people are having problems with to get a sense of where to focus the discussion (numbers in parentheses are number of people saying this grass is among their primary concerns):

Annuals

Taeniatherum caput-medusae - medusahead (6)
Aegilops triuncialis - barbed goatgrass (5)
Bromus tectorum - cheatgrass (4)
Bromus diandrus - ripgut brome (6)
Avena spp. - wild oats (1)
Brachypodium distachylon - false brome (2)
Lolium multiflorum - Italian ryegrass (2)
Hordeum marinum ssp. *gussoneanum* – Mediterranean barley (1)
Schismus spp. – Mediterranean grass (1)
Bromus madritensis ssp. *rubens* - red brome (1)

Perennials

Cynodon dactylon – bermuda grass (3)
Brachypodium sylvaticum – slender false brome (2)
Pennisetum setaceum – crimson fountaingrass (2)
Piptatherum miliaceum – milo grass (2)
Sorghum halepense - Johnsongrass (1)
Festuca arundinacea – tall fescue (1)
Phalaris arundinacea (1) – reed canarygrass
Phalaris aquatica - hardinggrass (1)
Holcus lanatus – common velvetgrass (4)
Ehrharta erecta – upright veldtgrass (1)

Next, we asked people to share both their successful and unsuccessful management experiences:

- *Pennisetum*: Was planted as an ornamental in a shopping mall at Menlo Park, a woman was observed collecting seeds. When approached and asked whether she knew it was an

invasive pest plant, she said yes, and that she also intended to plant seeds of pampasgrass. The point is that many people in California do not believe that invasive ornamental plants are truly a problem. More education is needed.

- The issue of “sterile” versions of invasive ornamentals was discussed. Joe said that when the ploidy level is different, they probably are truly sterile. Cultivars may be able to revert to the reproductive variety, and a study is underway at UC Riverside to determine how likely this is.
- Medusahead – Roundup was sprayed when plants were turning brown, Joe said this is too late, spraying must be done while plants are still green and seeds are not yet viable.
- Seed mixes often have many invasive species in them. An unnamed government agency recently eradicated *Schismus*, an invasive species, and then a different department within that agency planted the area with *Schismus*.
- *Brachypodium sylvaticum* (slender false brome) – a couple of handouts were distributed from John Beall showing photographs and reasons for concern about the spread of this invasive grass. This grass has recently been discovered in San Mateo County. It has spread over 10,000 acres in Oregon and is causing economic losses. It can grow in sun, partial shade, wet and dry conditions, and may prevent the survival of tree saplings in forested environments. In San Mateo county contact: Jonas Roddenberry (representing the County WMA and the Midpeninsula Regional Open Space District) at jroddenberry@openspace.org or (650) 691-1200 Ext. 531. The Open Space District has closed trails, sprayed roadsides with Roundup, and has started a public education program. They have found that flaming does not work under the redwood trees. Hand pulling seems to be ineffective – plants resprout. This grass occurs mainly on the coast but occurs inland in Oregon, so should be looked for inland in CA. The Waipuna steam machine has been tried (uses hot coconut oil), but is expensive, needs to be accessed by a service truck, and moves extremely slowly. It top-killed plants but doesn't kill roots, and may stimulate germination. This grass may be misidentified – apparently there are 2 growth forms, and possibly 2 species, an annual and a perennial. Joe D. will attempt to clarify some specimens he has collected but they are likely to be *Brachypodium distachyon* since they appeared not to be a clear population of bunchgrasses.
- “Landmark” herbicide has been tried on goatgrass. This is a combination of chorsulfuron (Telar) and sulfometuron (Oust). Joe D. found it to be very effective but also injures perennial grasses and most broadleaf species. Will generally give bare ground.
- *Ehrharta erecta* makes seeds all year around. Hand removal is not effective. Roundup only kills the plants but doesn't affect the large seed bank. Even when sprayed 5-10 times. The land manager is trying to outcompete it with native shrubs and *Calamagrostis* that are kind of bushy, and taller than the *Ehrharta*. It has a very hard seed so could last in the soil longer than the average grass seed. Jeff Corbin recommends establishing a dense cover of natives.
- Yellow bush lupine and other natives can be very aggressive and outcompete or shade out *Bromus* spp. in dunes (Use in South Coast only – it is invasive up north!!).
- Solarizing with plastic – only kills grasses but not seed bank. Use clear plastic rather than black plastic for best results.
- Joe D. used wicking treatments on *Ehrharta* in areas with very thick thatch and the thatch was too thick to allow seedlings to sprout.

- Plastic tarps around Stanford – black plastic can kill annuals (before rains) but the natives survived. Leave on for several weeks, then remove.
- Solarization with clear plastic – only native *Lotus* germinated. No weeds. Killed entire seed bank, including YST, medusahead, cheatgrass, *Avena*. Manager applied in summer to get soil temperature to 140° F. Black plastic does not work. This was in Medford, Oregon where the summer is hot and it is sunny a lot.
- A study at UC Davis – drill seeded grasses with mix of natives. *Leymus triticoides* has outcompeted *Bromus diandrus* (ripgut). *Bromus hordeaceus* is still a competitive weed.
- *Bromus hordeaceus* in San Diego does not seem to be outcompeting rare plants there. *B. diandrus* may be more of a problem.
- Joe D. – monitoring water usage of weeds: *B. diandrus* is most water efficient, produces twice as much biomass from the same amount of water as other weeds. (Because it starts growing earlier in the season). Jeff Corbin says that it draws down water faster from the entire soil profile.
- Italian ryegrass and barley on a 200 acre site near at Moss Landing is growing with a rare clover. Land managers mow, which helps the *Trifolium*, but also helps the annual grasses. They also have native meadow barley that they are trying to encourage.
- Medusahead in the Sierra National Forest: For small patches, crews hand pull and bag before seeds disperse. Medusahead now exists in several areas too large for hand-pulling, need advice on how to control it.
- Medusahead seed only lives 2 years. Burning reduces cover dramatically. Burn as early as possible, as soon as your area can carry a fire. May is good in the Central Valley.
- Joe D. says that just knocking back the thatch will reduce medusahead cover. Medusahead is unusual in that one seed can put out 2-3 radicals, so each seed has 2 -3 chances of getting established even if the first radical doesn't make it to the soil through the thatch. If you get rid of the thatch, you reduce its advantage over other species.??
- *Bromus diandrus* is very sensitive to heat, more so than many other weedy annual grasses. Burning is always successful with *B. diandrus* even after the seed has shattered.
- Cheatgrass – however, burning helps establish cheatgrass unless you burn very early.
- Rare forbs can co-exist with medusahead, but not with cheatgrass.
- When to burn to control these weedy grasses is very site-specific. In Southern California it can be as early as January.
- Filaree (*Erodium* sp.) is encouraged by burning. If you use fire to control weedy grasses, you have to use another method to control filaree (herbicide). Fire can convert systems from grass to filaree.
- Concern from Forest Service biologists and botanists that the huge increase in acres of fuels treatments resulting from National Fire Plan will result in cheatgrass and other invasives spreading exponentially. Some federal agencies cannot use herbicides without a huge time lag. Too time consuming (this may be changing).
- Bonnie Harper-Lore (Federal Highway Administration) said that Executive Order 13112 requires that if federal funds are used for invasive control, natives must be replanted. Information can be found on the web at: <http://www.fhwa.dot.gov/environment/vegmgt/index.htm>, click on Policy Guidelines. (There is other good information on this web site as well).

- Kyle Merriam's research on fuelbreaks and the spread of invasives should help with the argument for restoration (web address: <http://www.werc.usgs.gov/fire/seki/ffm/>).
- San Clemente Island is burned a lot by training operations – leads to good natives, no annual weeds. But perennials do decline here without fire and the annual weeds creep in. Need disturbance to maintain a healthy native community in some areas.
- Fire – how to use it to control weedy grasses? You can call CDF. Take California Native Grass Association (CNGA) burning class to learn more about how to get permits, plan a burn, etc.
- Gophers and ground squirrels – prefer natives with good roots. Someone has observed that when they revegetate with natives, the natives get eaten. Also, gopher mounds favor annual weeds. Richard Hobbs at Stanford looked at gopher mounds. Sean Wattas at UCSB is looking at gophers too.
- Plateau (imazapic) is about to be registered in CA for annual grasses. Good on *Bromus* species., it does not hurt composites or perennials. But, it gets tied up in thatch and binds more tightly to thatch than other herbicides. Imazapic is both a pre- and post-emergent herbicide. Does not hurt legumes. Pre-emergent liquid applied at a very low rate. Can be combined with burning.
- Use Roundup with medusahead in spring, but since it's not selective, it kills everything.
- Ranchers can't burn easily, but they can graze. Timing of grazing is key, in March it doesn't affect medusahead, but if you graze with sheep just as seedhead emerges, you reduce cover. Only use sheep on 100% cover of medusahead. Sheep probably lose feeding weight on it because of the low nutritive value. Goats might work
- De-thatching in San Diego was done by using a crew weed whacking and bagging. Well trained crews must recognize natives. Works well, but is expensive and time-consuming.
- A combination of Telar, Transline, and 2,4-D was used, this eliminated all native forbs from the study site, but also yellow starthistle. Didn't take out pepperweed, thistle, or mustard. Even grasses were hurt by this combination. Be careful using herbicides in areas with native forbs.
- Medusahead – mowing is an alternative to burning. If you mow, you should rake it up, just before the seedheads are turning. As long as inflorescence is totally green, mowing works. Collect all the seeds before they fall!
- Brent Johnson - Re-introducing Tule elk near the coast did increase coastal grassland community species richness. This is due to thatch reduction which allows for more diversity of natives, although the elk will not eliminate weeds.
- If you are considering using any herbicides (especially pre-emergents) along creeks, talk to the manufacturer first! Can be dangerous along creeks.
- Joe D. used Landmark herbicide in experimental plot that killed annuals, but perennials did not establish year 1, the herbicide killed them. Waited until year 2 and they did establish, but you have to live with a year of bare ground – which may not work for erosion problems.
- Hardinggrass – someone is tarping it for an entire year! We'll see if it works. Roundup or shovels are most effective for smaller sites.
- A recent study was done using different colors of plastic for mulching out weeds. Certain colors (red) are most effective. For more information contact major advisor Steve Fennimore (Fennimore@vegmail.ucdavis.edu). It was a MS Degree in the Vegetable Crops Department completed in either 2002 or 2003.

- Cardboard and leaves in layers have worked to kill reed canarygrass, but you have to let it sit for 3 years. Then you can plant riparian plants directly into the cardboard mulch. Can only be used over small areas.

ACTIONS THE WILDLAND COMMUNITY CAN WORK ON:

1. Provide guidance on how to burn more easily: permits, planning, how to streamline the planning process.
2. Education! The public needs to know how dangerous weeds (invasive grasses in this case) are to our state.