

**TAdN General Meeting**  
**April 9, 2001**  
**Minutes**

Joe DiTomaso, Weed Science Group "Use of herbicides as part of integrated control of weeds."

Rodeo is now the property of Dow, called Aquamaster. More on this later in the meeting from Michael Krebsbach.

Perennial pepperweed- has large root mass storage capacity, grows in riparian zones like Arundo. Explored options for this habitat type. Tried mowing, but of course it grows back. Thought that multiple mowings might deplete energy reserve in the root. Tried mowing when energy reserves were low, in late summer. Didn't work- the plant just resumed growth and storage. The best time to treat the plant with herbicides is in the fall when translocation is reversing, just like with Arundo. Problem: there's a lot of above-ground biomass, and the herbicide gets hung up in the tops, which are translocating mostly to the flowers. Decided to put together an integrated control plan- mowing changed the morphology and more basal leaves were exposed. This increased the herbicide deposition on the lower leaves and translocation increased towards the roots. As a result, control went from 20% to 90%. It was also better this way with imazapyr. This was the case only with high-density areas- perennial pepperweed in the sparser areas had enough basal leaves exposed that control was just as effective without mowing first. Mark Renz (graduate student) tracked the spray pattern and deposition using dye in water. I was assumed that the herbicide would have the same pattern.

When Joe develops integrated management strategies they include a consideration of the desirable end vegetation (rather than just shooting for dead weeds). In the case of the pepperweed, the thatch keeps out desirables. Discing was incorporated to expose the soil.

Timing: There is a two-to-three month difference in the best month for applications depending in the latitude and altitude-need to focus on the phenology (seasonal changes) of the plant, ie., watch what is happening and pick the time to spray from observations.

Questions:

What kind of mower?- A sickle-bar mower left large stems that don't decompose very fast. A flail mower chops it up more and the slash decomposes faster.

Spraying plants that are thirsty or stressed will produce less dramatic results than when the plants are lush.

Some info on modes of action and effectiveness of a few herbicides;

Glyphosate: Weak acid, volatilization is low and there is no leaching, binds tightly to soil. Low toxicity. Hits one enzyme, EPSP synthase that produces aromatic amino acids. Breakdown in plants is slow. Animal systems don't have that particular enzyme pathway to work on. Very flexible, nonselective.

Imazapyr- "Stalker" is registered for non-crop areas and is an emulsifiable concentrate (gives better penetration but should include a seed oil in the mixture) and "Arsenal" is a water soluble formulation. It is not registered for non-crop areas in California (only forestry), but is registered for non-crop and aquatic sites in other states. Imidazolinone family, low vol, high sol, moderately leachable. Preemergent herbicide, so you need some leachability- that's a desirable property for this type of herbicide. Soil half-life 1-5 months. Absorbed by both roots and foliage, translocates in both xylem and phloem, works by inhibiting ALS (acetolactate synthase), an enzyme involved in the synthesis of branched-chain amino acids. It is very slow-acting because of the high concentration of pooled amino acids in the plant. You may have to wait two years to cut the plants down because they can recover if you cut too soon. But this is why it works so well, it gets all over the plant for a thorough kill. You have all the same application methods. "Hack and squirt" (stem injection technique) works great for tree of heaven and is a very rapid method in the field. You can be very selective. There is even new equipment that hacks and squirts at the same time, but it can squirt right past the trunk or stem with the smaller diameters. There is an aquatic formulation of Stalker in use now for melaleuca. They hope to have the aquatic label in a year or so. Works great on pampas grass. Eventually there can be leaching from the roots, and because it is soil-active you don't want to use it in the vicinity of desirable plants or trees because there is likely to be damage. It is weak on some plants (blackberry, conifers) but it is non-selective. See more about Stalker in Bob Brenton's talk.

Graminicides: Target grasses and are very selective. Target lipid synthesis enzyme, very specific to plant materials. Used on jubatagrass where the species in between were desirable natives that were all broadleaf. Used Fusilade (fluazifop) with good result, no damage to the natives. Tried Poast (sethoxydim), didn't work. These herbicides don't have aquatic labels.

Question: what is a chemical's soil-binding activity in sand? Lower, and you need some clay particles, but there are usually clay particles even in sand, even though you can't see any. There is a lot in the literature, showing that there is very little movement even in very low organic content soils. Ask Pat Minogue (BASF) for copies of the literature- minogup@BASF-CORP.com.

When you're treating trees you can treat only the cambium- so can you just treat some of the stumps on Arundo? Don't know yet. Thin-line application, zorro-style, is being investigated with the Chico State folks (Dr. Rich Holman).

New piece of equipment, called a Burch Web-Blade, drips a concentrated stream onto the blade for an instantaneous cut-stump effect. Still being tested. One is being developed for saltcedar, and they're making a hand-held one. Soon to be marketed. Eliminates problems with drift.

### **Bob Brenton on Stalker (Imazapyr):**

Herbicides are just one tool in the box- there's not likely to be a magic bullet. Stalker is the name because of the single-stalk application. Arsenal is NOT meant for spot- treatments. So Stalker can be used in the ways we need for Arundo. Toxicity: rat > 5000mg/kg; rabbit, dermal LD50 > 2000mg/kg, not a teratogen, not a reproductive toxin, not a mutagen. No evidence of carcinogenic effect- this is actually rare. These are continually reviewed and

are third-party tests. Commercially available since 1998, full registration in California only recently because of the regulatory cost. California will not consider a product until it has a federal label, and then the tests are sometimes duplicated and special California-unique considerations are tested. Wildlife toxicity: Quail 8-day diet LC50 > 5000ppm; same for duck; earthworms, trout, catfish, = > 100ppm or practically non-toxic. Half-life by microbial degradation in soil about 5-142 days depending on temp. Water and light together breaks it down, half-life 2-3 days. Data is available from the Weed Science Society of America website.

Labeled for various uses. It is in use in the Santa Ana River on Arundo. Application is everything- Low volume, targeted foliar applications provide efficacy, efficiency, and low impact. Results tend to occur over a 4 to 6 month period. This is actually desirable- rapid change favors invasives, and you might get some other weed coming in. Slow transitions are helpful when battling weeds. Available herbicides for low volume foliar targeted application include Glyphosate and Stalker, and NOT Garlon, Banvel, 2-4-D or Spike. Equipment and application tips in Bob's slides. Surfactants: Methylated Seed Oils work well. You don't want to use oils over water as they are dangerous for fish and invertebrates.

Question: What is the definition of an aquatic application? One that is directly in the water. It doesn't count incidental overspray from bankside applications and this is taken into consideration for labeling for riparian applications. If there is potential for problems with overspray, this will be reflected in label restrictions regarding use around respective bodies of water. there won't be a ditchbank label.

Combinations of Roundup and Stalker in a tank-mix give good results depending on the intended outcome- see Bob's slides. Practicalities of worker safety, frequency of apps, cost- see slides.

Observable effects: After about thirty days Arundo will start to yellow. 60 days out there will be a burning or blackening of the tops. It stops growing upward, but remains otherwise pretty healthy looking. You have to wait one year to evaluate your success, but you can tell if you've been successful if you see that burning of the tops. It will look that way for a year. Timing- theoretically, yes, timing matters- midsummer to fall. But they've treated in April, May, June, August... always have seen the same result.

These trials were done by first mowing the weeds to the ground. A hydro-ax didn't do a good job, but an ASV high-speed rotary disk mower works well.

Testing is still in progress on this new product, and at the end of the tests there will be a report with general guidelines. You want qualified applicators, not volunteers. We will collect together the best info to date and put it up on the TAdN web.

You'll get 95%+ efficacy if it's done right. Stalker has been used in other states on Arundo for about a decade, so there is a lot of experience, although conditions are different.

Contacts for more info: Pat Minogue, 530-243-4444, minogup@basf-corp.com Bob Brenton 916-716-9822

"Dose makes the poison"- there is a balancing decision to be made when considering the toxicity of the herbicide and the number of repeat applications.

Adding a little ammonium sulfate into the mix enhances uptake, but may not want to do this in a riparian corridor.

Michael Krebsbach- Monsanto's glyphosate product is now called Aquamaster, the Rodeo name has been sold to Dow. It's the same chemical.

**TAdN Steering Committee Meeting**  
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Mark Goldberg with Nile Fiber sent a rep, Sky somebody, who is supposed to take info back regarding availability of Arundo for harvest. We'd need to know what their criteria are. We can't necessarily provide maps like they want. Mark suggests we develop a policy for dealing with commercial interests. If we have the information from them maybe we can evaluate the policy on a case by case basis.

Contract with FWS is signed, HORRAY!

Karen Willett and Robyn Myers made a how-to-do GIS webpage- we can link to. It may be useful for us to look at for layout and content.

[www.suddenoakdeath.org](http://www.suddenoakdeath.org) -- A project using web reporting of oak death. Rich Marovich has set up a utility for reporting locations on a writable map on the Web. We can incorporate it into our data collection tools- use it for collecting info on Arundo from people all around (Post-meeting note- the Weed Science Group recommend we flag that kind of information as casual or unvouchered). Kent Nelson tells us that Harry Spanglet is putting together the Bay-delta GIS and it includes invasive species. We will coordinate.

Subcontract with the eradication partners:

We will want to let the partners know everything that is expected from them. The partners need to come up with an eradication plan. Permitting is part of that. We may be able to get a regional permit- Santa Clara Valley got a ten-year permit. But we won't hold up anything trying- if they can get their local permits they should just go for it. It may take a while to get the regional permit, so we can go after it for long term work while we operate under local permits for the near-term work.

It's CALFED's responsibility to get the regional permits together for its own work- and we are CALFED's representative on the Arundo issue. We may even request additional funds for pursuing regional or consolidated permits. It would make it more cost effective for everyone. Purple loosestrife and spartina CALFED people are ahead of us and may have gotten somewhere with it.

We'd like to set up a continuing arrangement wherein we are funded automatically without competition.

Put Kim on the steering committee.

There's a California permitting handbook- it's a big complicated thing.

We might want to provide the list of possible agencies to call and see if

there will be a need for a permit. Make that part of the eradication plan support packet. If they need help they should ask. Sometimes the permits even conflict.

We will want to work with the partners on their turf- meet with them at their locations. Provide support and let them do it. We have responsibility to educate them about what they need to do so we aren't liable for state and federal requirements they need to adhere to. Maybe we want to require them to show us proof of permitting.

Bob will work up an information packet on permitting with the help of Ron's boss at EDAW, and any other source.

Also need an eradication plan template.

Now the Putah Creek people know a lot more about where their Arundo is through the recent acquisition of aerial photos and parcel data than they did when they wrote the proposal. An assessment with subsequent prioritizing would now be good to do, and will hopefully result in a plan that is still within the boundaries of the contract. Many of the partners will probably need to change their sites- so do we have to go through a revision process? It's a watershed approach, we should have some flexibility based on new information. It was, after all, a year and a half ago that we described the conditions that we were proposing to deal with.

Predicting special status species:

This is done by consulting the NDDDB and CWHR through DFG or a consultant. Should be able to get access to the NDDDB for free through Robyn and NRCS (Post-meeting note: it is up online as generalized records on CalFlora, [www.calflora.org](http://www.calflora.org)). Some expertise is required to interpret these data. The local RCD is supposed to be able to help with that, but experience varies. Both of these are available on the DFG website. If the site has been surveyed before we can use that information. We will also avoid the nesting season to simplify matters, since we can't survey for every bird- it would take all year.

We have to cover all the bases- do the assessments that are required by the federal agency giving us the money. First step is finding out from CALFED what is required. Can also do a literature review for efforts that may have done surveys, grey literature, CalWeeds (projects), CERES, and California Digital Library.

Encourage partnership with the local WMA, and we should call Steve Schoenig to get help with getting that support.

The information we provide may not be complete- we will have to build it as we go. We need to state that up front. Should also check all language that recommends methods for compliance with Kim, and keep her responses (and any

others) filed for future reference where there is the chance of liability for a partner's actions.

Policy regarding commercial use of Arundo: Mark drafted a policy, we will put it on the agenda for the next general meeting.

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