UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources
Forest Stewardship

Forest Stewardship Education Newsletter
June 2022
Managing Invasive Plant Species

Greetings from UC ANR

According to the pre-workshop assessment taken by workshop participants, 70% of those enrolled are concerned or greatly concerned about invasive plants. Fifteen percent of participants have either eliminated or have been working to reduce invasive plants on their forested property. But what are we really talking about when we say 'invasive plants'?

The Natural Resources Conservation Service (NRCS) defines an invasive plant as, "A plant that is both non-native and able to establish on many sites, grow quickly, and spread to the point of disrupting plant communities or ecosystems," such as Scotch broom and medusahead. But what about plants such as poison oak? As an avid hiker, I enjoy a hike so much more if I don't need to be on the lookout for poison oak. Pacific poison oak is a native plant, but so obnoxious...

The NRCS provides us with a few other useful definitions:

- Opportunistic Native Plant - A native plant that is able to take advantage of disturbance to the soil or existing vegetation to spread quickly and out-compete the other plants on the disturbed site
- Weed - A weed is a plant (native, such as the Pacific poison oak, or non-native) that is not valued in the place where it is growing, or any plant that poses a major threat to agriculture and/or natural ecosystems

So, whether you are dealing with an invasive plant, opportunistic native plant or weed, there are many vegetation management options available to reduce or eliminate the problem plant including mechanical/physical methods, grazing, prescribed fire, and herbicides. In this newsletter, we will focus on mechanical/physical methods and herbicide use. The Prescribed Fire Newsletter and Targeted Grazing Newsletter are available as a resource.

I know talking about the use of herbicides as a forest vegetation management tool can be a difficult discussion to have. However, in some cases, there are invasive weeds that are almost impossible to control without the use of herbicides. But as always, the Forest Stewardship Education Program is about providing accurate, scientific information to forest landowners so you can decide if a particular activity is relevant to your desired goals and objectives.

Cheers,
Kim Ingram, Forest Stewardship Coordinator

Pacific poison oak with fruit. Photo by Joseph DiTamaso, UC ANR

UC ANR IPM: Poison Oak Management Guide

In Pursuit of Invasive Species video by the Invasive Species Centre - Good advice for forest landowners around invasive species in Ontario and beyond!

If you want to concentrate your efforts where they will be most effective, consider this central principle of weed management: small infestations can be eradicated, large infestations can only be controlled. - Forest Stewardship Series 14: Exotic Pest Plants

Mechanical/Physical Methods of Invasive Plant Management

Desired forest vegetation can be affected by invasive plants in several ways:

- They can be smothered and break under the added weight of the invasive plant;
- Their ability to photosynthesize can be greatly reduced as they become shrouded under the invasive plant's foliage;
- The invasive plant can outcompete the desired plant for resources, taking up more than its share of water and nutrients;
- As the invasive plant grows bigger, it takes up more space and produces more seed than the desired plant, setting itself up to further colonize an area; and

- Invasive plants can even change soil chemistry, modifying it to favor its own growth and spread.

Though preventative measure are key to minimizing the establishment of invasive plants (using weed-free materials, cleaning equipment before moving from one location to another, and minimizing soil disturbances) trying to eradicate an already developed plant population is often where forest landowners find themselves.

Control Methods
Depending on the size of infestation, topographical features of your land, proximity to water features, or your desired level of effort and ability, you will have different control method options.

Mechanical Methods: Mechanical methods include the use of chain saws, mowers, masticators, and bulldozers to remove invasive plant species or alter their vertical structure. It is not uncommon to follow up with other control methods after using these tools because soil disturbance creates conditions for invasive plant regrowth from existing seedbanks or other introduction vectors.

Hand Tools: According to the Ecological Landscape Alliance, weed wrenches or uprooters are manually operated, lever tools that allow you to pull up woody plants. Constructed of heavy steel, they are basically a set of powerful jaws attached to a sturdy handle. The jaws grip a targeted plant, and the handle provides leverage for wresting out well-rooted woody plants with minimal soil disturbance. Other hand tools such as axes, loppers, and girdling tools can be used but because they do not eliminate the plant root, repeated treatment efforts or the use of directly applied herbicides may be needed.

Mulching: Once an invasive plant's vertical structure is reduced, mulching can cut off light thereby preventing photosynthesis from occurring. Mulching materials spread over infested areas can be natural such as straw and wood chips, or synthetic such as black plastic.

Solarization: Again, once an invasive plant is no longer growing upright, covering the area with clear polyehtylene plastic will heat up the soil and kill any remaining seeds. The soil must be moist *before* you lay the plastic and the edges firmly sealed in order for the air and soil under the plastic to rise to the required temperature.

First use with a masticator in a forested setting video

A pesticide is any substance "intended for preventing, destroying,

repelling, or mitigating any pest"... including antimicrobials, herbicides, and bug repellents. Plant growth regulators, defoliants, desiccants, and nitrogen stabilizers are also pesticides. - National Pesticide Information Center

Vegetation Management Through Herbicide Use

According to the Forest Stewardship Series 7: Forest Regeneration, herbicides can be used to reduce competition from undesirable tree, shrub and herbaceous plant species, especially as a follow-up treatment to mechanical methods or prescribed fire. They are a chemical control agent that inhibits plant growth or kills the plant outright. Herbicides may be cost-effective for vegetation control especially in large areas, and they perform well in areas that are too steep or risky for other treatments to be effective.

According to the UC IPM website, an important first step is to identify the invasive species and select the proper herbicide for the application site.

- Be sure the herbicide label lists the species you want to control;
- An herbicide will kill all susceptible plants, not just weeds. Make sure the label says it's safe to apply on or around the other plants where you intend to use it; and
- Be sure the invasive plants are in a stage that is susceptible to the herbicide. You will need to identify if you need to use a preemergence or postemergence herbicide. Postemergence applications are most effective after the leaves are fully developed and when the plant is actively growing. Late summer or early fall applications are often the most effective, because this is the time when perennial plants start to move nutrients (or herbicides) toward the belowground buds and roots.

Application methods
Herbicides are generally applied in forests using a backpack sprayer, though they can be directly injected into a stem of an unwanted shrub or tree (hack and squirt), as well as applied to stumps.

Concentrations
According to the IPM website onwoody weed invaders, with most herbicides, a solution of 1% to 2% of the concentrated product (41% active ingredient) is appropriate for foliar spray applications for landowner use (up to 10% for professional applicators) when made during the proper growth stage to plants not under water stress.However, the percent of active ingredient can differ depending on the product formulation and will affect how much water you need to add.

Be careful with chemicals!
While herbicides and other chemicals do have appropriate uses, users need to exercise caution around their use and storage.

- Always read and follow the directions and precautions on the label;
- Store chemicals properly and in their original containers;
- Secure them from unauthorized use;
- Do not allow chemicals to 'drift' or spread into areas not appropriate for their use; and
- Dispose of any unused chemicals or empty chemical containers

according to the labels directions.

Please note, The US Forest Service's "Forest Management Handbook" recommends that forest landowners who need to treat more than 1/10 acre with herbicides, should consult with an RPF or Certified Pesticide Applicator.

Mark Heath, a certified Pest Control Advisor with the California Department of Pesticide Regulation, discusses herbicide safety and how to read herbicide labels.

UC Statewide Integrated Pest Management (IPM) website	California Invasive Plant Council's Inventory of Invasive and 'Watch' Plants	National Pesticide Information Center

Q&A with Registered Professional Forester and licensed Pesticide Control Advisor, Heather Morrison

Q: As an RPF, why did you decide to also become a licensed Pesticide Control Advisor?
A: I became a PCA right around the same time I became an RPF (2001) because vegetation management is such an integral part to being a forester.

Q: How do you broach the subject of herbicide use with forest landowners?
A: *I actually don't treat it any differently than any other vegetation management scheme. It is one of the tools we can use and is most definitely a huge part of IPM- integrated pest management. I present it as an option and if landowners have hesitancies, we have a conversation about it. Herbicide isn't always the best choice and every situation is different.*

Q: What are some examples where you have effectively used herbicides as a forest management tool?
A: *One of the best uses is in shaded fuel breaks. Maintenance is key! People always seem to forget that the forest isn't static and it grows back, so these huge investments we make in establishing fuel breaks can be lost if we don't maintain them. Generally, most hardwoods resprout and that is what is being thinned - madrone and tanoak, at least here on the coast. Coming in 2-3 years later and treating the resprouts along with newly established vegetation is key.*

Another example is invasive plant suppression. These wildfires have been creating the perfect environment for increased spread of invasive plants like broom, pepper weed and stinkwort. The past two years I have been working

with some forest landowners in the Glass Fire to suppress French broom which was bad before the fire, and now even worse. Because new plants take 2-3 years to produce viable seed it has been a race to try and treat these areas before they release more seed. Broom plants produce thousands of seed per plant which remain viable in the soil for 70+ years!

Q: Are their situations where you would NOT recommend using herbicides?
A: *Obviously if you are an organic farmer ! Mostly what I find is you have to switch up the types of herbicide you use. For example, in Napa I don't want to use triclopyr because grapes are so extremely sensitive. If you have sensitive areas like wetlands, or where you have new tree seedlings, you would choose a different herbicide . You might also treat differently, maybe don't use the frill and spray method and choose to cut and wait to treat the resprouts because you are in a more urban area.*

Herbicides are very regulated and I like to remind people that we are applying usually only ounces per acre. This is compared to the same herbicides on the shelves where most likely consumers are not reading the label and wearing their PPE or applying it correctly.

Many times using herbicide in conjunction with other types of vegetation management, like mechanical or burning, can increase the efficacy of the treatments. - Heather Morrison

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Scotch Broom flowers. Photo by Jack K. Clark, UC ANR

Isn't one person's weed another person's flower?

My mother believed the only weed was the grass that would work it's way from the lawn into her flower beds. Everything else was left to do its thing. Granted, the scope and scale of invasive plant species in her yard was quite different from the impacts of invasive plant species in a forested environment.

Invasive plants, whether native or exotic, can be problematic

Want to become a licensed pesticide applicator?

The California Department of Pesticide Regulation (DPR) is responsible for examining and licensing or certifying qualified pesticide applicators. DPR also licenses businesses that sell or apply pesticides or use pest control methods/devices for hire.

To become certified, you must pass the Laws, Regulations, and Basic Principles examination and at least one pest control category examination (A-P).

Forest (Category E)
This category allows you to apply or supervise the application of restricted and general use pesticides, substances, methods, or devices to control pests in:
• Forest, forest nurseries, and forest seed-producing areas;

in several ways.

1. Changes to fire regimes - Many invasive plant species did not evolve in our fire adapted ecosystem. Their abundance can alter fire regimes, increasing both fire frequency and intensity which can negatively alter the landscape.
2. Wetland alterations - Invasive plant species can invade and dominate water systems such as streams, ponds and other riparian habitats, out competing native plant species and altering riparian ecological functions.
3. Impacts to wildlife - Native fauna species also evolved to co-exist with fire adapted flora. Invasive plant species generally do not provide the same habitat values (ex. food and shelter) that wildlife depend on.
4. Increasing homogeneity - With invasive plant species outcompeting native plants, there is a reduction in plant diversity that supports a healthy ecosystem.

UC ANR IPM: Brooms Management Guide

• Site preparation for tree planting, conifer release brush control projects, and stump treatment in forestry management.

Once you pass the examination(s) and receive your license, you must accumulate approved continuing education (CE) hours (~20) before your license will be renewed.

A few other items of note...

- Have you had your initial site visit with an RPF, Burn Boss or Certified Range Manager? There is still time! No matter which workshop you partcipated in (even back in 2020!), if you completed the workshop, you are eligible. Need to make up a session in order to qualify, we can arrange that. Don't let this opportunity pass you by! Contact Kim Ingram at kcingram@ucanr.edu for more details.

- The California Forest Pest Council produces newsletters several times a year on pest and disease issues relevant to forest landowners in California. The June 2022 issue is all about the rise of conifer mortality in northern California. Check it out!

- The California Department of Forestry and Fire Protection recently reopened its container seedling nursery operation in Davis. The Lewis A. Moran Reforestation Center now has an annual seedling capacity of nearly 250,000 seedlings and are working on a goal to produce over 1 million seedlings in the near future. At this time, they are taking seedling orders for the 2023 sowing season. Two rounds of seedling request screenings will be in mid-July and mid-September to prioritize and approve orders to begin sowing in late winter to early spring. **For seedling requests related to post-fire reforestation, seedlings will be free, courtesy of a grant from the United States Forest Service.** For more information on the ordering process or to place a seed or seedling request, please visit: https://www.fire.ca.gov/programs/resource-management/resource-protection-improvement/wildfire-resilience/reforestation-center/. For any other specific questions relative to seedling production, please contact Nursery Manager Kuldeep Singh at Kuldeep.singh@fire.ca.gov.

Upcoming Forest Stewardship Workshops and Field Days:

- June 30th - August 25th, Lake County Co-hort, Online and in-person field day (July 16th)

- July 17th, Small Landowner Stewardship in Redwood and Coastal Doug Fir Forests Field Day, Mendocino County. Please click here to register.

- August 24th - October 19th, Amador- Calaveras Co-hort, Online and in person field day (September 17th)

For more information on the workshop, and to share with a friend, please visit: http://ucanr.edu/forestryworskhopregistration