

Help Shape the Future of UC Agronomic Crop Research

The UCCE Agronomic Crops Program team is doing a statewide assessment of the most pressing needs facing agricultural producers. This survey is being distributed far and wide, so if you have already seen it feel free to ignore. For those of you who have not seen it, I wanted to bring it to your attention as we need participants from the Intermountain Region. Results from this effort are going to help guide the focus of UC Agronomic Crop research in the coming years. We want our region and concerns to be represented and not left out!



UCCE is conducting an online questionnaire for field crop production and we need your assistance!

Who: Growers, consultants, and allied industry for field crop production in California.

What: A 15-20 minute online questionnaire to gather information about your concerns, challenges, and preferences for extension information and approaches. Can be taken from a phone or a computer. **The first 100 participants will receive a \$10 gift card to Starbucks.**

[Participate Here](#)

Why: We want your needs and interests to better guide UCCE research and extension efforts. Your input will highlight the most important issues facing field crop production in California and help us set priorities for future programming.

Thank you for your time. Your responses are incredibly important in helping UCCE identify how we can better serve your needs and interests.

All responses are anonymous and your answers will be kept confidential. The results will be shared in an aggregate form via reports and presentations. The questionnaire is open until Friday, August 21, 2020.

If you have questions, please contact the project team at fieldcrops@ucdavis.edu (Nick Clark, Michelle Leinfelder-Miles, Mark Lundy, Bruce Linquist, Whitney Brim-DeForest, Sarah Light, Vikram Koundinya, Bob Hutmacher, Cameron Pittelkow, and Jessie Kanter).

Blue Alfalfa Aphids

Transform (Sulfoxaflor) has been registered under a special local needs label in alfalfa for 2021 (Only in Siskiyou, Shasta, Lassen, & Modoc Counties)

In my last newsletter, I wrote about how aphids were one of the pests historically controlled with Lorsban/chlorpyrifos. At the time of that article, I had no idea that there would be a large blue alfalfa aphid outbreak which would cause impacts on alfalfa production throughout the Intermountain Region this spring. Some of the fields I looked at were heavily infested, and there was a lot of crop damage that occurred. What was interesting is that there were lots of aphids right as the crop was breaking dormancy keeping the plants from growing (Pictures one and two). It is relatively unusual to have large aphid populations as the crop is breaking dormancy, as typically populations start to build after the crop has some above ground growth.



Picture one - New growth of alfalfa covered in aphids as dormancy was being broken.



Picture two - Aphids covering new growth of alfalfa..



*Picture three
Blue Alfalfa Aphid*



*Picture four
Pea Aphid*

There are two main types of aphids which can be easily confused with each other. The common pea aphid and the blue alfalfa aphid. Both are “large” (still very small) green bodied aphids. The best way to tell them apart is by looking at the antennae. Blue alfalfa aphids have smooth antennae, which are uniform and brown (Picture three) while pea aphids have dark bands on the segments of their antennae (Picture four). Populations of both species can be present on the same plant at the same time. In order to see the antennae, a hand lens is needed to get close enough to see the bands. Placing a white sheet of paper behind the insect can help give a clean background to see the antennae. Other aphids include the black cowpea aphids and spotted aphid both which also inject toxin.

Why does it matter what type of aphid you have? Blue alfalfa aphids inject a powerful toxin into the crop while they are feeding. This toxin has the ability to stunt the plants, reducing yields in first cutting, and in really bad infestations the second cutting as well. Additionally, both species of aphids produce “honeydew” (sticky waste from their feeding on sap) which can promote sooty molds. Both species are prolific, quick reproducing pests, being born pregnant and able to reproduce very rapidly. While there were many fields with pea aphids, there were also lots of fields that had large populations of blue alfalfa aphids this year.

Aphids are not a problem every year, as often their natural enemies are able to keep them in control. All kinds of other insects feed on aphids from lacewing to ladybug larvae. There are even parasitic wasps that can lay eggs in

the aphids, helping keep their population in check. In one of the fields I visited this year, there was a tremendous population of parasitic wasps! (Picture five) When large populations of natural predators are present, the decision to treat with an insecticide should be weighed over the impact to the natural predators. Aphids have such a quick lifecycle, that a few survivors can quickly repopulate the infestation much quicker than the natural predators takes to rebound as their life cycles are much longer.



Picture five - One of the natural predators of aphids are parasitic wasps. Each one of these brown aphids on the tops of the leaves were infected with a parasitic wasp killing the aphid. Wasp larvae eat the aphid from the inside and emerge from the aphid host to go infect more aphids.

UC has developed different economic thresholds for aphids depending on the size of the plant, and depending on specie of aphids:

Plant height	Pea aphids	Blue alfalfa aphids
Under 10 inches	40-50 per stem	10 to 12 per stem
10 to 20 inches	70 to 80 per stem	40 to 50 per stem
Over 20 inches	100+ per stem	40 to 50 per stem

Economic thresholds for aphids in alfalfa. The thresholds are much lower for the younger plants and the blue alfalfa aphids. (Adapted from UCIPM website)

While there are many insecticides that are labeled for aphids, they are not all created equal. Pyrethroid insecticides, such as Warrior (Lambda-Cyhalothrin), can give broad spectrum control of aphids, but also kill many other insects including the beneficial predators, leading to booms of aphid populations after treatments. Malathion in combination with a pyrethroid has given better results, but again will kill most of the natural predators. Sivanto (Flupyradifurone) is a neonicotinoid insecticide that has been shown to provide very good control of blue alfalfa

aphids, and is a more selective insecticide. The downside to Sivanto is that it is quite expensive.

As the aphid outbreak was occurring this spring, the Siskiyou County Agricultural Commissioner's department put in for a special local needs label for another neonicotinoid insecticide, Transform (Sulfoxaflor). Transform had been shown in research trials to perform similarly to Sivanto for blue alfalfa aphid control. The Department of Pesticide Regulation made a notice of decision on July 24th approving the SLN application for next growing season!

The SLN label for Transform will only be available in four counties Siskiyou, Shasta, Lassen and Modoc. It will expire in July of 2021 unless it is renewed. Transform is HIGHLY toxic to pollinators, and a stipulation for the SLN label is that all applications must be made before the crop blooms. With this in consideration, applications should be avoided if there are lots of flowering weeds in the field that could also attract pollinators. If we have bad blue alfalfa aphids again next year, Transform could be another insecticide option to consider.

I also wanted to share a picture of what happens when you have a large population of toxin injecting aphids, and you do nothing. Picture six is from one of my herbicide trials this spring. However, the crop damage you see is not from an herbicide, it is from aphids feeding. I made applications of an insecticide to my plots to control the aphids with my backpack boom sprayer. However, I messed up and didn't treat one strip in the trial... There was almost NO crop growth in that strip, but the rest of the treated alfalfa was nearly a foot tall. Aphids in high numbers can do a lot of crop damage as the picture indicates. It is worth scouting your fields early, and if you have aphids, determining what type they are to prevent significant damage to the crop.



Picture six - A strip of alfalfa where I didn't apply an insecticide. Almost no crop growth occurred as the heavy aphid feeding prevented the crop from growing. The adjacent crop was quite healthy where the aphids were controlled. Green plants in the untreated strip are weeds, not alfalfa.

Highlighting Two Uncommon Noxious Weeds. Let's Keep Them Uncommon!

There are two species of noxious weeds I want to bring to your attention, as they are not that common in our area: **rush skeleton weed** (*Chondrilla juncea*) and **sulfur cinquefoil** (*Potentilla recta*). Both of these perennial species have relatively small populations in the Intermountain area. If possible, we want to keep them from becoming the next widespread noxious perennial species like Canada thistle or perennial pepperweed.

I'll start with **rush skeleton weed**. It is relatively difficult to identify when it is young. The leaves and rosettes look fairly similar to a dandelions. As the growing season progresses, it sends up long spindly shoots as it bolts in early summer. After it bolts it looks quite a bit like chicory, but it is much more invasive. (Chicory has larger blue or white flowers.) Eventually it develops a yellow flower and seeds like a dandelion that can blow in the wind.



Lower leaves and spiny lower shoots of skeleton weed plant.



Spindly stems of a skeleton weed plant. Basal leaves look similar to a dandelion or chicory.



*Chicory in flower. Before flowering, the growth and leaves can look similar to skeleton weed. Chicory is much more widespread and is common along roadsides and pastures of the Intermountain area.
(Photo courtesy of sanbi.org)*



Rush skeleton weed patch in rabbit brush next to Honey Lake. Little grass is growing where the skeleton weed is established. It can be difficult to pick out before it flowers.

This plant is not widespread in California and is considered an A-list noxious weed on the old noxious weed list. The map from Cal Flora shows where it has been officially documented within the state. There have been sightings in Plumas county, a couple in Shasta, and there is an established population on the west shore of Honey Lake. I wouldn't be surprised if there are other populations around our region which do not show up on the map!

Skeleton weed has the potential to expand in the Intermountain region, overtaking rangeland and dryland pastures. In conversations I have had with weed scientist Tim Prather, skeletonweed has completely escaped control in his state of Idaho. It has established on over 3 million acres in the mountains of Idaho, and in many parts of eastern Washington. Skeleton weed is not just problematic here in the western US, but is also a problematic plant in dryland wheat production in Western Australia and parts of Argentina. Keep your eye out for it, so we can prevent it from overtaking our landscapes!

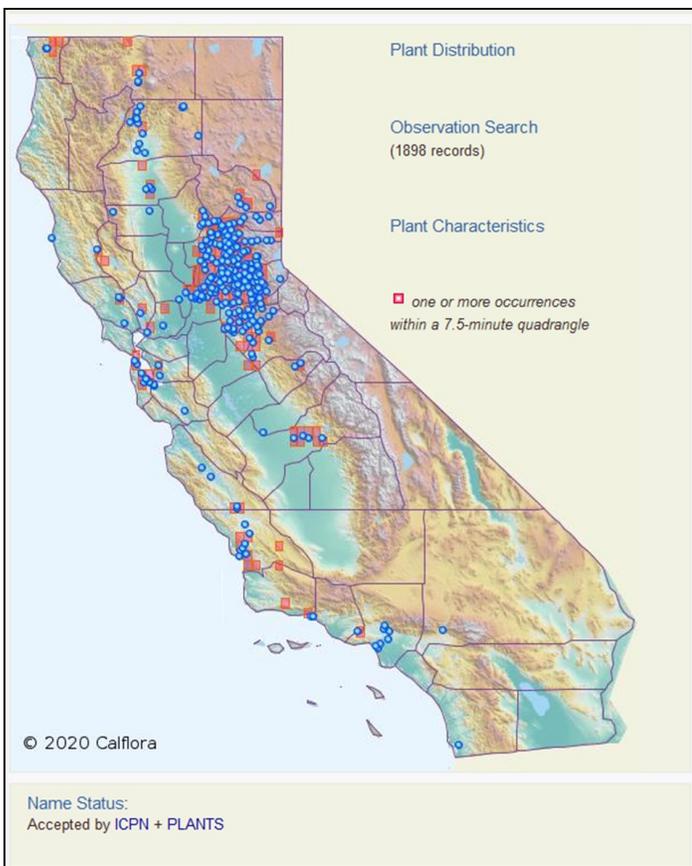


Rush skeleton weed flowering in late July. Now is a good time to find and identify patches of skeleton weed!

Unlike “showy” weeds, such as pepperweed or Scotch thistle, it is easy to glance over skeleton weed as its spindly stems do not catch the eye. Before it flowers it can blend in with grasses and forbs alike. The best time to see skeleton weed is right now as it is flowering. Keep your eyes out for yellow flowers on a plant that looks like chicory to find it.

Skeleton weed is not desirable forage for livestock or wildlife, and grazing tends to promote skeleton weed over other species that are more desirable. Generally, mechanical control is not effective for established plants because of the deep root system. However, there are multiple biocontrol agents established in the state. A rust, a gall forming midge, and a gall forming mite can all help reduce spread, but not eliminate populations.

Like many deep-rooted perennial weeds, herbicides are often relied upon to control established skeleton weed patches. The best time to make applications is in the rosette stage. If you do find a population on your property, mark the area out now while you can find the plants and see the flowers. The next year, finding the rosette will be easier. Feel free to give me a call to discuss what control options might be best utilized for your situation.



Cal Flora map showing rush skeleton weed (*Chondrilla juncea*) distribution.

The second species I want to bring to your attention is **sulfur cinquefoil**. Sulfur cinquefoil (*Potentilla recta*) is relatively common in the western US, but has limited populations here in California (at least documented populations). It is a deep perennial plant with a woody crown that looks very similar to some of our native cinquefoils, and is easy to confuse with a native plant. Cinquefoils can be found in a wide variety of ecotypes from forested areas to native meadows or pastures. It is not a desirable forage as it has a high tannin content which is unpalatable to livestock and wildlife. Under grazing pressure, it will often be ignored and can eventually dominate a pasture.

Sulfur cinquefoil has palmately compound leaves and a light yellow flower. There are at least nineteen other native cinquefoils that grow in the area, so if you suspect you have sulfur cinquefoil, make sure to get it identified.



Palmately compound leaf of sulfur cinquefoil.

Previously, sulfur cinquefoil was considered an A list noxious weed, but its status is under evaluation, as many noxious designations are. Regardless of the category it is listed under, it is still a noxious weed, and not one we want to let take over our landscapes. It has the ability to spread by seed, as well as by root, and established plants can live up to 20 years forming a woody crown.



Sulfur cinquefoil's light yellow flower.



Notice the stiff hairs sticking out directly from the stem on sulfur cinquefoil.



Slender cinquefoil, a native with similar leaves, but hairs lay flat against the stem. (Photo credit: Steven Thorsted)

One key characteristic of sulfur cinquefoil compared to other cinquefoils is the stiff hairs that stick straight out from the stem. Many other native cinquefoils have hairs that lay flat on the stem. This can be key to help identify the noxious weed before it goes to flower.

Often invasive weeds are associated with large patches, and this is typically true of sulfur cinquefoil. However, since I learned to identify sulfur cinquefoil, I have found numerous large patches of native cinquefoils along roadways and in pastures (Highways 36, 44, and 139 to name a few). If you have questions about how to identify what cinquefoil you have, you can always drop off a sample at the Cooperative Extension office, or send a sample down to Davis.



Cal Flora map showing sulfur cinquefoil (Potentilla recta) distribution.

Controlling weeds while patches are small can pay large dividends on efforts needed in the future. If you suspect you may have either of these species, let's eliminate them before their populations really get started in our region.



Patch of sulfur cinquefoil in established grasses.

ALERT! Mysterious Seeds from China

Over the past week, I have received numerous emails about packets of seeds people across the US have received from China. These seed packets were not ordered, and have been sent unsolicited to random people throughout the country. The USDA Animal and Plant Inspection Service is aware of the situation, and is trying to spread the word with the goal of preventing any new pests from becoming established. The California Department of Food and Agriculture is also aware of the situation and is working closely with the USDA to obtain any seed packets received here in the state.

On the off chance that you received a random package of seeds from China, please do not open the packet, and do not plant the seeds. Report the packet to your local AG commissioner's office for further instruction. While the individuals or motives behind these seeds is unknown, we want to minimize the risk of any new invasive species or plant diseases from becoming established!



Seed packets received from overseas. (Image courtesy of the Alabama Department of Agriculture)

A PUBLICATION FOR FARMERS, RANCHERS AND FRIENDS OF AGRICULTURE • COOPERATIVE EXTENSION

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