



Branched broomrape management research update and intro to upcoming label changes

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Agriculture and Natural Resources

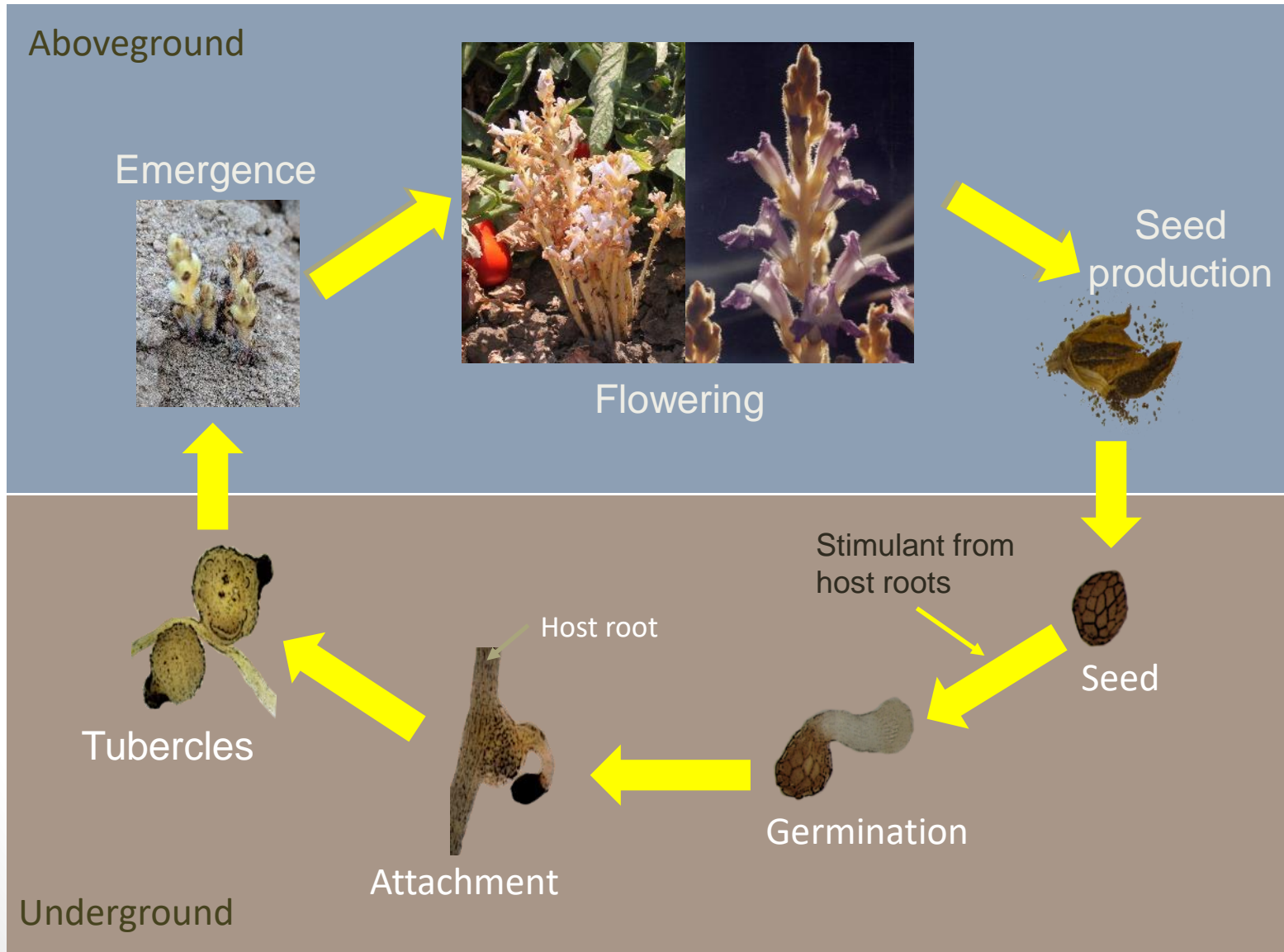
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Broomrape

- A genus of >200 parasitic herbaceous plants
 - *Orobanche* spp (aka *Phelipanche* spp).
- Broomrapes are root parasites (attach below ground)
- Holoparasites = derives all carbon from a host plant
- Plants lack chlorophyll
 - Usually yellow- or straw-colored
- Some broomrapes have narrow host range, but others have a much wider host range
- At high density, can greatly reduce yield or even result in crop failure



Lifecycle





Success in Israel with PICKIT DSS



Untreated control

Overview of broomrape management trials

- 2019/2020 evaluated chemigated imazapic and preplant incorporated sulfosulfuron according to PICKIT protocols
- 2021 focus shifted to chemigated imazamox paired with PPI sulfosulfuron
- 2022 continued to evaluate chemigated imazamox as well as chemigated rimsulfuron alone and paired with PPI sulfosulfuron
- 2023 continued to evaluate chemigated rimsulfuron (24c SLN) alone and paired with PPI sulfosulfuron
 - Foliar applications of maleic hydrazide
 - Variety screening and field trials

CA field trials 2022



Matt Fatino

Broomrape suppression (CA 2022)

Average Cluster



Rimsulfuron 24c Special Local Need Label

* Not currently listed on AGRIAN or CDMS, but is in effect. Ask!

AGRIAN by TELUS Agriculture

RESULTS DETAILS

5 Results Found For: matrix

Matrix SG

General Crop Specific Documents Safety Registration Mfg. Info

Label - CD02-628-020

MSDS/SDS - 04/01/2022 CD03-628-020

Supplemental Documents All States All Commodities

Section 24c - CA - For Management of Broomrape in Tomatoes

Supplemental Label - FOR USE IN BLUEBERRIES, RASPBERRIES & BLACKBERRIES (Expires 2024-04-01)



RIMSULFURON GROUP 2 HERBICIDE

FIFRA Section 24(c) Special Local Need (SLN) Label
FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF CALIFORNIA
For management of broomrape in tomatoes

Matrix SG

EPA Reg No. 352-768

SLN # 303093

ATTENTION

- It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
- This labeling must be in the possession of the user at the time of application.
- Follow all applicable directions, restrictions, Worker Protection Standard requirements and precautions on the EPA registered label for Matrix SG (352-768).

Chemigation

UC WEED SCIENCE
Weed control, management, ecology, and minutia

UC ANR

UCANR: Safeguarding abundant and healthy food for all Californians

Rimsulfuron 24c registration for broomrape management in tomato

Author: Bradley Hanson
Published on: October 7, 2022

One of the largest weed issues affecting the California processing tomato industry is the parasitic plant, branched broomrape (*Phelipanche ramosa*; *Orobanchaceae*)

- <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=50241>
- <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=47701>
- <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=43242>

Last week, CDPR issued a positive decision on a 24c "Special Local Needs" label request to allow application of rimsulfuron (Matrix SG) via chemigation through subsurface drip irrigation systems. This newly-allowed use pattern should be helpful for suppression of broomrape in tomato.

The CDPR decision was posted here: <https://www.cdpr.ca.gov/docs/registration/nod/nodmenu.htm> and is in Report 2022-39 for the Week of September 30, 2022. I've also attached it to the bottom of the blog post.

Rimsulfuron is widely used in tomato in California both as PRE and early POST herbicide for control of many weeds. The 24c label simply adds a new application method that is targeted specifically at the broomrapes which are parasites that attached to the root of tomatoes and other host plants. The new use pattern puts the herbicide right in the rootzone of the tomato plant at the time when broomrape seeds are germinating and the seedlings just attaching to the host.

The protocol for this specific use is three applications of rimsulfuron; one at early bloom and two more at 10-15 d intervals thereafter. Each of the three applications should be 1.33 oz product (25% WDG) which equates to the yearly max allowed on the Section 3 label.

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Feeds

September 20, 2022

FIFRA 24(c) Special Local Need Label (SLN)
For distribution and use only in the state of California

For use on Tomatoes for control of Broomrape (*Phelipanche ramosa* and *aegyptiaca*) through

Location: Statewide

Crop/Site/Commodity: Tomatoes

EPA
Manu

Target

Dosage

Frequency/Timing of Application:

A total of 3 applications must be used for weed control. Make the first application at early bloom and repeat at 10 to 15 day intervals for a maximum of 3 applications.

Diluti

Restricted

Specific Use Restrictions:

1. Do not make more than 3 applications per acre per year.
2. Do not apply more than 4.0 ounces of product per acre per year.
3. Tomatoes treated under this SLN cannot be combined with treatments allowed under the Section 3 product label for this product on tomatoes.
4. Do not apply to tomatoes grown in greenhouses.
5. This SLN can only be used for control of broomrape (*Phelipanche ramosa* and *aegyptiaca*).

Metho

Preharvest

Other Requ

Chemigat

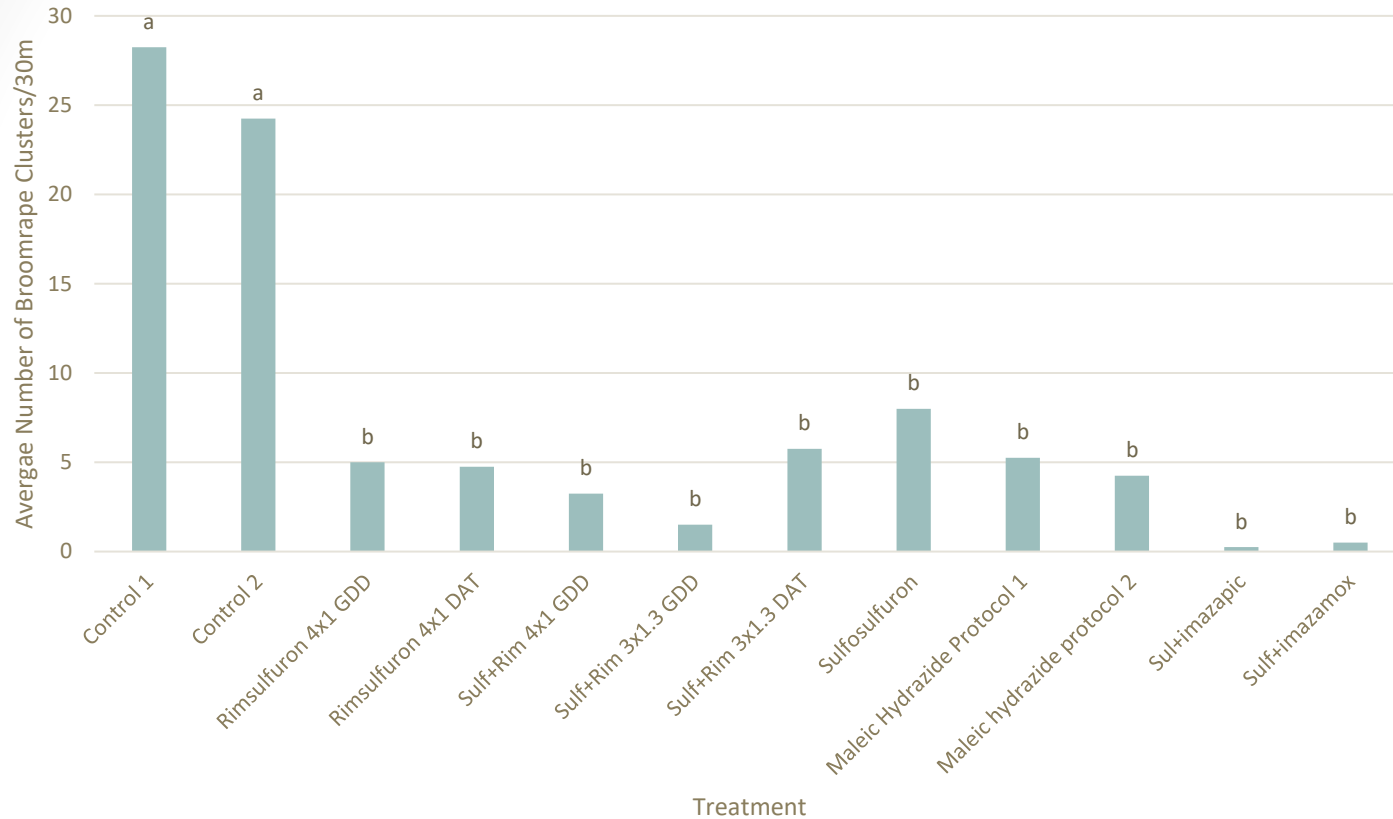
- Appl
prod

2023 Field Season Objectives

- Refine chemigated rimsulfuron application timing, evaluate efficacy of treatment alone and paired with PPI sulfosulfuron
- Evaluate foliar applications of PGR maleic hydrazide
- Screen 5 varieties for differences in branched broomrape attachment



2023 Broomrape Efficacy Trial Results

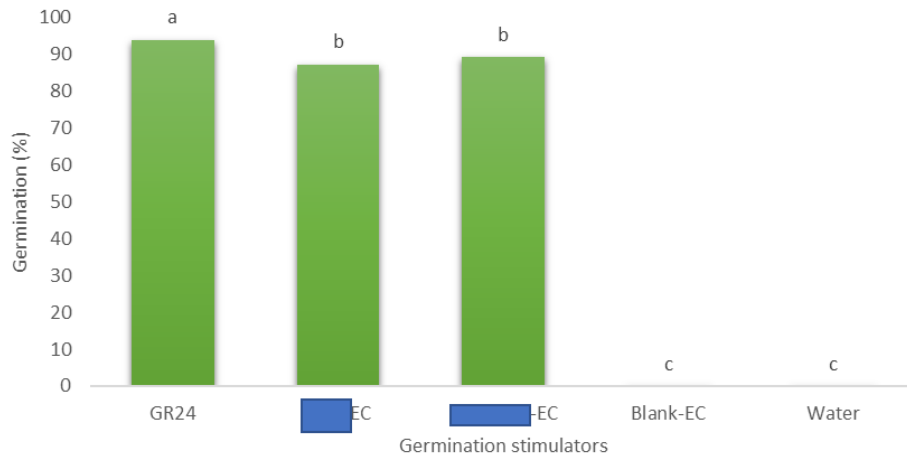


- **Figure 1.** Average number of branched broomrape clusters per 120-ft plot by treatment across four replications in an infested tomato field in Yolo County, CA.

Germination stimulation studies



Branched broomrape germination



Acknowledgements:

- CTRI funding
- IR4 funding
- Swett/Hanson CDFA-SCBG funding
- CLFP funding
- Schreiner Bros., Barrios, Turkovich, Viguie, PCP
- Patricia Lazicki, Gene Miyao, Coby Goldwasser



Endangered Species Act (ESA) Potential Label Changes



Special thanks to:

Lynn Sosnoskie, Cornell University

Mark VanGessel, University of Delaware

Dr. Bill Chism, EPA, OPP retired, Chair, WSSA Endangered Species Act Committee

Threatened and Endangered Species

- There are over 1,700 threatened and endangered species in the U.S., DC, and territories
- Over half the U.S. species are plants
- Because plants provide food and habitat, this can lead to significant (negative) downstream effects
- Additionally, you can cause significant harm to threatened and endangered animals by affecting their critical habitat (even if those plants aren't endangered themselves)

Background on Endangered Species Act (ESA)

- Every time a pesticide is registered, a label is changed, or a pesticide is reregistered by the EPA, a federal regulation must be written to authorize that registration action
- Therefore, the ESA impacts must be considered
- However, the EPA has not been actively assessing impacts to T&E species on pesticide registrations
- Courts have indicated that non-compliance will not be tolerated (EPA is in “ongoing legal vulnerability”)

The EPA and the Endangered Species Act (ESA)

- The Draft Herbicide Strategy is an attempt by the EPA to speed up the review process
 - 1) Identify plant species (and animals) likely to be affected by herbicide use,
 - 2) Identify mitigation strategies to reduce drift and runoff/erosion,
 - 3) Determine where mitigation measures (method to meet ESA obligations) would be applied
- Where mitigation measures are required across the ENTIRE US, the measures would be listed on the product label.
- In instances where only PART of the US is required to implement mitigation measures, the measures for locations affected would be available through the EPA's Bulletins Live! Two system (Pesticide Use Limitation Areas (PULAs)) ...THE LABEL WILL DIRECT YOU HERE



Endangered Species

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- [Endangered Species Home](#)
- [About the Endangered Species Protection Program](#)
- [Assessing Pesticides Under the Endangered Species Act](#)
- [Endangered Species: Information For Pesticides Users](#)
- [Litigation on Endangered Species and Pesticides](#)
- [Bulletins Live!](#)**
- [For Kids](#)

Endangered Species Protection Bulletins

Endangered Species Protection Bulletins are a part of EPA's Endangered Species Protection Program. Bulletins set forth geographically specific pesticide use limitations for the protection of threatened and endangered (listed) species and their designated critical habitat.

- [Obtain Bulletins using EPA's Bulletins Live! Two application.](#)
- [Read the tutorial Bulletins Live! Two.](#)
- [Go to the quick start guide.](#)
- [View the November 2023 webinar for Bulletins Live! Two.](#)
- [Learn How to locate the EPA Registration number to search for product in Bulletins Live! Two.](#)

If your pesticide label directs you to this website, you are required to follow the pesticide use limitation(s) found on your label and in the Bulletins Live! Two system for your intended application area, pesticide product, and application month. You may not see any geographically specific use limitations for the product you are applying even if your label directed you to this

When will different types of pesticides be impacted?

- Rodenticide Pilot to protect Endangered Species
 - *Released November 2022*
- Herbicide Strategy
 - *Final version should be released May 2024*
- Insecticide Strategy
 - *Final version should be released January 2025*
- Fungicide Strategy
 - *Final version should be released late 2025 or 2026*

What Will Change for Users?

- Who will be affected by this and when???
 - All fungicides, herbicides, insecticides, and rodenticides will have label changes
 - Your impacts depends: are the fields near listed species, do you use pesticides with high risks, can you afford the conservation mitigations needed, etc.?
- When will this happen? (where is the EPA in terms of having a final decision and then how soon can the audience expect to state implementing these mitigations)
 - Between 2025 and 2027 all pesticide labels will start to change to protect endangered species
 - It may take 15 years to change all pesticide labels
- **Stay tuned....**

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**UC Davis Weed Research
and Information Center**

<http://wric.ucdavis.edu/>

<http://ucanr.org/blogs/UCDWeedScience/>



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- <https://caes.ucdavis.edu/news/parasitic-weeds-threaten-tomato-plants-california-farms>
- Online September 26, 2023

Postdoctoral scholar Pershang Hosseini examines a specimen inside the Contained Research Facility at UC Davis where research projects are examining ways to control and learn more about *Orobanche ramosa*. (Jael Mackendorf/UC Davis)

Parasitic Weeds Threaten Tomato Plants on California Farms

UC Davis Teams Utilize Innovative Research Techniques to Battle an Invasive Species

by Emily C. Dooley | September 26, 2023

At first glance, *Orobanche ramosa* looks like an interesting blossoming plant, one that could add a unique flair to flower arrangements. But it's a parasitic weed that attaches to roots, sucks out nutrients and is threatening California's lucrative \$1.5 billion processing tomato industry.

The weed's tiny seeds — smaller than finely ground pepper — can survive in soil for many decades and be carried by wind, water, soil transfers and even footwear. If found attached to crop plants and reported to the state, farmers are required to destroy

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