



The biology and management of difficult to control weeds in alfalfa

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Weeds affect alfalfa quantity and quality

- Stunting and stand loss
- Mold, discoloration, combustion
 - *Purslane*
- Palatability issues and poisonous species
 - *Fiddleneck*
 - *Curly dock*
 - *Common groundsel*



A close-up photograph of a Purslane (Portulaca oleracea) plant. The plant features several large, thick, green, oval-shaped leaves with a slightly waxy texture and reddish-brown edges. The leaves are arranged in a rosette pattern. The plant is growing in dark, moist soil with some organic matter like wood chips. A semi-transparent dark grey box is overlaid on the top part of the image, containing the text 'Purslane (Portulaca oleracea)' in white font.

Purslane (*Portulaca oleracea*)

Purslane (*Portulaca oleracea*)

- Common purslane is a prostrate, mat-forming, summer annual
- Portulacaceae (purslane family, 115 species all genus *Portulaca*)
- Reddish stems radiating out from a central rooting point
- Leaves are oval in shape, shiny green in color and oppositely arranged
- Stems and leaves are succulent, smooth and hairless

Purslane (*Portulaca oleracea*)

- Flowers are yellow and five-petaled
- Tiny red-brown-black seeds can remain dormant in the soil for decades
- In CA, purslane germinates when (moist) soil temp reaches about 60 F
- Stems can remain viable for days after being up-rooted (can re-establish)

Purslane (*Portulaca oleracea*)

Red stem and sometimes a red edge to the leaf



5-petal flowers that produce small, long-lived seed



Purslane (*Portulaca oleracea*)

- More about purslane biology and ecology:
- <http://ipm.ucanr.edu/PMG/PESTNOTES/pn7461.html>
- <http://ipm.ucanr.edu/PMG/WEEDS/purslane.html>

Purslane (*Portulaca oleracea*)

- Purslane is an issue in alfalfa because the moisture in purslane could lead to discoloration, mold, or even spontaneous combustion when it is raked and baled with hay.
- For more information about purslane concerns in hay, please see: <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=24933>
- *By: Michelle Linefelder-Miles*
- For more information about bale moisture guidelines, please see: <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=10239>
- *By: Dan Putnam*

Purslane (*Portulaca oleracea*)

- *Management - Pre-emergence herbicides (soil-applied, residual)*
- Trifluralin (Treflan) or pendimethalin (Prowl H2O) (WSSA 3, dinitroanilines, 'yellow herbicides', microtubule inhibitors) applied after the first cutting, but prior to weed seedling emergence
- Trifluralin or pendimethalin can also control dodder and warm-season grasses, like glyphosate-resistant junglerice
- The incorporation of pre-emergent soil residual products is needed to ensure effectiveness
- Pay particular attention to pendimethalin rates and cutting restrictions

Purslane (*Portulaca oleracea*)

- *Management - Post-emergence herbicides (foliar-applied)*
- Carfentrazone (Shark), imazethapyr (Pursuit), and glyphosate-based products should also have activity against purslane, although the timing of applications is always crucial
- Contact herbicides, like carfentrazone (WSSA 14, PPO-inhibitor), must be applied to small plants (between cuttings) to ensure good coverage
- Contact herbicides can damage alfalfa, resulting in a loss of yield
- Carfentrazone has also been shown to be especially injurious to alfalfa when the crop is stressed due to saturated soil conditions

Purslane (*Portulaca oleracea*)

- *Management - Post-emergence herbicides (foliar-applied)*
- Imazethapyr (WSSA 2, ALS-inhibitor) can have significant plant back restrictions due to soil residual activity
- Glyphosate (WSSA 9, EPSPS-inhibitor) in RR alfalfa should also be applied to smaller weeds to maximize control potential (tolerance increase with size, age)
- Temperature can also impact glyphosate performance; higher temperatures can lead to stressed weeds, which are often less susceptible to systemic herbicides



Groundsel (*Senecio vulgaris*)

Groundsel (*Senecio vulgaris*)

- Winter (sometimes summer) annual weed
- Asteraceae (Sunflower family)
- The first true leaves of the seedlings have shallow teeth and may be purple on the underside or have purple-tinged veins at the base
- Later leaves are more deeply (but often irregularly) lobed
- Leaves may be hairless or hairy

Groundsel (*Senecio vulgaris*)

- The plant starts as a rosette but sends up a branch/branches where flower clusters are produced
- Flowers are yellow and often drooping
- Individual flowers are surrounded by green bracts with black tips
- Seeds possess tufts of hairs (a pappus) that aid in wind dispersal
- Common groundsel is problematic in alfalfa because it produces alkaloids, which can cause chronic and irreversible liver disease in livestock

Groundsel (*Senecio vulgaris*)

Seedling leaves are not as deeply lobed as adult leaves



Groundsel (*Senecio vulgaris*)

Black tips on bracts at base of flower are diagnostic



Groundsel (*Senecio vulgaris*)

Drooping flowerheads



Wind-dispersed seed



Livestock Poisoning Plants of California

<https://anrcatalog.ucanr.edu/pdf/8398.pdf>

<http://anrcatalog.ucdavis.edu>

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Livestock-Poisoning Plants of California

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Poisonous plants cause significant losses of livestock every year. A successful livestock operator must know which poisonous plants occur on a given range or pasture and how they can be controlled or avoided. This publication shows which plants are poisonous, tells how they affect stock, and suggests ways to reduce losses from poisoning.

Undesirable effects may result from a single ingestion of a large amount of a poisonous plant, but some plants are so toxic that very small amounts may result in severe disease or death. Other plants cause chronic poisoning only after ingestion over weeks or months. The later situation may result in clinical signs long after the exposure to the toxic plant material, and treatment may no longer be possible.

With few exceptions, livestock will not eat poisonous plants unless forced to by hunger. The single most important way to prevent poisoning is to use proper range and pasture management practices to provide ample forage, encouraging consumption of nontoxic plants. Areas infested with poisonous plants should be avoided when trailing, holding, or unloading animals. Supplemental feed may protect stock if these conditions cannot be avoided, but there are circumstances (for example, herbicide applications) that may change palatability or increase toxicity in some plants. If toxic weeds are embedded in alfalfa cubes or included in total mixed rations, animals may not be able to avoid ingestion of them.

Many poisonous plants may be controlled with herbicides. Often, however, the uneven distribution

Groundsel (*Senecio vulgaris*)

- More about groundsel biology and ecology:
- http://ipm.ucanr.edu/PMG/WEEDS/common_groundsel.html
- <http://ipm.ucanr.edu/PMG/PESTNOTES/pn74130.html>

Groundsel (*Senecio vulgaris*)

- *Management - Pre-emergence herbicides (soil-applied, residual)*
- Flumioxazin (Chateau, WSSA 14, PPO-inhibitor) applied to a dormant crop can be effective against groundsel
- Hexazinone (Velpar, WSSA 5, PSII-inhibitor), which also has post-emergence activity on small weeds, can also control common groundsel
- Efficacy of hexazinone may be reduced if foggy, low light conditions persist after application.

Groundsel (*Senecio vulgaris*)

- *Management - Post-emergence herbicides (foliar-applied)*
- 2,4-DB (Butyrac, WSSA 4, synthetic auxin, restricted material) and bromoxynil (Buctril, WSSA 6, PSII-inhibitor) can control groundsel before weeds have reached 2-inches in diameter or height
- Weeds must be actively growing in warmer conditions not exceeding 80 degrees
- Always check the forecast before applying 2,4-DB; if significant precipitation/irrigation occurs within four days of application, severe crop injury can occur

Groundsel (*Senecio vulgaris*)

- *Management - Post-emergence herbicides (foliar-applied)*
- Glyphosate-based herbicides (in Roundup Ready alfalfa) can also be effective against groundsel but will not provide control of glyphosate-resistant species like hairy fleabane
- In established alfalfa, saflufenacil (Sharpen, WSSA 14, PPO-inhibitor) applied post-emergence can also provide good control of common groundsel
- Other contact herbicides, such as paraquat (Gramoxone, WSSA 22, PSI-electron diverter, restricted material) and carfentrazone, have been found to be less effective

Groundsel (*Senecio vulgaris*)

- Once groundsel plants are large and flowering, there isn't anything that can be sprayed to effectively control these weeds in alfalfa fields
- Reducing biomass does not automatically eliminate toxicity
- Before cutting and baling your hay, inspect the field to identify any potential toxic plants, and make sure to separate out any bales that are contaminated
- See: <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=28980>

Use the UC IPM Website!

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Integrated Weed Management in Seedling Alfalfa
(Reviewed 3/17, updated 3/17)

In this Guideline:

- [Monitoring](#)
- [Weed management before planting](#)
- [Weed management after planting](#)
- [Publication](#)
- [Glossary](#)

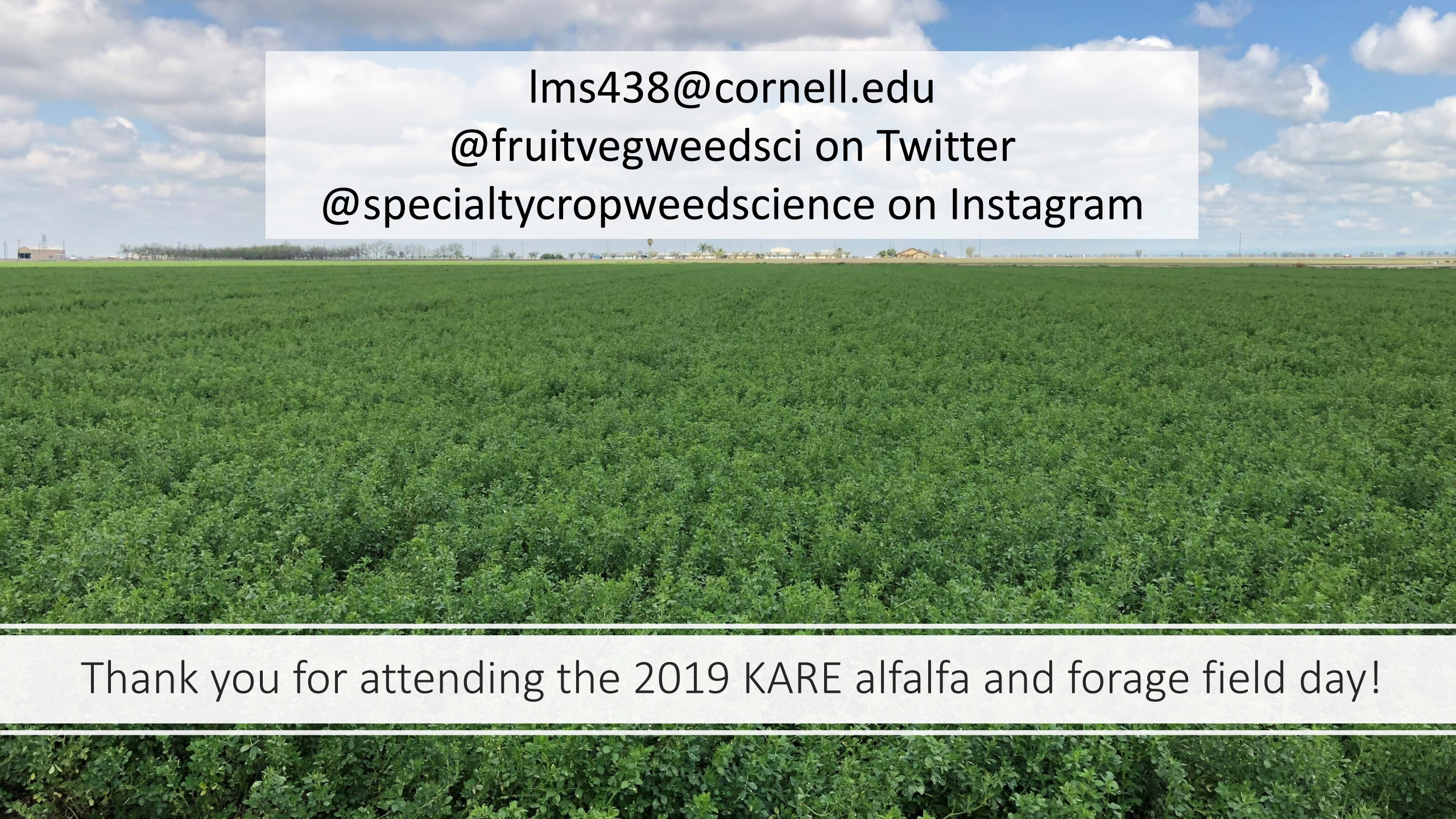
More about weeds in alfalfa:

- General Information
 - [Herbicide-Tolerant Varieties as a Weed Management Strategy](#)
 - [Preventing Weed Resistance And Weed Shifts](#)
- Seedling alfalfa
 - [Integrated weed management](#)
 - [Susceptibility to herbicides](#)
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Uncontrolled weeds in seedling alfalfa can cause loss of the stand during crop establishment. Weed infestations can weaken young alfalfa plants, retard growth, delay the first cutting, reduce quality, and result in long term damage to crop yield and stand persistence.

Proper establishment and management of an alfalfa stand are essential for weed control. It is not cost-effective to control weeds in a thin or weak stand. Plant



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Thank you for attending the 2019 KARE alfalfa and forage field day!