The biology and management of difficult to control weeds in alfalfa

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Common groundsel (*Senecio vulgaris*)

Common groundsel is a winter (and sometimes summer) annual weed in the sunflower family (Asteraceae) that germinates, primarily, in the late fall and early spring. 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. The plant starts as a rosette but at maturity sends up a branch/branches upon which drooping yellow flowers (in clusters) are produced. Individual flowers are surrounded by green bracts with black tips (a diagnostic feature). Seeds possess tint tufts of hairs (a pappus) on one end that aid in wind dispersal. The plant is often described as having a 'ragged' or 'scraggly' appearance. Plants usually die in the heat of the summer. For more information about common groundsel, please see: http://ipm.ucanr.edu/PMG/WEEDS/common_groundsel.html or http://ipm.ucanr.edu/PMG/PESTNOTES/pn74130.html

Common groundsel is problematic in alfalfa because it produces pyrrolizidine alkaloids, which can cause chronic and irreversible liver disease in livestock. Cattle and horses are most sensitive to the PAs, followed by pigs and chickens, and then sheep, goats and turkeys, which are the least sensitive to PA toxicity.

In seedling alfalfa, post-emergence applications of Butyrac (2,4-DB; restricted material) and Buctril (bromoxynil) can control groundsel before weeds have reached 2-inches in diameter or height. Both Butyrac and Buctril work best when weeds are actively growing in warmer conditions not exceeding 80 degrees. Always check the forecast before applying Butyrac; if significant precipitation/irrigation occurs within four days of application, severe crop injury can occur. 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, Sharpen (saflufenacil) applied post-emergence can also provide good control of common groundsel although other contact herbicides, such as Gramoxone (paraquat; restricted material) and Shark (carfentrazone), have been found to be less effective.

Combining pre- and post-emergent herbicides is important for managing flushes of weed seed germination that occur throughout the winter and spring. Incorporation of pre-emergent soil residual products by moisture is often needed to ensure effectiveness. Velpar (hexazinone), which also has post-emergence activity on small weeds, can control common groundsel although efficacy may be reduced if foggy, low light conditions persist after application. Chateau (flumioxazin) applied to a dormant crop can also be effective against groundsel.

The timing of herbicide applications (from a crop development and dormancy perspective, relative to cutting, and in response to weed size) is crucial to minimize injury and maximize control. Once groundsel plants are large and flowering, there isn't anything that can be sprayed to effectively control these weeds in alfalfa fields. While, burning the plant back with an herbicide would reduce the amount of weed biomass and seed set, the toxicity will not be eliminated. 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. Please also see: https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=28980

Common Purslane (*Portulaca oleracea*)

Common purslane is a succulent, prostrate, mat-forming, summer annual weed in Portulacaceae family. The species can be identified by its reddish stems radiating out from a central rooting point. The stems and leaves are fleshy, smooth and hairless. Leaves are oval in shape and a shiny green in color and arranged opposite each other. Flowers are small, yellow and five-petaled. Tiny (about 1/64 to 1/32 inch in diameter) red to brown to black seeds are borne in a small pod with a top that comes off like the lid on a cookie jar. Seeds can remain dormant in the soil for many years (up to 40, by some accounts). In California, purslane begins to germinate when soil temperatures reach about 60 degrees following an irrigation or rain event. The fleshy stems of common purslane can remain moist and viable for several days after being up-rooted and can then become re-established in the field. For more information, please see: http://ipm.ucanr.edu/PMG/PESTNOTES/pn7461.html or http://ipm.ucanr.edu/PMG/WEEDS/purslane.html

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 from Michelle Linefelder-Miles. For more information about bale moisture guidelines, please see: https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=10239 from Dan Putnam.

With respect to herbicide control, Treflan (trifluralin) or Prowl H2O (pendimethalin) applied after the first cutting but prior to seedling emergence can be effective tools for managing purslane. Reducing weed establishment in-field means that fewer individuals need to be treated with foliar-applied products during the cropping season. Pendimethalin and trifluralin may also control dodder and warm-season grasses, like glyphosate-resistant junglerice. Remember, the incorporation of pre-emergent soil residual products by moisture is often needed to ensure effectiveness. Pay particular attention to pendimethalin rates and cutting restrictions

With respect to post-emergence products, foliar-applied herbicides like (carfentrazone), Pursuit (imazethapyr), and glyphosate-based products should also have activity against purslane, although the timing of applications is always crucial. Contact herbicides like Shark must be applied to small plants between cuttings to ensure good coverage and, consequently, good control. Contact herbicides can also damage alfalfa, resulting in a loss of yield, which must be accounted for in the decision-making process. Shark has also been shown to be especially injurious to alfalfa when the crop is stressed due to saturated soil conditions. Glyphosate should also be applied to smaller weeds to maximize control potential; purslane can become more tolerant of glyphosate as the plants increase in size and maturity. Temperature can also impact glyphosate performance; higher temperatures can lead to stressed weeds, which are often less susceptible to systemic herbicides. Pursuit can have significant plant back restrictions due to soil residual activity.

Please see: http://ipm.ucanr.edu/PMG/r1700111.html for more weed management information in alfalfa. Always read herbicide labels and comply with any instructions/restrictions. Any mention of pesticides is not a recommendation or endorsement for use by the University of California.