

STAND ESTABLISHMENT AND SEEDING-YEAR WEED CONTROL REFRESHER

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If you're an alfalfa grower who grows a nice lush stand of alfalfa, chances are you've learned some things about alfalfa establishment and weed control through the school of hard knocks. You know it takes good planning to obtain a healthy stand of alfalfa, and one of the most critical stages is getting alfalfa seedlings from emergence to established stand status.

Let's face it, alfalfa seedlings grow slower than the main weeds you contend with during stand establishment. It's important to get alfalfa going strong early, so weeds don't get ahead of it during the critical establishment phase. Alfalfa doesn't have as many herbicide options as corn or soybeans. However, as a perennial crop, it offers wider planting-date options, plus agronomic and cultural management options that you don't have with annual crops. These cultural management options should be considered along with weed control options. It can be an interesting challenge to put together the alfalfa establishment puzzle on your farm. Let's consider the pieces of that puzzle.

Seedbed Preparation and Planting

Start with a firm seedbed to obtain an even and adequate stand. A firm seedbed improves your chances of good stand establishment. This axiom holds true whether seed is coated or uncoated. A sparse or uneven stand of alfalfa won't improve with age, and sparse stands are prone to weeds.

A firm seedbed facilitates moisture transfer from soil to seed. A pass with a cultipacker right after planting can make a big difference in conventional tillage, especially when soil is dry. In no-till seedings, success depends on setting depth gauge wheels for proper soil depth, with press wheels set for adequate soil closure and firm seed-to-soil contact.

Pay attention to seeding depth. Whether using conventional tillage or no-till, strive for optimal planting depth of 1/4-1/2" for most soils and no deeper than 1" in sandy soils. Uneven seeding depth can lead to uneven stands.

Consider no-till as a good alternative to conventional tillage. No-till avoids bringing weed seeds to the surface where germination will occur. It can reduce initial weed competition during stand establishment, especially if the prior crop was not weedy and didn't leave a crop of new weed seeds on the soil surface.

What about seeding rates? Most University alfalfa seeding-rate recommendations range from 12 to 18 pounds of seed per acre. Those recommendations were generally arrived at without the inert coatings sometimes applied to alfalfa seed today. Look for the percentage of coating/inert material on your seed label, and be aware of that when deciding a final seeding rate. If you don't plant enough pure live seed, your alfalfa crop will be less productive and less competitive with weeds.

Planting date will influence the species and amount of weeds new-seeding alfalfa will face at establishment

Plant alfalfa early to get a jump on later-emerging weeds. Alfalfa can be planted anytime from very early spring through late summer. Seed germinates at soil temperatures of 37°F or greater, but there is a limit to earliness of alfalfa planting. Tender alfalfa seedlings are killed at 27°F and below.

Frost seeding into winter small grains can have varied success. Frost seeding is a late winter or very early spring broadcast-seeding method made during or soon after soil thaw. It can give alfalfa an early jump on many weed species, but success is variable and you take your chances on a hard freeze killing young seedlings. If you frost seed, be sure to have a backup plan. Frost seeding can be useful to fill in occasional bare spots in established new stands, for example where a prior-year nurse crop may have lodged in a few areas of the field.

Spring planting is very popular, and usually provides favorable soil moisture to enable good seedling growth and establishment. From a weed-control standpoint, spring planting can be challenging due to the typical spring flush of weed seedling emergence.

Late spring through mid-summer planting can be a fit when other factors prevent spring planting. Adequate surface moisture, along with subsoil moisture to sustain the developing crop through any potential dry period, is



advisable. The predominant weed species that needs to be controlled may change as spring planting is delayed into summer.

Late summer planting may result in less weed competition than another timing. That's because seeds of many weed species have already germinated, leaving fewer viable weed seeds to sprout. That's a good reason to think about planting *after* small grains instead of *with* a small grain nurse crop. Adequate soil moisture for germination and early growth will be a requirement.

Nurse Crops

A nurse crop is a crop species planted with alfalfa that offers a benefit during the establishment phase of an alfalfa stand. Nurse crops should not be so competitive they will smother seedling alfalfa. Oats is a common choice, and a good rule of thumb is to keep the oats seeding rate at 1 bu/acre or less when used as a nurse crop.

Nurse crops help control erosion. A faster-growing nurse crop, such as oats with its fibrous roots near the soil surface, improves early establishment erosion control over alfalfa alone.

Nurse crops can offer significant dry matter production in a relatively short time. For instance, an oats nurse crop cut at boot stage can provide a respectable forage harvest in shorter time than a typical new alfalfa seeding.

A fast-growing nurse crop is more competitive with weeds. The nurse crop tends to hold weeds in check, but don't forget that your nurse crop is competing with and slowing down alfalfa seedling growth rate, too. Seedling alfalfa can hang out within the canopy of a faster-developing nurse crop for a while, but it will be spindly from competition with the nurse crop until it is harvested. That might not be a big deal if you aren't counting on a lot of alfalfa in the establishment year. Don't plant a nurse crop too thick; if it lodges, it can cause early attrition and smothering loss of young alfalfa plants.

Nurse crops should be harvested sooner rather than later- if your aim is to speed up alfalfa stand establishment. For example, harvest oat haylage at boot stage rather than letting oats mature to grain harvest, with increasing risk of lodging and smothering alfalfa.

Clip the alfalfa stand if any combination of weeds and/or nurse crop begins to smother alfalfa. Alfalfa tends to re-grow more strongly than most weeds, especially following taproot and crown development, by about 60 days after emergence. But you don't have to wait that long to clip alfalfa. If weeds begin to overtake the legume, clip the young stand to avoid letting weeds smother the alfalfa. Young seedling alfalfa will regrow from axillary buds well before crowns are formed, provided stems are cut above the lowest trifoliate leaf axil.

If you aim to make a bumper crop of small grain, plant the small grain at a good seeding rate for grain production, and consider no-till seeding alfalfa into stubble after taking off the straw.

Clear-Seeding Tips

A clear seeding of alfalfa is sown without a nurse crop, and in some stretch of the definition may include other forage species intended to co-exist with alfalfa beyond the establishment phase. Examples include trefoil or orchardgrass.

Clear seeding offers faster alfalfa stand establishment than if using nurse crops. If your goal is rapid stand establishment to maximize first-year yield of high-quality alfalfa, go with clear seeding and skip the nurse crop. Make a plan for weed control, because uncontrolled weeds will tend to grow faster without a competing nurse crop.

If you want to clear-seed alfalfa without the use of herbicides, a late-summer seeding is your best bet for minimizing weed competition. If no-till seeding, clip pre-existing weeds short beforehand. If using conventional tillage, get the seedbed prepared; then let weed seeds germinate for several days and control germinating weed sprouts with a rotary hoe or other light tillage. Broadcast sow or drill alfalfa seed with minimal additional soil disturbance to avoid bringing more weed seeds to the surface, where germination can be triggered. Follow up with a cultipacker for firm seed-to-soil contact.

Herbicide Weed Control

Fewer registered herbicide choices are available for alfalfa versus corn or soybeans, but the control strategies should be familiar. Start out with tillage or a burndown herbicide in no-till to control any established weeds. Apply a broad-spectrum preemergent or preplant-incorporated herbicide. Follow with a postemergent treatment if warranted. Consider early postemergent Roundup® (glyphosate) as an alternative to what was already mentioned, or in addition to that mentioned, but only if you planted a variety with resistance to the herbicide.

Avoid using the same class of herbicides across all crops in your rotation. If you have a history of herbicide-resistant weed species on your farm, consider rotating additional effective herbicide modes of action into your herbicide program that you haven't used in affected fields. Also consider crop safety when planning your herbicide selections.

Scout emerging alfalfa and young alfalfa stands for weeds to determine if postemergent weed control is needed. The key is to scout early, and, for best control, be ready to apply an appropriate herbicide when weeds are small. If small weeds grow beyond the labeled stage of control, probably clipping is the better weed-control option, especially if weeds are in significant competition with alfalfa.

Your weed-control and herbicide choices during establishment of this perennial crop may affect your other herbicide choices. Consider alfalfa herbicide options with different modes of action versus the herbicides you use with your other crops in rotation. Herbicide rotation with the use of multiple modes of action is a key management tool for avoiding a buildup of herbicide-resistant weeds in your fields. Your herbicide choices may affect your rotation or harvest options for a period following application. Herbicide options may be reduced or eliminated when including other forage crop species in your alfalfa stand. Pay attention to crop rotation and harvest or feeding restrictions when using herbicides.

Always read and follow label directions. The table below and on the following page covers most herbicide options in alfalfa. Several of these options are labeled for various clover species, too. This table does not cover the comprehensive information found in herbicide labels, such as feed restrictions, crop-rotation restrictions, and other important information. Be sure to read and follow herbicide labels and supplemental labels for your state or special use before deciding on or using any herbicide.

Herbicides for Use in Alfalfa

(Read and follow label directions, including alfalfa growth stage not shown in table)

Timing	Herbicides	Weed Growth Stage	Weeds Controlled	Considerations
Pre-plant burndown, At-plant burndown	Gramoxone Inteon®	Actively growing weeds and grasses	Non-selective broad spectrum	70-day harvest restriction, only one application per season, with varying regional restrictions
Pre-plant burndown, At-plant burndown	Roundup®	Actively growing weeds and grasses	Non-selective broad spectrum	Application must be made prior to crop emergence
Pre-plant incorporated	Balan™ Eptam®	Germinating broadleaf seeds and emerging seedlings	Broad-spectrum broadleaf control	Soil incorporation or chemigation needed to distribute herbicide in top few inches of soil
Early postemergence	Buctril®	Broad-spectrum broadleaf control of small weeds up to 2" tall	Broad-spectrum broadleaf control	Temperatures over 70°F within 3 days of application can cause crop burn; 30- to 60-day harvest restriction
Postemergence	Butyrac®	Small broadleaf control, with suppression of some larger broadleaves	Broad-spectrum broadleaf control	30-day harvest restriction for established alfalfa, 60-day harvest restriction for seedling alfalfa; can be tankmixed with Buctril® or Poast® for additional broadleaf and grass control
Postemergence	Poast®	Actively growing grasses, tallest height controlled varies by grass species, generally 8"	Annual and perennial grasses	Harvest restriction 7 days before grazing, 14 days before cutting for hay/haylage; best control before mowing grasses
Postemergence	Select Max®	Actively growing grasses, generally 2-6" in height	Annual and perennial grasses	Harvest restriction 15 days; best control before mowing grasses
Early postemergence and established stands, when weeds are small	Pursuit® Raptor®	Emerged weeds up to 3" for most species	Broad-spectrum broadleaf and grass suppression, with control of many broadleaves	30-day harvest restriction

Herbicides for Use in Alfalfa (*Continued*)

(Read and follow label directions, including alfalfa growth stage not shown in table)

Timing	Herbicides	Weed Growth Stage	Weeds Controlled	Considerations
Postemergence, only for varieties with Genuity® Roundup Ready® technology	Roundup PowerMax® or Weathermax®	Actively growing weeds and grasses	Broad spectrum of annual and perennial broadleaves and grasses	Do not apply within 5 days of harvest; aim for first application at 3- to 4-trifoliolate leaf stage for best early weed control and null plant take-out; no rotational restrictions
Postemergence, established stands only, no greater than 6" crop height	Chateau®	Emerged seedlings not exceeding 1-3" in height	Broadleaf and some annual grass control, including cheatgrass	25-day harvest restriction, up to 12-month rotation interval
Fall, early winter post-emergence in established alfalfa, or late-summer seedings after first trifoliolate stage.	Kerb®	Controls germinating seeds and emerging seedlings	Annual and perennial grasses, including cheatgrass	25- to 45-day harvest restriction; apply during cool temperatures above freezing, up to 55-60° F
Dormant application in established stands	Eptam® 7E Treflan® 4EC	Germinating broadleaf seeds and emerging seedlings	Broad-spectrum broadleaf control	14- to 21-day harvest restrictions; chemigation needed to carry herbicide into top few inches of soil
Dormant application in established stands	Velpar® Alfamax™ Gold	Pre-emergence and early growth up to 2" in height or diameter	Non-selective broad spectrum	12-month minimum rotation interval to corn and root crops, 24 months for most other crops
Dormant application in established stands	Sinbar®	Pre-emergence and early growth up to 2" in height or diameter	Seedling annual weeds	24-month rotation interval
Dormant application	Roundup OriginalMax™ or PowerMax®	Apply to actively growing weeds	Control or suppress many weeds, including quackgrass, downy brome, and cheatgrass	Supplemental labels refer to a training requirement, 36-hour grazing restriction