

2024 Envu Management Manual

Range & Pasture



The
Cattleman

A TEXAS & SOUTHWESTERN CATTLE BARBERS ASSOCIATION PUBLICATION

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Acronyms and abbreviations

Extension - Texas A&M AgriLife Extension Service and Oklahoma State Extension Service

IPT - Individual plant treatment

USDA NRCS - U.S. Department of Agriculture Natural Resources Conservation Service

Photos courtesy of Envu, U.S. Department of Agriculture Natural Resources Conservation Service, Texas A&M AgriLife Extension Service, Clint Rollins and Ricky Linex, "Range Plants of North Central Texas"

Front cover photo courtesy of Wilks Ranch in Texas

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Let's balance what works with what's next

And reshape your rangeland for the long haul.

Envu is a new vision for a company backed by half a century of experience caring for the future of our environments. Our innovative products root out invasive weeds and brush while promoting healthy, productive forage so you can keep your livestock well stocked on the native grasses they need to thrive. We're also your partner for the long haul. With longer-lasting control over your land and us working right alongside you, you'll be able to transform your land and your bottom line.

Scan the code with your smartphone camera to get in contact with your local representative today.



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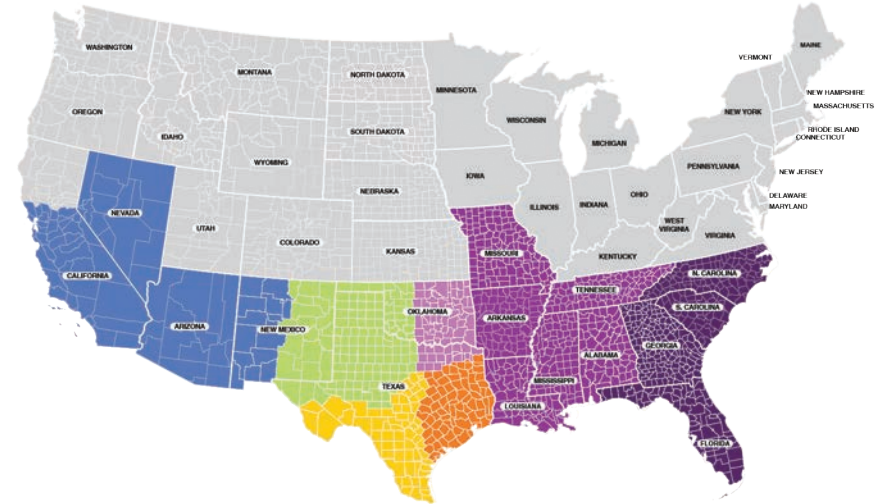


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Sales representatives regional map



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Checklist: Range & Pasture spraying

- ☐ **Consider your long-term plans for your farm or ranch.** Plant manipulation could influence the aesthetic value and production potential of the ranch for generations to come.
- ☐ **Identify your weeds or brush.** Different types of weeds and brush call for different types of solutions, which can have varying types of restrictions.
- ☐ **Consider the area you need to manage.** Do desired results (mosaic, strips or blocks) along with plant populations fit aerial, ground or IPT applications?
- ☐ **Choose the correct applicator.** Make sure the commercial applicator you choose has the correct equipment, licenses and regulatory requirements for your job. Discuss the products the applicator is going to use, then pick the correct product(s) for the job based on your short- and long-term needs.
- ☐ **If making applications yourself, be sure to first consult the experts.** Ask for solution recommendations from your company rep, local dealer, state extension office, applicator or consultant before beginning a job.
- ☐ **Have the proper equipment.**
 - + Product labels
 - + Wind gauge
 - + Soil thermometer (for certain brush species, soil temperature should be monitored well in advance of the application)
 - + Required personal protective equipment (e.g., proper clothing/coveralls, respirator, chemical-resistant gloves, etc.)
 - + Environmental containment equipment in case of a spill
- ☐ **Understand and follow the proper mixing sequence.** This includes any water conditioners, herbicides or adjuvants you will be using during your job.
- ☐ **Read, follow and understand the label.** You'll find answers to questions like: Are the products restricted use, state-limited use or general use products? Do the products require/impose post-treatment grazing, haying and/or manure management restrictions? Then ask yourself: Can I abide by those restrictions for the specified time period?
- ☐ **Clean your equipment.** Make sure your sprayer and other equipment are cleaned out and not contaminated with chemistries from past spray jobs.
- ☐ **Calibrate your sprayer, and change nozzles if necessary.** Ensure appropriate droplet sizes are being delivered based on your carrier volume, speed, spray pressure and spray tips (consult label and spray tip manual for directions).
- ☐ **Know the reentry time.** Different products require different timings. Be sure to check the label.
- ☐ **Be a good neighbor. Don't drift.** Identify the surrounding areas, make sure the wind is correct and always check the weather before spraying.

Range & Pasture herbicides

Recommended mixing order for Envu Range & Pasture herbicides

Read and understand all product labels being used before you begin.

1. Start with a clean tank, nozzles and pump systems. Replace any worn or leaking parts.
2. Calibrate sprayer (see calibration page).
3. Fill tank half-full of clean water.
4. Start tank agitation.
5. If spraying glyphosate, add any water conditioners needed (dry products should be pre-slurried before adding to the tank). Allow it to agitate until well dispersed throughout the tank. Some water conditioners may lower the pH of the water. A buffering agent may be needed to raise the pH to an acceptable level.
6. Pre-slurry and add all dry products in water (e.g., wettable powder [WP], dry flowable [DF] and dry granule [DG] products; examples include Cimarron® herbicides: part A of Cimarron® Max herbicide, Cimarron® Plus herbicide and/or Pastora® herbicide). Make sure to use a clean container.
7. Add suspension concentrates (Rezilon® herbicide).
8. Add emulsifiable concentrates (ECs).
9. Add water-soluble liquids (Method® 240SL herbicide if treating fence lines or wildlife refuge areas or part B of Cimarron Max herbicide [2,4-D + dicamba]).
10. Add glyphosate products, if needed.
11. Add proper adjuvants if needed or recommended (e.g., nonionic surfactant [NIS], methylated seed oil [MSO], crop oil concentrate [COC], etc.).



Sprayer calibration tips

Fill the sprayer tank half-full with water

Adjust the spray pump to the same pressure you will use to spray herbicide – broadcast ground sprayer 30 pounds per square inch (psi) or lower pressure to reduce spray drift, down to 20 psi if the spray pattern is maintained.

Boomless sprayer calibration

Spray a swath on a hard surface that can be easily measured. Measure the width of the swath in feet almost to the edges, allowing for a small amount of overlap. Use this chart to choose your calibration course.

If your swath is this wide (feet)						
20	25	30	35	40	45	50
Spray a row this distance (feet) to equal 1/8 of an acre						
273	218	182	156	136	121	109

- + An 1/8 of an acre swath will be sufficient to calibrate your sprayer.
- + Mark the length of the course and drive the course in the gear and at the rpm you'd use to spray. Record your drive time. This is how long it will take to spray 1/8 of an acre.
- + Park the tractor, maintain rpm used to drive the course and turn on the sprayer.
- + Catch the water being sprayed from the nozzle for the same time it took you to drive the calibration course.
- + A clean, 2-liter soft drink bottle with a hole cut in the side is a handy funnel.
- + If you're calibrating a cluster nozzle, tie a garbage bag around the nozzle to catch water.
- + Run the sprayer, collecting the output for the same time it took to drive the calibration course.
- + Measure the volume of the water using a container graduated in pints.
- + Pints of water caught in the bucket are equal to the number of gallons the sprayer will deliver per acre.

Boom sprayer calibration

- + Measure the nozzle spacing.
- + Use the chart above to determine your calibration course length.
- + Mark the course and record the time required to drive in the desired gear and rpm. This is the amount of time required to spray 1/128 of an acre.
- + Catch the water from one nozzle for the time it took to drive the calibration course.
- + The number of ounces of water caught will determine the number of gallons that will be sprayed per acre.
- + Catch the water from each nozzle to determine if all of the nozzles are delivering the same volume. If the flow is uneven, examine the nozzles and screens, checking that everything is the same size and not blocked with debris.

Trending topics

Composting



When it comes to taking care of your ranch, we're into more than controlling weeds and brush.

Just like you, Envu is always looking at the big picture – that's the protection, productivity and profitability of your entire ranch.

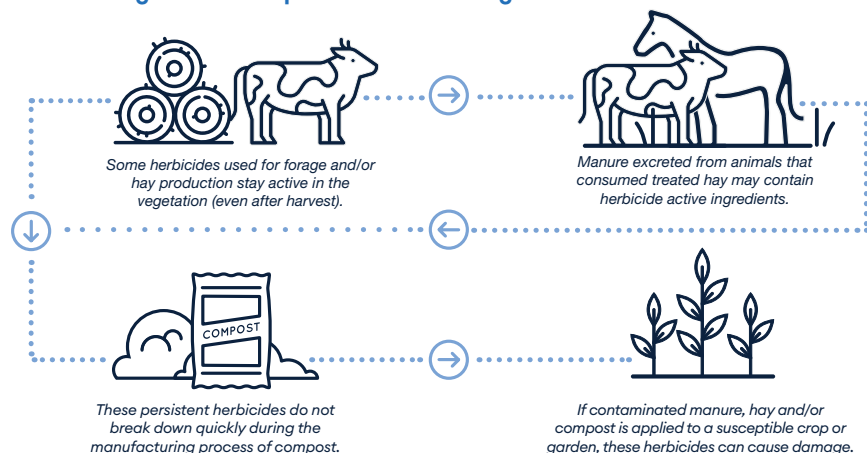
Take composting for example. Whether you're selling hay or moving manure to a compost facility, you want to make sure you're mitigating risk from the get-go. Here's a look at how you can do that.

+ Ensure a quality compost while mitigating your risk.

As a rancher, you may be more connected to the compost industry than you realize. That said, herbicide selection is a very important starting point when developing a program for any crop. You should be aware that many available herbicides contain label restrictions that prevent you from moving hay or manure into the compost stream. This is especially true for improved pasturelands, which may include production systems that are grazed, hayed or both. These production systems often require herbicides to control undesirable weeds that impact the quality and/or quantity of forage or hay produced.

Although many products are available to control unwanted weeds, they are not equal in their ability to control these pests nor in their fate after being sprayed. One critical concern is the persistent nature of some auxin-mimicking herbicides such as aminopyralid, picloram and clopyralid (components of GrazonNext® HL herbicide, Grazon® P+D herbicide, Chaparral™ herbicide, Sendero® herbicide, Reclaim® herbicide and various other generic products). These actives are found in many commonly used herbicides in improved pastures today. These herbicides remain active in the forage long after application and even after the forage is harvested or grazed. If this hay or the resulting manure is used as fertilizer, compost or mulch around sensitive crops, damage to susceptible garden, ornamental and/or row crop species may occur.

+ Manage herbicide persistence in forage and manure with Envu.



Today many state, county and local communities mandate the composting of materials derived from plant and animal materials (food wastes, lawn and garden materials, grass clippings, leaves, hay, manure, animal carcasses, etc.). Hay and manure have been identified as two major sources of persistent herbicide contamination for the composting industry. As the composting industry continues to grow and expand its ability to recycle our natural resources, agricultural producers need to be mindful that their actions, and specifically their herbicide program selection, may negatively impact this vital industry.

To service the needs of the hay production industry while helping safeguard the composting industry, Envu offers Rezilon® herbicide, Cimarron® Plus herbicide and Pastora® herbicide for improved pasture producers. These products are effective tools for controlling many broadleaf and grass weeds. They are not persistent in the forage, harvested hay or resulting manure, and thus pose limited risk to the composting industry should the treated plant material or resulting manure be used for compost. Always read and follow label directions regarding intervals for grazing and/or haying.

For more information about herbicide selection, visit www.Rezilon.com.

 **CIMARRON**
Plus

 **PASTORA**

 **REZILON**

Range & Pasture solutions

Easy, efficient and effective



Innovative solutions to help improve productivity.

Our science-based solutions are designed to control invasive weeds and brush, optimize the growth of desirable grasses, and help you increase your profits. If you want the job done right, start with the right products.

Invora® herbicide

The power to reclaim rangeland is in your hands.

- + New active ingredient for managing woody brush and weeds on rangelands.
- + Effective long-term control of honey mesquite and huisache.
- + A tool for use in rangeland restoration efforts.
- + Proven extended treatment life, resulting in favorable economics compared to past standards.
- + PRE and POST control of many broadleaf weeds through both root and shoot uptake.

Provides effective long-term control of mesquite and huisache. Also controls Texas mountain laurel, Texas persimmon and coyotillo (IPT required).

Invora® herbicide is a RESTRICTED USE PESTICIDE.

Rezilon® herbicide

Break free from ineffective grass control.

- + Preemergence herbicide for annual grass and broadleaf weed control.
- + See higher-quality forage on the first cut.
- + Make one application of 3 fl oz/A in the late winter and another 3 fl oz/A in the late summer.
- + No grazing restrictions.

For use in warm-season bermudagrass and bahiagrass hay or pastures.



Cimarron® Plus herbicide

Season-long control for more successful results.

- + Flexible use rates: 0.125 to 1.25 oz/acre.
- + No haying or grazing restrictions.
- + Can be used as a broadcast or spot treatment.

Controls thistle complex, sericea lespedeza, bahiagrass and cocklebur (higher rates needed).

Do not use Cimarron Plus herbicide in the following counties of Colorado: Alamosa, Conejos, Costilla, Rio Grande and Saguache.

Pastora® herbicide

Provides broad-spectrum, selective weed and grass control for use in bermudagrass pastures and hayfields.

- + Controls sandbur, Johnsongrass, bahiagrass and 26 other grasses.
- + Provides winter annual grass and weed control to ensure a quality first cutting.
- + Can also be used as an effective spot treatment.

Delivers higher-quality forage for horse and cattle producers.



Contact your Envu Range & Pasture rep for specific recommendations on rates, fertilizers, additives and adjuvants.



Next-generation mesquite and huisache control

Guaranteed for the long haul.

Invora® herbicide doesn't just stunt mesquite and huisache growth – it stops it. Using our next-generation herbicide with our next-generation vegetation identification technology gives you guaranteed control. With Invora herbicide and RangeView™ analysis, you can identify and help eliminate unwanted brush so nutritious forage can thrive. It's all backed by our five-year performance guarantee.

Start investing in your long haul at rangeview.envu.us



Scan to sign up for a RangeView analysis and Invora herbicide treatment recommendations.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. Environmental Science U.S. LLC, 5000 CentreGreen Way, Suite 400, Cary, NC 27513. For additional product information, call toll-free 1-800-331-2867. www.envu.com. Not all products are registered in all states. Envu, the Envu logo, Invora® and RangeView™ are trademarks owned by Environmental Science U.S. LLC or one of its affiliates. ©2024 Environmental Science U.S. LLC.



Invora® herbicide

Brush and weeds controlled by Invora® herbicide

Invora® herbicide controls a broad spectrum of woody plants and broadleaf weeds. Following are tables documenting known activity of Invora herbicide on various species. Envu continues to evaluate additional brush and weed species to include in these lists. Non-documented species present on the application site may be impacted by Invora herbicide and should not be sprayed if injury or death of those plants cannot be tolerated.

Broadleaf weeds controlled with broadcast or spot applications:		Brush (woody plants) controlled with broadcast applications:	
Bindweed, field	<i>Convolvulus arvensis</i>	Huisache	<i>Acacia smallii</i>
Broomweed, common	<i>Amphiachyris dracunculoides</i>	Sericea lespedeza	<i>Lespedeza cuneata</i>
Buttercup	<i>Ranunculus</i> spp.	Mesquite, honey	<i>Prosopis glandulosa</i>
Carrot, wild	<i>Daucus carota</i>	Mesquite, velvet	<i>Prosopis velutina</i>
Clover, sweet	<i>Melilotus</i> spp.	Mesquite, western honey	<i>Prosopis glandulosa</i> var. <i>torreyana</i>
Clover, white	<i>Trifolium repens</i>	Rose, multiflora	<i>Rosa multiflora</i>
Cocklebur	<i>Xanthium strumarium</i>		
Croton, woolly	<i>Croton capitatus</i>	Brush (woody plants) controlled with foliar IPT applications:	
Dandelion	<i>Taraxacum officinale</i>	Acacia, catclaw	<i>Acacia greggii</i>
Dogfennel	<i>Eupatorium capillifolium</i>	Agarito (aka algerita)	<i>Mahonia trifoliolata</i>
Hemlock, poison	<i>Conium maculatum</i>	Bumelia	<i>Bumelia languinosa</i>
Horsenettle	<i>Solanum carolinense</i>	Coyotillo	<i>Karwinskia humboldtiana</i>
Ironweed, tall	<i>Vernonia gigantea</i>	Huisache	<i>Acacia smallii</i>
Knapweed, diffuse	<i>Centaurea diffusa</i>	Lotebush	<i>Zizyphus obtusifolia</i>
Knapweed, Russian	<i>Rhaponticum repens</i>	Mesquite, honey	<i>Prosopis glandulosa</i> var. <i>glandulosa</i>
Knapweed, spotted	<i>Centaurea stoebe</i>	Mesquite, western honey	<i>Prosopis glandulosa</i> var. <i>torreyana</i>
Kochia	<i>Bassia scoparia</i>	Mimosa, catclaw	<i>Mimosa biuncifera</i>
Lettuce, prickly	<i>Lactuca serriola</i>	Mountain laurel, Texas	<i>Sophora secundiflora</i>
Marestail (horseweed)	<i>Conyza canadensis</i>	Persimmon, common	<i>Diospyros virginiana</i>
Ragweed, common	<i>Ambrosia artemisiifolia</i>	Persimmon, Texas	<i>Diospyros texana</i>
Ragweed, giant	<i>Ambrosia trifida</i>	Flameleaf sumac	<i>Rhus copallina</i>
Ragweed, western	<i>Ambrosia psilostachya</i>	Tasajillo	<i>Opuntia leptocaulis</i>
Sesbania, hemp	<i>Sesbania herbacea</i>	Whitebrush	<i>Aloysia gratissima</i>
Sicklepod	<i>Senna obtusifolia</i>	Yaupon	<i>Ilex vomitoria</i>
Skeletonweed, rush	<i>Chondrilla juncea</i>	Yucca	<i>Yucca</i> spp.
Sneezeweed, bitter	<i>Helenium amarum</i>		
Spurge, leafy	<i>Euphorbia esula</i>		
Starthistle, yellow	<i>Centaurea solstitialis</i>		
Tansy, common	<i>Tanacetum vulgare</i>		
Thistle, bull	<i>Cirsium vulgare</i>		
Thistle, Canada	<i>Cirsium arvense</i>		
Thistle, musk	<i>Carduus nutans</i>		
Velvetleaf	<i>Abutilon theophrasti</i>		

Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Defining and identifying effectiveness

Defining effectiveness leads to results for the long haul

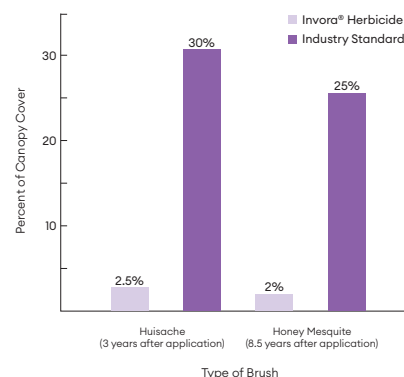
You know that Invora® herbicide can help you eliminate unwanted brush and grow better forage. But that's not the full story when it comes to gauging its true value.

- Invora® herbicide has the highest effectiveness rating on mesquite and huisache in the ERM-1466 Chemical Weed and Brush Control Reference Guide for Rangeland.
- The active ingredients are absorbed through the leaves and the root system via both the xylem and phloem and transported to the crown and bud zone. This stops new growth before it starts.
- Here's what that means in terms of plant mortality based on the ERM-1466 ratings: **Invora herbicide kills 76%-100% of target plants.** Products with a "high" rating kill 56%-75%.
- Because Invora herbicide kills the entire root system, **plants don't come back and canopy cover is reduced to less than 5%** for both mesquite and huisache.
- Three years after treatment, huisache canopy cover was 30% with traditionally used chemical treatments and **only 2.5% in Invora herbicide-treated plots.**
- Approximately 8.5 years after treatment, honey mesquite canopy cover was 25% with traditionally used treatments and **only 2% in the Invora herbicide-treated plots.**
- The RangeView™ Restoration Pledge guarantees five years of mesquite and huisache control when Invora herbicide is applied using the RangeView digital ranching platform.

Measuring success through a two-year apparent mortality rate is not an accurate indication of an herbicide's long-term performance. To accurately gauge actual brush control, you need to measure canopy cover for multiple years after application.

The absence of leaves on a huisache or honey mesquite plant several years after application indicates that you can be more certain that it's actually dead.

Canopy Cover Trial Results*



*Based on previous Texas A&M research indicating 30% huisache and 25% mesquite canopy cover are points that signal declining forage production and an economic threshold to retreat brush.

Brush Control for the Long Haul

5+ years
of huisache control**

10+ years
of mesquite control**

**Average results based on trial research. Individual results may vary depending on management practices.

Invora® herbicide is a restricted use pesticide.

Invora® herbicide

Timing, foliage conditions and Invora® herbicide rate

For optimal long-term results, it's important to time your application of Invora® herbicide based on factors including the targeted species, environmental conditions, air and soil temperatures, and foliage conditions of the targeted species. In general, adequate soil moisture and growing conditions are necessary for a successful Invora herbicide application. Targeted brush foliage should have less than 25% damage due to hail, insects or disease. Avoid applications soon after rainfall events and while brush is producing new light-green foliage.

Honey mesquite

For long-lasting control of honey mesquite, apply in late spring to midsummer when foliage is mature with a dark-green color and after soil temperature reaches 75 degrees Fahrenheit at a depth of 12 inches. For broadcast applications, use Invora herbicide at 24 to 36 fluid ounces per acre with an approved methylated seed oil + organosilicone (MSO-OS) adjuvant (see adjuvant label for rate; typically, 4 to 6 fluid ounces per acre).



Eight years after aerial application of Invora herbicide on honey mesquite. The site had a scattered population of lotebush prior to application. The arrow points to two lotebush plants remaining. Lotebush provides good-quality cover when present in moderation.



Honey mesquite three months after application. Defoliation with Invora herbicide can be slower than other treatment options. Many specialists agree this helps with uptake and translocation. Brownout and leaf drop may take several months to achieve.



Honey mesquite is a perennial legume common on rangelands across the southwest. The bud zone of the plant must be targeted with herbicides or removed through mechanical means to achieve adequate control.

Invora® herbicide

Huisache

For huisache, apply in the fall before November 1. For broadcast applications, use Invora® herbicide at 36 to 48 fluid ounces per acre with an approved MSO-OS adjuvant (see adjuvant label for rate; typically, 4 to 6 fluid ounces per acre).



Huisache is a perennial legume commonly found in the Southern region of the United States from Florida to California. It has taken over many areas of rangeland in the coastal plains region of Texas. If top-killed, huisache can quickly regrow vegetation from buds on the lower part of the trunk or beneath the soil line.



Once a field is invaded by huisache, it spreads through seeds moved by livestock and wildlife.



Four years after an aerial application of Invora herbicide (36 fl oz/A). Some of the dead huisache stems are still present on the treatment site. Proper grazing management plans are necessary to avoid removing too much vegetation cover that competes with new huisache plants that may germinate from the seed.



Five years after application of a ground broadcast treatment of Invora herbicide (48 fl oz/A).

Western honey mesquite

For western honey mesquite, apply in the late summer to early fall when there is adequate soil moisture. For optimum results, make applications once newly developed foliage turns dark green following summer rains (typically 10 days to two weeks after late-summer rainfall events). For broadcast applications, use Invora® herbicide at 36 to 48 fluid ounces per acre with an approved MSO-OS adjuvant (see adjuvant label for rate; typically 4 to 6 fluid ounces per acre).

Western honey mesquite (also known as dunes mesquite) is commonly found in areas of far west Texas through southern New Mexico.



Three years after an aerial application of Invora® herbicide (36 fl oz/A) (left) on western honey mesquite compared to the untreated check (right).

Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

IPT applications

At Envu, we are dedicated to providing you with tools to get the job done for the long haul. And we want to help you get the job done right the first time, starting with one of your biggest investments: your fencing. Brush can rapidly invade fences, reducing their lifespan and increasing maintenance costs. Invora® herbicide can be a great option to reclaim the managed area beneath a new or established fence.

But fences are just one area where Invora herbicide can help. Learn how effective Invora herbicide leaf spray, stem spray and cut stump applications can save time and money.

Leaf sprays

Instructions for treatment

- ✦ For most woody plant species, the spring and summer growing seasons (when soil temperature 12 inches deep is at least 75 degrees Fahrenheit and mesquite foliage is healthy with a dark-green color) are the most effective times for treatment. Foliage should be mature, healthy and free from insect, disease or hail damage with no new light-green foliage present due to recent rainfall events.
- ✦ Equipment requirements for leaf sprays are minimal. A backpack sprayer or ATV-mounted sprayer will be effective, but spray nozzle selection is critical.
- ✦ An adjustable ConJet 5500-X6 or X8 nozzle is recommended. Leaves should be sprayed until they are wet but not to the point of dripping.
- ✦ Leaf spray rates are based on concentration. For leaf sprays, mix a 1.5% v/v solution of Invora herbicide in water with 0.5% v/v approved MSO-OS adjuvant. Remember to add the recommended rate of an approved spray adjuvant and spray dye marker to the tank.

Stem sprays

Instructions for treatment

- ✦ It's best to apply stem sprays with Invora herbicide during the growing season.
- ✦ Backpack sprayers are the most effective method of application with nozzle selection – a critical element. The ConeJet 5500-X1 or X2 is recommended. The nozzle should be adjusted to a fine cone to direct all of the spray onto the targeted stem. Spray not contacting the stem should be avoided. Each stem should be sprayed on all sides but not to the point of runoff. Treat from the ground to a height of 12 to 18 inches.
- ✦ Stem sprays are based on concentration. Invora herbicide should be mixed at a concentration of 15% with water. This is equal to 19.2 fluid ounces of Invora herbicide per gallon of spray mix. Add 1% MSO-OS (or 1.28 fluid ounces) per gallon of spray mix plus 0.5% marker dye (or 0.6 fluid ounces) per gallon of spray mix. Mix these components in water to make a total mix of Invora herbicide + MSO-OS + dye to equal 128 fluid ounces of solution.

Invora® herbicide

Cut stump sprays

Instructions for treatment

- When hand-cutting, a backpack spray will be most effective. The cut surface should be wetted, paying particular attention to the edges of the stump, allowing the spray mix to flow slightly down the outside cut surface. Hydraulic shears mounted on a skid steer often have an integrated spray system that allows the cut stump to be sprayed from the operator's cab.
- Cut stump sprays are based on concentration. Invora® herbicide should be mixed at a concentration of 10% with water. This is equal to 12.8 fluid ounces of Invora herbicide added to water, resulting in a 1-gallon spray batch. Also, add 1% (1.28 fluid ounces per gallon of spray mix) MSO-OS adjuvant and the recommended rate of a water-soluble spray dye to the mix.

Invora Herbicide Individual Leaf Spray Application		
	Rate	Amount/Gallon
Invora Herbicide	1.5%	1.9 fl oz
Surfactant	0.5%	0.6 fl oz
Blue Dye	0.5%	0.6 fl oz

Invora Herbicide Stem Spray Application		
	Rate	Amount/Gallon
Invora Herbicide	15%	19.2 fl oz
MSO-OS	1%	1.2 fl oz
Blue Dye	0.5%	0.8 fl oz

Invora Herbicide Cut Stump Spray Application		
	Rate	Amount/Gallon
Invora Herbicide	10%	12.8 fl oz
MSO-OS	1%	1.2 fl oz
Blue Dye	0.5%	0.5 fl oz

Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Invora® herbicide

Frequently asked questions

Intended use/activity

Q: What is Invora® herbicide?

A: Invora® herbicide is an innovative brush solution combining two active ingredients: aminocyclopyrachlor and triclopyr-amine. It is specifically designed to help restore rangeland by reducing the negative impacts of difficult-to-control tree and brush species, like mesquite and huisache. Invora herbicide is an amine formulation that significantly reduces volatility.

Q: Does Invora herbicide control broadleaf weeds?

A: Yes. Currently, there are over 30 broadleaf weeds listed on the label that Invora herbicide controls. Included in this list are ragweed, common broomweed, thistles, hosenettle, woolly croton, and many other annual, biennial and perennial weeds common to the four-state region in which Invora herbicide is labeled.

Q: How does Invora herbicide help to restore rangeland differently than current brush control herbicides?

A: A 15-trial summary was used to compare mesquite and huisache canopy recovery four to 10 years following applications of Invora herbicide and industry standard treatments. When assessed four to 10 years after treatment, mesquite and huisache canopies in the Invora herbicide treatments were much less than canopies of the industry standard treatments. When combined with appropriate management practices, including proper grazing management, an Invora herbicide application can help restore rangeland and, over time, the return of desirable grasses and broadleaf plants.

Q: What is meant by reductions in canopy cover?

A: Canopy cover of trees and brush reduces the amount of sunlight as well as consumes large quantities of water, reducing groundwater recharge and availability. Both of these situations reduce the amount of desirable forage available for grazing.

Q: Where can Invora herbicide be applied?

A: Invora herbicide can be applied to privately owned NON-HAYED rangelands and privately owned NON-HAYED perennial grasslands managed as rangelands in Arizona, New Mexico, Oklahoma and Texas only. NOT FOR USE ON HAY.

Q: Does Invora herbicide require additional training to sell the product?

A: No, it does not require additional training to sell Invora herbicide, but it is always a good practice to learn about proper use and stewardship to pass along to customers.

Q: Does Invora herbicide require a license to purchase?

A: Yes, Invora herbicide is a restricted use pesticide for retail sale to use only by certified applicators or people under their direct supervision and only for those uses covered by the certified applicator's certification.

Q: Does Invora herbicide require additional training for application?

A: Yes, prior to applying this product on rangeland, all applicator(s), both commercial and private, must complete picolinic acid chemistry training every two years.

Q: When is the best time to apply Invora herbicide?

A: Application time should be based on the targeted brush species. Research shows honey mesquite in Texas, Oklahoma and northeastern New Mexico is best managed with early summer to midsummer applications. New Mexico and West Texas often receive late-summer monsoon rains that improve growing conditions and leaf canopy of western honey mesquite (also known as torreyana mesquite). Therefore, it is best to target western honey mesquite once new leaf growth has matured and turned dark green. Late-summer and early fall applications (before November 1 in most years) are generally best for managing huisache. Regardless of timing, targeted brush must have good growing conditions with adequate leaf canopy with less than 25% defoliation due to insects, hail, disease or drought.

Q: What is the recommended broadcast rate of Invora herbicide for controlling mesquite and huisache?

A: The standard broadcast rate for honey mesquite is 24-36 fl oz/A. The standard broadcast rate for huisache and western honey mesquite is 36-48 fl oz/A.

Invora® herbicide

Frequently asked questions

Q: What are the maximum use rates for Invora® herbicide?

A: The maximum rates for Invora® herbicide are 54 fl oz/A/year and 48 fl oz/A in a single application.

Q: Are there any grazing restrictions after an application of Invora herbicide?

A: There are no restrictions on grazing following an application of Invora herbicide at labeled rates.

Q: Is an adjuvant required for application to woody brush and trees?

A: Yes, for broadcast applications targeting wood plants (brush) and trees, include MSO-OS as a spray adjuvant with applications of Invora herbicide unless specified otherwise on the label. Foliar IPT applications can be applied with an MSO-OS or nonionic surfactant.

Q: Are there specific buffer requirements to property lines for broadcast and IPT applications?

A: Yes, Invora herbicide may not be applied within 100 feet of adjacent property lines. A larger buffer zone may be necessary when sensitive crops are near the application zone or prevailing winds are blowing toward sensitive crops. However, IPT applications may be made up to the property line. These include IPT leaf sprays, cut stump or basal applications. Please refer to the label for complete buffer zone restrictions to property lines.

Q: Are there special precautions and requirements concerning disposing of woody debris and manure where Invora herbicide has been applied?

A: Yes, do not remove herbaceous vegetation off-site for two years – treated brush must degrade on-site. Allow livestock to feed on non-treated forage for three days to flush their digestive tracts before transport or moving to sites other than non-hayed rangelands or non-hayed perennial grasslands managed as rangeland. Manure must remain on-site.

Q: Are there specific buffer requirements to water bodies for broadcast and IPT applications?

A: Yes, for free-flowing water bodies, non-free-flowing water bodies not contained wholly on the treatment site, and irrigation ditches or canals, Invora herbicide may not be applied within 100 feet of the water's edge or outer banks of the irrigation ditch or canal. However, IPT applications can be made up to the water's edge and up to but NOT on the outer banks of dry or water-containing irrigation canals or ditches. For non-free-flowing, nonirrigated water bodies wholly located on the treatment site, aerial broadcast, ground broadcast and IPT applications are permissible up to the water's edge. This product may be applied to terrestrial sites that contain areas of temporary surface water caused by collection of water in equipment ruts or in other depressions created by management activities. Please refer to the label for complete buffer zone restrictions to bodies of water.

Q: Who is responsible for stewardship of vegetation and manure after an application of Invora herbicide?

A: The landowner or lessee is responsible for ensuring vegetation and manure remain on-site according to the label listed under "Land Ownership Requirements."

Q: Where can I find out more about Invora herbicide?

A: Visit www.invora.com to download the Invora herbicide label, technical bulletin, stewardship document, and find your local Envu Range & Pasture representative.

*Invora® herbicide is a
RESTRICTED USE PESTICIDE.*



"When we first discovered Rezilon® herbicide and used it for the first full season, it virtually eliminated our early grass and weed problem and made our first cutting a sellable product."

Lee Reynolds

Hay Producer
Shorter, AL

Rezilon® herbicide stops weeds before they start

Growing clean, high-quality hay can seem like a season-long battle against weeds. With Rezilon® herbicide, you'll see cleaner hay cutting after cutting. It stops weeds from emerging and stays active on the soil surface, giving you long-lasting weed control. And that means you can raise high-quality hay – and your reputation.



**Scan to find
out more**

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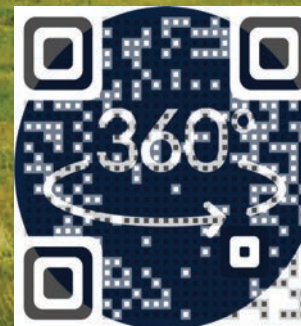
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“It’s as close
to a silver
bullet as I’ve
seen in the
hay business.”

- Gerry Sunday, Hay Producer, Mexia, TX

Hear how growers like you are getting
cleaner hay. Scan the QR code to experience
the Rezilon® Herbicide 360 Plot Tour.



ALWAYS READ AND FOLLOW PESTICIDE LABEL INSTRUCTIONS.
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Rezilon® herbicide

Rezilon® herbicide application chart

Weed Target	Timing	Rate
Crabgrass, goosegrass, foxtails and other warm-season annuals	January-February	3-5 fl oz/A
Ryegrass, little barley and other cool-season annuals	July-August	3-5 fl oz/A
All susceptible weeds For yearlong control	January-February July-August	3 fl oz/A 3 fl oz/A

When weeds have already germinated or perennial species are present, an appropriate tank-mix partner should be added for postemergence control. When tank-mixing, follow the correct mixing order of all products going into the spray tank. Dry products go in first, then emulsifiable concentrates, then Rezilon® herbicide, followed by soluble products, then adjuvants. If tank-mixing Roundup® Technology and Rezilon herbicide for a late-winter burndown and early preemergence treatment, add Rezilon herbicide first and allow enough time and agitation for thorough mixing, then Roundup Technology, followed by the adjuvant. If the correct mixing order is not observed, spray incompatibility and reduced weed control may result.

Rezilon herbicide benefits

- + Wider application window:**
Applications can be started as early as August and into the following spring as a result of extended residual weed control.
- + Consistent weed control:**
Provides preemergence control of annual grass and broadleaf weeds in warm-season bermudagrass and bahiagrass hayfield sites.
- + Increased hay quality:**
When applied according to label directions, growers could see higher-quality forage on their first cut as a result of controlling annual weed species present.
- + Product stability:**
Once applied, Rezilon herbicide can sit on the soil surface for some time with no degradation from sunlight while waiting on rainfall for activation.
- + Long residual activity:**
Rezilon herbicide has a relatively long half-life, allowing it to stay active for several months after application.
- + Ease of handling:**
Rezilon herbicide has low application rates compared to competitive products.

Rezilon herbicide benefits

- Rezilon herbicide controls more than 60 broadleaf and annual grass weeds, including:
- + Sandbur***
 - + Crabgrass**
 - + Ryegrass**
 - + Goosegrass**
 - + Annual foxtails**
- Tank mixtures: The applicable labeling for each product must be in the possession of the user at the time of application. Follow applicable use instructions, including application rates, precautions and restrictions of each product used in the tank mixture. Not all tank-mix product formulations have been tested for compatibility or performance other than specifically listed by brand name. Always predetermine the compatibility of tank mixtures by mixing small proportional quantities in advance.
- *Split applications/full rate needed for optimum control.

Rezilon® herbicide

Frequently asked questions

Intended use/activity

- Q: Will Rezilon® herbicide control perennial species?**
- A:** Rezilon® herbicide is a preemergence herbicide and will not control existing plants or those returning from perennial structures such as rhizomes or stolons. For plants that have already emerged or are perennial in nature, a POST application of Cimarron® Plus herbicide or Pastora® herbicide may be needed.
- Q: Does Rezilon herbicide control perennial species germinating from seeds, such as dallisgrass, vaseygrass or KR bluestem?**
- A:** Rezilon herbicide has excellent preemergence activity on seed germination of many broadleaf and grass weed species. Weeds not listed on the label, including perennial species, may or may not be controlled. However, species are continuing to be evaluated for control and additional species will be added once enough supporting data is obtained.
- Q: What grasses can I treat with Rezilon herbicide?**
- A:** Rezilon herbicide is labeled for bermudagrass and bahiagrass pastures and hayfields. Other warm-season grasses may be treated provided the user treats a small test area to verify safety. Rezilon herbicide may not be used on cool-season grasses as injury may result.
- Q: What varieties of bermudagrass can safely be treated with Rezilon herbicide?**
- A:** While Rezilon herbicide has been tested on several species of bermudagrass and bahiagrass, not all varieties have been evaluated for injury. However, we do not anticipate injury to occur on any variety of either of these species.
- Q: If I burn my pasture off, will that impact Rezilon herbicide activity?**
- A:** Studies from the western U.S. have shown the burning does not negatively impact Rezilon herbicide activity.

Application

- Q: What rate of Rezilon herbicide can I spray?**
- A:** Rezilon herbicide should be applied at 3-5 fl oz/A in a single application and no more than 6 fl oz/A in a 12-month period. For best control, Envu recommends a program approach with a February application of 3 fl oz/A followed by an additional 3 fl oz/A sprayed in mid-to-late summer.
- Q: How should I apply Rezilon herbicide?**
- A:** We recommend that Rezilon herbicide go out in a broadcast application of at least 15 GPA with flat fan or similar nozzles that apply a medium-to-medium/coarse droplet size to get the best coverage possible. A surfactant is not needed unless combining with a product that requires it.
- Q: Can Rezilon herbicide be applied to newly sprigged fields?**
- A:** No. Rezilon herbicide applications should only be made to fields that have been established for at least one growing season. Rezilon herbicide may inhibit stolon rooting, which can delay establishment.
- Q: How long can Rezilon herbicide stay on the ground before getting rain or irrigation?**
- A:** Rezilon herbicide can remain on the surface for several weeks without rainfall with no degradation from sunlight or loss in efficacy.
- Q: Can Rezilon herbicide be impregnated on dry fertilizer or applied with liquid fertilizer?**
- A:** We do not recommend making impregnated applications on dry fertilizer as soil coverage may not be adequate and poor weed control could result.
- Q: Can Rezilon herbicide be mixed with other pesticides?**
- A:** We do not anticipate any mixing issues when combining Rezilon herbicide with insecticides and other herbicides. However, a jar test should be done to evaluate compatibility. Always follow the label for mixing instructions and follow the W.A.L.E.S method for tank-mixing. The individual products are added in this order:

- W – Wettable powders, water-dispersible granules, etc.
A – Agitate the tank.
L – Liquids, flowables and other suspensions.
E – Emulsifiable concentrate (EC) formulations.
S – Surfactants or other adjuvants.

For more information, visit www.Rezilon.com.

Sandbur solutions

The problem

Sandbur, also known as grassbur (*Cenchrus* spp.), can cause economic losses primarily by reducing quality and quantity of forages in bermudagrass pastures. Sandbur prefers sandier soils (hence its name) and germinates throughout the growing season.

However, not all sandbur species are the same. The life cycle of these species ranges from annual to short-lived perennial to true perennial. Perennial sandbur species (those that overwinter) have been identified throughout Texas, Oklahoma and New Mexico and offer a bigger challenge to manage. These perennial species of sandbur and knotroot foxtail are not controlled under the Rezilon® herbicide label.

Soil disturbance from tillage, gophers or feral hogs may increase sandbur germination and spread. Soil temperatures in the 52-degree Fahrenheit range can initiate sandbur germination.

Managing sandbur is a program approach that requires knowledge, diligence and patience. A successful program may combine cultural, biological and chemical inputs (integrated pest management or IPM). However, it may take several years to bring a problem under control.

A healthy bermudagrass stand is one of the best tools to manage sandbur, so a good nutrient program is essential. A planned burn is also a good tool to consider. Fire can destroy the outer seed capsule that houses the sandbur seed and aid in a more uniform germination of seedling sandburs. Properly timed herbicide applications can also be a great tool in battling this problem. Proper timing is essential.

Sandbur action plan

- Scout.** Identify and flag or mark the locations of several dozen sandbur plants. Fall is the easiest time of year to accurately identify these weeds so you can treat them in the spring. This is because the seedhead of sandbur plants is present during the fall season. Over the winter, sandbur stems, leaves and seedheads will degrade, making identification much more difficult later on.
- Soil test.** Determine forage, soil fertility and micronutrient needs for the coming year by conducting a complete soil test in late fall or early winter. Soil pH affects availability of several key nutrients. Sandy soils are low in potassium (K) and need to be supplemented according to soil test recommendations.
- Fertilize.** Bermudagrass requires macronutrients in a ratio of 4-1 to 3; therefore, 1 ton of bermudagrass hay requires 50 pounds of nitrogen (N), 14 pounds of phosphorus (P) and 42 pounds of potassium (K). Apply N in early spring after soil temperatures reach 60 degrees Fahrenheit and/or between cuttings to maximize its use. If a soil test requires lime, P or K, apply in the fall as needed as fall applications will provide the best results. It is very important to fertilize according to recommendations if you want to reach your projected forage goals.



Photo: Gerald Hobson, Bayer Crop Science.
Overwintering or perennial sandbur



Photo: Jack LeClair, Bayer Crop Science.
Sandbur seedhead



Photo: Gerald Hobson, Bayer Crop Science.
Sandbur seedling

Sandbur solutions

The problem

Preemergent solutions

Rezilon® herbicide is the foundation of a sandbur control program. It may be used in both bermudagrass and bahiagrass pastures and hayfields. There are no grazing restrictions for Rezilon herbicide and no haying restrictions when the rate of 3 fluid ounces per acre is used. Rezilon herbicide should be applied and receive an incorporating rainfall well before sandbur is expected to germinate. Applications should be made with a flat fan or similar nozzles on a boomed setup. Boomless nozzles are not recommended as adequate soil coverage may not be obtained for good control. Do not use on rangeland.

Postemergent solutions

Pastora® herbicide is more than a grass herbicide. It can help manage sandbur as well as 25 other problem grasses. This includes little barley, rescuegrass, Johnsongrass, crabgrass and ryegrass (non-ALS resistant), plus over 100 broadleaf weeds like henbit, chickweed, mustards and many more. Apply before bermudagrass reaches 2 inches tall. Tank-mix Pastora herbicide with Cimarron® Max herbicide to better perennial broadleaf weeds. A follow-up application of Pastora herbicide may be necessary to control late-germinating sandbur. See the chart below. Prescribed burns may aid in reducing germination of the sandbur seed and adding potassium to the soil.

Coverage, nozzle spacing/type and orientation are all very important

Pastora herbicide can be applied in water or liquid fertilizer. Flat fan nozzles on 20-inch spacing will provide the best coverage of small seedling sandburs. Small flood tips (TK 2.5s-5s on 20-40-inch spacing) can provide adequate coverage as water/fertilizer volumes are increased.

If applied in water

Use 1-2 quarts.

If applied using liquid fertilizer as the carrier

Limit actual N to no more than pounds per acre.

If Pastora herbicide is being used as a spot treatment

Apply at the rate of 2.5 ounces per 100 gallons of water.

APPLICATION TYPE	SOLUTION	RATE (per acre)	APPLICATION NOTES
Preemergent	Rezilon herbicide	3-5 fl oz	Apply to established fields well before
Postemergent (sandbur <1.5" tall)	Pastora herbicide	1.0-1.5 oz	Apply to bermudagrass fields established for at least one growing season
Postemergent (sandbur >1.5" tall)	Pastora herbicide + Roundup® Technology or glyphosate	1.0-1.5 oz + 4.0-6.0 oz (of a 5.5 lb/gal glyphosate formulation)	Allow at least 16 days between applications
		1.0-1.5 oz + 5.0-8.0 oz (of a 4.0 lb/gal glyphosate formulation + 0.25%-0.5% of nonionic surfactant)	DO NOT apply Pastora herbicide more than twice a year or apply more than 2.5 oz/acre/season

Publication (SCS-2009-10) by Dr. Paul Baumann, professor and weed specialist at Texas A&M AgriLife Extension Service, which describes management of sandbur and is an excellent resource.



2024 Envu calendar

Plan ahead for your long haul.

For your convenience, we have put together a calendar schedule for when it should be around the best times to apply Envu solutions and maintain your rangeland. Remember that these are just general guidelines and that weather or other factors could influence and shift these timelines.

Let's grow better-quality hay for your livestock

Pastora® herbicide helps hay and forage producers grow high-value, weed-free bermudagrass pastures and hayfields. It controls a broad spectrum of undesirable grasses and broadleaf weeds that can easily spread, lower hay value and be toxic to animals. This outstanding control ultimately leads to a higher yield of an improved, quality product hay and forage producers demand.



Scan to find out more



ALWAYS READ AND FOLLOW PESTICIDE LABEL INSTRUCTIONS. Environmental Science U.S. LLC, 5000 CentreGreen Way, Suite 400, Cary, NC 27513. For additional product information, call toll-free 1-800-331-2867. www.envu.com. Not all products are registered in all states. Envu, the Envu logo and Pastora® are trademarks owned by Environmental Science U.S. LLC or one of its affiliates. ©2024 Environmental Science U.S. LLC.





Collect and send soil samples to the labs for analysis of both macronutrients and micronutrients. Establish projected goals and fertilize according to the soil lab recommendations. Optimum time to collect and send these samples is in the fall. Apply lime if necessary. Phosphorus (P) and potassium (K) availability are directly related to soil pH. These nutrients are very immobile in the soil, so early applications will allow you to get the most benefit.

Every ton of bermudagrass hay contains 50 units (pounds) of nitrogen (N), 14 units of P and 42 units of K. If you produce and remove 5 tons of hay from your pastures, you are removing 250 units of N, 70 units of P and 210 units of K. To avoid mining these nutrients from your soils, fertilize according to the lab recommendations for projected yields.

Look for new growth on old sandbur plants and new seedlings emerging from the seed. With proper scouting, you can determine if you have perennial plants, which changes the strategy for combating the problem.

January 1-2

Good spray coverage is important on small weeds and grasses. Nozzle spacing, nozzle size and design are critical to Pastora® herbicide success. Flat fan nozzles (8002s or 8003s) with narrow nozzle spacing (20 inches) provide the best coverage of small weeds and grasses. If flood tips are the only option, use TK 2.5s or TK 5s on 20-inch spacings. Cluster nozzles and boomless nozzles are the least desirable nozzles to control seedling grasses.

Envu Range & Pasture has added two herbicide products to their lineup. Read more about Invora® herbicide on pages 15-24 and visit [Invora.com](https://www.invora.com). Read more about Rezilon® herbicide on pages 25-29 and visit [Rezilon.com](https://www.rezilon.com).

1. Begin Rezilon herbicide applications before grass seeds have germinated or emerged in January and February.
2. Begin dormant applications of Cimarron® Plus herbicide + Roundup® Technology applications in bermudagrass.
3. Begin Cimarron Plus herbicide applications in rangelands.

January 3-4

Now is a great time to plan your weed and brush control programs. Talk to your custom applicator (aerial and ground) about Envu Range & Pasture products and programs.

January 5

Continue pasture renovations in hay meadows if compaction is an issue. Early renovations can provide needed avenues for less soluble P and K nutrients to move into the root zone of desirable grasses. Be aware that soil tillage practices such as aeration can disrupt preemergence herbicide barriers such as Rezilon herbicide. The optimal time to end soil-disturbing practices is mid-to-late December, prior to Rezilon herbicide application in January or February. Learn more about the sandbur problem in your field. The various sandbur species are different – some are perennial species and others are annuals. By intense scouting, you can determine if you have perennial plants, which changes the strategy for combating the problem. This helps you plan for the year better.

- + Inspect plants for signs of new growth. The crowns and lower stems of perennial plants will show signs of life such as white or green fleshy tissue.
- + Scout for new seedlings emerging from the soil. For positive sandbur identification, dig up the seedling with the roots intact. The bur (seed) will be attached to the young root system.
- + Control gophers, moles or other burrowing animals as these will impact PRE herbicide layers and sandbur control. Gopher/mole control practices should be timed to minimize soil disturbance of the Rezilon herbicide barrier.

January 10-12

Herbicide application timing as well as weed or grass identification are keys to a successful program. Utilize Texas A&M AgriLife Extension's ERM-1466 Guide, the Envu Range & Pasture products website, and www.cdms.net for current labels and control recommendations.

January 14-16

Control weeds or grasses when they are small. This maximizes savings of soil moisture and expensive nutrients and allows the use of reduced herbicide rates. January and February are great months for prescribed burns. These burns can help native grass stands and aid in managing sandbur issues in bermudagrass pastures. Coordinate prescribed burning with local authorities and be aware of local burn bans that are enforced on a county-by-county basis.

January 17-19

Enclosed in this guide are some great reference sheets that can provide useful information. These include:

1. Checklist for Herbicide Applications (page 8)
2. Herbicide Mixing Guide (page 9)
3. Calibration Guide for Both Boom and Boomless Sprayers (page 10)
4. Herbicides in Compost and Manure: What You Need to Know (pages 11-12)
5. Envu Range & Pasture Solutions Guide (pages 13-14)
6. Sandbur Solutions Guide (pages 30-31)

January 21-23

Fall and winter rains can germinate unwanted weeds and grasses. Do inventory and assess early weed or grass problems in pastures. Seedling weeds or grasses are always easier and less expensive to control. Unwanted thistles can germinate in the fall and lay dormant in the rosette stage until early spring. Spraying at this stage can save herbicide dollars and provide optimum results.

January 24-26

January is a great time to attend winter CEU or CCA classes to obtain or renew your herbicide applicator license. Your local AgriLife Extension may offer needed CEUs or update pumps. Now is the time to tune up your sprayers. Learn about calibrating, changing nozzles and hose sprayer calibration on our sprayer calibration on page 10.

Reminder: Always be aware of potentially sensitive crops in the area when applying any herbicide. Be cognizant of the regulations and restrictions for your county. Consult with your Envu Range & Pasture rep, your custom applicator, Texas AgriLife A&M Extension agent, or the Texas Department of Agriculture for restrictions in your county.

Remember the label is the law. Be a good neighbor and always be cognizant of sensitive crops on your or your neighbor's property. Do not drift.

Invora® herbicide is a RESTRICTED USE PESTICIDE.



Poisonous weeds or brush can kill your livestock, impact your hay production and reduce your livelihood. A great reference book to help identify these plants is “The Poisonous Plants of Texas” and is available through the Texas A&M AgriLife Extension bookstore. A few of the key poisonous species in our ranges and pastures are broom snakeweed, silverleaf nightshade, horsenettle, bitter sneezeweed, cocklebur, goldenrod, henbit, pigweed, marehail, Texas groundsel, twinleaf senna, Johnsongrass, mesquite, whitebrush, huisache and more. These species are highlighted within this book.

February 4-6

1. Begin Rezilon® herbicide applications in January and February.
 - a. Read more about Rezilon herbicide on pages 25-29 and visit Rezilon.com.
2. Begin dormant applications of Cimarron® Plus herbicide + Roundup® Technology in bermudagrass.
3. Begin Cimarron Plus herbicide applications in rangelands.

February 7-8

Spring broadleaf weeds begin to germinate when soil temperatures reach 55-60 degrees Fahrenheit. Sandbur begins to germinate when soil temperatures reach 52 degrees Fahrenheit. Fall weeds such as henbit, chickweed and winter annual grasses begin to germinate when soil temperatures drop below 70 degrees Fahrenheit.

February 9

Scout bermudagrass pastures for KR bluestem, sandbur, Johnsongrass or other invading species.

February 11-12

Consider starting nitrogen (N) applications to hay meadows and introduced pastures when soil temperatures reach 60 degrees Fahrenheit or warmer.

February 26-27

Unwanted winter annual grasses or broadleaf weeds utilize N, phosphorus (P) and potassium (K) that can be used to produce desirable grass. Scout bermudagrass pastures for annual ryegrass, little barley, cheatgrass, rescuegrass, and downy or Japanese brome as well as broadleaf weeds such as henbit, the thistle complex, chickweed and Carolina geranium. Implement a control plan to manage these undesirables in your pastures.

February 28-29

Late-fall or early winter rains can initiate heavy weed or grass germination in our ranges and pastures. Spraying weeds early provides the best control and requires less herbicide and dollars. Early is always best when spraying weeds in ranges and pastures.

March 1

1. Begin Pastora® herbicide applications in bermudagrass.
 - a. Review the Sandbur Solutions Guide on pages 30-31.
2. Begin planning for Invora® herbicide applications on honey mesquite. Optimum timing for broadcast and foliar IPT applications first occurs in South Texas and progresses north over spring and summer months. Basal IPT and cut stump IPT applications can be made throughout the year, but optimum timing is during the season of active growth.
 - a. Read more about Invora herbicide on pages 15-24 and visit Invora.com.
3. Begin Cimarron® Plus herbicide applications in rangelands.

Reminder: Always keep pasture herbicides out of stock tanks and other water supplies.

March 14-16

Early control of unwanted grasses or weeds in rangelands, pastures or in bermudagrass pastures will return the most dollars. For every pound of weeds controlled, research has shown 1-7 pounds of additional grass can be produced.

March 18-20

Some weeds or grasses may become resistant with overuse of a single class of chemistry. Tank-mixing and/or rotating alternate modes of action can help reduce the risk of herbicide resistance developing. Be proactive.

March 21-23

Begin or continue to scout for many broadleaf weeds in your pastures. Many summer annual weeds begin to germinate when the soil temperature reaches 60 degrees Fahrenheit. Scouting and spraying early can save you both time and money.



Seedling weeds are often hard to detect. Scouting and seedling weed identification are your best tools. Download seedling weed identification tools to help manage weeds when they are small.

Reminder: Always determine if an approved adjuvant is needed to optimize results.

Check on Rezilon® herbicide or Rezilon herbicide + tank-mix applications and start planning for the next step if perennial sandbur plants are present. If perennial plants are not present, continue to monitor the field for seedling escapes.

Reminder: Always determine if an approved adjuvant is needed to optimize results.

Herbicide timing and weed or grass identification are keys to success. Continue to utilize the ERM-1466 Texas AgriLife guide as well as the CDMS website for current labels and recommendations. Control weeds or grasses when they are small and actively growing to obtain maximum benefits from herbicide dollars.

April 1-3

Good spray coverage is important on small weeds and grasses. Nozzle spacing, nozzle size and design are critical to Pastora® herbicide success. Flat fan nozzles (8002s or 8003s) with narrow nozzle spacing (20 inches) provide the best coverage of small weeds and grasses. If flood tips are the only option, use TK 2.5s or TK 5s on 20-inch spacings. Cluster nozzles and boomless nozzles are the least desirable nozzles to control seedling grasses.

April 4-10

1. Monitor Rezilon herbicide applications that occurred in January and February.
 - a. Read more about Rezilon herbicide on pages 25-29 and visit Rezilon.com.
2. Begin broadcast applications of Invora® herbicide on mesquite as well as foliar IPT applications on mesquite, huisache and other susceptible brush species. Optimum timing for broadcast and foliar IPT applications first occurs in South Texas and progresses north over spring and summer months. Basol IPT and cut stump IPT applications can be made throughout the year, but optimum timing is during the season of active growth.
 - a. Read more about Invora herbicide on pages 15-24 and visit Invora.com.
3. Apply Pastora herbicide in bermudagrass pastures.
 - a. Review the Sandbur Solutions Guide on pages 30-31.
4. Continue or plan Cimarron® Plus herbicide applications on native and introduced pastures.
 - a. Review the current labeling.

April 11-13

Sandbur management: Check on Rezilon herbicide or Rezilon herbicide + tank-mix applications and start planning for the next step if perennial sandburs are present. If perennial sandburs are not present, continue to monitor the field for seedling escapes. If perennial sandburs *are* present, apply Pastora herbicide + a reduced rate of glyphosate with surfactant in at least a 10% UAN carrier immediately after hay harvest and before bermudagrass regrowth.

May 2-4

Make broadcast applications of Invora® herbicide on mesquite as well as foliar IPT applications on mesquite, huisache and other susceptible brush species. Optimum timing for broadcast and foliar IPT applications first occurs in South Texas and progresses north over spring and summer months. Basal IPT and cut stump IPT applications can be made throughout the year, but optimum timing is during the season of active growth.

- a. Read more about Invora herbicide on pages 15-24 and visit Invora.com.

May 7-8

1. Apply Pastora® herbicide in bermudagrass pastures.
 - a. Review the Sandbur Solutions Guide on pages 30-31.
2. Continue Cimarron® Plus herbicide applications on native and introduced pastures and fallow wheat fields.
 - a. Review the current labeling.

Invora® herbicide is a RESTRICTED USE PESTICIDE

Invara® herbicide is a RESTRICTED USE PESTICIDE.



Sandbur management: Continue to check fields following previous applications. Apply a second application of Rezilon® herbicide. If perennial plants or escapes are present, include Pastora® herbicide + a reduced rate of glyphosate + surfactant in a 10% UAN carrier. Best applied soon after application and before bermudagrass regrows. Read more about Rezilon herbicide on pages 25-29 and visit Rezilon.com.

June 6-8

Continue broadcast applications of Invora® herbicide on mesquite as well as foliar IPT applications on mesquite, huisache and other susceptible brush species. Optimum timing for broadcast and foliar IPT applications first occurs in South Texas and progresses north over spring and summer months. Basal IPT and cut stump IPT applications can be made throughout the year, but optimum timing is during the season of active growth.

- a. Read more about Invora herbicide on pages 15-24 and visit Invora.com.

June 10

Apply Pastora herbicide in bermudagrass pastures.

- a. Review the Sandbur Solutions Guide on pages 30-31.

June 13-15

Continue Cimarron® Plus herbicide applications on native and introduced pastures.

- a. Review the current labeling.

June 20-22

Continue bermudagrass nutrient management as well as invasive or poisonous weed or grass control. Remember that every ton of bermudagrass hay has 50 pounds of nitrogen, 14 pounds of phosphorus and 42 pounds of potassium. It is important not to mine or deplete the nutrients from hayfields.

July 1

Continue to monitor Rezilon® herbicide applications that occurred throughout the year.

- a. Read more about Rezilon herbicide on pages 25-29 and visit Rezilon.com.
- b. To manage sandbur, apply a follow-up application of Rezilon herbicide for continued soil residual activity if not already applied in June. Rezilon herbicide must be applied and incorporated by rainfall or irrigation prior to sandbur germination.

July 4-6

Continue broadcast applications of Invora® herbicide on mesquite as well as foliar IPT applications on mesquite, huisache and other susceptible brush species. Optimum timing for broadcast and foliar IPT applications first occurs in South Texas and progresses north over spring and summer months. Basal IPT and cut stump IPT applications can be made throughout the year, but optimum timing is during the season of active growth.

- a. Read more about Invora herbicide on pages 15-24 and visit Invora.com.

July 8-10

Scout bermudagrass fields for newly germinating sandbur plants. Apply Pastora® herbicide in bermudagrass pastures if needed.

- a. Review the Sandbur Solutions Guide on pages 30-31.
- Continue Cimarron® Plus herbicide applications on native and introduced pastures and fallow wheat fields.
- a. Review the current labeling.



August 1-4

The publication “Toxic Plants of Texas” is a great resource to identify and manage many species that are dangerous to livestock. Honey mesquite and western honey mesquite can be poisonous to your livestock, especially during a drought.

August 5-7

- Continue to monitor Rezilon® herbicide applications.
- Read more about Rezilon herbicide on pages 25-29 and visit Rezilon.com.
 - Apply Rezilon herbicide now to target winter annual grasses. Up to 6 fluid ounces per acre per year of Rezilon herbicide can be applied.

August 8-10

- Broadcast applications of Invora® herbicide for huisache and western honey mesquite (where fall rains have resulted in good canopy conditions) begin. Continue Invora herbicide foliar IPT applications on mesquite, huisache and other susceptible brush species. Basal IPT and cut stump IPT applications can be made throughout the year, but optimum timing is during the season of active growth.
- Read more about Invora herbicide on pages 15-24 and visit Invora.com.

August 12-14

- Apply Pastora® herbicide in bermudagrass pastures if needed.
- Review the Sandbur Solutions Guide on pages 30-31.

August 15-16

- Continue Cimarron® Plus herbicide applications on native and introduced pastures as well as winter wheat fields.
- Review the current labeling.

August 22-24

Avoid foliar applications on honey mesquite or western honey mesquite when temperatures are above 90 degrees Fahrenheit and leaf conditions are marginal or poor.

August 26-28

Evaluate pastures and your weed or brush control programs. Be prepared to change your weed or brush control programs to address weed shifts or possible introduction of new weeds or grasses. Continue to manage your fence lines to keep clear of brush, weeds or other damaging plants.

Invora® herbicide is a RESTRICTED USE PESTICIDE.

September 1

- Continue to monitor late-summer Rezilon® herbicide applications and flag large sandbur plants suspected of being perennial.
- Read more about Rezilon herbicide on pages 25-29 and visit Rezilon.com.
 - Apply Rezilon herbicide mid-August through early September for fall-germinating weed targets.

September 2-4

- Apply Invora® herbicide broadcast to huisache and western honey mesquite (where fall rains have resulted in good canopy conditions). Continue Invora herbicide foliar IPT applications on mesquite, huisache and other susceptible brush species. Basal IPT and cut stump IPT applications can be made throughout the year, but optimum timing is during the season of active growth.
- Read more about Invora herbicide on pages 15-24 and visit Invora.com.

September 9-11

- Continue Cimarron® Plus herbicide applications on native and introduced pastures and fallow wheat fields.
- Review the current labeling.

September 16-18

Send 2023 hay samples to the lab for analysis. This will help you evaluate your winter feeding needs and requirements. Scout fall pastures for any early germinating winter broadleaf weeds or grasses. Implement control if necessary. Remember that you need at least 30 days prior to frost for an herbicide application to adequately control weeds or grasses in ranges and pastures. Check the long-term weather forecast and plan.

September 19-21

Begin to test the soil and start preparations for fall applications of phosphorus and potassium. These nutrients are relatively insoluble and very immobile in the soil. Early applications will provide the best results.

Invora® herbicide is a RESTRICTED USE PESTICIDE.



Continue to monitor Rezilon® herbicide applications.

- a. Read more about Rezilon herbicide on pages 25-29 and visit Rezilon.com.
- b. Rezilon herbicide applications targeting winter annual grasses should have already been applied and activated by rainfall or irrigation.

Potentially the first frost in many areas across Texas, Oklahoma or New Mexico (be prepared).
Herbicide applications will be less successful during frost.

October 1-2

Apply Invora® herbicide broadcast for huisache. Continue Invora herbicide foliar IPT applications on mesquite, huisache and other susceptible brush species when leaf canopy is good. Basal IPT and cut stump IPT applications can be made throughout the year, but optimum timing is during the season of active growth.

- a. Read more about Invora herbicide on pages 15-24 and visit Invora.com.

October 3-5

Apply Pastora® herbicide in bermudagrass pastures if needed.

- a. Review the Sandbur Solutions Guide on pages 30-31.

Continue Cimarron® Plus herbicide applications on native and introduced pastures as well as winter wheat.

- a. Review the current labeling.

October 10-12

October is a good month to begin early season soil testing. Send soil samples to the lab for analysis. Send hay samples to the lab for complete nutrient analysis. Knowing the TDN and digestibility your hay provides will help determine your livestock feeding needs for the upcoming winter months.

October 14-16

After the first frost, implement lime, phosphorus and potassium applications according to the soil test analysis. Now is a good time to start pasture renovations to allow these immobile nutrients to move into the desirable grass root system. Be advised that pasture renovations can disrupt the herbicide barrier of a preemergent herbicide. These renovations break the herbicide barrier and bring up untreated soil that can allow for weed germination in untreated areas.

October 17-19

Scouting your pastures in the fall is a great time to evaluate the current year's herbicide program and plan for next year's applications.

Invora® herbicide is a RESTRICTED USE PESTICIDE.

November 1-2

Attend workshops to complete end-of-year CEU or CCA requirements.

November 4-6

Wrap up Invora® herbicide foliar IPT applications on brush and broadcast applications for huisache by early November if environmental conditions permit.

- a. Read more about Invora herbicide on pages 15-24 and visit Invora.com.

November 7-9

Apply Pastora® herbicide in bermudagrass pastures if needed.

- a. Review the Sandbur Solutions Guide on pages 30-31.

Continue Cimarron® Plus herbicide applications on native and introduced pastures as well as winter wheat.

- a. Review the current labeling.

Invora® herbicide is a RESTRICTED USE PESTICIDE.

Check on the browning of the flagged sandbur plants. Inspect plants for green material/vegetation.

Continue Invora® herbicide basal IPT and cut stump IPT applications on honey mesquite, western honey mesquite and huisache. Although optimum timing is in the growing season when these brush species are actively growing, these application methods can be made throughout the year.

- Read more about Invora herbicide on pages 15-24 and visit Invora.com.

Continue Cimarron® Plus herbicide applications on native and introduced pastures as well as winter wheat.

a. Review the current labeling.

Scout pastures, traps and other areas for unwanted or poisonous plants. Evaluate your current herbicide treatment and improve for next year.

Annual versus perennial sandbur species require different solutions.

1. Inspect and identify marked sandbur: Look specifically at where the plant's stem connects to the crown. If it is brown and dry, it's likely an annual species. If it's green, white or shows signs of moisture, it's likely a perennial species.
2. Prepare for spring application: Knowing what type of sandburs you have can help you develop your application strategy. Rezilon® herbicide is a great solution for annual sandburs, but it won't kill perennials.
3. Prepare spray equipment: Winter is an ideal time to perform necessary maintenance or upgrade your spray system before spring application.
4. Minimize soil disturbance: Avoid mechanical disturbance like tillage and quickly address the presence of any burrowing or wild animals.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Reminder: Always be aware of potentially sensitive crops in the area when applying any herbicide. Be cognizant of the regulations and restrictions for your county. Consult with your Envu Range & Pasture rep, your custom applicator, Texas AgriLife A&M Extension agent, or the Texas Department of Agriculture for restrictions in your county.

Remember the label is the law. Be a good neighbor and always be cognizant of sensitive crops on your or your neighbor's property. Do not drift.

Invora® herbicide is a RESTRICTED USE PESTICIDE.



Season-long control for more successful results

Cattle and forage producers have wanted and needed an herbicide to help manage problem weeds in rangelands and pastures. They are looking for solutions that are economical and have no grazing or haying restrictions. Cimarron® Plus herbicide delivers on all three. It offers residual control to protect pastures and rangeland grasses from problem broadleaf weeds, and it offers good activity on woody species.



Scan to find out more



Do not use Cimarron Plus herbicide in the following counties of Colorado: Alamosa, Conejos, Costilla, Rio Grande and Saquache.

ALWAYS READ AND FOLLOW LABEL INSTRUCTIONS. Environmental Science U.S. LLC, 5000 CentreGreen Way, Suite 400, Cary, NC 27513. For additional product information, call toll-free 1-800-331-2867, www.envu.com. Not all products are registered in all states. Cimarron®, Envu and the Envu logo are trademarks owned by Environmental Science U.S. LLC or one of its affiliates.

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Broadleaf weeds

Weed identification and treatment

Beebalm	49	Marestail	56
Bitter sneezeweed	50	Marsh elder	57
Broom snakeweed	50	Milkweed,	
Broomweed	51	Snow on the prairie	57
Camphorweed	51	Nightshade, buffalobur	58
Cocklebur	52	Ragweed, parthenium	58
Croton, one-seed	52	Ragweed, giant	59
Croton, woolly	53	Ragweed, western	59
Curlycup gumweed	53	Sericea lespedeza	60
Devil's claw	54	Sunflower	60
Goldenrod	54	Sunflower, maximilian	61
Gray golden-aster	55	Texas groundsel	61
Henbit	55	Thistles complex	62
Lowland cudweed	56	Wild mustard/ bastard cabbage	62

Common name: Beebalm or horsemint

Scientific name: *Monarda citriodora*

Treat with: Cimarron® Plus herbicide or Pastora® herbicide



Common name: Bitter sneezeweed
Scientific name: *Helenium amarum*
Treat with: Cimarron® Plus herbicide or Pastora® herbicide

Can be toxic to livestock.



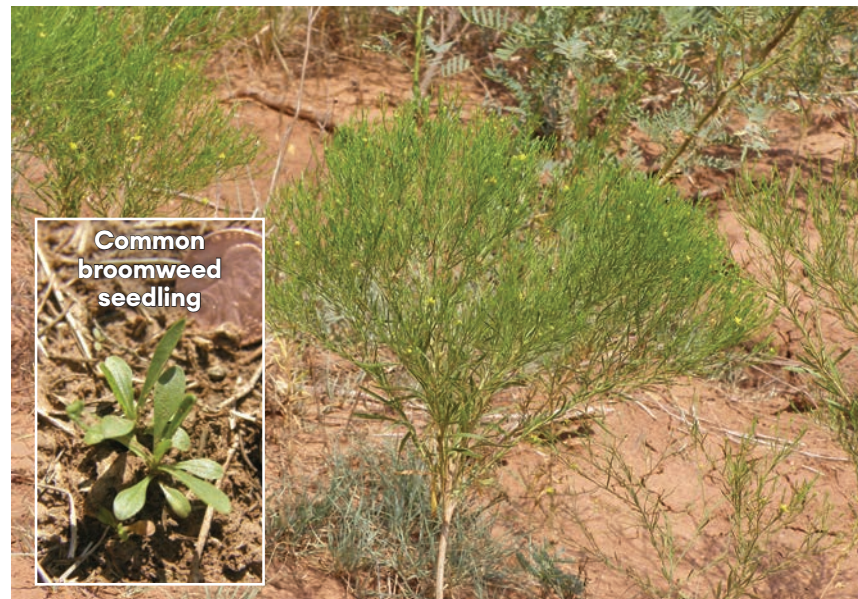
Common name: Broom snakeweed
Scientific name: *Gutierrezia sarothrae*
Treat with: Cimarron® Plus herbicide and Invora® herbicide

Can be toxic to livestock.



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Common name: Broomweed
Scientific name: *Amphiachyris dracunculoides*
Treat with: Cimarron® Plus herbicide and Invora® herbicide



Common name: Camphorweed
Scientific name: *Heterotheca latifolia* Buckley or *Heterotheca subaxillaris*
Treat with: Dicamba D and Cimarron® Plus herbicide and Invora® herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Common name: Cocklebur
Scientific name: *Xanthium strumarium*
Treat with: Cimarron® Plus herbicide or Pastora® herbicide



Common name: Croton, one-seed
Scientific name: *Croton monanthogynus*
Treat with: Cimarron® Plus herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training.
 To learn more, visit www.Invora.com.

Common name: Croton, woolly
Scientific name: *Croton capitatus*
Treat with: Cimarron® Plus herbicide and Invora® herbicide



Common name: Curlycup gumweed
Scientific name: *Grindelia squarrosa*
Treat with: Invora® herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training.
 To learn more, visit www.Invora.com.

Common name: Devil's claw
Scientific name: *Proboscidea louisianica*
Treat with: Dicamba D and Cimarron® Plus herbicide



Common name: Goldenrod
Scientific name: *Haplopappus heterophyllus* or *Solidago odora*
Treat with: Dicamba D and Cimarron® Plus herbicide



Invoira® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invoira.com.

Common name: Gray golden-aster
Scientific name: *Heterotheca canescens*
Treat with: Invoira® herbicide



Common name: Henbit
Scientific name: *Lamium amplexicaule*
Treat with: Cimarron® Plus herbicide or Pastora® herbicide



Invoira® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invoira.com.

Common name: Lowland cudweed
Scientific name: *Gnaphalium palustre*
Treat with: Dicamba D and Cimarron® Plus herbicide

Can be toxic to livestock.



Common name: Marestalk
Scientific name: *Conyza canadensis*
Treat with: Cimarron® Plus herbicide

Can be toxic to livestock.



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invora.com.

Common name: Marsh elder
Scientific name: *Iva annua*
Treat with: Cimarron® Plus herbicide

Can be toxic to livestock.



Common name: Milkweed, snow on the prairie/snow on the mountain
Scientific name: *Euphorbia bicolor*/*Euphorbia marginata*
Treat with: Invora® herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invora.com.

Common name: Nightshade, buffalobur
Scientific name: *Solanum rostratum*
Treat with: Cimarron® Plus herbicide



Common name: Ragweed, parthenium
Scientific name: *Parthenium hysterophorus*
Treat with: Dicamba D and Cimarron® Plus herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invora.com.

Common name: Ragweed, giant
Scientific name: *Ambrosia trifida*
Treat with: Dicamba D and Cimarron® Plus herbicide



Common name: Ragweed, western
Scientific name: *Ambrosia psilostachya*
Treat with: Dicamba D and Cimarron® Plus herbicide and Invora® herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invora.com.

Common name: Sericea lespedeza
Scientific name: *Lespedeza cuneata*
Treat with: Cimarron® Plus herbicide and Invora® herbicide



Common name: Sunflower
Scientific name: *Helianthus annuus*
Treat with: Cimarron® Plus herbicide or Pastora® herbicide and Invora® herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Common name: Sunflower, Maximilian
Scientific name: *Helianthus maximiliani*
Treat with: Dicamba D and Cimarron® Plus herbicide



Common name: Texas groundsel
Scientific name: *Senecio ampullaceus*
Treat with: Cimarron® Plus herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Common name: Thistles complex
Scientific name: *Cirsium* spp. and *Silybum* spp.
Treat with: Cimarron® Plus herbicide and Invora® herbicide



Common name: Wild mustard/bastard cabbage
Scientific name: *Brassica juncea* (L.) Czern.
Treat with: Cimarron® Plus herbicide or Pastora® herbicide and Rezilon® herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Grass weeds

Weed identification and treatment

Annual ryegrass	63
Bahiagrass	64
Barnyard grass	64
Cheatgrass	65
Crabgrass	65
Foxtail, annual	66
Johnsongrass	66
KR bluestem	67
Little barley	67
Rescuegrass	68
Sandbur/grassbur	68

Common name: Annual ryegrass
Scientific name: *Lolium perenne* or *multiflorum*
Treat with: Pastora® herbicide and Rezilon® herbicide



Annual ryegrass

Common name: Bahiagrass
Scientific name: *Paspalum notatum*
Treat with: Cimarron® Plus herbicide



Common name: Barnyard grass
Scientific name: *Echinochloa crus-galli*
Treat with: Pastora® herbicide and Rezilon® herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Common name: Cheatgrass
Scientific name: *Bromus tectorum* or *Bromus secalinus*
Treat with: Pastora® herbicide and Rezilon® herbicide



Common name: Crabgrass
Scientific name: *Digitaria sanguinalis*
Treat with: Pastora® herbicide and Rezilon® herbicide

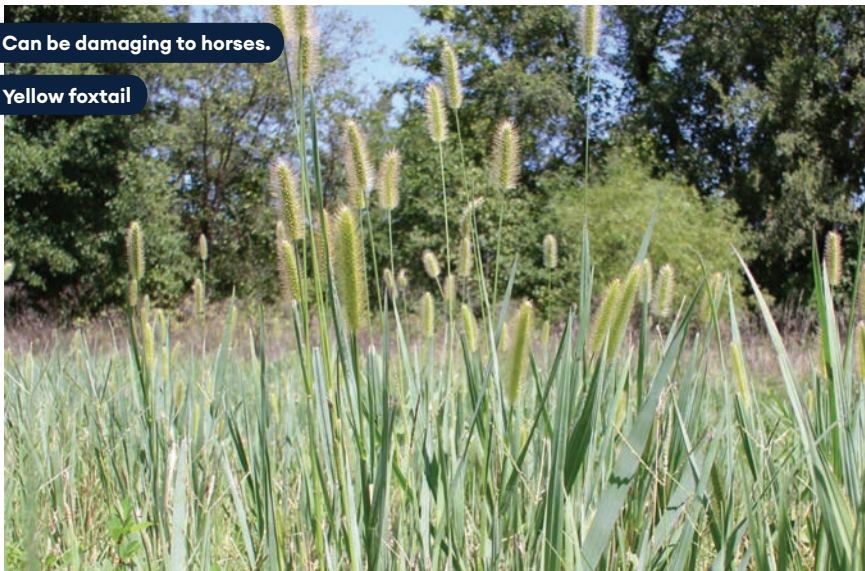


Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Common name: Foxtail, annual
Scientific name: Yellow foxtail – *Setaria glauca*; Giant foxtail – *Setaria magna*;
 Green foxtail – *Setaria viridis*
Treat with: Pastora® herbicide and Rezilon® herbicide

Can be damaging to horses.

Yellow foxtail



Common name: Johnsongrass
Scientific name: *Sorghum halepense*
Treat with: Pastora® herbicide

Can be toxic to livestock.



Invoira® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invoira.com.

Common name: KR bluestem
Scientific name: *Bothriochloa ischaemum*
Treat with: Pastora® herbicide for weed suppression with sequential applications



Common name: Little barley
Scientific name: *Hordeum vulgare* or *Hordeum pusillum*
Treat with: Pastora® herbicide (late-winter/early spring timing) and Rezilon® herbicide

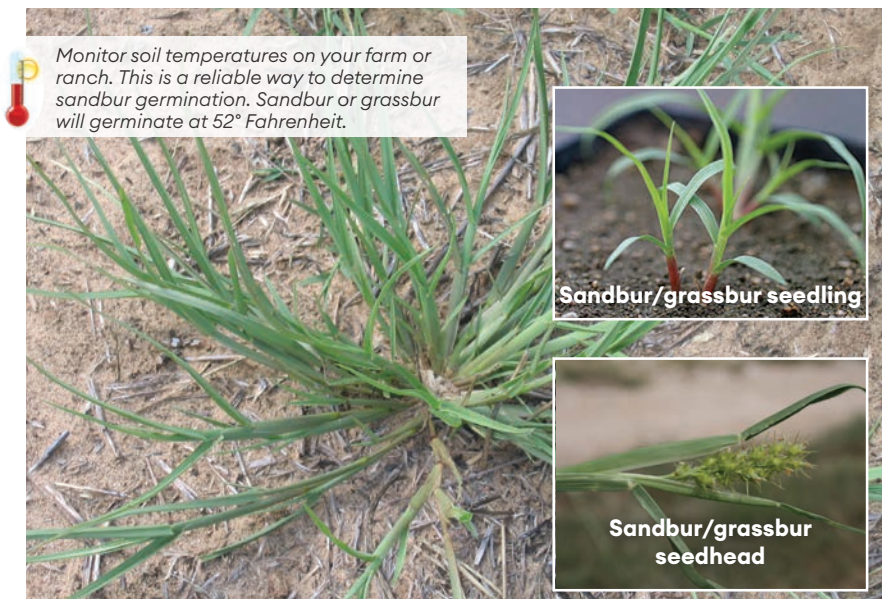


Invoira® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invoira.com.

Common name: Rescuegrass
Scientific name: *Bromus unioloides* or *willdenowii*
Treat with: Pastora® herbicide



Common name: Sandbur/grassbur
Scientific name: *Cenchrus echinatus*
Treat with: Pastora® herbicide or Rezilon® herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invora.com.

Woody species

Weed identification and treatment

Agarito (fruit)	69	McCartney rose aka	
Bumelia, gum	70	Cherokee rose	75
Catclaw acacia	70	Mesquite, honey	75
Catclaw mimosa	71	Mesquite, western honey	76
Chinese tallow	71	Persimmon, Texas	76
Dewberry and blackberry	72	Prickly ash	77
Flameleaf sumac	72	Sagebrush, sand	77
Hackberry	73	Whitebrush	78
Honey locust	73	Wild plum	78
Huisache	74	Yucca	79
Lotebush	74		

Common name: Agarito (fruit)
Scientific name: *Mahonia trifoliolata*
Treat with: Invora® herbicide IPT



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invora.com.

Common name: Bumelia, gum
Scientific name: *Sideroxylon lanuginosum*
Treat with: Invora® herbicide IPT



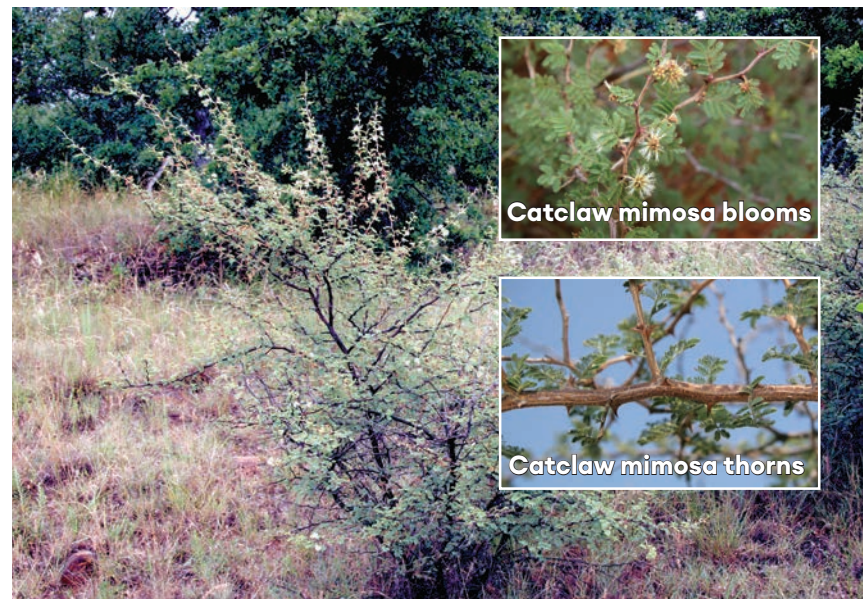
Common name: Catclaw acacia
Scientific name: *Acacia greggii*
Treat with: Invora® herbicide IPT



Catclaw acacia blooms

Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Common name: Catclaw mimosa
Scientific name: *Mimosa aculeaticarpa* var. *biuncifera*
Treat with: Invora® herbicide IPT



Catclaw mimosa blooms

Catclaw mimosa thorns

Common name: Chinese tallow
Scientific name: *Sapium sebiferum*
Treat with: Invora® herbicide IPT



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.Invora.com.

Common name: Dewberry and blackberry
Scientific name: *Rubus* spp.
Treat with: Cimarron® Plus herbicide

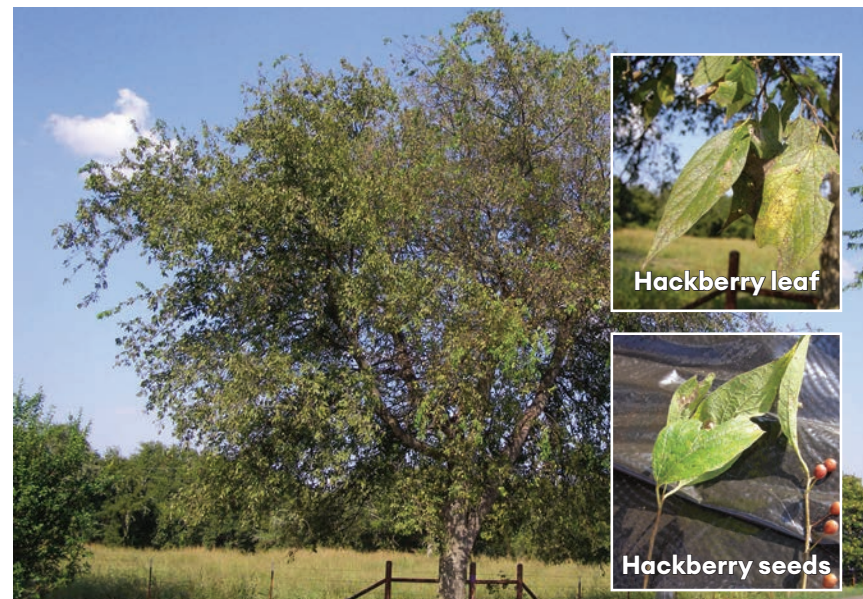


Common name: Flameleaf sumac
Scientific name: *Rhus copallinum*
Treat with: Invora® herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invora.com.

Common name: Hackberry
Scientific name: *Celtis occidentalis*
Treat with: Invora® herbicide IPT



Common name: Honey locust
Scientific name: *Gleditsia triacanthos*
Treat with: Invora® herbicide IPT



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Common name: Huisache
Scientific name: *Acacia farnesiana*
Treat with: Invora® herbicide



Common name: Lotebush
Scientific name: *Ziziphus obtusifolia*
Treat with: Invora® herbicide IPT



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Common name: McCartney rose aka Cherokee rose
Scientific name: *Rosa bracteata* J. C. Wendl
Treat with: Invora® herbicide plus picloram plus Cimarron® Plus herbicide



Common name: Mesquite, honey
Scientific name: *Prosopis glandulosa*
Treat with: Invora® herbicide



Can be toxic to livestock.

Mesquite blooms

Mesquite seedlings

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Common name: Mesquite, western honey
Scientific name: *Prosopis glandulosa* Torr. var. *torreyana* (L.D. Benson) M.C. Johnst
Treat with: Invora® herbicide 36-48 fl oz/acre



Common name: Persimmon, Texas
Scientific name: *Diospyros texana*
Treat with: Invora® herbicide IPT



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training.
 To learn more, visit www.invora.com.

Common name: Prickly ash
Scientific name: *Zanthoxylum clava-herculis*
Treat with: Invora® herbicide IPT



Common name: Sagebrush, sand
Scientific name: *Artemisia filifolia* Torr.
Treat with: 2,4-D ester and Cimarron® Plus herbicide



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 To learn more, visit www.invora.com.



Common name: Whitebrush
Scientific name: *Aloysia gratissima*
Treat with: Invora® herbicide IPT

Can be toxic to livestock.



Common name: Wild plum
Scientific name: *Prunus* spp.
Treat with: Cimarron® Plus herbicide



Invora® herbicide is a RESTRICTED USE PESTICIDE. Prior to spraying, all applicators must complete picolinic acid herbicide training. To learn more, visit www.invora.com.



Common name: Yucca
Scientific name: *Yucca* spp.
Treat with: Dicamba D and Cimarron® Plus herbicide



Notes

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This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.[illegible]

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.This image shows a full page of blank handwriting practice paper. It features approximately 20 evenly spaced, horizontal blue lines across the entire width of the page. The lines are thin and light blue, providing a guide for letter height and placement. There are no margins, text, or other markings on the paper.

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Notes



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Invest in the long haul.

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out more**



*Average results based on trial research. Individual results may vary depending on management practices and growing conditions.

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