

RESTORING AMERICA'S RANGELAND

Long-lasting Brush Control with Spike® 20P Specialty Herbicide



Today's rancher preserves the great rangeland, which blankets vast areas of our country. Good land management practices result in improved land utilization, dependable livestock forage supply, diverse plant communities and wildlife habitats, and a solid foundation for a successful future.



However, trees, shrubs and other woody plants tend to sneak up on land managers. Brush problems may start small, spreading in from fence lines and scattering across grazing areas. Slowly, but surely, these plants grow and gain enough density to cause problems, and they most certainly have the upper hand in drought. Spike® 20P specialty herbicide offers thorough, long-lasting brush control with a 20 percent pelleted formulation for land managers to

renew rangeland. Spike 20P lets you sculpt the landscape according to your land management goals.

Although it's most economical to stop encroaching brush early using individual plant treatments, land lost to aggressive brush can be reclaimed. And it can do so more economically than buying more grazing land. Plus, it's the right thing to do for the land and for generations to come.

HEALTHY LAND STEWARDSHIP



Spike® 20P specialty herbicide is a nonrestricted use product that provides long-lasting, broad-spectrum brush control from the roots up. It's especially useful in arid regions in the Southwest, where brush can dry out seasonal streams and deplete moisture from the soil.

Spike 20P allows ranchers to sculpt the landscape depending on their land management goals. Each treatment involves a prescriptive, customized approach to help revitalize rangeland long-term. Over time, a carefully planned brush management program using Spike 20P will enhance and invigorate any rangeland.

Improving grass production

When brush is controlled, there's more moisture in the soil. Moisture combined with better access to sunlight enables grasses to thrive. Once competition from unwanted brush is controlled, grass returns and livestock utilization increases, which translates to increased rates of gain and animal health improvement.

Increasing carrying capacity

Improved grass production means more cattle can graze on the same amount of land, so beef production thrives, too. As a result of treatment with Spike 20P, an operations' carrying capacity can be increased without leasing additional acres. Not only can carrying capacity be increased, herds can be easier to manage because unwanted brush won't impede access.

Better herd management

Using Spike 20P to control brush results in easier cattle management. Without tall species on the land, cattle are more visible. Without dense, thicketed shrubs, they're also easier to move around. In fact, ranchers have remarked that the open areas created by Spike 20P have considerably decreased their time spent gathering cattle.

Enhancing wildlife habitat, plant diversity

Very few animals thrive in areas that have heavy brush infestations. Most game animals, especially deer, prefer fringe areas where they can browse and still be near cover. A prescriptive brush control program using Spike 20P can optimize wildlife habitat by sculpting the land. Treating strips of brush with Spike 20P is an excellent and economical way to increase fringe acreage, as the untreated areas will become all-important edge habitats that can increase local biodiversity.

Ranchers in Texas, Oklahoma and New Mexico have used precision applications of Spike 20P to control brush in strips while leaving other swaths untreated to enhance wildlife habitats. Texas A&M University, AgriLife Extension researchers found that the untreated areas will become all-important edge habitat for deer, quail and other wildlife.

In addition, University of Wyoming research shows that when Spike 20P was used to selectively thin big sagebrush, dry streams came back to life; native grasses and forbs sprung up; plant diversity increased, and wildlife flourished.



WE'VE GOT YOU COVERED

Just as Dow AgroSciences is committed to researching and developing new products that help cattlemen and land managers more effectively care for their grazing lands, we're dedicated to providing an unmatched level of support.

If you have questions about how Range & Pasture products from Dow AgroSciences can improve grassland production and utilization, contact our Customer Information Center to locate the Dow AgroSciences Range and Pasture Specialist for your area. You can also find product information, including specimen labels, MSDS and downloadable literature at www.RangeAndPasture.com.



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HEALTHY LANDS INITIATIVE

The New Mexico Bureau of Land Management approach to restore native grasslands and riparian areas to a healthy and productive condition includes managing invasive plant species and out-of-control brush, often using Spike® 20P specialty herbicide. These treatments help restore the native landscape and watershed, and have tremendous benefits to wildlife.

To learn more about the Healthy Lands Initiative and potential cost-share initiatives in your area, visit:

www.blm.gov/nm

Building drought resistance

Eliminating invasive brush with Spike® 20P specialty herbicide removes a major source of competition for soil moisture. Consider that there can be as much as 20 tons of roots under an acre of sand shinnery — with about half of each root composed of water. Once brush roots are out of the way, the soil retains more moisture so grass is more tolerant of dry periods.

If grazing is well-managed after brush dies, experts expect an improvement in range condition. Through biological succession, annual forbs typically occur first. Next to respond are the perennial forbs along with annual and short-lived perennial grasses, followed by longer-lived perennial grasses. These deep-rooted perennial grasses prevent erosion and are more drought-resistant.

In addition, effective brush management encourages watershed restoration and increases the potential to revitalize riparian areas. Seasonal streams may start to run again and additional moisture now available can add to the groundwater profile.

Improving land aesthetics

The ability to sculpt land with a selective application of Spike 20P allows many ranchers to look better than ever. Many ranchers are finding a happy balance between treating enough brush to realize real gains from rejuvenated grasses and desirable plants while using selective sculpting treatments to encourage game and other wildlife communities.

The environment

No brush treatment is worthwhile if it harms the very environment it's meant to revitalize. Spike 20P, a nonrestricted use herbicide, has provided effective brush control through more than 20 years of proven use. Tebuthiuron, the active ingredient in Spike 20P, disrupts the growth process within the plant by affecting enzymes unique only to plants.

PROVEN, LONG-LASTING BRUSH CONTROL



Spike® 20P specialty herbicide kills brush over time — roots and all. As a result, grass gets the sunlight, moisture and nutrients it needs to re-establish and grow.

Land managers have relied on Spike 20P for years to slowly and thoroughly provide the brush control they want. In fact, based on research plots more than 20 years old, extension range specialists expect up to a 30-year population shift as a result of the treatment made years before, having controlled the unwanted brush with Spike 20P on creosotebush, catclaw and tarbrush.

So whether it's to sculpt the landscape or to manage brush long-term, years of proven effectiveness give land managers confidence when treating with Spike 20P.



Three months after application of Spike 20P

Fischer Ranch Eufaula, OK

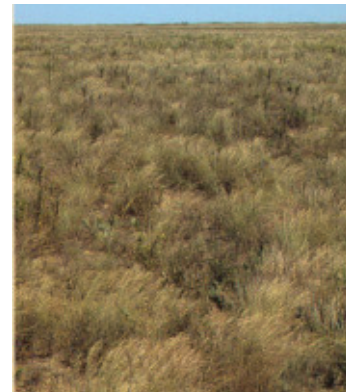


15 months later



Three months after application of Spike 20P

Beasley Ranch Plains, TX



15 months later

BUILDING DROUGHT RESISTANCE — AND MUCH MORE

When drought is more the norm than the exception, it's best to be prepared. When you can't make it rain, another option is to make the best use of the rain that you do get, according to Eric Stovall, located in the Big Bend area, just south of Marathon, Texas.

After his application of Spike® 20P specialty herbicide, Stovall has waited as long as eight months for rain. Despite the long wait, he says he averages 90 percent control. Once Spike 20P is activated by moisture to begin working, its benefits last a long time and Stovall says the grass response can be dramatic.

“Overall, we may have doubled or tripled the grass we produce,” he says. “This has been more beneficial than buying more land and paying taxes on it. You just can't buy land for \$40 an acre.”



Eric Stovall and his canine hand, Camo, admire abundant growth of bush muhly grass after a late-summer rain. Stovall controlled creosotebush on this site about four years earlier.

Mode of action

Most brush herbicides are applied to foliage and work into the brush from the leaves down. Spike 20P works differently than other methods because it is applied to the soil surface and works through the root system to achieve brush control.

With the active ingredient tebuthiuron, Spike 20P is formulated as heavy, high-density clay pellets that stay stable on the soil surface and resist breakdown. This formulation makes Spike 20P a smart choice when drift is a concern.

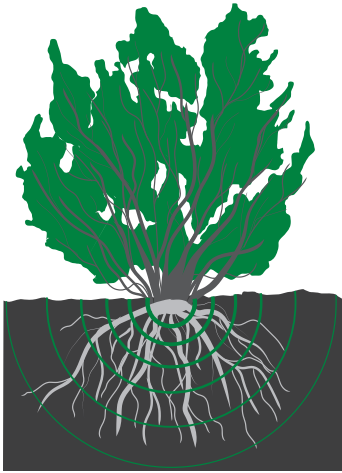
When activated by rainfall, Spike 20P moves into the soil and is absorbed by the plant's roots. It works its way up into the leaves where it blocks the plant's ability to convert sunlight into food, so leaves wither and die. As the brush defoliates and refoliates for up to two years, it exhausts the food reserves in the roots and the brush dies.

Meanwhile, as the brush defoliates, sunlight can again reach the ground. With less competition for water and sun, native grasses begin to grow again.

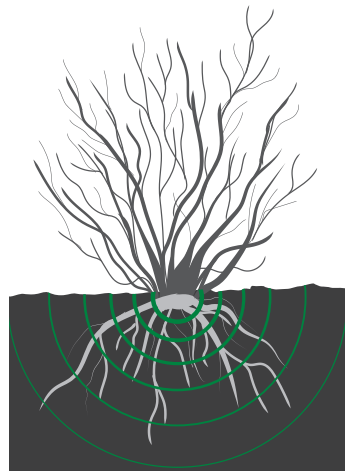
While there are no label restrictions that require land managers to restrict grazing following an application with Spike 20P, Dow AgroSciences recommends deferring grazing for at least one active growing season following application to encourage forage grass response.

Your Range and Pasture Specialist can help you design an integrated land reclamation program suited to your individual operation and long-term goals.

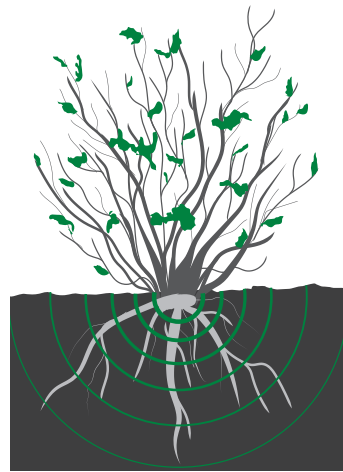




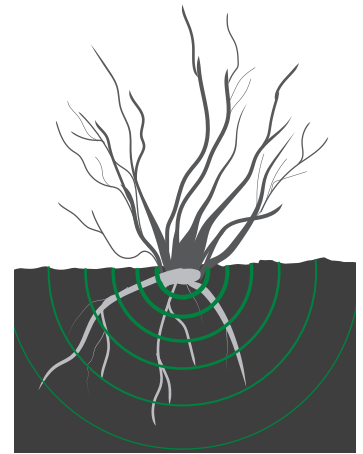
1. Spike 20P works from the roots up, translocating into leaves.



2. Brush defoliates.



3. Brush defoliates and re-leafes over time until the food reserves in the roots are gone.



4. Brush is completely dead, roots and all.

Treatment methods

Spike® 20P specialty herbicide can be applied as a spot treatment or through broadcast application. Spot treatments may be done year-round, while most broadcast applications are conducted in the early spring and fall. Spike 20P must be applied with ground or aerial application equipment capable of accurate calibration and able to provide a uniform distribution of pellets on the soil surface.

Application timing

Spike 20P may be applied at any growth stage and at any time during the year except when the soil is frozen or saturated with moisture. For optimum results, applications should be made prior to active seasonal growth in spring or before expected seasonal rainfall. Because Spike 20P may cause temporary herbicidal symptoms to appear on perennial grasses, Dow AgroSciences recommends applying Spike 20P during the dormant season to minimize potential effects.



In addition, applicators should be sure feeder roots of desirable plants do not extend into the treatment area where the herbicide might affect them. As a rule of thumb, treatment setback distance should be one to two times the height or width of the desirable vegetation, whichever is greater.

Areas to avoid

Although Spike 20P is a nonrestricted use herbicide, some application restrictions apply on certain soil types and in areas where groundwater contamination is a concern. Please consult the product label for a list of restrictions, and label rates vs. soil types.

Species controlled

Spike® 20P specialty herbicide provides long-term control of more than 110 woody species. Use it on post oak, black jack oak, running live oak and sand shinnery oak, to name a few. Elms, yaupon, creosotebush, big sagebrush and whitebrush are other species for which Spike 20P is particularly effective.

The brush species listed below are examples of woody plants controlled using Spike 20P. For a complete list, consult the Spike 20P label.



Big sagebrush

Perennial reproducing from seed. Plants average less than 3 feet in height; but in deep soils this woody species reaches heights over 10 feet. It is considered an evergreen even though leaves have a grayer color in winter months.



Sand shinnery oak

Low-growing shrubby plant forming dense thickets. Rarely grows more than 3 feet tall. Some species form shrubby trees growing up to 15 feet tall.



Creosotebush

Branched, strong-scented resinous evergreen shrub, up to 4 to 5 feet tall.



Sand sagebrush

This perennial, warm native shrub is low-growing and is silvery green.

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R01-108-009 (05/15) DAS 010-58501