

SAGEBRUSH CANOPY COVER REDUCTION - THINNING

General Information

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Spike 20P herbicide is a surface applied soil-active product for control of woody plants (trees, shrubs, and vines). Treatments become effective after sufficient rainfall has occurred to move the active ingredient in Spike 20P into the root zone. Herbicidal symptoms appear most rapidly when applied just before seasonal rainfall. Treated trees and shrubs (brush) exhibit leaf chlorosis and browning followed by defoliation. Woody plants may go through several defoliation cycles before death occurs. Time required to achieve control of woody vegetation may vary from one to several years. Increased application rates and additional time is required to achieve consistent woody plant control under the following conditions: (1) the treated area contains deep, medium-to-fine textured, or high organic matter soils; (2) the target species are deeprooted; or (3) the vegetation consists of species tolerant to Spike 20P.

For best brush control results, do not disturb intact plants by such practices as wood cutting, chaining, or burning for two years after application of Spike 20P. Resprouting is more likely to occur if plants are disturbed before complete woody plant control occurs.

General Use Precautions and Restrictions

Spike 20P is intended for control of unwanted woody vegetation such as trees, shrubs, and vines. Spike 20P will also control herbaceous broadleaf plants such as clover or lespedeza. Grasses in the area immediately adjacent to pellets may be temporarily damaged. Dormant season application is recommended to minimize herbicidal effects on grasses and other herbaceous plants. The herbicidal activity of Spike 20P in soil may prevent the growth of trees, shrubs, and other broadleaf vegetation for several years after treatment.

Do not apply Spike 20P to interior ditch banks (areas which slope toward the drainage). Do not apply to ditches used to transport irrigation water or potable water.

Not for sale, distribution, or use in Nassau and Suffolk Counties in New York State

Use Restrictions in the State of Florida

In Broward, Collier, Dade, Hendry, Lee, Monroe, and Palm Beach Counties of Florida, Spike 20P may be applied only in accordance with supplemental labeling.

Maximum Application Rate for Grazing or Haying: If treated area is to be used for haying, do not apply more than 20 pounds per acre of Spike 20P. If treated area is to be used for haying, do not apply more than 10 pounds per acre of Spike 20P in areas receiving 20 inches or less average annual rainfall, or more than 20 pounds per acre of Spike 20P in areas receiving more than 20 inches average annual rainfall.

There are no grazing restrictions following application of Spike 20P at labeled rates.

Haying Restriction: Do not cut hay for livestock feed for one year after a Spike 20P treatment.

Effects on Herbaceous Vegetation: Spike 20P may injure or suppress certain herbaceous vegetation in the treated area. Therefore, do not apply where such injury cannot be tolerated. Injury to most herbaceous perennial plants is reduced if Spike 20P is applied when vegetation is dormant.

Do not apply Spike 20P more than once per year.

Safe use of Spike 20P requires the following guidelines to be carefully followed:

Treatment Setback:

Do not apply Spike 20P in the vicinity of desirable plants. Exposure of even a small part of a plant root system to Spike 20P may cause severe plant injury or death.

Note: Plant roots usually occupy an area much larger than the aerial portion of the plant. Treatment setback distance should be 1 to 2 times the height or width of adjacent non-target vegetation, whichever is greater. For example, if adjacent non-

target vegetation is 25 feet tall, the treatment setback should be 25 to 50 feet. If there is a question about appropriate setback distance, contact an Arboriculturist (tree expert) to determine if the proposed treatment area is free of roots of desirable vegetation.

Potential Product Movement:

Spike 20P or soil containing Spike 20P may be moved from treated areas by flowing water, wind, or mechanical means. Do not apply Spike in areas where overland flow of water might move Spike 20P or soil containing Spike 20P from the treated area.

Do not apply where wind erosion may cause movement of soil containing Spike 20P from the treated area unless the surface has been stabilized with a gravel mulch or some other means. Do not apply in areas where soil may be redistributed by mechanical means to non-treated areas.

Remedial Action After Accidental Application or Spill:

Take action to minimize the effects of an accidental application or spill immediately.

Once rainfall has moved Spike 20P into the plant root zone, the effect on woody plants is irreversible.

Damage from accidental application or spill may be prevented only if soil containing Spike 20P is carefully removed before rainfall has moved Spike 20P into the root zone. Apply a waterproof covering to the affected area until cleanup is accomplished. Carefully collect Spike 20P pellets and/or soil containing Spike 20P with appropriate equipment and dispose at an approved landfill site. If rainfall has occurred, remove surface soil in the affected area to the depth of Spike 20P penetration.

Frequency of Application and Maximum Use Rates:

Broadcast Applications (Aerial or Ground Equipment):

- The maximum use rate and frequency of application is 1 to 2 lb a.i./acre once every three years for vulnerable sites where soils are sandy and depth to water table is shallow. (Refer to Environmental Hazards section under "Use Restrictions for Ground Water Protection".)

- For all other areas, the maximum use rate and frequency of application is up to 4 lb a.i./acre once every three years and no more than two treatments totaling of 6 lb a.i./acre in any 6 year period.

Spot Treatments (Hand Application or Hand-held Equipment): May be applied at rates up to 6 lb a.i./acre when needed.

Factors in Herbicidal Response

Soil Texture, Soil Depth, and Organic Matter

Poor control or erratic results are likely to occur when Spike 20P is applied to soils containing more than 5% organic matter or more than 30% clay. Do not apply to "blackland" or other heavy clay soils which crack extensively upon drying. Other deep, medium, and fine-textured soils supporting deep-rooted woody plant species require increased application rates for consistent control. The susceptibility of woody plants occurring on shallow, coarse, or rocky soils with low organic matter is normally increased due to increased soil availability of Spike 20P and shallow rooting depth. Therefore, use application rates at the low end of the rate range in these situations.

Woody Plant Size and Density

The height and density of woody vegetation is a reliable indicator of soil conditions. Woody vegetation is generally taller and more dense where soils are deeper and/or of medium to fine texture and where soil moisture conditions are more favorable. Higher rates in the rate range are required on such sites. On sites with coarse, shallow, or rocky conditions with less favorable soil moisture conditions, woody vegetation will be smaller and less dense. Lower rates in the rate range are required for control on such sites. Where a high level of woody plant control is required and application rates cannot be adjusted for changes in soils, plant size, or density, apply Spike 20P at a rate sufficient to control the tallest and most dense woody vegetation in the treatment area.

Application Timing

Spike 20P may be applied anytime except when the soil is frozen or is saturated with moisture. For optimum results, applications should be made prior to the resumption of active seasonal growth in the spring or before expected seasonal

rainfall. In areas receiving greater than 25 inches of annual rainfall, late summer and fall applications may require a higher application rate in the indicated rate range to achieve consistent control.

Spike 20P is recommended for control of brush regrowth after dozing or shredding, provided the regrowth has reached an average height of five feet or more prior to application. Spike 20P works best when there is an abundance of active leaf area to stimulate water and herbicide uptake during the season following application. Taller regrowth will tend to provide faster and more consistent brush control.

Spike 20P may cause temporary herbicidal symptoms to appear on perennial grasses. Dormant season application is recommended to minimize herbicidal effects on desirable forage grasses.

Effect of Shallow Groundwater on Woody Plant Control:

- Do not apply Spike 20P to areas where the water table is predominately shallow (5 feet or less), such as marshy or sub irrigated areas, or areas immediately adjacent to streams or lakes which are periodically flooded. On such sites, where roots extend directly to a shallow water table, woody plants are minimally affected by applications of tebuthiuron and poor control will result.

Limitations, Restrictions, and Exceptions

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Spike 20P herbicide may be applied at reduced rates of 1.0 to 2.5 lb per acre of product (0.2 to 0.5 lb a.i./acre tebuthiuron) where reduction in big sagebrush (*Artemisia tridentata*) canopy cover is desired for wildlife habitat development and enhanced forage production.

Application of reduced rates will thin (not eliminate) the live cover of big sagebrush resulting in a more open mosaic of woody and herbaceous vegetation and greater biodiversity on many sites. The effectiveness of Spike 20P is dependent upon soil texture, soil organic matter, sagebrush density and plant growth conditions following application.

The active ingredient (tebuthiuron) is more available for root uptake in coarse textured soils with low organic matter content. Conversely, in soils with high organic matter or clay content, a greater portion of the tebuthiuron will be bound

(adsorbed) to the soil material and less available for uptake.

Application Rates

To choose the appropriate rate of Spike 20P, site characteristics, current live canopy cover, and desired live canopy cover must be considered.

Thinning:

- Rates of 1.0 to 1.5 lb/acre of Spike 20P (0.2 to 0.3 lb a.i./acre) are recommended to provide a thinning effect (50 to 75% canopy reduction) in big sagebrush growing on coarse to medium textured soils with less than 4% organic matter. Higher rates may be required to achieve the desired level of canopy cover reduction on sites with the following characteristics: Soils with greater than 4% organic matter content, soils with greater than 30% clay, or on sites with very dense sagebrush (40% or greater canopy cover).

Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

Rates

[field rates 0](#)

[field rates 1](#)

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Soils

[Coarse](#)

[Medium](#)

[Clay](#)

Timings

[N.A.](#)