

FRINGED SAGEBRUSH



(Artemisia frigida)

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Fringed sagebrush, also called fringed sagewort or pasture sage, is a perennial native forb with a low, woody base, giving rise to semiherbaceous annual stems. It produces an abundance of seeds that remain viable for several years. Fringed sagebrush can spread from short rhizomes resulting in a bunch-like plant. It is a member of the wide ranging composite family (*Compositae* or *Asteraceae*).

Fringed sagebrush plants are mat-like with most of the leaves clustered near the ground (Figure 1). Leaves are soft, silky gray, finely divided into three or five segments, and generally 0.5 to 0.75 inches long. Stems initially are partially erect but become more erect at flowering time and can be 4 to 12 inches tall when groups of mature seed heads are formed (Figure 2). Flowers bloom from late July to early September, and in dense stands shed clouds of pollen. The seeds are achenes, oblong, flattened with rounded edges, gray to brown in color, and borne on single seed stalks. Seeds mature in September. The plant has a sage odor and is bitter to taste.

Fringed sagebrush is the most widely distributed and abundant species of the *Artemisia* genus. Its range extends from Mexico north throughout the western regions of the United States and Canada, into Alaska. Fringed sagebrush is a common plant of high plains, valleys, mountains, and many grasslands at higher elevations, and occurs in association with a wide variety of plant communities. In North Dakota, fringed sagebrush is abundant on mixed- and short-grass plains. It is resistant to drought and overgrazing.

Forage value of fringed sagebrush is high by chemical analysis. Protein percentages, which are similar to good alfalfa, and phosphorus and fat contents are well above those of associated grasses at all growth stages. However, fringed sagebrush is seldom grazed by cattle in the northern Great Plains due to aromatic oils and a bitter taste that limit palatability. In the southwestern United States, it is one of the best native forage species for sheep and cattle. It provides valuable wildlife feed throughout its range and provides fair to good sheep forage in the northern Great Plains from late fall through early spring.

Fringed sagebrush frequently increases rapidly with overgrazing. Numerous viable seeds, drought tolerance, low palatability, and the ability to spread by rhizomes are factors that tend to increase stands of fringed sagebrush.



Figure 1. Early fringed sagebrush.



Figure 2. Mature fringed sagebrush. (Source: Weeds and Poisonous Plants of Wyoming and Utah, 1987.)



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With dense stands, desirable forage production is reduced due to competition for moisture, light, soil nutrients, and space. When overgrazing is eliminated and precipitation is adequate, grasses eventually out-compete fringed sagebrush and production of desirable forages increases.

Control

Vigorous pasture and range grasses are the best weed competitors, so good grazing management reduces most weed problems, including fringed sagebrush. Herbicides can control fringed sagebrush, but TIME OF APPLICATION and MOISTURE are key factors in determining the success of a chemical treatment. Herbicides should be applied in late May to mid June when fringed sagebrush is actively growing (Figure 1) and not under stress. The herbicide most commonly used is 2,4-D, but dicamba (Banvel) and picloram (Tordon) are alternatives.

2,4-D

An effective and the most economical herbicide for controlling fringed sagebrush is 2,4-D low volatile ester (LVE). A treatment of fringed sagebrush with 2,4-D at 0.5 lb/A or more gave 89 to 100 percent fringed sagebrush control in NDSU trials (Table 1). Apply 2,4-D before weeds are over 6 to 8 inches tall, usually in late May to mid June.

Research conducted by the USDA-ARS near Mandan showed good fringed sagebrush control with 2,4-D when average precipitation occurred. Best control occurs if temperatures exceed 60 degrees Fahrenheit.

Note: 2,4-D may injure or kill desirable broadleaf plants; 2,4-D at 1.5 lb/A or more may cause temporary stunting of grasses, especially when applied during the boot stage. Grazing restrictions vary with the product used, so read and follow all label directions. Most 2,4-D labels do not allow grazing of dairy animals for seven to 14 days after application. Remove meat animals from freshly sprayed areas for seven days before slaughter if they grazed within two weeks of application.

Dicamba

Dicamba (Banvel) at 0.5 lb/A provided 70 percent control of fringed sagebrush and the control increased at higher rates (Table 1). Dicamba should be applied when the plant is actively growing (Figure 1). Research at South Dakota State University suggests applying dicamba at 0.5 to 1 lb/A for good topgrowth suppression and 1 to 2 lb/A for stem and root control. Rates up to 3 lb/A may be used for dense stands in small areas.

Note: Legumes and desirable broadleaf plants will be killed. Dicamba over 2 lb/A may cause temporary damage to some grasses. Kentucky bluegrass appears to tolerate dicamba at labeled rates. Smooth bromegrass stand reductions have been noted with higher rates. Most grasses are least tolerant at the boot stage. The waiting period after treatment for dairy animals varies from seven to 60 days depending on the rate applied. No waiting period between treatment and grazing by non-lactating animals is required, but meat animals should be removed from treated areas 30 days prior to slaughter. Check label for details before using.

Dicamba has a relatively long soil residual and is water soluble with potential to move into the underground water supply. Do not use dicamba where a sandy porous surface

Table 1. Fringed sagebrush control in pasture and rangeland.^a

Herbicide	Rate		15 months treatment
	(lb/A)	(qt/A) ^b	(% control)
2,4-D LVE	0.50	0.50	96
2,4-D LVE	0.75	0.75	100
2,4-D LVE	1.00	1.00	99
2,4-D LVE	1.50	1.50	89
2,4-D LVE	2.00	2.00	100
Picloram	0.25	0.50	63
Picloram	0.50	1.00	92
Picloram + 2,4-D	0.25 + 1.0	0.5 + 1.0	99
Picloram + 2,4-D	0.50 + 1.0	1.0 + 1.0	99
Picloram + 2,4-D	0.25 + 2.0	0.5 + 2.0	97
Picloram + 2,4-D	0.50 + 2.0	1.0 + 2.0	99
Dicamba	0.50	0.50	70
Dicamba	1.00	1.00	98
Dicamba	2.00	2.00	82
LSD (0.05)			24

^aResearch conducted by North Dakota State University, Fargo. Treatments were applied June 12, 1978 to plants 3 to 6 inches tall, and control was evaluated Aug. 31, 1979. LVE = low volatile ester formulation.

^b2,4-D and dicamba at 4 lb ae/gal, and picloram at 2 lb ae/gal.

and substrata overlie ground water 10 feet or less below the surface. Do not contaminate streams, ponds, wetlands, or irrigation ditches.

Picloram

Picloram (Tordon 22K) at 0.5 lb/A or greater applied before plants are over 8 inches tall provides over 90 percent control of fringed sagebrush (Table 1). South Dakota State University reported excellent control by picloram at 1 lb/A. Picloram is an expensive herbicide and high rates may not be economical if a large area is treated.

Picloram at 0.25 lb/A or more applied with 2,4-D at 1 lb/A or more always provided excellent control of fringed sagebrush (Table 1).

Note: Legumes, trees and desirable broadleaf plants often are severely damaged or killed by picloram. Most grasses tolerate rates less than 1 lb/A. Smooth bromegrass may be injured by higher rates while Kentucky bluegrass is generally tolerant. When using picloram near water, precautions similar to dicamba must be observed. Picloram has a longer soil residual than dicamba and is water soluble.

Do not transfer livestock from treated grass areas onto sensitive broadleaf crop areas for 12 months after application or until picloram has disappeared from soil without first allowing seven days of grazing on untreated pasture. Urine may contain enough picloram to injure sensitive broadleaf plants. Consult label for grazing restrictions as restrictions vary with picloram rate and use of treated forages.

Fringed sagebrush can be controlled effectively by herbicides; 2,4-D usually is the preferred herbicide because it provides excellent control and is most economical. An efficient grazing management plan to eliminate overgrazing should be implemented to minimize reestablishment of fringed sagebrush.