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### G80-510 Sagebrush Control

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## Sagebrush Control

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Sagebrush is an all encompassing term commonly used to describe *Artemisia* species found on range and pasture lands in Nebraska. The dominant woody sagebrush species found in western Nebraska are sand sagebrush, fringed sagebrush, green sagewort, and big sagebrush. These species vary in appearance, distribution and control recommendations. All four species are perennials, have deep extensive root systems and flower in the latter part of the summer.

The leaves of sagebrush have a strong odor as a result of camphor like compounds. Palatability and digestibility of sagebrush species found in Nebraska tend to be poor because of high volatile oil content.

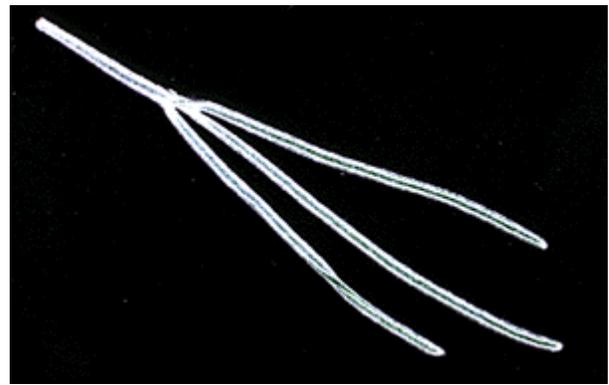
### Sand Sagebrush

Sand sagebrush (*Artemisia filifolia* Torr.) is a woody perennial shrub that reproduces by seed. This species is the predominant sagebrush in Nebraska and may grow to a height of from 2 to 4 feet. Numerous woody stems covered with gray hairs grow from a woody base. Leaves are 1 1/2 to 3 inches long, divided into three narrow thread like segments, light grayish-green in color, and covered with silver gray hairs. The leaves of this species fall off during the fall and winter. The following year new leaves are produced and some of the stems are replaced. Estimates indicate that this species infests close to 100,000 acres of rangeland in western Nebraska.



Sand sagebrush is an indicator of sandy soils. An abundance of this species may be an indication of improper grazing management. Some range sites under equal grazing management, however, may have more sand sagebrush than others, due to differences in sand content of the soil. Sand sagebrush is a poor forage in Nebraska and has been reported to cause abortions in livestock during advanced reproductive stages.

Sand sagebrush can be controlled by spring application of 2,4-D (*Table I*). One application will generally only give moderate control so a follow-up treatment the next year will be necessary for 95 percent or greater control of existing plants. Sand sagebrush control on rangeland in fair or better condition will generally increase forage production 50 to 75 percent following treatment. Retreatment may be necessary for two to three years after initial treatment to control sagebrush seedlings. Mowing sand sagebrush for two consecutive years in June has also been an effective means of control in Northern Great Plains states.



Sand sagebrush stem (top) and leaf (bottom).



Fringed sagebrush stem (top) and leaf (bottom).

## Fringed Sagebrush

Fringed sagebrush (*Artemisia frigida* Willd.) is a perennial half shrub that reproduces by seed and a spreading woody base. New stems grow from the base each year. Leaves are clustered at the base of the plant and develop early in the growing season while flowering does not occur until late in the summer. The plant may grow from 4 to 24 inches high and is generally found on rangelands in the central and western portions of Nebraska. Stems are woody and covered with whitish hair. Leaves are 1/2 to 1 inch long, divided into three to five linear segments, whitish-green in color, and covered with fine, silky silver hairs. Fringed sagebrush is adapted to a wide range of soil conditions. Forage quality is considered poor for cattle but fair for sheep. An abundance of this species on rangeland and pastures is an indication of overgrazing.

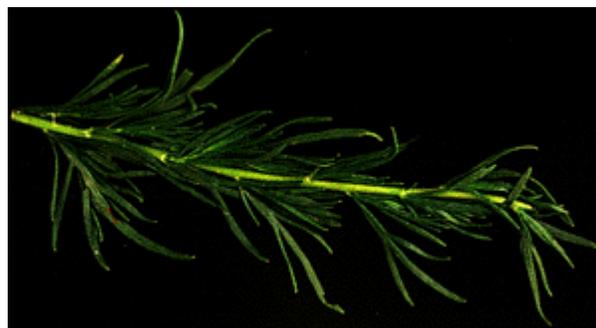
Fringed sagebrush can be controlled by either spring or summer application of herbicides (*Table I*). Control of heavy infestations of fringed sagebrush in Sioux County, Nebraska resulted in 75 percent per year

increase in native grass production for three consecutive years following treatment. Seedlings begin reinfesting the treated areas two to three years after spraying. Retreatment with 2,4-D is an effective means of controlling these new seedlings.

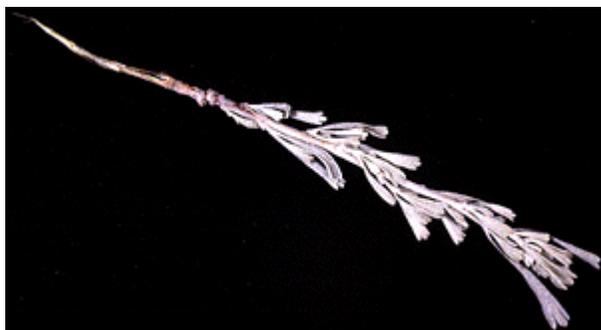
## Green Sagewort

Green sagewort (*Artemisia campestris* L.) is a short lived perennial that reproduces by seed. Plants may grow from 1 to 3 feet tall and are generally found on range and pasture land in central and western Nebraska. Lower and basal leaves are 3 to 6 in. long, pinnately divided into two to three thread like segments and are dark green in color. While the leaves are generally smooth, some may be partially covered with fine hairs. The basal leaves are noticeably longer and more lobed than the upper leaves. New stems grow from the woody base each year, and old barren stems from the previous year's growth are commonly present.

Green sagewort is considered poor forage in Nebraska. Heavy infestations have occurred on western Nebraska rangelands on sandy soils as a result of overgrazing. This species can be controlled effectively with herbicides if applied for more than one year (*Table I*).



Green sagewort stem (top) and leaf (bottom).



Big sagebrush stem (top) and leaf (bottom).

## Big Sagebrush

Big sagebrush (*Artemisia tridentata* Nutt.) is a perennial that reproduces by seed. This species grows to a height of 2 to 15 feet and maintains green leaves throughout the year. Big sagebrush is the least commonly found species in Nebraska, occurring infrequently in western Nebraska. Leaves are 3/8 to 3/4 inches long, have three, or occasionally more, blunt lobes on the leaf end, gray-green in color, and covered on both sides with short, fine, silvery white hairs. The new stems are also covered with silvery hair but become rough and gray-green with maturity. Nutritive value of this species is high. However, low palatability resulting from high resin content reduces its forage value.

Mechanical control with equipment such as rotobeaters or rotary mowers has proven to be an effective means of control in many western states. Herbicides such as 2,4-D can also be used for control of big sagebrush and are generally as effective as mechanical practices (*Table I*). Big sagebrush seedlings may reinvade

treated areas one to two years after treatment and will require further control measures.

## Sagebrush Control

All four sagebrush species discussed herein are native to Nebraska. An increase in abundance of these species frequently results from continually overgrazing native grasslands. It is important to note that drought, insect damage and fire alone or in combination may cause major changes in species composition on grasslands even when they are not being grazed. Adding improper grazing to these factors can greatly increase the rate of decline in range condition and loss of forage resources. Avoiding sagebrush infestations through sound grazing management is the most economical means of sagebrush control. Overgrazing causes forage grasses to become less competitive with undesirable shrubs and more susceptible to drought and other stress factors.

The efficiency and cost/benefit ratio of sagebrush control will be strongly influenced by the condition of existing vegetation and the forage production potential of the site. Successful improvements of sagebrush infested grasslands may require reseeding of forage species following sagebrush control. Caution should be used with any control measure on highly erodible sites with a sparse cover of desirable forage species.

After sagebrush stands are reduced by control techniques pastures must be managed carefully or the land may soon become reinfested. Because sagebrush species produce very large quantities of seeds, the soils in infested areas frequently contain a large seed reserve. Consequently, further control measures may be required following the initial control practices. New sagebrush seedlings can be controlled adequately with a spring application of 2,4-D.

*The information presented herein is supplied with the understanding that no discrimination is intended, nor endorsement implied, by the Nebraska Cooperative Extension Service. These herbicide recommendations are from the original 1980 publication and may no longer be current. Follow label directions carefully.*

<b>Table I. Control of sagebrush with herbicides.</b>				
<i>Species</i>	<i>Herbicide</i>	<i>Amount of commercial product to apply* per acre (ha)</i>	<i>Time of application</i>	<i>Remarks</i>
Sand sagebrush	2,4-D LV ester	2 qt.	June, new leaves fully developed.	Do not treat under dry soil conditions and later in the season. Retreatment will be necessary in following years for complete control.
	2,4-D + 2,4,5-T**	1 qt. + 1 qt.		
	Silvex**	2 qt.		
Fringed sagebrush	Tordon 22K***	1 pt.	June or August	Do not treat under dry soil conditions. Retreatment will be necessary for

	2,4-D LV ester	2 qt.	June	seeding control.
Green sagewort	2,4-D LV ester	2 qt.	Late May through early June.	Do not treat under dry soil conditions. Retreatment will be necessary in following years for complete control.
	Banvel + 2,4-D	1/2 pt. + 1 qt.		
	Tordon 22K*** + 2,4-D	1/2 pt. + 1 qt.		
Big sagebrush	2,4-D LV ester	2 qt.	Spring, new leaves 1/2 in. to fully developed.	Do not treat under dry soil conditions and later in the season. For aerial application use oil (no lower than No. 2 diesel).
Sagebrush seedlings	2,4-D LV ester	1 qt.	Late May through early June	
<p>* Low volatile ester formulations are preferred over volatile esters such as butyl and isopropyl. 2,4-D, silvex, and 2,4,5-T are calculated on the basis of 4 lb/gal of acid equivalent</p> <p>** Permitted uses of 2,4,5-T and silvex include application to (1) rangeland and (2) fence rows, hedge rows and waste areas not part of a pasture, forest or right-of-way.</p> <p>*** Read the Tordon 22K label carefully and heed all precautions and warnings.</p>				

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