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EC69-185 Know and Control Woollyleaf Bursage and Skeletonleaf Bursage

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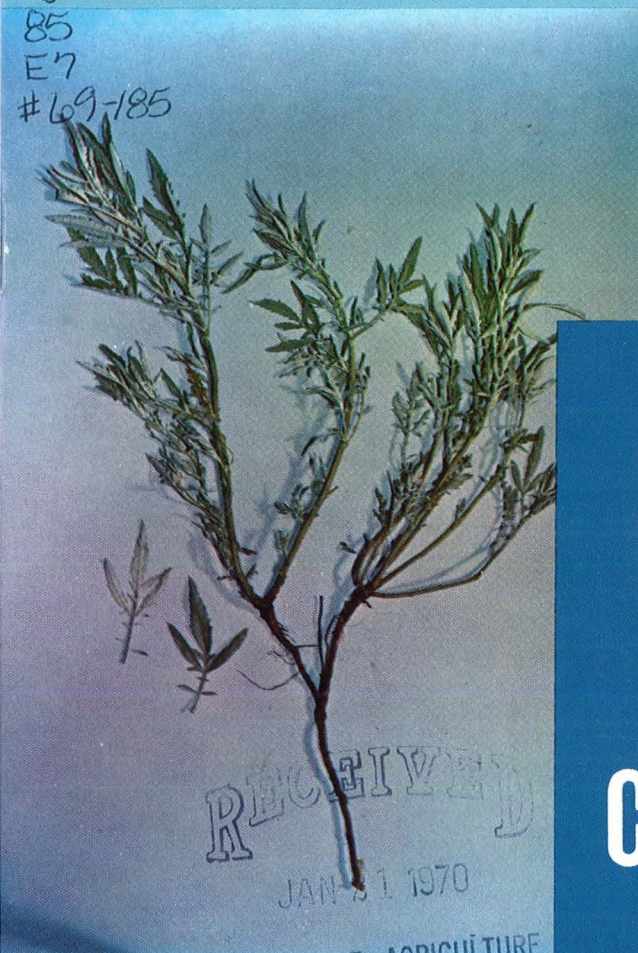
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know and control

WOOLLYLEAF BURSAGE and SKELETONLEAF BURSAGE



Cooperative Extension Service, University of Nebraska
College of Agriculture and Home Economics,
and U.S. Department of Agriculture Cooperating
E. F. Frolik, Dean J. L. Adams, Director

Cover photograph courtesy of Weed and Seed Division, State Department of Agriculture, Nebraska.

know and control

Woollyleaf Bursage and Skeletonleaf Bursage..

Larry S. Jeffery and Laren R. Robison^{1/}

Woollyleaf bursage (*Franseria tomentosa* Gray) and Skeletonleaf bursage (*Franseria discolor* Nutt.) inhabit cultivated fields, meadows, pastures, roadsides, and areas of poor drainage. These two species are extremely difficult to distinguish in the field but control practices are the same.

They have been called by local names such as bur ragweed, creeping ragweed, silverleaf povertyweed, woollyleaf povertyweed, franseria, woolly franseria, whiteweed, and lagoonweed. About 55,000 acres in Nebraska are infested with bursage. Most of the area is in the south central and western part of the state, south of the Platte River and in the Panhandle (Figure 1).

Both woollyleaf bursage and skeletonleaf bursage are considered noxious weeds because of their aggressive competitive ability and resistance to common weed control practices. The Nebraska noxious weed law and its associated regulations prohibit the sale and transport of crop seed, grain, livestock feed, or any other material containing vegetative portions or seeds of the bursages.

Description

The bursages are perennials which reproduce by seeds and roots. New plants arise from buds on the roots during the middle of April. The plants grow to a height of 12 to 36 inches depending on the levels of nutrients and soil moisture.

The long-petioled, dusty-white colored leaves may be either alternate or opposite on the stem. The leaves are covered with a dense mat of white woolly hairs. Each leaf is pinnately divided and has 3 to 7 lobes (Figure 2). The flowers are monoecious. Male flowers are borne on an erect flower stalk 2 to 4 inches long and female flowers are borne in the axils of the leaves. Flowering occurs from late July to September and seed is set in late August or September.

The bur-shaped fruit is about 9 mm. long, light tan in color, and covered with short spines (Figure 3). Two seeds are produced in separate compartments within the bur. Seed production is variable. A single stem may produce from 14 to 1489 seeds with an average of 430. The seeds have a high degree of dormancy and will remain viable in the soil for a number of years.

The roots are purple to light brown in color and may penetrate the soil 6 or more feet. The tap root is 1/8 to 1/4 inch in diameter, but the lateral roots are much smaller. Buds which arise on the lateral roots may produce new stems.

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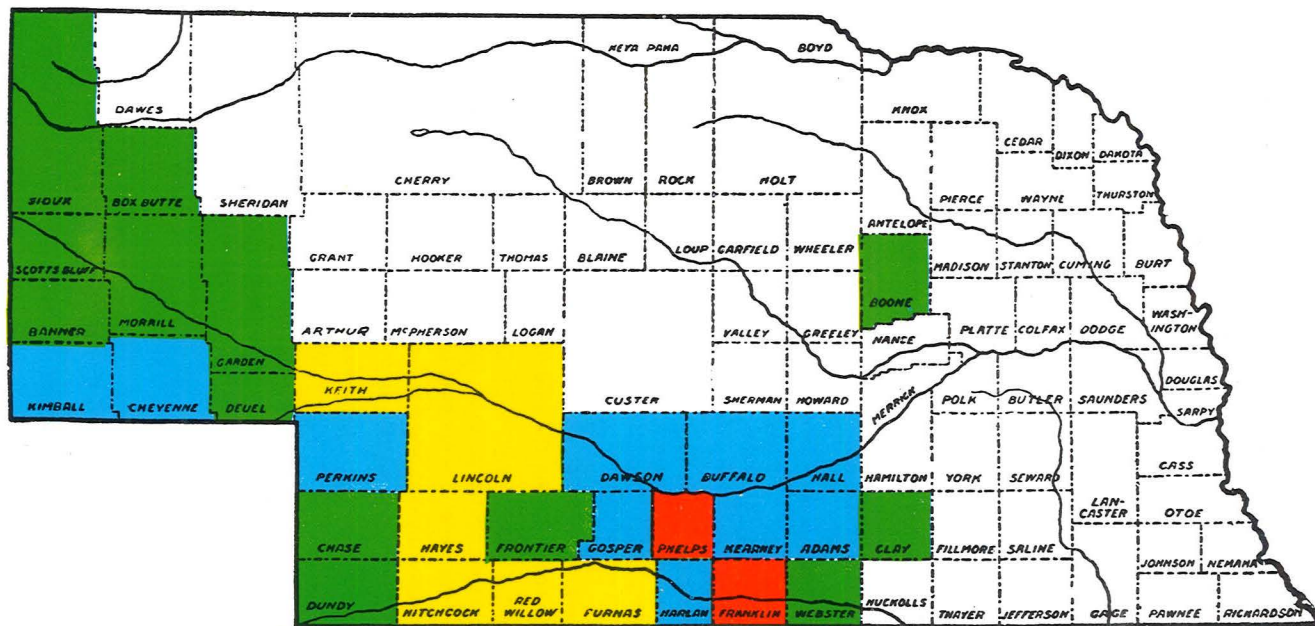


Figure 1. Thirty-two Nebraska counties have reported an infestation of 55,000 acres of woollyleaf bursage and skeletonleaf bursage.

- Heavy infestation, 13,000 + acres
- Medium infestation, 500 - 3,000 acres
- Low infestation, 50 - 499 acres
- Very Low infestation, 1 - 49 acres

Figure 1. Distribution of bursage in Nebraska.

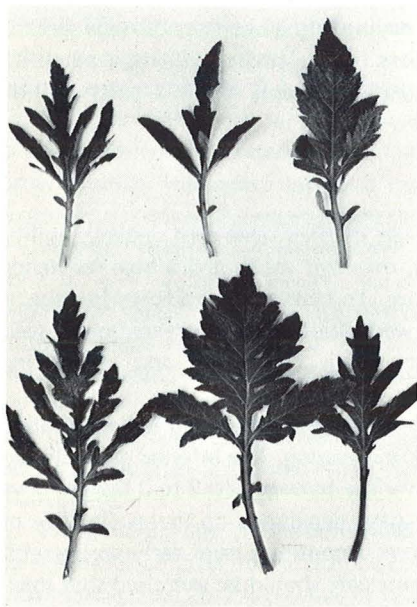


Figure 2. Bursage leaves.



Figure 4. Bursage plants which have grown from a single piece of root.

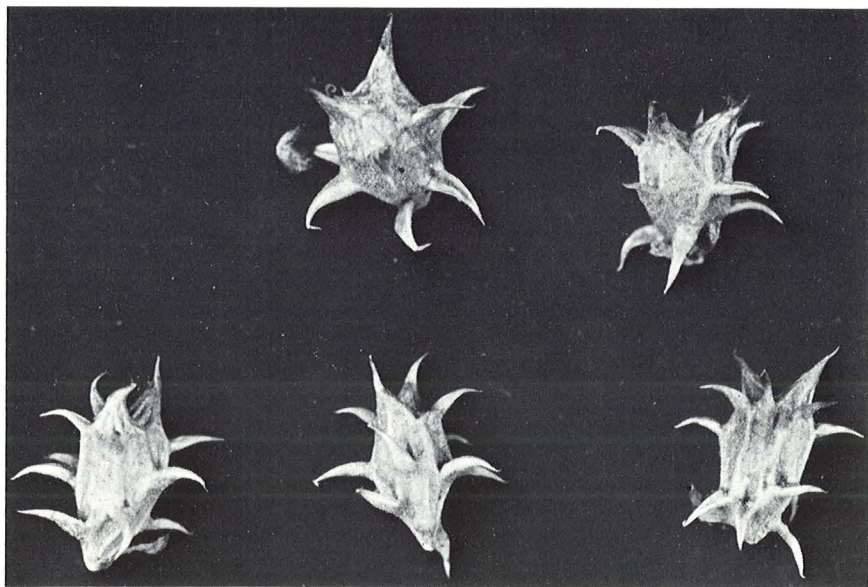


Figure 3. Bursage fruits which contain 2 seeds.

Bursage roots are very resistant to drying and retain their capacity to produce new shoots after several days of drying in the open air. Bursage spreads by roots at a fantastic rate and can increase from a single shoot to a patch 37 feet in diameter in a 3-year period. Many of the plants within a patch will be attached to one another. (Figure 4).

Methods of Control

The bursages are hard to control because of their deep root systems, ability to withstand drought and drying of roots, dormant seeds, and a high resistance to many of the commonly used herbicides. To control or eradicate bursage, a well-planned 3-part program must be followed which includes prevention of seed production, keeping new root growth to a minimum, and preventing establishment of new plants.

Cropland: Bursage infestations can be drastically reduced, if not eradicated, by two or three year programs of repeated cultivation. The infested areas should be cultivated 3 to 4 inches deep every time the bursage gets 2 to 3 leaves above the soil surface or about every 14 to 21 days depending on the availability of moisture for plant growth. Cultivations should continue from early spring until the first hard killing frost in the fall. Extreme care should be exercised that small pieces of the root are not carried to uninfested areas.

Following this system, the area should be periodically policed for new seedlings which can be killed by cultivation or application of 1 lb/A of an ester form of 2,4-D in early June during a period when soil moisture is adequate for plant growth. At times it is not practical to clean cultivate over a 2-year period for reasons such as wind and water erosion or loss of income due to no crop returns. In this case, a crop, cultivation and herbicide combination may give good control though it is doubtful that bursage can be eradicated completely.

Winter wheat should be fertilized adequately and planted at a population which will insure a good stand and dense ground cover. In the spring, 1/2 lb/A of an ester form of 2,4-D should be applied when the grain is in the tillering or early jointing stage of growth. When the wheat has matured and is harvested, the area should be plowed and then cultivated at 2 to 3 week intervals until another crop of wheat can be sown. This practice will gradually reduce the bursage population.

Bursage is a more vigorous competitor with corn and sorghum than it is with wheat. This is probably because of the difference in time of planting and seedling establishment. If corn and sorghum are planted in a bursage infested area, the area should be plowed in the fall and then cultivated 2 times at 3-week intervals before corn or sorghum are planted. Both crops should be cultivated as long as possible.

An ester formulation of 2,4-D should be applied at a rate of 1 1/2 lb/A when corn is 12 inches tall or 1/2 lb/A when sorghum is 6 to 10 inches tall. Sorghum is more susceptible to 2,4-D than is corn and some injury may result. Also, a second application of 2,4-D may be applied as a directed spray to corn as a lay-by treatment. When either corn or sorghum is grown, the land should be plowed immediately after the crop is harvested in an attempt to reduce plant growth which increases root food reserves, to reduce seed maturation, and to expose the roots to the rigors of winter.

Another method, which has been recommended in Colorado, is to apply 50 lb/A of 2,4-D amine in the late fall just before soil freeze-up. Soil temperature should be about 40° F. The herbicide should be incorporated with a disk if moisture does not fall within 24 hours after the application. This treatment is not a persistent soil sterilant. Wheat, corn and sorghum can be planted in the spring if planting is delayed until the soil has warmed up and enough moisture has fallen to leach the herbicide from the upper root zone. Crop injury may occur if the crop is planted early, if the temperature is cool, or if moisture is inadequate.

Pastures: Bursage can be controlled in pastures by the yearly application of 2 to 4 lb/A of an ester formulation of 2,4-D over a 3 to 4 year period. Bursage is most susceptible to 2,4-D when it is applied in early June. The plants must be growing rapidly and must not be suffering from drought. Sufficient spray volume should be used to wet the leaves thoroughly.

After the stand has been reduced, yearly applications of 1 to 2 lb/A of 2,4-D should be applied to control any resprouts and to prevent the establishment of new seedlings coming from seeds lying dormant in the soil. Each year the pasture should be mowed in August to prevent the formation of new seed.

Non-cropland, non-pasture: These areas include highway, pipeline and railroad right-of-ways, industrial sites, fence rows, and around farm buildings. If these areas are treated, livestock should not be allowed to graze them. Caution should be exercised to prevent spray drift to susceptible crops and water supplies. Apply 2,4-D in early June at the rate of 2 to 4 lb/A. Also, Tordon 212 (a mixture of picloram and 2,4-D) can be applied at the rate of 3 lb/A in early June.

Extreme caution should be taken to prevent picloram from contaminating water supplies in ditches or ponds. Dicamba (Banvel) at 4 to 5 lb/A also may be applied during the month of June. Picloram and dicamba should not be used on crop, pasture or rangeland.

Soil sterilants: Where patches of bursage are small and confined, soil sterilants can be applied to prevent the patch from increasing in size. An additional 10 to 15 foot area should be treated around the patch to control stragglers and new sprouts. Soil sterilants will keep the soil void of vegetation for

2 to 5 years depending upon the type of herbicide used, rate applied, soil type and climatic conditions.

Several compounds can be used as soil sterilants to control bursage in non-crop areas such as highway and railroad right-of-ways and industrial sites. Fenac (Fenac or Tri-fen), tritac (Tritac or Tritac D), and 2,3,6-TBA (Trysben 200 or Benzac 1281) may be applied at the rate of 10 to 20 lb/A in either the fall or early spring before growth occurs. A granular formulation of 2,3,6-TBA (Benzabor) may be applied at the rate of 3/4 to 1 lb/square rd. These compounds do not kill dormant seeds in the soil, therefore treated areas should be checked periodically for new plants. New infestations can be controlled with tillage or 2,4-D.

Caution: Always read the herbicide label before using. Keep chemicals out of the reach of children.