

ELEMENT STEWARDSHIP ABSTRACT
for

Artemisia absinthium

Common Wormwood

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THE NATURE CONSERVANCY

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The Nature Conservancy
Element Stewardship Abstract
For *Artemisia absinthium*

I. IDENTIFIERS

Common Name: COMMON WORMWOOD

Global Rank: G?

General Description:

A. absinthium is a suffruticose perennial, two to five feet tall, with many branching stems. *Artemisia absinthium* is a member of the composite family (Compositae: Anthemideae).

Diagnostic Characteristics:

Among the *Artemisia*, *A. absinthium* can be identified by the pistillate marginal flowers and perfect, fertile central flowers, a receptacle with long, woolly hairs, a coarse stem, and pinnately dissected leaves with oblong to linear-oblong leaf segments (Britton and Brown 1913, Fernald 1950).

II. STEWARDSHIP SUMMARY

A. absinthium is generally not considered a problem on well-established prairies and monitoring seems unnecessary. It does create a minor problem in relatively small patches on highly disturbed, usually previously grazed areas, and if necessary can best be controlled by cutting or mowing and/or application of the herbicides 2,4-D, dicamba, picloram, or glyphosate. For best residual (long-term) effects, herbicide application should be made when plants are at least 12 inches high, from late June to mid-August.

III. NATURAL HISTORY

Range:

A. absinthium may be found from Newfoundland to Manitoba, as far north as Hudson's Bay, and south to Nova Scotia, New England, Pennsylvania, and New Jersey (Britton and Brown 1913, Fernald 1950). In the Midwest, it can be found in Ohio, Indiana, Wisconsin, and Minnesota (Fernald 1950). In the Great Plains, it is found in North Dakota, South Dakota, Montana, and the Prairie Provinces of Canada (Britton and Brown 1913, Fernald 1950, Molberg 1976, Wrage and Kinch 1973, Mitich 1975, Schroeder 1979). It is also known to occur in Nebraska and Kansas (McGregor et al. 1977).

Absinth sage is a native of Eurasia, the Middle East, and North Africa (Wrage and Kinch 1973, Mitich 1975). It was introduced to North America in the early part of the 19th century to be cultivated for medicinal and social uses (Mitich 1975), and was first reported outside cultivated gardens in 1841, along roadsides and on waste ground (Torrey and Gray 1841, Mitich 1975).

Habitat:

Absinth generally becomes established in disturbed areas where there is little competition from other plants (Molberg 1971). Preferred habitats include dry soil in roadsides, waste areas, farm yards, pastures, and cropland (Molberg 1871, Schroeder 1979). It is also commonly found in fence rows, possibly as a result of intensive grazing along fences (Maw and Schroeder 1981, Bultsma 1982).

Reproduction:

The life cycle of *A. absinthium* has been reported by Wrage and Kinch (1973). Growth begins in late April, and new plants are 4-12 inches tall by mid-May. Flowering begins in late July to early August. During late fall, the above-ground portion of the plant dies. Seedlings may emerge at any time from late spring to early fall (Wrage and Kinch 1973). Seedlings may be unnoticed for some time as they are low with small leaves before the upright flowering stems emerge (Wrage and Kinch 1973, Mitich 1975). Seed dispersal can be aided by running water, and root fragments carried by machinery may extend infestations in cultivated areas (Molberg 1976).

Allelopathy has been demonstrated in *A. absinthium*. Volatile emanations from the leaves of absinth completely prevented germination in wheat (*Triticum triticale*), and inhibited seedling growth in wheat, hoary cress (*Cardaria draba*), and common flax (*Linum usitatissimum*), whereas seedling growth on white mustard (*Sinapis alba*) was markedly stimulated.

Extracts made from the leaves of *A. absinthium* prevented germination of all four test species, and extracts of roots prevented germination of wheat and reduced root and shoot elongation in the other three species by 53-85% (Chirca and Fabian 1973).

IV. CONDITION

Threats:

Absinth sage can create a problem in native grasslands, pastures, and fields by outcompeting grasses and other desirable plants. It generally presents a problem in highly disturbed areas, such as old pastures, and is not considered a threat to well-established prairies (Plumb 1987, McNeil 1987). Cattle usually avoid eating absinth, but will consume it when it is found in hay. Milk from cows that have consumed absinth is strongly flavored and rejected for human consumption; grain containing absinth is similarly tainted and rejected for use in flour (Molberg 1971, Maw and Schroeder 1981).

V. MANAGEMENT/MONITORING

Management Requirements:

A. absinthium easily becomes established on disturbed areas and may present a threat to the re-establishment of native species in recovering prairies.

For cultivated areas, Molberg (1976) recommended summer fallow followed by fall tillage to eliminate seedlings established in the mid-summer to early fall. Laycock (1979) recommended raking, chaining, rotobearing, discing, or plowing for control of big sagebrush, *A. tridentata*, and other *Artemisia* spp., but cautioned that treatment timing is important. If mechanical methods are used after seed set in the fall, the disturbance effect may encourage a good crop of sagebrush seedlings the next year (Laycock 1979).

Mowing: Mowing can be used in pastures and fields, but see "Research Needs Comments." Studies on the native sage *A. fififolia* suggest that a spring burn at the time of grass green-up will kill back the woody brush tops of the sage, and subsequent resprouting may be controlled by mowing in mid-to-late summer (Launchbaugh and Owensby 1978). It is unknown to what extent *A. absinthium* may be controlled in this manner. Bultsma (1982) suggested that mowing three times a season may be effective in preventing seed production, but pointed out that absinth sage is often difficult to mow due to its presence in fence rows or rocky areas.

Burning: Bultsma (1982) reported burning an area containing absinth sage with no apparent reduction effect. Studies on other sages indicated that, with few exceptions, fire resulted either in increases or no change in sage abundance (Anderson and Bailey 1980, Bragg 1978, Hadley 1970, Dix 1980). Laycock (1979) noted that some *Artemisia*, such as *A. tripartita* and *A. cana*, will often sprout after fire.

Plumb (1987) reported that heavily disturbed areas where absinth is a problem may have low fuel loads and be unable to support a hot enough fire to accomplish top-removal. A combination of spring burning followed by mowing once or twice in mid-to-late summer may be effective (but see "Research Needs"). Britton et al. (1981) outlined a technique for determining if a particular sagebrush area can be burned under prescribed conditions based on the relative amounts of herbaceous fuel and the canopy cover of sagebrush. This technique was intended for communities with abundant big sagebrush, *A. tridentata*, but may also prove useful as a guideline for areas infested with *A. absinthium*.

Chemical Control: *A. absinthium* can be effectively controlled with herbicides. Those most commonly used include dicamba, 2,4-D, picloram, and glyphosate. The degree of control achieved depends in large part on timing of application. Some researchers suggest early spring treatments (May-June), while others recommend spraying in summer or fall for improved residual effects. Although herbicide application rates are given in pounds per acre, it should be possible to treat individual plants since *A. absinthium* in natural areas usually occurs in small patches.

Mitich (1975) suggested using 2,4-D at 2 lb/A applied in late May in North Dakota or mid-May in South Dakota, and stated that applications made after mid-June would be less effective. Wrage and Kinch (1973) also recommended 2,4-D at two to four lb/A and reported that the best spray period is around mid-May in South Dakota, with increasingly less effective spraying after June 1. Molberg (1971b), however, conducted tests on absinth in Saskatchewan using 2,4-D ester and 2,4-D amine at 1-2 lb/A and stated that residual

growth suppression was greatest from 2,4-D ester applied in July. In another study, Molberg (1971c) tested butyl esters of 2,4-D, 2,4-DB, and dicamba on absinth sage. The plots were mowed on June 1, and the herbicides applied at 2 lb/A on June 18. The results were evaluated later that summer and the following year. While 2,4-D provided good control the first year, it had little residual effect. Dicamba provided adequate control both years, and 2,4-DB was not adequate either year (Molberg 1971c).

Friesen (1962) also reported successful control of absinth in Manitoba using dicamba at 8 oz/A sprayed on July 3 when most absinth was two to three inches high.

Lym et al. (1984) stated that herbicides should be applied when the plants are at least 12 inches high, and applications from late June through mid-August would give better residual control the following season than either spring or fall treatments. If fall treatments are chosen, the plants should be mowed or cut in early to mid-summer to promote active regrowth prior to the fall herbicide application. Suggested rates of herbicide treatment included dicamba at .5-1 lb/A, 2,4-D at 1-2 lb/A, picloram liquid at .125-.25 lb/A, picloram at .5 lb/A, and glyphosate at .25-1 lb/A (Lym et al. 1984).

The Research Branch, Agriculture Canada, recommended using glyphosate at 4 lb/A to control absinth in pine nurseries. Glyphosate at 2 lb/A and glyphosate plus seimazine at 2 and 3 lb/A were less effective. None of the treatments were observed to adversely affect *Picea pungens* in the nursery (Agriculture Canada 1974).

Biological Control: Schroeder (1979) reported that the pyralid moth *Euzophera cinerosella* may be an effective control agent for absinth sage. The following life history information comes from Schroeder (1979). *E. cinerosella* is native to Europe and Asia throughout the range of *Artemisia absinthium*. The adults emerge from absinth from late May to the third week of July and live two to three weeks. The females deposit up to twelve eggs, mainly on stems and leaves on the lower parts of absinth. The larvae emerge in eight to ten days, and bore into the leaf bases, destroying axillary buds and mining deep into the vascular tissues of the shoots. The insect undergoes six instars, reaching the final larval stage in the roots. Shoots that suffer moderate to heavy attack produce no viable seeds. At rates of 10 to 20 larvae per plant, 20 to 15 shoots (30-100% of the plant) can be destroyed. Field studies in Europe showed that the abundance of larvae on absinth can be patchy within an area, and that certain individual plants are preferred. The criteria for this selection is not known.

Field tests in the Prairie Provinces of Canada were conducted to test the selectivity of *E. cinerosella* to native *Artemisia* spp. (Maw and Schroeder 1981). The larvae chose, fed, and developed best and most consistently on *A. absinthium*. However, adults were also recovered from native sages, including *A. cana*, *A. longifolia*, and *A. dracunculus*, but not from *A. frigida* and *A. indoviciana*. It was concluded that further research is necessary before releasing *E. cinerosella* because of the potential threat to native sages.

Management Programs:

There are several areas in North Dakota where absinth sage has been reported as a problem in relatively small patches: two are in State Wildlife Management Areas in central North Dakota and one is located in the Sheyenne National Grassland. Absinth is also reported to be a minor problem at the Ordway Prairie in South Dakota. No active management control programs are being carried out in these areas, mostly because funding is not available for control of low priority species such as absinth.

Contact: Mike McNeil, Resource Assistant, Sheyenne National Grassland, Box 946, Lisbon, ND 58054. (701) 683-4342.

Glenn Plumb, Research and Management Associate, Ordway Prairie, Star Route 1, Box 16, Leola, SD 57456. (605) 439-3475.

Monitoring Requirements:

Monitoring is not considered necessary as the problem patches of *A. absinthium* are relatively small and highly localized, and abundance seems to be stable or decreasing (Plumb 1987, McNeil 1987).

VI. RESEARCH

Management Research Needs:

More study is needed on the long-term effects of mowing. Wrage and Kinch (1973) and Mitich (1975) reported that seed production is not prevented by mowing, as seeds are then produced on low horizontal branches that grow from the base of the plant. However, Molberg (1976) stated that repeated mowing may weaken plants enough to prevent seed production.

Research may also be warranted on the effectiveness of the pyralid moth *Euzophera cinerosella* as a biological control agent for absinth sage. *A. absinthium* is the preferred host of *E. cinerosella* (Maw and Schroeder 1981), but the extent to which the moth is attracted to native sages is unknown and further research is necessary before it can be considered for use as a control for absinth.

Until *A. absinthium* is documented to be a severe problem on natural areas, research on control of this species is not considered to be a high priority.

VII. ADDITIONAL TOPICS

VIII. INFORMATION SOURCES

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IX. DOCUMENT PREPARATION & MAINTENANCE

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