

**California Pest Rating Proposal for**

*Salvia aethiopsis* L., Mediterranean sage

Family: Lamiaceae

Pest Rating: B



Photo Credit: E. Coombs. Oregon Dept. of Agriculture. Bugwood.org

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**Comment Period: 07/27/2022 through 09/10/2022**

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**Initiating Event:**

*Salvia aethiopsis* has been previously assigned a B-rating by the California Department of Food and Agriculture (CDFA), Plant Health and Pest Prevention Services, but has not undergone the current pest

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risk assessment procedure. *Salvia aethiopsis* is designated as a noxious weed as defined by the California Food and Agricultural Code (FAC) Section 5004 and is listed in Title 3, California Code of Regulations (CCR), Section 4500.

## **History & Status**

### **General Description**

*Salvia aethiopsis* is a strongly scented herbaceous biennial with a stout taproot. In the first year, *Salvia aethiopsis* grows as a basal rosette of blue-green, five to 30 centimeters (cm) long, broadly lanceolate to triangular leaves that are covered with densely matted, woolly hairs and have irregularly shaped, pointed to rounded margins. In the second year, the plant develops erect, branched stems that are square in cross-section and 0.2 to 1 meter long. The stems have smaller, oppositely arranged, clasping leaves, which are also covered with densely matted hairs. The bilabiate pale yellow or whitish flowers are approximately 1.5-2.5 cm long and are grouped in tight whorls in the axils of leafy bracts along a panicle-shaped inflorescence. The fruits consist of four smooth, shiny brown nutlets per flower. The one-seeded ovoid nutlets are approximately 2.5-3 mm in length and have a pattern of darker netted veins on the brown background. In autumn following flowering, the plant dries and the stems break, enabling the dried plant to tumble with the wind (Averett, 2012; Roché, 1991).

### **Worldwide Distribution**

*Salvia aethiopsis* is native to temperate regions of western and central Asia and southern and central Europe, including the countries of Armenia, Azerbaijan, Georgia, Russian Federation, Tajikistan, Turkmenistan, Iran, Turkey, Moldova, Ukraine, Austria, the Czech Republic, Slovakia, Hungary, Bulgaria, former Yugoslavia, Greece, Italy, Romania, France, Portugal, and Spain (USDA GRIN, 2022). It is naturalized in the United States, where it occurs in the states of California, Oregon, Washington, Idaho, Nevada, Arizona, and Colorado (EDDMapS, 2022).

### **Official Control:**

*Salvia aethiopsis* is listed in CCR Section 4500 as a noxious weed defined by California FAC Section 5004. The Department is mandated by California FAC, Division 1, Chapter 3, Section 403 to prevent the introduction and spread of noxious weeds. *Salvia aethiopsis* is also listed as a noxious weed in the states of Colorado, Nevada, Oregon, and Washington, and a noxious weed subject to Early Detection/Rapid Response in Idaho (NPB, 2022).

*Salvia aethiopsis* is listed as a restricted noxious weed seed in California defined by California FAC Section 52258, and as a prohibited noxious weed seed in the states of Colorado, Nevada, and Utah (USDA AMS, 2022).

*Salvia aethiopsis* has been the target of biological control efforts in the United States since 1962 (Nechols, 1995). The Mediterranean sage root weevil (*Phrydiuchus tau*) is the biological control agent permitted for use in California (Pitcairn et al., 2014).

### **California Distribution:**

The CalFlora Database contains approximately 250 records of *Salvia aethiopsis* collected from northeastern California counties as follows: Modoc (138), Lassen (87), Siskiyou (7), Plumas (5), Shasta (5), Sierra (3). The species was also collected one time from a botanical garden greenhouse on the

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campus of California State University, Northridge in Los Angeles County in 1970 (CalFlora Database, 2022), although it is unclear whether this was a cultivated plant. The species was first collected in California in Lassen County in 1892.

### **California Interceptions:**

Between 2004-2020 there were 29 interceptions of *Salvia aethiopsis* at the Alturas and Dorris California Border Protection Stations. Interceptions occurred as plant debris clinging to the outside of both commercial and private vehicles or as contaminants of commercial shipments of hay (CDFA PDR database, 2022).

### **Consequences of Introduction**

#### **1) Climate/Host Interaction: Score is Medium (2)**

*Salvia aethiopsis* grows in sagebrush flatlands in the Pacific Northwest area of the United States (Coombs et al., 2008). In California, *Salvia aethiopsis* occurs in the Modoc Plateau bioregional area at elevations between 1,250 to 1,550 meters above sea level (Averett, 2012). *Salvia aethiopsis* grows in dry, disturbed habitats such as overgrazed rangelands and pastures, abandoned farmland, construction sites, roadsides, and burned areas (DiTomaso and Keyser, 2013).

- Low (1) Not likely to establish in California; or likely to establish in very limited areas
- **Medium (2) may be able to establish in a larger but limited part of California**
- High (3) likely to establish a widespread distribution in California

#### **2) Known Pest Host Range: Score is High (3)**

*Salvia aethiopsis* can occur wherever general ecological conditions exist that are conducive to its survival.

- Low (1) has a very limited host range
- Medium (2) has a moderate host range
- **High (3) has a wide host range**

#### **3) Pest Dispersal Potential: Score is High (3)**

*Salvia aethiopsis* reproduces only by seed. Each plant can produce 50-100,000 seeds (Roché, 1991). Seeds are dispersed when the mature plant dries and breaks free from the ground, allowing it to tumble with the wind across the landscape. Plant parts and seed can also be moved on vehicles, equipment, livestock, or in contaminated soil, agricultural seed, or hay (Roché, 1991). Per DiTomaso and Keyser (2013), it is expected that seeds of *Salvia aethiopsis* can be viable in the soil for several years.

*Salvia aethiopsis* seeds produce a mucilaginous seed coat upon hydration. Mucilaginous seed coats provide advantages in general to seeds germinating in dry environments, such as the ability to stick to the soil surface, germinate in the absence of a soil covering, or adhere to and be dispersed by birds or other animals (Ryding, 2001). Young and Evans (1973) suggest that the copious amount of seed coat mucilage produced by *Salvia aethiopsis* enables this species to colonize disturbed, dry habitats and may aid in seed dispersal via adherence to birds.

- Low (1) does not have high reproductive or dispersal potential
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- Medium (2) has either high reproductive or dispersal potential
- **High (3) has both high reproduction and dispersal potential**

**4) Economic Impact: Score is High (3)**

The strongly scented *Salvia aethiopsis* is non-palatable to livestock (Nechols, 1995) and displaces desirable forage plants (Coombs et al., 2008). In 2019, organic pasture and rangeland accounted for 647,288 acres throughout California, with the top ten pasture and rangeland producing counties being Tehama, Modoc, Humboldt, Merced, Siskiyou, San Luis Obispo, Sonoma, Marin, and both Mendocino and Stanislaus (CDFA, 2020).

*Salvia aethiopsis* can invade alfalfa and grain fields and occasionally lawns (Nechols, 1995) and can contaminate hay. California leads the nation in the production of both alfalfa hay and alfalfa seed. In 2019, alfalfa hay was planted on approximately 580,000 acres throughout the state, with over four million tons of alfalfa hay produced, for a total value of \$844,190,000. That same year alfalfa seed was valued at \$53,068,000 in California, with the majority of alfalfa seed production occurring in Imperial County (91.8%), with Fresno County producing 8.1% and Modoc County producing 0.1% of the state's total alfalfa seed (CDFA, 2020).

Shipments, including agricultural seed, that are found infested with *Salvia aethiopsis* and are destined to states where *Salvia aethiopsis* is a regulated noxious weed are subject to rejection, treatment, reconditioning, or destruction, typically at the owner's expense.

- A. The pest could lower crop yield.**
- B. The pest could lower crop value (includes increasing crop production costs).**
- C. The pest could trigger the loss of markets (includes quarantines).**
- D. The pest could negatively change normal cultural practices.
- E. The pest can vector, or is vectored, by another pestiferous organism.
- F. The organism is injurious or poisonous to agriculturally important animals.
- G. The organism can interfere with the delivery or supply of water for agricultural uses.

Economic Impact:

- Low (1) causes 0 or 1 of these impacts
- Medium (2) causes 2 of these impacts
- **High (3) causes 3 or more of these impacts**

**5) Environmental Impact: Score is High (3)**

*Salvia aethiopsis* can displace native plant species.

- A. The pest could have a significant environmental impact such as lowering biodiversity, disrupting natural communities, or changing ecosystem processes.**
  - B. The pest could directly affect threatened or endangered species.
  - C. The pest could impact threatened or endangered species by disrupting critical habitats.**
  - D. The pest could trigger additional official or private treatment programs.
  - E. The pest significantly impacts cultural practices, home/urban gardening or ornamental plantings.
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Environmental Impact:

- Low (1) causes none of the above to occur
- Medium (2) causes one of the above to occur
- **High (3) causes two or more of the above to occur**

Consequences of introduction to California for *Salvia aethiopsis*: **High (14)**

Low = 5-8 points

Medium = 9-12 points

**High = 13-15 points**

**1) Post Entry Distribution and Survey Information: Score is Low (-1)**

-Not established (0) Pest never detected in California or known only from incursions.

**-Low (-1) Pest has a localized distribution in California or is established in one suitable climate/host area (region).**

-Medium (-2) Pest is widespread in California but not fully established in the endangered area, or pest established in two contiguous suitable climate/host areas.

-High (-3) Pest has fully established in the endangered area, or pest is reported in more than two contiguous or non-contiguous suitable climate/host areas.

**7) Final Score: High (14-1=13)**

**Conclusion and Rating Justification:**

*Salvia aethiopsis* is established in multiple counties of northeastern California. Due to the economic impacts of *Salvia aethiopsis* on infested agricultural shipments and the on-going biological control efforts for this species, a B-rating is recommended.

**Uncertainty**

**References**

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**\*Comment Period: 07/27/2022 through 09/10/2022**

**\*NOTE:**

You must be registered and logged in to post a comment. If you have registered and have not received the registration confirmation, please contact us at [permits\[@\]cdfa.ca.gov](mailto:permits[@]cdfa.ca.gov).

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**Comment Format:**

- ❖ Comments should refer to the appropriate California Pest Rating Proposal Form subsection(s) being commented on, as shown below.

**Example Comment:**

Consequences of Introduction: 1. Climate/Host Interaction: [Your comment that relates to “Climate/Host Interaction” here.]

- ❖ Posted comments will not be able to be viewed immediately.
- ❖ Comments may not be posted if they:
  - Contain inappropriate language which is not germane to the pest rating proposal;
  - Contains defamatory, false, inaccurate, abusive, obscene, pornographic, sexually oriented, threatening, racially offensive, discriminatory or illegal material;
  - Violates agency regulations prohibiting sexual harassment or other forms of discrimination;
  - Violates agency regulations prohibiting workplace violence, including threats.
- ❖ Comments may be edited prior to posting to ensure they are entirely germane.

- ❖ Posted comments shall be those which have been approved in content and posted to the website to be viewed, not just submitted.
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**Pest Rating: B**

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