Fire risk report for *Melilotus alba*

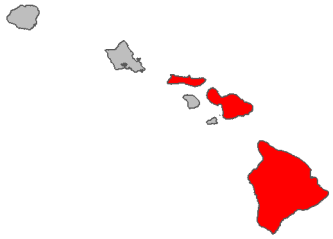
Full Species Name
Melilotus alba Medik.

Family: Fabaceae

Common names:
white sweet clover

Synonyms:

Known occurrences (as of 2020)



Year first documented as naturalized in Hawai'i: 1979

This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 23.

View photos on Starr Environmental

View on Wikipedia

View occurrences on iNaturalist

View at Plants of Hawaii

View photos on Flickr

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Lowest risk ⇔ Highest risk

This species is likely a **low** fire risk in Hawai'i with a fire risk score of **0.25**.

This species was ranked by our machine learning algorithm using the data presented on the next page. A predicted score of > .34 suggests the plant is a high fire risk.

Summary of Fire ecology	
Native habitat fire proneness	No Data
Fire promoting plant in its native range	No
Fire promoting plant in its introduced range*	No
Regenerates after fire	Yes
Promoted by fire	Yes
Reported flammable*	Low
Relative is flammable*	No

*These values were used by the model to predict fire risk

Detailed summary of Fire Ecology

Native habitat fire proneness (In any part of the plant's native range is its habitat described as fire prone due to natural or human caused fires?)	No Data	#literature dominated by North american work, I could not find info about this species in its native range
Fire promoting plant in its native range (Does the species act as a major fuel source, increase fire severity, frequency, or modify fuel bed characteristics within its native range?)	No	
Fire promoting plant in its introduced range (Same as Fire Promoting Native but within the species introduced range)	No	#does not seem to be flammable by itself
Regenerates after fire (Does the plant regrow after fire by any means? This includes resprouters, reseeders, and recruiters which dispersed into the area within approximately one year post fire)	Yes	"Survival and increased abundance of sweetclover are likely following dormant-season fires [96,129]. Survival of established plants is less likely and abundance may be reduced by growing season fires [129,295]; however, emergence from the seed bank will likely allow sweetclover to persist even after growing-season fires. Sweetclover persists on annually burned sites and has been reported on sites burned annually for up to 10 years [105]." https://www.fs.fed.us/database/feis/plants/forb/melspp/all.html#FIRE%20EFFECTS%20AND%20MANAGEMENT
Promoted by fire (Does the plant increase in abundance after a fire?)	Yes	"Sweetclover is well adapted to survive fire. Established 2nd-year plants often survive dormant-season fires [96,128], and seed survival and subsequent establishment are likely even if growing-season fires kill all plants. Seeds are heat tolerant [29,200], and germination can be stimulated by fire [129,197,218]." https://www.fs.fed.us/database/feis/plants/forb/melspp/all.html#FIRE%20EFFECTS%20AND%20MANAGEMENT

		---------- "Scotch broom, white sweetclover (Melilotus alba), and common dandelion (Esser 1993b) have all been observed to establish or increase abundance after fire" Anzinger, D., & Radosevich, S. R. (2008). Fire and nonnative invasive plants in the Northwest Coastal bioregion. In: Zouhar, Kristin; Smith, Jane Kapler; Sutherland, Steve; Brooks, Matthew L. Wildland fire in ecosystems: fire and nonnative invasive plants. Gen. Tech. Rep. RMRS-GTR-42-vol. 6. Ogden, UT: US Department of Agriculture, Forest Service, Rocky Mountain Research Station. p. 197-224, 42.
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	Low	"Although one study found poor fire spread through dense sweetclover patches (see Fuels) [74], more information regarding fire behavior in areas heavily invaded by sweetclover is necessary before altered fuel characteristics and changes in fire regimes can potentially be attributed to sweetclover." https://www.fs.fed.us/database/feis/plants/forb/melspp/all.html#FIRE%20EFFECTS%20AND%20MANAGEMENT
Relative is flammable (Does a plant in the same genus meet the Reported Flammable criteria?)	No	

Text in quotes are direct quotes from the source
Text in square brackets was added by the assessor to clarify something or to summarize from a figure.
Text preceded by a “#” is comment from the assessor

The data presented were assembled from literature and database searches for each species using as much data as could be collected regarding the plant’s fire ecology under natural conditions. Searches aimed to be exhaustive and consist of as much data as could be located in 2020. Our machine learning algorithm was trained on 49 species of plants which had their fire risk ranked by 49 managers in Hawai’i in November 2020. The model used a conditional random forest regression algorithm to predict scores for each species using the manager score as the response variable and the fire ecology traits of each plant as the predictor variables to generate a fire risk score. This trained model was then used to predict the fire risk for all species which were not ranked by managers. The model was calibrated such that it is 90% accurate at predicting high fire risk plants and 79% accurate at predicting low fire risk plants. This research and the resulting fire risk model has been published in the journal Biological Invasions by Kevin Faccenda and Curt Daehler (both at the University of Hawai‘i at Mānoa).

Note that the analysis doesn't account for a plant species' spatial distribution, population density, or distinct climate and ecosystem conditions (which can also influence fire risk). The fire risk of these species are mostly under "worst case" environmental conditions where the climate is dry enough to maintain fire, but wet enough to allow for plant growth and fuel accumulation. The fire risk ranking should not be taken as a stand-alone risk metric in prioritizing weed control efforts. Rather, this information may also be useful for determining if a newly discovered species poses a potential fire threat in wildland areas.

More general information on the weed risks and ecology of non-native plants in Hawai'i is available from the Hawai'i Invasive Species Committee's Weed Risk Assessment database.

View more fact sheets at https://www.pacificfireexchange.org/weed-fire-risk-assessments

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Fact sheet prepared by Kevin Faccenda (faccenda@hawaii.edu) in November 2021. Data were prepared by Kevin Faccenda in 2020.

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