

Fire risk report for *Vachellia farnesiana*

Full Species Name <i>Vachellia farnesiana</i> (L.) Wight & Arn.
Family: Fabaceae
Common names: klu aroma kolu
Synonyms: <i>Acacia farnesiana</i>
Known occurrences (as of 2020) 
Year first documented as naturalized in Hawai'i: 1864
This species has been ranked by the Hawai'i Weed Risk Assessment program as High Risk with a score of 14.
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 **high** fire risk in Hawai'i with a fire risk score of **0.31**.

This species was ranked by 49 managers on a scale of 'no risk', 'low risk', 'medium risk', or 'high risk'. The numerical score ranges from 0 to 1 with higher scores indicating more managers considered it a higher risk. A score of > .31 indicates high risk.

Summary of Fire ecology	
Native habitat fire proneness	Fire-prone
Fire promoting plant in its native range	No
Fire promoting plant in its introduced range*	No
Regenerates after fire	Yes
Promoted by fire	No
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?)	Fire-prone	"Huisache is a component of mixed deciduous thornscrub on upland sites in the lower Rio Grande valley. These ecosystems are thought to have had fire regimes with mean fire intervals ranging from 7 to 30 years. Shorter fire intervals maintained dominance of perennial grasses, and longer intervals allowed extensive development of a shrub layer with a height of 6.6 to 13 feet (2-4 m) and canopy cover of 70% to 100%. Fires most likely occurred on sites adjacent to grasslands, which burned frequently. Occasionally, during dry, windy conditions, fire could spread to the shrub canopy" https://www.fs.fed.us/database/feis/plants/shrub/vacfar/all.html
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	
Regenerates after fire (Does the plant regrow after fire by any means? This includes resprouters, reseeder, and recruiters which dispersed into the area within approximately one year post fire)	Yes	"Huisache can be top-killed by relatively low temperatures during fire, but roots typically survive fire and new stems sprout from surviving root crowns [7, 19, 23, 28, 61, 81]. Tall plants with large stem diameters are less likely to be top-killed during low-intensity fire than smaller plants [61]. Huisache 14 Fire Effects Information System (FEIS) seeds are resilient to heat and are likely survive fire in the soil seed bank [22]. Survival of seed in the aerial seed bank (pods attached to plants) depends on fire intensity and severity." https://www.fs.fed.us/database/feis/plants/shrub/vacfar/all.html

Promoted by fire (Does the plant increase in abundance after a fire?)	No	"Huisache seedling recruitment may be reduced after severe fire. Nine new recruits occurred on plots treated with extreme prescribed fire in June 2008, and five new recruits occurred on plots treated with extreme prescribed fire followed by a low-intensity prescribed fire 1 year later. Unburned, control plots had 16 new recruits during the study period. Overall density of sprouting shrubs, including huisache was reduced by 35% to 55% as a result of high mortality and low recruitment [74]. See Immediate Fire Effects for more information about this study" https://www.fs.fed.us/database/feis/plants/shrub/vacfar/all.html
Reported flammable (Is the species described as being flammable, being a major wildfire fuel, or high fire risk?)	Low	#No data suggesting high flammability. IT seems it only really burns when surrounded by other fuels such as grass. The firewise plant list - texas suggests medium flammability https://static1.squarespace.com/static/566b94a0a128e652f030c7fe/t/5a6fc04b419202aacbcd9a23/1517273163954/Texas-Plant-Flammability-List.pdf
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>

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

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