



Control of Madagascar Ragwort (aka Madagascar fireweed, *Senecio madagascariensis*)

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Madagascar ragwort, also called Madagascar fireweed and variable groundsel,⁽¹⁾ *Senecio madagascariensis* Poiret, a native of Madagascar and South Africa,⁽²⁾ has become a serious weed of pastures on the islands of Hawai'i and Maui.

In the early 1980s, Lee Beerman, then with Parker Ranch, reported a “yellow-flowered weed” in pastures near Hāwī, Kohala. From there, within a decade, it had infested pastures all the way up to Kahuā Ranch. Today it infests pastures and roadsides throughout Waimea and into Honoka‘a, up the Saddle Road, and is establishing in Kona. Madagascar ragwort has jumped across the island into Ka‘ū, apparently with cattle shipments. On Maui, it infests roadsides and pastures from ‘Ulupalakua to Kula, Makawao, Pukalani, Ha‘ikū, and Waihe‘e. On Kaua‘i, an infestation was found on a hydro-mulched road-cut at Halfway Bridge. Because the infestation was confined to the hydro-mulched area, it was surmised that the ground-cover seed from Australia was contaminated with the weed. Diligent rogueing by the Hawai'i Department of Agriculture (HDOA) and the Kauai Invasive Species Committee seemed to be eradicating the Kaua‘i infestation, but then a new infestation was found in Kalihi Wai.

Australian scientists have reported that Madagascar ragwort is a serious problem in pastures of Queensland



Madagascar ragwort flower's petals and central disk are bright yellow; each flower invariably has 13 petals (photo: R.Heu).



Madagascar ragwort produces flowers profusely. The small, daisy-like flowers range in size from about 3/8 to 1 inch in diameter.

and New South Wales because it depresses forage yield and is poisonous to livestock, causing yearly losses of A\$2 million.⁽²⁾

Description

Madagascar ragwort is a low, upright, branched herb 4–20 inches high. Its narrow, green leaves are up to 2½ inches long and have margins that are either entire (smooth), serrated, or lobed. It flowers profusely with small, daisy-like flowers ranging in size from about 3/8



An extensive infestation of Madagascar ragwort in the Saddle Road area of the island of Hawai'i.

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to 1 inch in diameter. Both the petals and the central disk of the flower are bright yellow, and each flower invariably has 13 petals. The flowers mature into white thistle-balls up to $\frac{5}{8}$ inch in diameter.

Madagascar ragwort is prolific. Each flower produces about 150 thistled seeds, and each plant produces an average of 30,000 seeds. The seeds (a seed type known as an achene) are dry, cylindrical, and slender. They are about $\frac{1}{10}$ inch long and are dispersed by wind or by hitchhiking on passing animals and vehicles. The seed is long-lived, making ragwort a permanent problem in infested pastures.⁽¹⁾ This weed readily invades pastures damaged by overgrazing, drought, or (in Hawai'i) the yellow sugarcane aphid (*Sipha flava*). It seems equally at home in low-elevation, arid pastures as in high-elevation, moist pastures.

Methods to control ragwort

Biological control. Australian scientists have collected several insects that feed on Madagascar ragwort. However, because the plant is closely related to *Senecio lautus* Forster f. ex Willd., a native Australian plant that is not a weed, the scientists are pessimistic about chances that release of these insects for ragwort control in Australia will be approved.⁽³⁾

Biocontrol researchers at HDOA have brought several natural enemies of ragwort from Madagascar and South Africa into their quarantine facility to determine the suitability of these potential biocontrol agents for release in Hawai'i. Of a total of 11 insects and a fungus that were collected in late 1999 by the HDOA exploratory entomologist, only two species still remain as candidates for biocontrol of ragwort. Host specificity studies have been completed on an arctiid moth whose larvae feed voraciously on ragwort foliage. Currently, data is being assembled to justify the release of this species from quarantine. Studies continue on a tephritid fly whose larvae feed within and destroy ragwort flowers.⁽⁴⁾

Cultural control. Australian agronomists⁽¹⁾ recommend pasture management practices that encourage forage growth and vigor, such as controlled grazing and applications of fertilizers. Early action is emphasized because of the fecundity and rapid dispersal of Madagascar ragwort. Carefully timed mowing may help, but it also may make the problem worse if done at an inopportune time, such as during drought. Sheep and goats are less susceptible than cattle to ragwort poisoning and can be used to graze down the weed. However, when using sheep or goats as a control measure it is not advisable to graze young animals or lactating females in heavily infested pastures during the preflowering stage of the plant, as these animals may be more susceptible to poisoning than mature or dry females.⁽⁵⁾

Chemical control. Madagascar ragwort is sensitive to several herbicides, including clopyralid, 2,4-D, MCPA, dicamba DGA, glyphosate, and tebuthiuron. Because glyphosate is nonselective, it can only be applied where non-target kill can be tolerated. Or, it can be applied directly to ragwort with a wipe-on applicator so that it does not kill other plants in the pasture. The other herbicides are selective against broadleaf plants and will not injure grasses at label rates. Of these, MCPA and 2,4-D, a restricted-use herbicide, are the most economical because they are old products. MCPA, chemically related to 2,4-D, does not require certification to use and is thus the most convenient product for effective control. MCPA application to rank growth of ragwort requires 2 lb/acre or 2 qt/acre (\$11/acre). Young infestations require half that. Where forage legumes are mixed with grasses, the amine salt formulation of 2,4-D would be preferable because of its mild effect on legumes such as white clover (MCPA and 2,4-D esters are more injurious than 2,4-D amine on legumes). In any case, best results are obtained when ragwort is young and succulent and not drought stressed.

In general, a single herbicide application will not suppress Madagascar ragwort permanently. Cultural practices must be changed to prevent reinfestation (see *Cultural control*, above).

Report sightings

Sightings of this weed should be reported to the nearest office of the Hawaii Department of Agriculture.

Numbers to call:

O'ahu	973-9538
Kaua'i (also Ni'ihau)	274-3069
Maui (also Moloka'i, Lāna'i, Kaho'olawe)	873-3555
Hawai'i	974-4140

References cited

- (1) Watson, R., T. Launders, and J. Macadam. 1984. Fireweed. Agfact P7.6.26. New South Wales Dept. of Agriculture, Scone, Australia.
- (2) Holtkamp, R.H., and J.R. Hosking. 1993. Insects and diseases of fireweed, *Senecio madagascariensis*, and the closely related *Senecio lautus* complex. Proc., 10th Australian and 14th Asian-Pacific Weed Science Soc. Conf., Brisbane, Australia. p. 104-106.
- (3) Personal communication, Dr. G. White, entomologist, Queensland Dept. of Lands.
- (4) Personal communication, Ken Teramoto, HDOA Biocontrol Section.
- (5) Personal communication, Dr. Mark Thorne, UH-CTAHR.