Schinus molle L.; Peruvian peppertree
Schinus terebinthifolius Raddi; Brazilian peppertree

Peppertrees

Family: Anacardiaceae
Range: In the western U.S., both species are only found in California. They are also problematic in many tropical areas, including Hawaii.
Habitat: Canyons, washes, slopes, riparian areas, fields, and along roadsides. Plants grow best where some soil moisture is available during the warm season.
Origin: Peruvian peppertree is native to the riparian habitats of Peru. Brazilian peppertree is native to the dry grasslands of southern Brazil. The peppertrees are common landscape ornamentals that were introduced to the U.S. 100 to 200 years ago. Both species have escaped cultivation and become invasive in some areas.
Impacts: Peruvian peppertree is more widespread than Brazilian peppertree in California, but appears to be less problematic. Peruvian peppertree is susceptible to black scale (*Saissetia oleae*), a pest of citrus. Plants can cause dermatitis in sensitive individuals. Fruits are used to make a drink in South America. Brazilian peppertree is locally invasive in certain riparian areas of southern California and has aggressively colonized hundreds of thousands of acres in Florida. Brazilian peppertree foliage can be toxic to horses and cattle when ingested, and direct contact with the sap can cause contact dermatitis in sensitive individuals. Fruits are readily consumed and dispersed by wildlife, particularly birds. Brazilian peppertree fruits are sometimes sold as "pink peppercorns" in the U.S. However, ingestion of fruits in large quantities can cause severe digestive tract irritation in animals and humans.
California Invasive Plant Council (Cal-IPC) Inventory: Both species are Limited Invasiveness

Peppertrees are evergreen shrubs to trees with alternate, glabrous, aromatic odd-pinnate-compound leaves. Peruvian peppertree can grow to 60 ft tall, whereas Brazilian peppertree is generally shorter, to a maximum of 35 ft tall. The leaves of Peruvian peppertree are 4 to 12 inches long with 15 to 59 slender leaflets per leaf. Brazilian peppertree leaves are about 4 to 8 inches long with only seven leaflets per leaf.

In both species the male and female flowers develop on separate trees (dioecious). Inflorescences are panicles of numerous greenish-white flowers mostly 1 to 3 mm long. Flowers are insect-pollinated and the fruits are spherical, berry-like, 4 to 8 mm diameter and pink to red with one seed. Plants reproduce by seed and sometimes vegetatively from root sprouts. Most seeds remain viable for less than 1 year after dispersal.

NON-CHEMICAL CONTROL

Mechanical (pulling, cutting, disking)	Small seedling plants can be removed manually and this has been a successful technique in many natural areas, provided it does not cause significant disturbance that can favor peppertree establishment. Entire saplings, including root systems, can be pulled up by hand, but by the time the plant is several feet tall, hand pulling may no longer be possible. In this case, larger saplings can be removed with a weed wrench. For larger plants, control is more difficult as they can resprout from the base. Heavy equipment such as bulldozers, front end loaders, root rakes and other specialized equipment can be used, but the entire root

	system must be removed to prevent resprouting, because root pieces as small as 0.25 inch diameter can resprout. This is often not suitable in natural areas. Mechanical operations that disrupt the vegetation while placing large volumes of peppertree seed on the soil will likely lead to reinvasion, perhaps at greater density than the original population.
Cultural	The seeds of *Schinus* cannot tolerate heat, thus will not germinate following a fire. However, basal trunk and root sprouting can be aggressive after burning. Once *Schinus* saplings attain a height of 3 ft most plants are able to survive fire by coppicing and will grow more rapidly than competing native hardwoods, thus increasing dominance of the stand. Burning at 5-year intervals, however, has been shown to exclude *Schinus* from pine forests of Florida. Another important consideration for prescribed burning of *Schinus* species is that they belong to the Anacardiaceae, which is the same family as poison oak and ivy. Thus, the sap and smoke from the burning may irritate or cause an allergic response in sensitive individuals.
Biological	As of 2010, biological control agents have not been released for peppertrees, although release has been recommended in Florida for a sap-sucking thrip species (*Pseudophilotrips ichini*) and a defoliating sawfly (*Heteroperreyia hubrichi*). An application has also been submitted for release of a leaflet roller (*Episimus unguiculus*). Brazilian pepper trees that were defoliated 5 times in 3 years had significantly fewer berries than Brazilian pepper trees that were not defoliated or were defoliated less frequently. It is felt that targeting biological control efforts on juveniles may be more effective than more mature plants.

CHEMICAL CONTROL

The following specific use information is based on reports by researchers and land managers. Other trade names may be available, and other compounds also are labeled for this weed. Directions for use may vary between brands; see label before use. Herbicides are listed by mode of action and then alphabetically. The order of herbicide listing is not reflective of the order of efficacy or preference. Excellent recommendations for controlling Brazilian peppertree can be found at http://www.fleppc.org/Manage_Plans/schinus.pdf.

GROWTH REGULATORS	
Dicamba *Banvel*, *Clarity*	**Rate:** 1.8 to 5% v/v solution for spot applications **Timing:** Postemergence, generally in late summer or autumn when plants are growing actively and translocating sugars to the below-ground tissues. **Remarks:** Results are inconsistent and often good control is not achieved with dicamba. It does not appear to be the best option for control of peppertrees.
Fluroxypyr *Vista XRT*	**Rate:** 1% v/v solution for spot applications **Timing:** Postemergence, generally in late summer or autumn when plants are growing actively and translocating sugars to the below-ground tissues. **Remarks:** Fluroxypyr can be used for both foliar applications and basal bark treatments, but no data are available on either treatment for the control of peppertrees.
Triclopyr *Garlon 3A*, *Garlon 4 Ultra*	**Rate:** Foliar treatment: 1.5 to 3% v/v solution with *Garlon 4 Ultra* and 15% with *Garlon 3A*. Cut stump treatment: 20% v/v *Garlon 4 Ultra* in water, or undiluted *Garlon 3A* or 50% *Garlon 3A* in water. Basal bark treatment: 20 to 30% v/v *Garlon 4 Ultra* in basal oil, applied to the bark around the bottom 1 ft of the tree. Lower rates (14%) have been shown to be successful by others. Stem injection: for large trees, undiluted *Garlon 3A* or *Garlon 4 Ultra* can be effective and will prevent regrowth. When using a drill technique, it is important to drill all the folds and scars to ensure that the entire cambium has been accessed. **Timing:** Postemergence, generally in late summer or autumn when plants are growing actively and translocating sugars to the below-ground tissues. **Remarks:** Triclopyr has little to no soil residual activity, but may damage other broadleaf species, especially with aerial foliar applications to larger trees. Peppertrees can be effectively controlled by cutting and treating the stumps with herbicide. The trunk should be cut as close to the ground as possible, and triclopyr should be applied to the cambium within 5 minutes. Treat before plants begin to fruit.
AROMATIC AMINO ACID INHIBITORS	
Glyphosate *Roundup*, *Accord XRT II*, and others	**Rate:** Broadcast foliar treatment: 1.3 to 3.3 qt product (*Roundup ProMax*)/acre (1.5 to 3.7 lb a.e./acre). Spot treatment to seedlings and young plants: 1% v/v solution. Foliar application to older plants: > 1.5% v/v solution. Cut stump treatment and stem injection: 40% of concentrated product. **Timing:** Postemergence, generally in late summer or autumn when plants are growing actively and

	translocating sugars to the below-ground tissues. **Remarks:** Glyphosate is nonselective and has no soil residual activity. Peppertrees can be effectively controlled by cutting and treating the stumps with herbicide. The trunk should be cut as close to the ground as possible. Apply glyphosate to the cambium within 5 minutes. Treat before plants begin to fruit.
BRANCHED-CHAIN AMINO ACID INHIBITORS	
Imazapyr *Arsenal*, *Habitat*, *Chopper*, *Stalker*, *Polaris*	**Rate:** Foliar treatment broadcast: 2 to 4 pt product/acre (0.5 to 1 lb a.e./acre). Foliage spot treatment: 0.5 to 1% v/v solution. Cut stump treatment: 20% of concentrate. Stem injection treatment: undiluted concentrate. **Timing:** Late summer or autumn when plants are growing actively and translocating sugars to the below-ground tissues. **Remarks:** All treatment methods can be effective. Imazapyr can have long soil residual activity.
PHOTOSYNTHETIC INHIBITORS	
Hexazinone *Velpar L*	**Rate:** 2 gal product/acre (4 lb a.i./acre) **Timing:** Preemergence at the beginning of the rainy season to allow for movement of herbicide into soil and uptake by roots. **Remarks:** Hexazinone is a root-absorbed herbicide that can be very effective for the control of Brazilian peppertree. However, it is slow-acting and has residual activity. This residual activity is beneficial for long-term control but can pose problems to non-target species. For widely scattered plants, where access to the main stem is difficult, basal spot treatments are easily applied. High rates of hexazinone can create bare ground, so only use high rates in spot treatments.
Tebuthiuron *Spike 20P*	**Rate:** 20 lb product/acre (4 lb a.i./acre), or 0.25 to 1 oz product/6 inches of basal stem diameter (0.1 to 0.25 oz a.i./6 inches of basal stem diameter) **Timing:** Preemergence at the beginning of the rainy season to allow for movement of herbicide into soil and uptake by roots. **Remarks:** Tebuthiuron has very long soil residual activity. Selective control around target plant can be achieved by placing the pelleted form of the herbicide at the base of the plant.

RECOMMENDED CITATION: DiTomaso, J.M., G.B. Kyser et al. 2013. *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center, University of California. 544 pp.