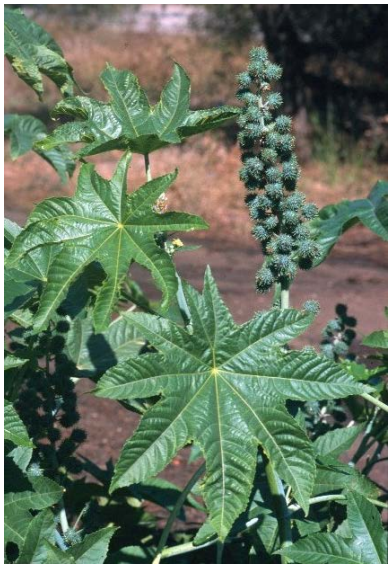
Ricinus communis L.

Castorbean



Family: Euphorbiaceae
Range: Although more common in the southeastern U.S., it can be problematic in California, Arizona and Utah.
Habitat: Roadsides, fields, riparian areas, and disturbed waste places. Grows best when moisture is plentiful, but tolerates considerable drought. Plants are highly susceptible to frost damage and grow as an annual in cold winter areas.
Origin: Native to tropical Africa and Eurasia. Some varieties of castorbean are cultivated as ornamentals and for the oil contained in the seeds.
Impacts: Seeds and, to a lesser degree, foliage are highly toxic to humans and animals when ingested. Plant material contains an extremely toxic protein, ricin. Ingestion of 4 to 8 seeds can kill an adult, and fewer can kill a child. Seeds must be broken or chewed to release the toxin. Castor oil derived from the seeds does not contain the water-soluble toxin. Crushed foliage has a disagreeable odor and is usually avoided by animals. Livestock poisonings most often occur when feed is contaminated with castorbean seeds. Handling foliage and seeds can cause severe contact dermatitis in sensitive individuals.
California Invasive Plant Council (Cal-IPC) Inventory: Limited Invasiveness

Castorbean is a summer annual, perennial, shrub, or small tree to 10 ft tall or more. The leaves are alternate and large, shield-like, with 5 to 11 palmate lobes. The stems are hollow, often tinged red. The plant lacks hairs.

Male and female flowers develop on the same plant (monoecious). Flower clusters are terminal and panicle-like, with female flowers above the male flowers. All flowers lack petals. The fruit are capsules covered with soft spines, usually gray-green, but occasionally purplish or red. The seeds are oblong, 10 to 14 mm long, smooth, glossy, and mottled silver and brown. Plants reproduce by seed that disperse short distances when capsules snap open at maturity. On the soil surface seeds can be moved a short distance by ants. They can also disperse to greater distances in water or by human activities. Castorbean does not form persistent seedbanks except when buried by tillage.

NON-CHEMICAL CONTROL

Mechanical (pulling, cutting, disking)	For individual plants, it is possible to remove by digging. Smaller plants can be hand pulled, although it is important to wear gloves, as castor bean is poisonous. Even larger plants can be removed by hand pulling in wet sandy soils. It is important to remove the bulk of the root crown to prevent regeneration. Weed wrenches can be a very effective tool for small to medium-sized plants with a single stem. This is much more effective in moist soils. In dry soils the plant can break off and leave the root system. Removed larger plants can be piled and burned on site. With larger colonies, where cultivation is practical, slashing followed by cultivation gives effective control. It is essential to keep the cultivation shallow to prevent deep burial of seeds. Repeat cultivation as needed to kill seedlings and any regrowth from old crowns.
Cultural	Neither burning nor grazing is recommended for castor bean control. Burning in coastal areas can lead to ideal conditions for habitat conversion. Seeds in or on the soil readily germinate after fire, and seedlings grow so rapidly that they outcompete other species, dominating the area and driving out desirable natives. Animals do not find castor bean palatable and, in fact, the plant is poisonous.
Biological	Castor bean is a crop in some locations in the United States. As such, there are no efforts to develop a biological control program. However, a large number of diseases and pests are known to impact castor

	bean crops. Mung moth, pink bollworm, scab, wilt, leaf spot, seedling blight, inflorescence rot, pod rot, rust spot, graymold, crown rot, stem canker, leaf blight, bacterial wilt, and angular leaf spots can impact castor bean crops, but are rarely seen in riparian wildland plants.

CHEMICAL CONTROL

The following specific use information is based on published papers and 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.

GROWTH REGULATORS	
2,4-D Several names	**Rate:** 2 qt product/acre (1.9 lb a.e./acre) **Timing:** Postemergence when plants are growing actively, thoroughly wetting leaves and stems. **Remarks:** 2,4-D is a broadleaf-selective herbicide. It has no soil activity. When using the ester formulation do not apply when outside temperatures exceed 80°F.
Dicamba *Banvel*, *Clarity*	While not typically used in the United States, cut stump treatments with dicamba have been reported to be effective in Australia.
Picloram *Tordon 22K*	Picloram is not typically used for castorbean control, but can be used in a cut stump treatment when combined with 2,4-D or triclopyr. This technique is sometimes used effectively with large plants in Australia. Picloram is a restricted use herbicide. It is not registered for use in California.
Triclopyr *Garlon 3A*, *Garlon 4 Ultra*, *Pathfinder II*	**Rate:** Foliar spot treatment: 1% v/v solution of *Garlon 3A* or 4. Basal bark treatment: 20% v/v solution of *Garlon 4 Ultra* or undiluted *Pathfinder II.* Cut stump treatment: 100% v/v solution *Garlon 3A*, or 20% *Garlon 4 Ultra* with 80% basal oil. Basal cut stump treatment: 20% Garlon *4 Ultra* with 80% basal oil. **Timing:** Postemergence, to seedlings or to fully developed leaves of mature plants. Where castorbean grows as a perennial, cut stump or basal bark treatments should be made in the late season when plants are translocating carbohydrates to below-ground tissues. For cut stump treatments, applications must be made immediately after cutting. **Remarks:** For basal bark treatments, apply with a backpack sprayer using low pressure and a solid cone or flat fan nozzle. Spray the lower stems, including the root collar, to a height of 12 to 15 inches from the ground; the spray should thoroughly wet the lower stem but not to the point of runoff. Cut stump treatments should be used for larger diameter plants. Treated sites must be revisited several times after the initial herbicide treatment to hand pull seedlings that sprout. Triclopyr is a broadleaf herbicide and will kill other sensitive broadleaf species it contacts. *Garlon 4 Ultra* is a low volatile ester. However, in warm temperatures, spraying onto hard surfaces such as rocks or pavement can increase the risk of volatilization and off-target damage.
AROMATIC AMINO ACID INHIBITORS	
Glyphosate *Roundup*, *Accord XRT II*, and others	**Rate:** Foliar broadcast treatment to seedlings: 1.5 pt product (*Roundup ProMax*)/acre (0.85 lb a.e./acre). Spot foliar treatment: 2% v/v solution for spray-to-wet applications. Cut stump treatment: 25% v/v solution. **Timing:** Postemergence, to seedlings or to fully developed leaves of mature plants. **Remarks:** Glyphosate is a nonselective herbicide. Stem injection and cut stump applications can be made to large trees and shrubs. These techniques can reduce risk of non-target damage. Cutting can be accomplished with loppers or small saws.
PHOTOSYNTHETIC INHIBITORS	
Hexazinone *Velpar L*	**Rate:** 4 to 7 qt product/acre (2 to 3.5 lb a.i./acre) **Timing:** Preemergence to base of plant while plants are growing rapidly and when subsequent precipitation can move chemical into root zone. **Remarks:** In Australia, castorbean has been successfully controlled with a preemergence treatment of hexazinone. It can give total vegetation control, so generally should be used in a spot treatment at the base of target plants. Hexazinone is mobile in the soil. High rates of hexazinone can create bare ground, so only use high rates in spot treatments.

ECOMMENDED 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.