CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Profile for

Cyperus rotundus, purple nutsedge

Family: Cyperaceae

Pest Rating: C

Seed Rating: Restricted

Comment Period: 09/26/2025 through 11/10/2025

Initiating Event:
Cyperus rotundus has at various times been assigned a B, Q, and W-rating by the California Department of Food and Agriculture (CDFA), Plant Health and Pest Prevention Services. *Cyperus rotundus* is designated as a noxious weed as defined by the California Food and Agricultural Code (FAC) Section 5004 and is listed in Title 3, California Code of Regulations (CCR), Section 4500. Prior to 2015, *Cyperus rotundus* was assigned a B-rating by the CDFA, Plant Health and Pest Prevention Services. Given its rating history, a current evaluation is indicated.

History & Status

General Description
Cyperus rotundus is a perennial, herbaceous sedge that grows from tubers on an extensive network of wiry, underground rhizomes (CABI, 2014). The tubers of *Cyperus rotundus* are produced in chains, with several on a single rhizome (UC/IPM, 2016). The tubers of *Cyperus rotundus* are dark brown to black, irregularly shaped, and one to two cm long (CABI, 2014). The stems of *Cyperus rotundus* are erect, glossy, smooth, triangular in cross-section, and can grow up to 60 cm tall (approximately just under two feet (ft)) tall (UC/IPM, 2016; CABI, 2014). The leaves of *Cyperus rotundus* are somewhat grass-like but stiffer and thicker than grass leaves, dark green, V-shaped in cross section, and have rounded tips (UC/IPM, 2016). The inflorescence of *Cyperus rotundus* is a terminal, open umbel (CABI, 2014) with open, flat, narrow, dark reddish to purplish brown spikes (Jepson Flora Project, 2024; University of Georgia, Center for Invasive Species and Ecosystem Health, 2018; UC/IPM, 2016). *Cyperus rotundus* does not typically produce seeds in the United States (UC/IPM, 2016).

Cyperus rotundus and a similar species, *Cyperus esculentus* (yellow nutsedge), can be distinguished from each other by the height of the stems (*Cyperus esculentus* can grow to 0.9 m tall, the number and color of the flowers (few and dark reddish to purplish brown versus many and gold-brown, respectively), and by the number of tubers per rhizome (numerous in chains versus single, respectively) (UC/IPM, 2016).

Worldwide Distribution

Cyperus rotundus is widespread in the tropics and subtropics and is native to Eurasia (Jepson Flora Project, 2024). *Cyperus rotundus* occurs in Africa including Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Chad, Comoros, Côte D'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Ghana, Guinea, Kenya, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Reunion, Rwanda, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Western Sahara, Zambia, and Zimbabwe, in Asia including Afghanistan, Armenia, Azerbaijan, Bhutan, China, Ciscaucasia, Cyprus, India, Indonesia, Iran, Iraq, Israel, Lebanon, Japan, Kazakhstan, Korea, Kyrgyzstan, Malaysia, Myanmar, Nepal, Pakistan, Philippines Russian Federation, Saudi Arabia, Sri Lanka, Syria, Taiwan, Thailand, Turkey, Turkmenistan, Uzbekistan, Vietnam, Yemen,, in Europe including Albania, Austria, Bulgaria, Croatia, Greece, Italy, Portugal, Romania Serbia Slovenia Spain, and Switzerland, and is considered naturalized in Australia (USDA/GRIN, 2022).

In South America, *Cyperus rotundus* occurs in Argentina, Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname, and Venezuela. In North America, the Caribbean and the Pacific, *Cyperus rotundus* occurs in Anguilla Antilles, Aruba, Bahamas, Barbados, Cayman Islands, Cook Islands, Costa Rica, Cuba, Dominica, El Salvador, Fiji, French Polynesia, Guatemala, Honduras, Jamaica, Martinique, Mexico, Nicaragua, Niue, Panama, Puerto Rico, St. Lucia, Tonga and in Central America in Belize, Trinidad and Tobago, and the Virgin Islands (USDA/GRIN, 2022).

In the United States, *Cyperus rotundus* occurs in; Alabama, Arizona, Arkansas, California, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, New Mexico, New York , North Carolina, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, and Virginia (USDA/GRIN 2022; EDDMapS, 2024).

Official Control:

Cyperus rotundus is listed on CCR Section 4500 as a noxious weed defined by California FAC Section 5004. The Department is mandated by California FAC, Division 1, Chapter 3, Section 403 to prevent the introduction and spread of noxious weeds. *Cyperus rotundus* is listed as a restricted noxious weed seed in California defined by California FAC Section 52258 and subject to established tolerances for shipments within and to California.

Cyperus rotundus is listed as a prohibited noxious weed seed for shipments into the states of Alabama, Arizona, Arkansas, Georgia, Louisiana, Mississippi, New Mexico, Oklahoma, South Carolina, Tennessee, and Texas, and a restricted noxious weed seed subject to established tolerances for shipments into the states of Florida and North Carolina. *Cyperus spp.* are listed as a prohibited weed seed for shipments into Rhode Island (USDA/AMS, 2023).

California Distribution:

The CalFlora Database contains approximately 103 records of *Cyperus rotundus* collections from California between 1901-2023. An attempt was made to omit duplicate records from this proposal. Collections of *Cyperus rotundus* per county in the CalFlora Database are as follows: Butte (5), Colusa (1), El Dorado (1), Imperial (3), Inyo (1), Kern (1), Los Angeles (7), Merced (2), Napa (1), Orange (7), Placer (1), Riverside (15), Sacramento (8), San Bernadino (10), San Diego (7), San Mateo (2), Santa Barbara (6),

Santa Clara (2), Shasta (1), Stanislaus (1), Tehama (2), Tulare (2), Ventura (5), Yolo (8), and Yuba (1). The earliest record *Cyperus rotundus* from California is from San Bernardino County in 1901 (CalFlora, 2024).

Five additional detections of *Cyperus rotundus* are recorded in the CDFA PDR database from 2003-2009 from the counties of Imperial, Los Angeles, Orange, San Diego, and Shasta. These detections were made at school yards, fields, and in residential gardens (CDFA PDR database, 2024).

California Interceptions:
Cyperus rotundus has been intercepted a total of 44 times during regulatory nursery inspections or in general inspections of field and container grown nursery stock between 2003-2023 in the counties of Los Angeles (19 times), Merced (two times), Riverside (three times), San Diego (16 times), Solano (one time), Sutter (three times) (CDFA PDR database, 2024). *Cyperus rotundus* has been intercepted in incoming truck or parcel shipments a total of fifteen times between 2003-2023; once at the Needles Border Protection Station and in the counties of Los Angeles (seven times), Placer (three times), and one time each in the counties of Riverside, San Francisco, San Mateo, and Santa Clara (CDFA PDR database, 2024).

Consequences of Introduction

1) **Climate/Host Interaction:** Score is **Medium (2)**
Cyperus rotundus occurs in disturbed soils, cultivated fields, fallow land, neglected areas, road and rail sides, banks of irrigation canals and streams, edges of woods, and sand dunes (CABI, 2014). *Cyperus rotundus* can tolerate "almost every soil type, altitude, humidity, soil moisture and pH" (CABI, 2014), and can tolerate temperatures ranging from 3°-37° Celsius (38°-98° Fahrenheit) (CalFlora, 2024).

In California, *Cyperus rotundus* grows in the Central Valley, South Coast, and low desert to an altitude of about 250 m (820 ft) above sea level (UC/IPM, 2016) and to elevations as high as 330 m (1,085 ft) above sea level (CalFlora, 2024). Per CABI (2014), the range of *Cyperus rotundus* at increasing latitudes and altitudes is limited by cold temperatures and it generally does not tolerate shade. Per Keeley (1987) *Cyperus rotundus* "grows poorly in waterlogged soil and/or tubers do not sprout in fields under water."

-Low (1) Not likely to establish in California; or likely to establish in very limited areas
- Medium (2) may be able to establish in a larger but limited part of California
- High (3) likely to establish a widespread distribution in California

2) **Known Pest Host Range:** Score is **High (3)**
Cyperus rotundus can occur wherever general ecological conditions exist that are conducive to its survival.
- Low (1) has a very limited host range
- Medium (2) has a moderate host range
- High (3) has a wide host range

3) **Pest Dispersal Potential:** Score is **High (3)**

Cyperus rotundus rarely reproduces by seed but reproduces extensively by rhizomes (University of Georgia, Center for Invasive Species and Ecosystem Health, 2018). *Cyperus rotundus* produces an extensive system of branched chains of rhizomes and tubers underground. Large populations (as many as 600 plants) can develop from a single tuber in a single year (CABI, 2014). Per CABI (2014), tubers may remain dormant for up to seven years on undisturbed sites.

Dispersal of *Cyperus rotundus* can occur when tubers or rhizomes are moved by tillage equipment or other farm machinery, in soil, attached to transplanted material, in water from the banks of drainage and irrigation channels, or by the flooding of fields (CABI, 2014). Cultivation can cause fragmentation of tubers and rhizomes which can break dormancy and stimulate growth (CABI, 2014).

- Low (1) does not have high reproductive or dispersal potential
- Medium (2) has either high reproductive or dispersal potential
- **High (3) has both high reproduction and dispersal potential**

4) **Economic Impact:** Score is **High (3)**

Per Morales-Payan et al. (2005), *Cyperus rotundus* can interfere with and be devastating to various field, vegetable, and horticultural crops. *Cyperus rotundus* produces allelopathic compounds that reduce germination and growth of adjacent plants (Bryson and Carter, 2004), and Keeley (1987) reports that *Cyperus rotundus* can compete with adjacent crops for light, water, and nutrients, resulting in crop yield reductions.

Specifically, in a season-long competition study, Morales-Payan et al. (2005) reported that *Cyperus rotundus* reduced the yields for eggplant by 28%, bell pepper by 65%, and tomato by 70%. Morales-Payan et al. (2005) also provide results for a study showing yield reductions of red cabbage by 35% and onion by 89% due to *Cyperus rotundus* infestation. Keeley (1987) reports on several studies showing crop yield reductions in upland rice due to *Cyperus rotundus* competition for light and reduced nutrient uptake in cotton and wheat when grown in association with *Cyperus rotundus*.

Keeley (1987) states that *Cyperus rotundus* can reduce yields if permitted to grow unchecked, and, when present, requires considerable time, effort, and money to control. Control methods for *Cyperus rotundus* can include crop rotation, crop spacing, and use of fertilizers (Keeley, 1987).

In 2021, the total value of tomato production in California was approximately $1.2 billion, the approximate production value for onion was $297 million, the approximate production value for bell pepper was $184 million, and the approximate production value for wheat was $66 million (CDFA Crop Report, 2021-22). In 2021, the total value of rice production in California was just over $1 billion, and California rice represents almost 40% of the nation's total rice exports (CDFA Crop Report, 2021-22).

Cyperus rotundus is listed as a Harmful Organism for the countries of New Zealand, French Polynesia, and Israel (USDA/PExD, 2024). Shipments, including agricultural seed, destined to these countries are subject to phytosanitary restrictions pertaining to C*yperus rotundus.* Shipments that do not meet the specified requirements may be subject to rejection, treatment, reconditioning, or destruction, typically at the owner's expense.

A. The pest could lower crop yield.
B. The pest could lower crop value (includes increasing crop production costs).
C. The pest could trigger the loss of markets (includes quarantines).
D. The pest could negatively change normal cultural practices.
E. The pest can vector, or is vectored, by another pestiferous organism.
F. The organism is injurious or poisonous to agriculturally important animals**.**
G. The organism can interfere with the delivery or supply of water for agricultural uses.

Economic Impact:
- Low (1) causes 0 or 1 of these impacts
- Medium (2) causes 2 of these impacts
- High (3) causes 3 or more of these impacts

5) Environmental Impact: Score is **High (3)**

Cyperus rotundus can be found in a wide variety of natural habitats including riverbanks, sandbanks, river and stream shores, and natural areas (CABI, 2014). *Cyperus rotundus* has the "potential to negatively impact…. natural ecosystems by displacing native plants or by changing the availability of food or shelter for native animals" and has a high likelihood of invading new habitats due to its "rapid growth and formation of dense colonies due to its ability to produce an extensive system of rhizomes and tubers." (CABI, 2014). Morales-Payan et al. (2005) state that managing nutsedges in general can include labor-intensive and time-consuming methods such as repeated mulching, hoeing, shoot removal, and herbicide applications.

A. The pest could have a significant environmental impact such as lowering biodiversity, disrupting natural communities, or changing ecosystem processes.
B. The pest could directly affect threatened or endangered species.
C. The pest could impact threatened or endangered species by disrupting critical habitats.
D. The pest could trigger additional official or private treatment programs.
E. The pest significantly impacts cultural practices, home/urban gardening or ornamental plantings.

Environmental Impact:
- Low (1) causes none of the above to occur
- Medium (2) causes one of the above to occur
- High (3) causes two or more of the above to occur

Consequences of introduction to California for *Cyperus rotundus* **High (14)**

Low = 5-8 points
Medium = 9-12 points
High = 13-15 points

1) Post Entry Distribution and Survey Information: Score is **High (-3)**

-Not established (0) Pest never detected in California or known only from incursions.
-Low (-1) Pest has a localized distribution in California or is established in one suitable climate/host area (region).
-Medium (-2) Pest is widespread in California but not fully established in the endangered area, or pest established in two contiguous suitable climate/host areas.
-High (-3) Pest has fully established in the endangered area, or pest is reported in more than two contiguous or non-contiguous suitable climate/host areas.

7) **Final Score:** Medium **(14-3=11)**

Conclusion and Rating Justification:
Despite the economic impacts of *Cyperus rotundus* on California's agricultural industry, including reduced yield of important fruit and vegetable crops and the rejection of agricultural seed shipments infested with *Cyperus rotundus*, this weed is so widespread in California that a C-rating is recommended. Because it is a Section 4500 Noxious Weed, seed of *Cyperus rotundus* is Restricted by default. As a Noxious Weed, it is not legal to propagate or sell this species.

Uncertainty
Because of its long history and wide range in California, there is little uncertainty about the behavior and impacts of this weed.

References

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Responsible Party: California Department of Food and Agriculture; Seed Laboratory and Herbarium; 3294 Meadowview Road, Sacramento, CA 95832; (916) 738-6700; permits@cdfa.ca.gov.

***Comment Period: 09/26/2025 through 11/10/2025**

***NOTE:**

You must be registered and logged in to post a comment. If you have registered and have not received the registration confirmation, please contact us at permits[@]cdfa.ca.gov.

Comment Format:

- Comments should refer to the appropriate California Pest Rating Proposal Form subsection(s) being commented on, as shown below.

  Example Comment:

  Consequences of Introduction: 1. Climate/Host Interaction: [Your comment that relates to "Climate/Host Interaction" here.]

- Posted comments will not be able to be viewed immediately.

- Comments may not be posted if they:

  Contain inappropriate language which is not germane to the pest rating proposal;

  Contains defamatory, false, inaccurate, abusive, obscene, pornographic, sexually oriented, threatening, racially offensive, discriminatory or illegal material;

  Violates agency regulations prohibiting sexual harassment or other forms of discrimination;

  Violates agency regulations prohibiting workplace violence, including threats.

- Comments may be edited prior to posting to ensure they are entirely germane.
- Posted comments shall be those which have been approved in content and posted to the website to be viewed, not just submitted.

Pest Rating: [C]