
COMMON PURSLANE

Integrated Pest Management for Home Gardeners and Landscape Professionals

Common purslane, *Portulaca oleracea*, is a member of the Portulacaceae family with more than 120 different species found in that family. It is a weedy summer annual species that is abundant throughout the world, invading vegetable gardens, bare areas, low-maintenance lawns, ornamental plantings, and agricultural areas (Fig. 1). It was first identified in the United States in 1672 in Massachusetts. It is particularly well adapted to the warm, moist conditions found in California's irrigated agricultural and ornamental sites. Common purslane is edible, with a sweet, yet acidlike flavor. An excellent crunchy salad plant, it is said to blend well with hotter-flavored salad herbs. It has been cultivated in India and the Middle East and has been popular in Europe since the Middle Ages. In the United States, common purslane is a minor crop because of its use in ethnic cooking and its reputed health benefits of bioprotective nutrients (antioxidants, vitamins, and amino acids). In Spanish it is known as verdolaga. Other members of the purslane family include moss rose, miner's lettuce, and redmaids (desert rockpurslane).

IDENTIFICATION AND LIFE CYCLE

Common purslane is a prostrate, succulent annual that often forms a dense mat. The reddish stems originate from a central rooting point, radiating out like spokes of a wheel. The stems vary in length, commonly up to 12 inches. Leaves are stalkless (sessile), oval, smooth, succulent, and shiny, and vary from ½ to 2 inches in length. The leaves, although generally arranged opposite, may also occur alternately along the stem, particularly near the base. Small (⅜ inch), five-petaled, yellow flowers are borne singly in leaf axils and open only in sunshine. Seeds

are borne in a small pod with a top that comes off like the lid on a cookie jar. Seeds are reddish brown to black, oval, and tiny (about 1/64 to 1/32 inch in diameter). Common purslane is a prolific seeder. A single plant may produce 240,000 seeds, which may germinate even after 5 to 40 years. In late summer, flat mats of mature purslane can be turned over to reveal thousands of seeds on the soil surface.

Common purslane germinates in California from February to March in the southern desert areas to late spring in cooler areas when soil temperatures reach about 60°F. It germinates very near to or at the soil surface in large numbers after an irrigation or rain. Most of the tiny seedlings die, but the survivors grow rapidly and can produce flowers in a few weeks. The fleshy stems of common purslane can remain moist and viable for several days after cultivation and hoeing, and reroot to form "new" plants when gardens or fields are irrigated.

Proper weed identification is imperative to obtain successful control. Identifying purslane is important but it is usually not the only weed presenting a problem and you will want to identify other weeds to find the most effective strategy for control. See the online UC IPM Weed Photo Gallery at http://www.ipm.ucdavis.edu/PMG/weeds_common.html.

IMPACT

Because of its ability to produce large numbers of seeds, common purslane can rapidly colonize any warm, moist site. A few scattered plants in the first year can become an almost solid carpet of purslane the following year. Its ability to reroot after cultivation or hoeing frequently enables it to survive these

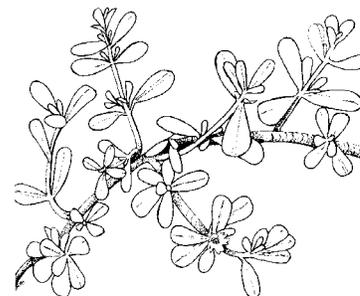


Figure 1. Common purslane.

cultural control practices. Common purslane is low in stature and forms dense mats. These vegetative mats utilize available moisture and nutrients and screen out light to the soil surface, preventing emergence of other seedlings. Common purslane is unsightly, reducing the esthetic value of turf and ornamental plantings. In commercial situations common purslane can limit summer vegetable production and reduce the efficiency of harvesting nut crops, such as almonds and walnuts, from the orchard floor.

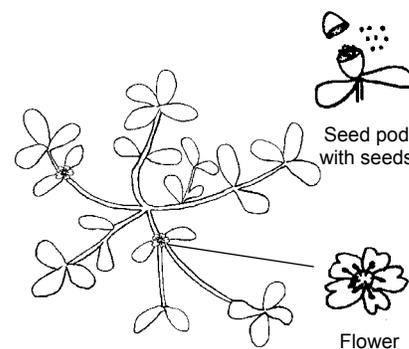


Figure 2. Flower and seed pod.

PEST NOTES

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MANAGEMENT

The primary method of management for common purslane is prevention. Common purslane is such a prolific seeder that once it has become established it is difficult to control. Avoid bringing common purslane into uninfested areas. Use weed-free planting stock and seed. Clean mowers, planters, and cultivation equipment that have been used in infested areas before allowing them to enter clean areas. Monitor uninfested sites for common purslane seedlings and destroy them before they set new seed. In home landscapes and gardens, this weed is generally managed by cultural means such as hand-weeding and mulching.

Cultural Control

Cultivation following irrigation when common purslane seedlings are small can reduce the weed population. However, because common purslane germinates at or near the soil surface, cultivation can bring up a fresh supply of weed seeds from deeper regions of the soil for future germination. Carefully monitor for weed seedlings after each irrigation and cultivate while seedlings are still small. When cultivating or hoeing larger common purslane plants, either remove them or allow plant material to thoroughly dry before irrigation. This will prevent rerooting of the fleshy stem sections. Otherwise, cultivation or hoeing becomes a transplanting operation and little control is achieved. Also, seeds may continue to ripen a week later even after a plant is pulled.

If they screen out all light, mulches can be used to control common purslane in ornamental plantings, orchards, vineyards, vegetable crops, and gardens. To be effective, organic mulches should be at least 3 inches thick. Synthetic mulches (plastic or fabric mulch) which screen out light and provide a physical barrier to seedling development, also work well. Fabric mulches, which are porous and allow flow of water and air to roots, are preferred over plastics. Combinations of synthetic mulches with organic or rock mulches on top are commonly used in ornamental plantings.

Soil solarization, the practice of covering moist soil with a clear plastic sheet for 4 to 6 weeks during the summer months, can kill common purslane and its seed. Solarization is done before gardens and ornamental areas are planted. To be effective it should be done during the summer months of July to August when heat and light intensity are highest. Prepare your beds before solarization. Do not disturb the soil or cultivate after solarization as weed seeds from deeper layers of the soil may be brought to the surface for germination. (See in References, Soil Solarization: A Nonpesticidal Method for Controlling Diseases, Nematodes, and Weeds.)

Biological Control

Purslane sawfly is an insect that feeds and reproduces on common purslane. It eats the leaves of common purslane, leaving the plants low in vigor and with little photosynthetic area. Unfortunately, by the time it develops sufficient numbers to have an impact on the common purslane population, seed development and much of the damage from purslane competition in the garden or crop have already occurred.

Chemical Control

Chemical control is generally not necessary for the control of common purslane in the home landscape; it is primarily used in conjunction with cultural methods for commercial situations and should be reserved for use only under unusual circumstances in the home landscape.

There are many herbicides that will control common purslane. Preemergent chemicals control seeds and postemergent chemicals control the growing weeds. A selective herbicide controls only certain weeds while a nonselective herbicide controls all or most weeds.

If preemergent herbicides are to be used, make sure they are present at the soil surface during the time of seedling emergence and have been activated with an irrigation or a shallow incorporation soon after application. Tilling the preemergent herbicides too deeply (2–3 inches) into the soil has resulted in failure to control common purslane.

Postemergent herbicides are effective when applied to the seedling stage; if applied too late in the season to mature plants, control is often erratic and seed set may have already occurred.

Turfgrass. Common purslane is usually not a problem in healthy, well-established turfgrass. It can be found most commonly in weaker, poorly maintained turfgrass. Therefore, the improvement of cultural practices to obtain healthy, competitive turfgrass is the best method to deal with this weed problem in lawns. However, several herbicides are available for use in turf that control purslane.

Preemergent control. The herbicides dithiopyr, pendimethalin, or combinations of benefin and trifluralin or benefin and oryzalin (used in bermudagrass turf only) will control common purslane as preemergent treatments. These products are mostly granular materials and some may be mixed with a turf fertilizer.

Postemergent control. Dicamba, MCPP, MSMA, and 2,4-D are effective postemergent herbicides in turfgrass and are available to the home gardener.

Ornamental Plantings. The use of a suitable mulch thick enough to limit the light reaching the soil surface can control common purslane in ornamental plantings and may eliminate the need for herbicides. Spot spraying a nonselective postemergent herbicide such as glyphosate can provide good control if care is taken to avoid letting it contact the foliage of desirable plants. Herbicide active ingredients such as oryzalin, pendimethalin, and trifluralin will provide control and are available to the home gardener.

Vegetable Gardens. Soil solarization, mulches, and early cultivation of common purslane seedlings can help to control infestations. Preemergents are almost never used in the vegetable garden because of the diversity of different vegetables, chemical residues for months after the application, and chemical registrations on the labels.

Specific herbicide recommendations for **commercial orchard crops and vegetable plantings** are available online; see the UC IPM Pest Management Guidelines at <http://www.ipm.ucdavis.edu/PMG>.

Important Notes: If you decide to use a chemical you need to be aware of certain precautions.

1. Many of the postemergent selective materials are in combinations to control a wider spectrum of weeds, often with three or four chemicals in the combination. Sometimes one or two of the chemicals will not control purslane but are included in the mix to control other weeds. For example, Bayer Advanced All in One spray contains 2,4-D, MCPP, dicamba, and MSMA. The MSMA provides no control and the MCPP provide partial control, while the 2,4-D and dicamba

will control purslane.

2. The granular formulations (post-emergent) with fertilizer are applied to a moist lawn so the herbicide is able to adhere to the moist broadleaf weed. Generally these "weed and feed" products are not recommended because the proper time for fertilizing often does not coincide with proper time for weed control.
3. There are many different brand names for many of the same chemical active ingredients, and/or variations in combinations of chemicals. Below are some examples:
 - Dithiopyr is found in Schultz Supreme Green Crabgrass Preventer with fertilizer, Best Turf Supreme Crabgrass Preventer plus Lawn Fertilizer, and Monterey Crab and Spurge Preventer.
 - Trifluralin sold as Trifluralin, Treflan is available only to professionals, or in the nursery as Preen for home-owners.
 - Mecoprop (MCPP) is found in Bayer Advance All in One and Ortho Weed B Gon (with other chemicals).
 - Glyphosate is sold as Roundup and Remuda.
4. Drift on breezy days during application can move the chemical onto desired ornamentals and cause injury.
5. Improper weed identification may result in no control or only partial control.
6. Calibration of application equipment, especially with the preemergent her-

bicides, is critical. Too little chemical applied results in poor control, and too much chemical applied may result in injury to the turf or ornamentals.

REFERENCES

- Cros, V. 2007. Good yields of common purslane with a high fatty acid content can be obtained in a peat-based floating system. *HortTechnology*, 17(1), 14-20.
- Elmore, C. L., J. J. Stapleton, C. E. Bell, and J. DeVay. 1997. Soil Solarization: A Nonpesticidal Method for Controlling Diseases, Nematodes, and Weeds. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 21377.
- Haar, M. and S. Fennimore. 2003. Evaluation of integrated practices for common purslane (*Portulaca oleracea*) management in lettuce (*Lactuca sativa*). *Weed Technology*, 17(2), 229-233.
- Mitich, L. W. 1997. Common purslane (*Portulaca oleracea*). *Weed Science*. 11(2):394-397.
- Molinar, Richard. 2002. *California Master Gardener Handbook*. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 3382.
- Whatcom County Weeds, Washington State Noxious Weed Board, Public Works Department. Available online, <http://www.co.whatcom.wa.us/publicworks/pdf/weeds/purslane.pdf>
- Whitson, T. D., ed. 2001. *Weeds of the West*, Jackson: Univ. WY. ❖

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To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned.

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WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Pesticides applied in your home and landscape can move and contaminate creeks, rivers, and oceans. Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits or vegetables ready to be picked.

Do not place containers containing pesticide in the trash or pour pesticides down sink or toilet. Either use the pesticide according to the label or take unwanted pesticides to a Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Household Hazardous Waste Collection site nearest you. Dispose of empty containers by following label directions. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

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