

MANAGING SPURGE IN THE LANDSCAPE, GARDEN AND TURF

Kelly Young

The Problem

Spurges, or sand mats are difficult to control, warm season, broadleaf weeds of landscapes, gardens and turf in the low deserts of Arizona. Fast growing and easily dispersed, spurges rapidly colonize and blanket areas where there is ample sunlight and moisture.

In addition to degrading the aesthetic appeal of landscapes and properties infested with spurge, spurge weeds also pose certain hazards to people recreating or working around them. Spurges produce a milky sap that can cause contact dermatitis in sensitive individuals and mild to serious eye irritation in most people (hence another common name “eyebane”). The specific chemical compounds are called diterpene esters and it is best to avoid skin and eye contact with the milky spurge sap.

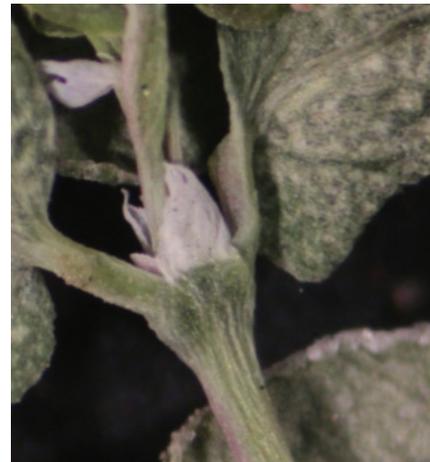
Spurges often harbor stinging ants. The weeds’ flowers have specialized structures that produce nectar as a food source for ants, which they aggressively defend when the plant is disturbed. People with allergies or special sensitivity to ant venom are at risk and should be careful around spurge.

Classification and Biology

Classification

Spurges belong to the plant family Euphorbiaceae, a large, cosmopolitan family represented by 16 genera and 100 subspecies and varieties in Arizona. Formerly included in the genus *Euphorbia*, the low-growing, herbaceous spurges are now classified in the genus *Chamaesyce* (pronounced ‘kamma-sice-ee’). Although there are 30 species of *Chamaesyce* in Arizona, only a handful are commonly encountered as weeds of landscapes, gardens and turf. Magnification is necessary to observe the minute differences that distinguish these species. Diagnostic features, such as number of ridges per seed, are too small to see with the naked eye.

- *Chamaesyce albomarginata*, (common name: white margin spurge, white margin sandmat, rattlesnake weed), is a perennial weed with a prostrate (low growing) habit. Taproot plus adventitious roots form where nodes contact the soil, complicating manual removal. Leaves are opposite (two leaves per node) and entire (not toothed) sometimes bearing a red spot on the upper surface. The species epithet *albomarginata* describes the white leaf margins. Stipules are white in color, membranous and fused. Stems, ovary and fruit are glabrous (hairless). Seeds are smooth and white in color.



C. albomarginata . the fused stipule is a diagnostic character.

- *Chamaesyce hyssopifolia* (common names: hyssopleaf spurge, hyssopleaf sandmat, nodding spurge) is an annual weed with an upright habit. Oblong to lanceolate leaves are opposite and finely toothed. Stems, ovary and fruit are mostly glabrous. Seed color ranges from grey to brown and have broad, shallow depressions with low ridges.



C. maculata, note the red spot on the upper leaf surfaces.

- *Chamaesyce maculata* (common name: spotted spurge, spotted sandmat), is an annual, prostrate weed with spotted, opposite, finely toothed leaves. Older leaves commonly with one or two red spots. Stems, ovary and fruits are hairy. The seeds are wrinkly and light brown in color.
- *Chamaesyce prostrata* (common name: prostrate spurge, prostrate sandmat, groundfig spurge) is an annual, prostrate weed with opposite, finely toothed leaves. The stem, ovary and fruit are hairy. The seed color ranges from white to gray and is marked by 5-7 low, sharp ridges.

Biology

Members of the genus *Chamaesyce* are monoecious, meaning that plants produce imperfect flowers that either have pollen or ovules. Ants are the likely pollinators, transferring pollen from the anthers of “male” flowers to the pistils of “female” flowers as they collect nectar. The fruit is a three-chambered capsule, each chamber bearing one seed, approximately 0.5 mm wide by 1.0 mm long. It is reported that under optimal conditions, some spurges can complete their lifecycle in as few as two weeks and can produce up to 500 seeds per square foot. Seeds are dispersed by ants and wind and may cling to shoes and tools.

Management Options

Cultural Practices

Successful management of any weed depends on early detection of seedlings when an infestation begins and removal. Avoid walking across spurge mats. Clean tools (i.e. hoes and spades) after working to remove spurge. Dispose of dead plants. Do not rake uprooted, mature spurge plants across the soil surface. This practice can spread seeds.

Healthy, vigorously growing turf will shade the soil surface and inhibit spurge seed germination. Poor spring transition of bermudagrass favors spurge. Fix irrigation system leaks and prevent excessive wet soils that will encourage spurge infestations.

Research suggests that a thick layer of coarse organic mulch (at least two inches) can suppress spurge germination in nursery containers. Wear gloves while manually removing spurge. Be careful not to rub the sap into eyes. After hoeing spurge, wash off tools to prevent dispersing seeds.

Chemical Control

The judicious use of herbicides may be an important part of an **integrated approach to controlling spurge**. **Always follow the instructions provided on the pesticide label** and do not under- or over-apply any product. Use extra caution to protect yourself and the environment and use the recommended personal protective equipment (PPE), including gloves and eye protection.

Preemergence herbicides prevent weed seeds in the soil from fully germinating and emerging. They must be applied to the soil before seed germination, because they have no activity on existing weeds. Once a preemergence herbicide has been applied, it must be “watered-in” to activate it, either by irrigation or rainfall. A few preemergence herbicides are available to homeowners. Look for products that contain oryzalin, dithiopyr, pendimethalin, prodiamine, benefin, isoxaben or trifluralin. Since spurges can germinate at any time air temperatures are above 60° F, use these herbicides in the spring and again in the mid-summer according to label instructions. Heat, moisture and microbial activity affect the longevity of preemergence herbicides, once applied.

Do not apply preemergence herbicides to vegetable gardens.

Postemergence herbicides are applied to the foliage and kill actively growing weeds. They have no activity in the soil and do not prevent seedling emergence. **Exercise caution when applying postemergence herbicides to avoid drift, or the application of chemicals to desirable plants.** Dispose of dead spurge, as herbicides may not kill seeds. Glyphosate, 2,4-D, and dicamba containing herbicides are postemergence products available to homeowners. Glyphosate is broad spectrum and kills most plants. Dicamba and 2,4-D control broadleaf plants only and can be used to selectively kill spurge in turfgrass without harming the grass. There are many broadleaf weed killers containing these chemicals available to home and professional gardeners. Many newer products are being developed and becoming available with combinations of active ingredients that will control spurge as well as other weeds.

Sources

Ehrenfeld, J. G. 1979. Pollination of Three Species of Euphorbia Subgenus Chamaesyce, with Special Reference to Bees. *American Midland Naturalist*, Vol. 101, No. 1 (Jan., 1979), pp. 87-98. (<http://www.jstor.org/stable/2424904>). Accessed May 2012.

Molinar, R. H., D. W. Cudney, L. Elmore, and A. Sanders. 2009. Pest Notes: Spotted Spurge and Other Spurges. University of California ANR Publication 7445. Accessed May 2012.

Webster G.L. 1986. Irritant plants in the spurge family (Euphorbiaceae). Clinics in Dermatology, 4 (2), pp. 36-45. Accessed May 2012.

Special thanks to Liz Makings, Curatorial/Museum Specialist at the Arizona State University Vascular Plant Herbarium, for her technical assistance with plant identification.



**THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE AND LIFE SCIENCES
TUCSON, ARIZONA 85721**

KELLY MURRAY YOUNG
ASSISTANT AGENT, HORTICULTURE

CONTACT:
KELLY YOUNG
kyoung@email.arizona.edu

This information has been reviewed by University faculty.
cals.arizona.edu/pubs/garden/az1572.pdf

Other titles from Arizona Cooperative Extension can be found at:
cals.arizona.edu/pubs

Any products, services or organizations that are mentioned, shown or indirectly implied in this publication do not imply endorsement by The University of Arizona.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Jeffrey C. Silvertooth, Associate Dean & Director, Economic Development & Extension, College of Agriculture and Life Sciences, The University of Arizona.

The University of Arizona is an equal opportunity, affirmative action institution. The University does not discriminate on the basis of race, color, religion, sex, national origin, age, disability, veteran status, or sexual orientation in its programs and activities.