

Biology and Management of Spotted Spurge (*Euphorbia maculata*) in Ornamental Crop Production and Landscapes¹

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Introduction

Spotted spurge is a summer annual weed characterized by its freely branched, prostrate stems that do not root at the nodes. Spotted spurge reproduces by seed and has a rapid growth rate, allowing it to establish quickly in a wide range of environments, including landscape planting beds, turfgrass, container and field nurseries, and many other agricultural settings. This publication is intended for use by nursery and landscape professionals, home gardeners, landowners, Master Gardener Volunteers, Extension agents, and others to aid in the identification and management of spotted spurge in ornamental crop production and in landscapes.

Species Description

Class

Dicotyledonous plant

Family

Euphorbiaceae

Other Common Names

Milk-purslane and spotted sandmat

Life Span

This species is a summer annual that can persist almost year-round in central and south Florida. However, it dies with frost.

Plant Biology

Spotted spurge (*Euphorbia maculata*) flowers early, produces large amounts of seed with little to no dormancy, and thrives in poor, dry, well-drained soils. It germinates between 60°F and 100°F and is commonly found in sidewalk cracks, roadsides, and gardens (NC State Extension 2021).

Habitat

Spotted spurge is commonly found in disturbed soils such as garden beds, sidewalk cracks, and hardscapes, as well

as in almost every area of nursery production (greenhouses, pots, roadways, aisles, ditches, etc.) (Figure 1). This species thrives in dry environments. It grows well in coarse soils like sand or gravel, but it can also establish itself in compacted and nutrient-poor soil. Optimal growth occurs under full sun, but it can persist in shaded areas.



Figure 1. Spotted spurge growing around an irrigation riser.
Credit: Annette Chandler, UF/IFAS.

Distribution

Spotted spurge is considered native throughout the continental United States, including Florida (USDA-NRCS 2024). It is a common weed in the eastern United States, expanding westward to North Dakota, Texas, California, and Oregon. Additionally, it is found in Canada, Mexico, Central America, South America, Japan, New Zealand, and Lebanon.

Growth Habitat

Spotted spurge has a prostrate growth habit, growing low on the ground (Figure 2). Its stems emerge from a single taproot and grow horizontally, creating a thick carpet that can span several feet in some cases. Spotted spurge can produce several thousand seeds from a single plant and can become difficult to eliminate entirely from landscapes and nurseries (Molinar et al. 2009).



Figure 2. The prostrate, low-growing habit of spotted spurge.
Credit: Annette Chandler, UF/IFAS.

Seedlings

The cotyledons are smooth (without hair), oval-shaped, green on the upper side, and reddish purple underneath. They grow on short stalks that are also reddish purple (Figure 3). The part of the stem below the cotyledons, known as the hypocotyl, is hairless and pink to maroon in color. Seedlings can begin to flower and produce large quantities of seeds within weeks of germination without a dormancy requirement (NC State Extension 2021).



Figure 3. Spotted spurge seedlings.
Credit: Annette Chandler, UF/IFAS.

Shoot

Leaves grow in opposite pairs along hairy pink-to-brown stems. They are dark green, oval-lance shaped (wider at the base and longer than it is wide), and about 1/6 to 2/3 of an inch (4 to 17 mm) long (Hodgson 2020). Many plants have a red spot in the middle of the upper leaf surface, but this marking is not always present (Mahr, n.d.). Shoots will emit a white milky sap when broken (Shoedice and Renz 2006).

Roots

Roots develop from a central point with a small taproot and a more noticeable fibrous root system (Landschoot et al. 2026). Stems spread outward in a roughly radial pattern, staying mostly flat against the soil surface. Although the stems grow out from the center, they do not root at the nodes.

Inflorescence

The flowers are tiny, are not very noticeable, and have no petals. They grow where the leaves meet the stem (Figure 4). Each flower cluster has several male flowers and one female flower, surrounded by white-to-pink, petal-like parts.



Figure 4. Spotted spurge stems containing small flowers/fruit.
Credit: Annette Chandler, UF/IFAS.

Fruit and Seeds

The plant can start producing seeds within a month of flowering under ideal conditions (Figure 5). The fruit is hairy and has three chambers, each with a small, wrinkled, light brown seed. One plant can produce thousands of seeds, which spread easily by sticking to animals, clothes, or tools. Irrigation water can also spread spotted spurge throughout nurseries if it is growing along ditches or irrigation ponds. Some seedlings may germinate almost immediately, while other seeds may survive and germinate the following season or when ideal conditions are met. Spotted spurge seeds will not germinate if they are buried too deep, as they require some sunlight for germination (Sidhu and Saha 2021).



Figure 5. Spotted spurge fruit and seeds.
Credit: Maria A. Rodriguez, UF/IFAS.

Similar Species

There are over 20 species of *Euphorbia* in Florida. Spotted spurge (*Euphorbia maculata*) is often confused with prostrate spurge (*Euphorbia prostrata*) (Figure 6A), spreading sandmat (*Euphorbia humistrata*) (Figure 6B), and creeping spurge (*Euphorbia serpens*) (Figure 6C) because they all have prostrate-type growth habits and similar small leaves. However, *E. maculata* (Figure 6D) usually has longer, more pointed leaves with a distinct, dark red or purple spot near the center, while *E. prostrata* has shorter, rounder leaves and more noticeable reddish pigmentation along the stems. *E. humistrata* can be distinguished from *E. maculata* by its broader, egg-shaped to oval leaves with asymmetrical bases. Meanwhile, *E. serpens* has the roundest leaves of the group and slightly larger, though still tiny, flower structures. All four species can look alike at first glance, but differences in leaf shape, coloration, and flower size can help distinguish them.

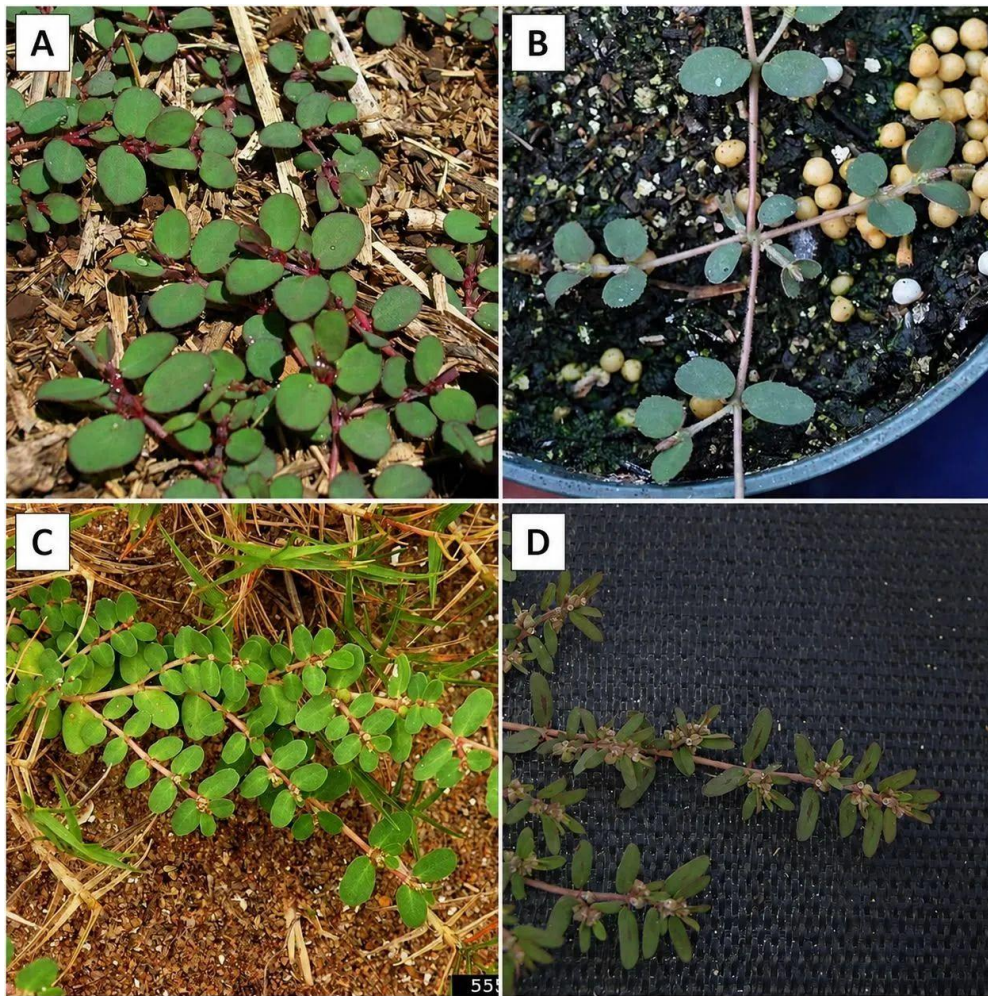


Figure 6. Species (A–C) similar to spotted spurge (D).

Credit: (A) Forest and Kim Starr, Starr Environmental, bugwood.org; (B) Bruce Ackley, Ohio State University, bugwood.org; (C) Juan Campá, MGAP, bugwood.org; and (D) Maria A. Rodriguez, UF/IFAS.

Management

Physical and Cultural Control

The most effective way to control spotted spurge in lawns is through consistent cultural practices that promote healthy turfgrass growth, such as proper watering, fertilizing, and mowing (Henderson and Patterson 2021). For more information on spurge control in turfgrass, see Ask IFAS publication ENH884, “[Weed Management Guide for Florida Lawns](#).” Applying mulch in landscape beds or in nursery pots helps block sunlight, which reduces seed germination and seedling growth. For example, pine bark nuggets applied at a 1-inch depth reduced spotted spurge emergence by around 90% in a container study (Cregg and Schutzki 2009). Many different types of landscape mulch are available and can be suitable for spurge management, including wood chips, pine bark nuggets, and other organic materials. Related publications on mulch types and their uses can be found on the Ask IFAS topic page for [mulches](#). In nurseries, many of these mulch materials are also effective for spurge control in containers; for example, parboiled rice hull mulch applied at a 1-inch depth has also been shown to significantly reduce spotted spurge emergence (Neal 2016). Minimizing soil disturbance and removing seedlings by hand before they go to seed are simple but effective ways to keep this weed under control. Combining all these methods creates an environment that naturally suppresses spurge and supports healthy plant growth.

Chemical Control

Preemergence

Since spotted surge has a high seed production and fast growth rate, preemergence herbicides are typically recommended as part of an overall weed management plan. Table 1 contains a list of preemergence herbicides labeled for control of spotted spurge in landscapes or in ornamental plant production. Preemergence herbicides should be applied before spotted spurge germinates. In Florida, spurge can germinate almost year-round, but peak germination ranges from early May through early October in most of the state. None of the available preemergence herbicides will provide season-long control, so making multiple applications will be necessary in nursery production where postemergence herbicides are limited. In the landscape where there are more postemergence options, preemergence herbicides could be timed for the spring, and additional applications could be made when pressure is very high. It is important to

rotate among different herbicide modes of action to achieve the best control and prevent herbicide resistance development. Table 1 includes mode of action group numbers, but all applicators are required to fully read and understand product labels prior to making an application.

Postemergence

Most postemergence herbicides that are effective on broadleaf weeds will control spotted spurge (Beddes et al. 2017). Systemic herbicides such as glyphosate can be used when spurge is very large and mature, while contact herbicides such as glufosinate (Finale or Cheetah), diquat (Reward), pelargonic acid (Scythe), and many others can be used on smaller plants. For a more complete list of available postemergence herbicides labeled for use in landscape beds, see Ask IFAS publication ENH95, “[Postemergent Herbicides for Use in Ornamentals](#).”

The following table lists registered pesticides that should be integrated with other pest management methods. Additional information on integrated pest management methods can be requested from UF/IFAS Extension horticulture or agriculture agents. A list of local UF/IFAS Extension offices is available at <https://ifas.ufl.edu/maps/>.

Table 1. Preemergence herbicides labeled for use in ornamental plant production and landscapes for control of spotted spurge.

Active ingredient	Example trade name/ formulation	Rate per acre (lb a.i./acre) ¹	WSSA Herbicide Group ²	Efficacy ³	Container production use	Field production use	Greenhouse/fully enclosed structure use	Landscape use
dithiopyr	Dimension® 2EW	2 pt (0.5)	3	S	YES	YES	NO	YES
pendimethalin	Pendulum® 2G	200 lb (4.0)	3	S	YES	YES	NO	YES
pendimethalin	Pendulum® 3.3EC	4.8 pt (2.0)	3	S	YES	YES	NO	YES
prodiamine	Barricade® 4FL	48 fl oz (1.5)	3	S–C	YES	YES	NO	YES
flumioxazin	Broadstar™ 0.25G	150 lb (0.375)	14	C	YES	YES	NO	YES
flumioxazin	SureGuard® 4SC	12 fl oz (0.375)	14	C	YES ⁴	YES ⁴	YES ⁵	YES ⁶
oxadiazon	Ronstar® 2G	200 lb (4.0)	14	S	YES	YES	NO	YES
dimethenamid-p	Tower® 6EC	32 fl oz (1.5)	15	C	YES	YES	NO	YES
s-metolachlor	Pennant Magnum® 7.6 EC	2.6 pt (2.5)	15	S	YES	YES	NO	YES
isoxaben	Gallery® 4.16SC	31 fl oz (1.0)	21	S–C	YES	YES	NO	YES
indaziflam	Specticle® 0.622 FLO	9 fl oz (0.04)	29	C	NO	NO	NO	YES
indaziflam	Specticle® 0.0224G	200 lb (0.04)	29	C	NO	NO	NO	YES
indaziflam	Marengo® 0.622SC	9 fl oz (0.04)	29	C	NO ⁷	YES	YES ⁸	NO
indaziflam	Marengo® 0.0224G	200 lb (0.04)	29	C	YES	YES	NO	NO
pendimethalin + dimethenamid-p	FreeHand® 1.75G	200 lb (2 + 1.5)	3 + 15	C	YES	YES	NO	YES
trifluralin + isoxaben	Snapshot® 2.5TG	200 lb (4 + 1)	3 + 21	S–C	YES	YES	NO	YES
prodiamine + isoxaben	Gemini™ 3.7SC	87 fl oz (1.5 + 1)	3 + 21	S–C	YES	YES	NO	NO
isoxaben + dithiopyr	Fortress® 0.75G	150 lb (0.75 + 0.375)	3 + 21	S–C	YES	YES	NO	NO
oxyfluorfen + pendimethalin	OH2® 3G	100 lb (2 + 1)	14 + 3	S–C	YES	YES	NO	YES

Active ingredient	Example trade name/ formulation	Rate per acre (lb a.i./acre) ¹	WSSA Herbicide Group ²	Efficacy ³	Container production use	Field production use	Greenhouse/fully enclosed structure use	Landscape use
flumioxazin + prodiamine	Fuerte®	100 lb (0.125 + 0.75)	14 + 3	C	YES	YES	NO	YES
oxyfluorfen + prodiamine	Biathlon® 2.75G	100 lb (2 + 0.75)	14 + 3	S–C	YES	YES	NO	YES

¹ Rates for herbicide products are listed, and rates for active ingredients are shown parenthetically. Rates shown are generally the highest recommended label rate for a single application. Check product labels for further details.

² Herbicide groups are based on primary sites of action and can be used to select herbicides that have differing sites of action (Mallory-Smith and Retzinger 2003) to minimize the potential development of herbicide-resistant weeds.

³ S = suppression (~60% to 80% control) and C = good control (~80% to 100% control), based on product labels or experimental data evaluating the highest recommended label rate.

⁴ Can only be used for selected conifer and deciduous tree species. Check the manufacturer's label for a complete list of species and recommended application methods.

⁵ Can only be applied if no ornamentals are present. Plants can be placed back inside the greenhouse 24 hours after application and after the product has been watered in.

⁶ Can be applied as a direct application around established woody landscape ornamentals.

⁷ Can only be used as a directed application in pot-in-pot production and other special use cases. Consult the label for details.

⁸ Labeled for use on greenhouse floors and under benches.

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