

## Weed focus: Spiny amaranth (“Pigweed”)

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Spiny amaranth (*Amaranthus spinosus* L.), most commonly called “pigweed”, is ubiquitous. It is a warm-season annual and, while native to North America, it is found worldwide. While spiny amaranth is edible, its close relative, *Amaranthus retroflexus* or red-root pigweed, is preferred for consumption and is cultivated for this purpose, particularly in Asia and Africa. Leaves of both species may be used in assorted stir-fry dishes and soups. Fruits and roots are used medicinally in some cultures. Seeds provide food for many songbirds. When found in pastures or croplands, however, either plant is usually viewed as a weed.

Spiny amaranth is an erect plant that can reach 5 feet in height. It can have a bushy appearance and has smooth stems and leaves. (Leaves of red-root pigweed are slightly hairy.) Leaf nodes have a pair of sharp spines, which are absent from red-root pigweed, and can be ½ inch long. The spines give the plant its name (photo upper right). Stems often have a red to purple pigmentation. Leaves are egg-shaped to diamond-shaped and often have a V watermark pointing toward the tip of the leaf. Leaves may also have purple markings on them. Petioles are often as long as the leaves.



Flowers are either male or female. Male flowers are on terminal spikes and female flowers are clustered at leaf nodes (photo at left). Seed are very small (~0.03 inch) and may be spread by wind, water, animals, or equipment. Seeds germinate mostly on the soil surface. Burial at just ¼ inch can reduce germination. The plants prefer warm, loamy soil high in organic matter so they thrive in feeding zones in pastures. They prefer high levels of nitrogen and under good growing conditions, plants can produce 235,000 seeds. Spiny amaranth can compete fairly well once it is established. It can be found interspersed even in dense, tall stands of grass (photo next page).

Livestock will consume the spiny amaranth plant, especially when it is small and stems are tender and less spiny. As the plant matures, the stems become less desirable; however, livestock will still select the leaves off the plant, especially small ruminants which have lips designed for selective grazing or browsing. While the plants are quite nutritious, there have

been reports of nitrate poisoning in livestock, because the plants can be nitrate accumulators under drought conditions and in soils rich in nitrogen. Additionally, amaranth plants can contain high levels of oxalate. Dried plant material may be as high as 30% oxalate and consumption of large amounts of this material can lead to oxalate poisoning which causes kidney failure.

Controlling spiny amaranth in pastures: Because it does have nutritive value and is most often not harmful to livestock, there may be no need to try to eliminate it from pasturelands. If it should become the dominant plant, however, control may be necessary. This can happen if pastures are overgrazed or damaged by feeding hay, allowing pigweed to gain the upper hand. Dense grass cover plays a large role in keeping weed populations at a minimum. Spiny amaranth may also be undesirable in hay fields since the dry plants can cause injury to both livestock mouths and human hands. Mowing the plants before they flower and set seed can be effective; however, pigweed is a resilient plant so a diligent mowing plan is needed to minimize seed formation. Additionally, as mentioned earlier, the dried material is potentially toxic if consumed in large quantities.



Herbicides can offer reasonable control in pastureland and hay fields; however, they may also eliminate desirable broadleaf plants along with the pigweed. Product labels usually recommend application before the plants reach 6 inches in height. While 2,4-D can reduce pigweed populations, it is not the most effective herbicide unless it is used in combination with other products, such as dicamba or triclopyr, again, keeping in mind the negative effect they may have on desirable species. Pre-emergence herbicides can be effective in alfalfa fields but must be applied before the plants germinate and few products are labeled for use in grass/legume mixtures because of the damage they can cause to the broadleaf species of the mixture. As always, read and follow label recommendations.

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