Identification and Impacts

Category C—Low

Kochia (*Bassia scoparia*)

Photo credit: L.J. Mehrhoff

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Key ID Tips

- Small, numerous lanceolate to linear flat leaves.
- Erect, shrub-like growth pattern.
- Inconspicuous leaves.
- Stems turn reddish-brown as it matures.

Navajo Name
Ch'il nilt'ǫlí

Origin
Native to Eurasia

Photo credit: J.M. DiTomaso

Description
Kochia is an annual forb/shrub that can grow to 7 feet tall. It appears grey green to bluish and is covered in soft hairs. Leaves are alternate, flat, and lanceolate to linearly shaped. Stems can turn reddish in the fall as plants mature. Flowers grow in spikes near the end of each branch and are small, green to yellow, inconspicuous, and may lack petals. They develop a deep tap root over time with lateral, branched roots.

Biology
Kochia grows in disturbed sites, waste areas, rangelands, and crop lands. They are often associated with alkaline sites and can tolerate saline, drought, frost, and sandy soils. Seeds begin to germinate in the spring. It is also allelopathic and releases chemicals into the soil that prevent or reduce growth of other plants. A single plant can produce thousands of seeds, which can remain viable for 1 to 2 years.

Locations
Found throughout the Navajo Nation.

Ecological Threat and Management Concerns
Kochia grows well in disturbed areas, such as waste sites, rangelands, and agricultural fields. Once established, it can reduce the growth of native plants and forage. A single plant can produce thousands of seeds. While seeds do not remain viable for long, they can germinate easily and plants can tolerate a wide range of conditions. Their allelopathic traits also help reduce competition with other native plants. When plants die, the stem remains and creating a tumbleweed. These tumbleweeds can break off and distribute seeds when plants are blown by the wind. They can also increase fire risks if tumbleweeds accumulate in areas. Older plants also have higher levels of oxalates which can be toxic to livestock in large amounts.

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Management Recommendations		Additional safety measures and limitations may apply for each method. Refer to the Navajo Nation Integrated Weed Management Plan for more information. **Mechanical/Manual Removal** Manual removal can be effective if the root is severed below the soil surface. Mowing can reduce seed production if done before flowering. However, cutting and mowing plants can make them harder to remove as plants can resprout from remaining taproots. Shallow tillage is not recommended as it can stimulate recruitment and germination. Deep tillage is effective if seeds are buried deep enough. **Biological** No biological control organisms are available. **Cultural Control** Grazing and burning are not recommended or effective. However, intensive grazing can reduce populations. However, grazing should only be done when plants are young as older plants have higher levels of oxalates. Establishment of perennial grass and forb species does reduce and inhibit kochia establishment. **Chemical** Use of herbicides can be effective. Refer to the product labels for information application rates, timing, and approved application methods. Recommended herbicides include: • Atrazine* • Dichlobenil • Fluroxpyr • Glyphosate • Indaziflam • Isoxaben • Metribuzin • Paraquat* • Pendimethalin • Prodiamine *Restricted Use by U.S. EPA **References** DiTomaso, J.M., G.B. Keyser et al. 2013. *Weed Control in Natural Areas in the Western United States.* Weed Research and Information Center, University of California. 544 pp. USDA, NRCS. 2023. PLANTS Database. Available at https://plants.sc.egov.usda.gov/. National Plant Data Team, Greensboro, NC 27401-4901 USA.

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