PNW 782

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QUICK FACTS

Palmer amaranth
(*Amaranthus palmeri*)

Biology
Palmer amaranth (Figure 1) is an annual pigweed species with separate male and female plants (dioecious), a characteristic that makes the plant prone to hybridize and produce genetically diverse seeds. The disposition is key to its adaptability, the weed's spread to different environmental conditions, and the weed's development of resistance to multiple herbicide Sites of Action (SOA).

Seeds
A female Palmer amaranth plant produces up to 500,000 seeds. Buried seeds usually remain viable in the field for 3–5 years. Seeds are very small (1⁄25 of an inch), making them harder to detect but easy to disperse. Seeds can survive the digestive system of livestock and remain viable.

Germination
Fast germination within a wide temperature window results in early and late-season germination. Late-season flushes produce seeds quickly.

Growth
Rapid growth (about 1–3 inches a day). Plants larger than 3 inches are harder to control with postemergence herbicides. Multiple growing points allow severed plants to regrow and produce seed.

Herbicides
Resistance to at least **nine herbicide SOA has been reported**: group 2 (e.g., rimsulfuron), group 3 (trifluralin), group 4 (e.g., 2,4-D), group 5 (e.g., atrazine), group 9 (glyphosate), group 10 (glufosinate), group 14 (e.g., fomesafen), group 15 (e.g., S-metolachlor), and group 27 (e.g., mesotrione). Some Palmer amaranth populations have developed resistance to multiple herbicide SOA.

Impact on Sugar Beet
One Palmer amaranth per 3 feet of row can cause as much as **51% yield loss**. There is no effective herbicide option to control emerged glyphosate-resistant Palmer amaranth.

Impact on Dry Bean
One Palmer amaranth per 3 feet of row can cause about **65% yield loss**. Residual herbicides are needed to reduce late-season flushes and seed production from Palmer amaranth. Postemergence herbicides labeled for use in dry bean are not very effective.

Impact on Potato
There is no publicly available data on yield loss in potatoes commonly grown in Idaho. However, in **sweet potato**, one Palmer amaranth per 3 feet of row causes as much as **52% yield loss**. A possible yield loss of up to 91% is estimated if left uncontrolled.

Figure 1. Palmer amaranth seedling (**A**), juvenile (**B**), and matured plant (**C**).

About the Authors

Albert Adjesiwor — Extension Specialist, Department of Plant Sciences, University of Idaho Extension, Kimberly Research and Extension Center

Joel Felix — Weed Scientist, Oregon State University, Malheur Experiment Station

Clarke Alder — Weed Scientist, Amalgamated Sugar, Boise, ID

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

Groundwater—To protect groundwater, when there is a choice of pesticides, the applicator should use the product least likely to leach.

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