






Weeds to Watch for in Manitoba

Tammy Jones, Manitoba Agriculture and Robert H. Gulden, Department of Plant Science, University of Manitoba

*NWA – The Noxious Weeds Act of Manitoba • Tier 1 – all plant parts must be destroyed • Tier 2 – destroy or control based on the size of infestation • Tier 3 – control required for infestations causing harm

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| <p>WILD OAT</p>  | <p>Features</p> <ul style="list-style-type: none"> • Annual C3 plant • No auricle, with hairs on the leaf margin • Panicle with up to 250 awned seeds • Up to 4 ft. tall • Seeds can remain dormant in the soil for up to eight years | <p>Caution</p> <ul style="list-style-type: none"> • #4 on the 2016 Manitoba Weed Survey • Prefers cool weather and moist soil • Confirmed multiple HR in Manitoba to Groups 1, 2, 8, 14, 15 and 25 • 10 plants/m² can reduce wheat, barley and canola yields by 10% and flax yields by 20% |
| <p>KOCHIA (Tier 3 NWA*)</p>  | <p>Features</p> <ul style="list-style-type: none"> • Annual C4 plant • Hairy alternate leaves • Inconspicuous flowers that outcross or self-pollinate • 6 in. to 6 ft. tall • Roots can penetrate up to 10 ft. • Can germinate throughout the summer and produce 15–30,000 seeds/plant | <p>Caution</p> <ul style="list-style-type: none"> • 21 plants/m² can reduce wheat yield by 33% • Commonly HR to Group 2 with known Group 4 HR biotypes and widespread HR to Group 9 in Manitoba • Drought and salinity tolerant |
| <p>REDROOT PIGWEED</p>  | <p>Features</p> <ul style="list-style-type: none"> • Prolific annual C4 plant • Dull green alternate leaves • Rough stem with taproot root structure • 1 to 3 ft. tall • Seed viable for five years • Germinates at high temps (20–30°C) and will germinate late in summer with adequate soil moisture | <p>Caution</p> <ul style="list-style-type: none"> • Group 2 HR biotypes in Manitoba • Alternate host for many insect pests • Under hot conditions can quickly advance beyond recommended stages for herbicide application • Indicator species of high nitrogen soils |
| <p>BIENNIAL WORMWOOD</p>  | <p>Features</p> <ul style="list-style-type: none"> • Annual or biennial plant • Smooth hairless stem with sage-carrot odour • Leaves pinnately divided and redivided • Up to 6 ft. tall • Highly competitive and prolific, producing up to one million seeds per plant • Germinates in the spring, summer or fall | <p>Caution</p> <ul style="list-style-type: none"> • #20 on the 2016 Manitoba Weed Survey • Invades pastures, ditches and crop land • Tolerant to most pre-plant incorporated and pre-emergence herbicides |
| <p>LAMB'S QUARTERS (Tier 3 NWA*)</p>  | <p>Features</p> <ul style="list-style-type: none"> • Annual C3 plant • Alternate leaves with white mealy particles (wax) • 2 to 3 ft. tall • Germinates at low temps • Averages 72,000 seeds/plant and seeds can survive 30–40 years | <p>Caution</p> <ul style="list-style-type: none"> • #14 on the 2016 Manitoba Weed Survey • Triazine-resistance (Group 5) is common in Ontario • 200 plants/m² can reduce barley yield by 20–25% • Produces oxalic acid that is poisonous to sheep and swine in large amounts |

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Weeds to Watch for in Manitoba continued

TALL WATERHEMP
(TIER 1 NWA*)



| Features | Caution |
|--|---|
| <ul style="list-style-type: none"> • Dioecious² annual C4 plant with high genetic diversity • Smooth stem with glossy leaves • Up to 8 ft. tall • Produces up to 500,000 seeds/plant • Germinates throughout the summer especially in reduced-tillage systems that leave seeds at the soil surface | <ul style="list-style-type: none"> • Growth rate is 50–70% greater than many other annual weeds • Confirmed HR in North Dakota³ • Multiple HR biotypes involving Groups 2, 4, 5, 9, 14, 15 and 27 |

GIANT RAGWEED
(TIER 3 NWA*)



| Features | Caution |
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| <ul style="list-style-type: none"> • Annual C3 plant native to North America • Stems somewhat hairy • Large opposite leaves, except at ends of branches, mainly 3- or can be 5-lobed, small upper leaves not lobed; leaf surface rough (like sandpaper) • 16 in. to 13 ft. tall | <ul style="list-style-type: none"> • Easily selected for Group 9 HR • A single plant produces up to one billion pollen grains • 1 plant/m² can reduce crop yields by 45 to 77% |

PALMER AMARANTH
(TIER 1 NWA*)



Photo: NDSU

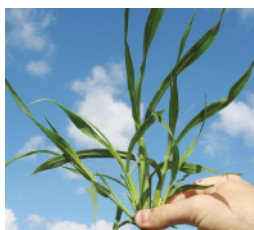
| Features | Caution |
|--|---|
| <ul style="list-style-type: none"> • Dioecious² C4 plant with high genetic diversity and aggressive growth • Hairless stem • Alternate ovate leaves with petioles longer than the leaf • Produces up to one million seeds per female plant • Up to 7 ft. tall • Germinates late winter until fall | <ul style="list-style-type: none"> • Confirmed HR in North Dakota³ • Very competitive • HR to multiple Groups including 2, 3, 5, 9, 14, 15 and 27 |

COMMON RAGWEED
(TIER 3 NWA*)



| Features | Caution |
|---|---|
| <ul style="list-style-type: none"> • Annual C3 plant • Compound finely-divided leaves • Distinctive inflorescence – seed at the base of long clusters of male flowers • 6 in. to 5 ft. tall with a long taproot • Produces 3–60,000 seeds which can persist for 80 years | <ul style="list-style-type: none"> • Easily selected for Group 9 HR • Important cause of hay fever, producing a large amount of pollen that can move > 125 miles • Strong accumulator of N, P, K and many micronutrients • Seed survives digestion (contaminates manure) |

YELLOW FOXTAIL



| Features | Caution |
|--|--|
| <ul style="list-style-type: none"> • Annual C4 plant • May be highly branched (many tillers) • Leaf has long hairs at the base and margin surface • Flowers are dense spike-like panicles with yellow bristles • Up to 3 ft. tall | <ul style="list-style-type: none"> • #6 on the 2016 Manitoba Weed Survey • Prefers warmer regions • Causes yield reductions of 16% in wheat, 11% in oats and 15% in soybeans • Biotypes with HR to Groups 1 and 2 or HR to Group 5 |

¹HR – herbicide-resistant ²Dioecious – produces separate male and female plants

³See NDSU's new factsheet *Identification, Biology and Control of Palmer Amaranth and Waterhemp* (W1916)