

Pigweed species Identification Guide

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Canada and U.S.	U.S.
Redroot pigweed Green pigweed Smooth pigweed Prostrate pigweed Tumble pigweed Waterhemp (MB, ON & QC)	Spiny amaranth* Palmer amaranth

^{*}Scattered plants found in Ontario

Currently in Ontario the Pigweed family have confirmed resistance to 6 of the 8 Herbicide Groups where resistance occurs – this is the most of any (Groups – 2, 5, 6, 7, 9, 14)

Herbicide Resistance in Ontario

Redroot pigweed	Groups 2, 5, 6, 7
Green pigweed	Groups 2, 5, 7
Smooth pigweed	Group 6
Waterhemp	Groups 2, 5, 9, 14
Tumble pigweed	None reported
Prostrate pigweed	None reported

- Palmer amaranth seedling notched tip, no hairs, broad
 ovate shaped leaves, no waxy
 sheen.
- Waterhemp seedling egg shaped cotyledons, notched tip, no hairs, narrow lanceolate leaves, waxy sheen.
- <u>Redroot pigweed seedling</u> notched tip, small fine hairs,
 ovate shaped leaves. Green
 and smooth pigweed very
 similar.



Palmer amaranth

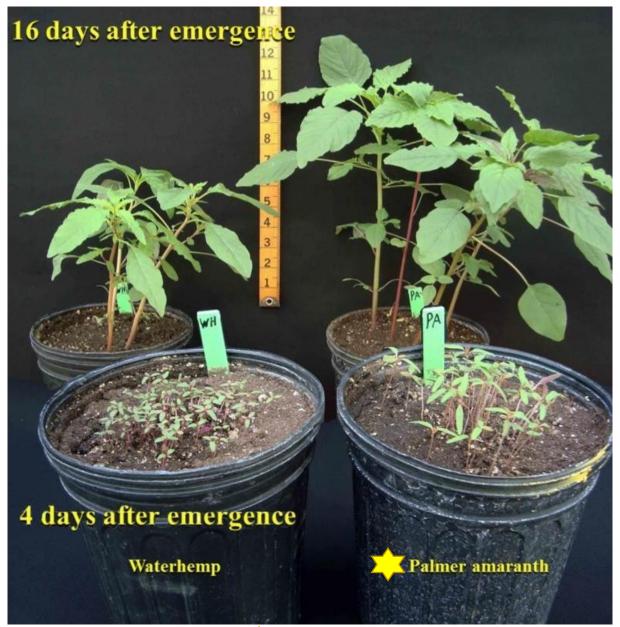


Waterhemp



Redroot pigweed

Seedlings and young plants of Waterhemp and Palmer amaranth







Palmer amaranth



Waterhemp



Redroot pigweed

Pigweed species seed is not distinguishable...

- <u>Palmer amaranth</u> 100,000-500,000 seeds/plant
- <u>Waterhemp</u> can produce over a million seeds without competition. Seeds can be viable 7-12 days after pollination.
- *Redroot and Green pigweed* can produce 100,000 600,000 mature seeds





Pigweed species seed is not distinguishable



Pigweed Species Palmer Amaranth (a serious problem weed)

- Adapts quickly (Dioecious plants male and female)
- Prolific seed producer (100,000-500,000 seeds/plant)
- Small seed (easily dispersed, thrives in notill)
- Aggressive competitor (growth up to 7 cm/day)
- Herbicide resistance Groups 2, 3, 4, 5, 9, 14,
 27
- Multiple resistance populations with 2, 4, 5, 9, 14 and 27
- Extended emergence (May to September)
- Pulled plants can re-root to produce seed
- Palmer amaranth is a desert plant that grows well in high heat and low moisture environments



Pigweed Species Palmer Amaranth (a serious problem weed)

Proper identification is the first line of defense...

- Palmer amaranth looks similar to other pigweeds (especially seedlings).
- Palmer leaves, stems and petioles are hairless.
- Petioles are usually longer than the leaf blade.
- Sometimes leaves will also have a "V" mark or dark red/purple patch (watermark) on the leaf blade (spiny and other pigweeds can sometimes also have this mark).
- Seed heads are 6 24 inches in length, the female flower bracts are sharp and can be painful to handle. Only females produce seed.

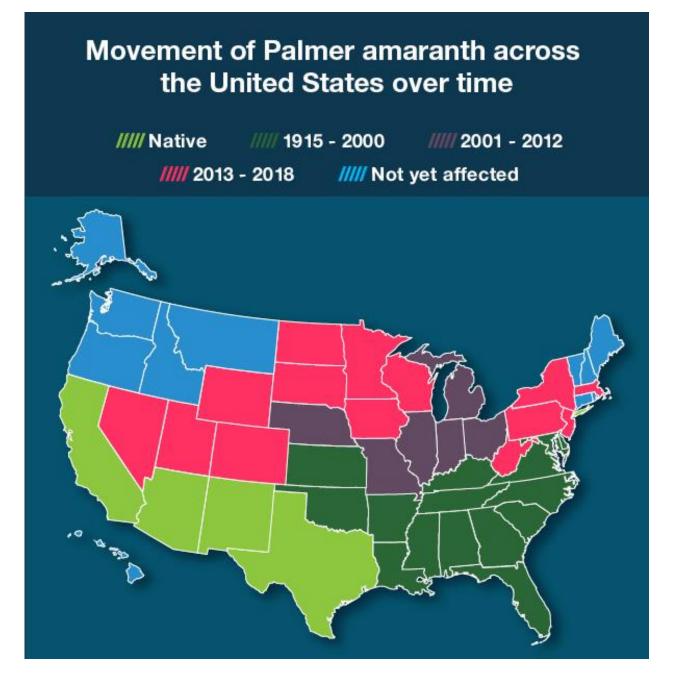


Pigweed Species

Palmer Amaranth

(a serious

problem weed)



Palmer amaranth seedling:

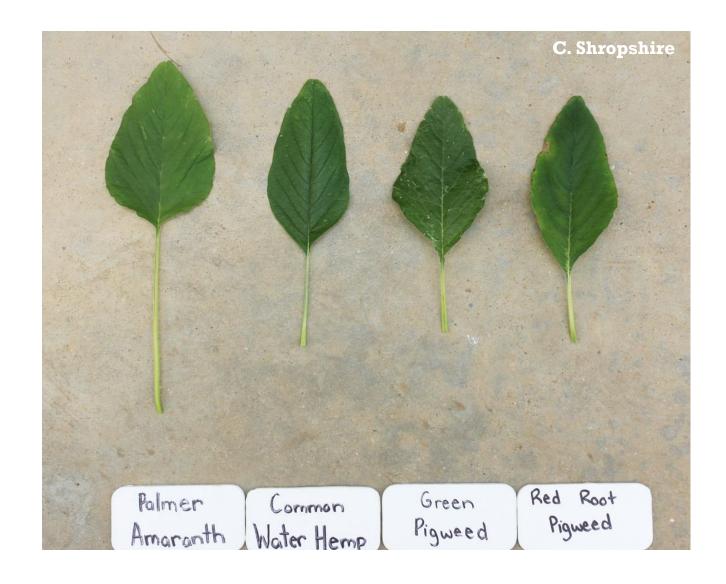
- notched tip
- no hairs
- broad ovate shaped leaves
- no waxy sheen



- A key diagnostic feature is the long petiole of **some** leaves on the plant.
- The petiole when folded over is longer than the leaf.



- This picture shows the longer petiole of Palmer amaranth.
- The petiole is longer than the leaf when folded over.



- The stems and leaves have no or few hairs and the stems feel smooth to the touch.
- Leaves are alternate on the stem and are generally lance-shaped or egg-shaped with prominent white veins on the underside.
- As plants become older, they
 often assume a poinsettia-like
 appearance and sometimes
 have a white or purple chevron
 on the leaves.



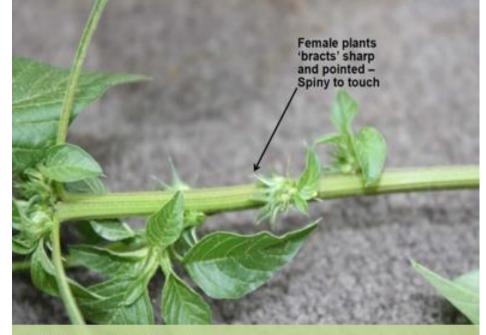
Photos by R. Hatzler

Key diagnostic features are:

- Hairless stem
- Sharp and pointed 'bracts' on the female plant.



- A key diagnostic feature is the sharp and pointed 'bracts' on the female plant.
- Leaves of Palmer amaranth sometimes have white or purple chevrons ("V" shaped watermark). This is not a main diagnostic feature.



Palmer amaranth stem



Like all Amaranthus species, the true leaves of Palmer amaranth have a small notch in the tip. Occasionally, a single hair can be found in the leaf notch of Palmer amaranth. This hair may not be present in each leaf notch of Palmer amaranth, and tends to be less common on leaves of waterhemp.







The female seed heads are quite spiny



Pigweed Species Waterhemp Redroot pigweed Green pigweed Smooth pigweed Tumble pigweed Prostrate pigweed Spiny amaranth

Pigweed Species Waterhemp

- egg shaped cotyledons
- notched tip
- no hairs
- narrow lanceolate leaves
- waxy sheen





Pigweed Species Waterhemp

- Waterhemp and Palmer amaranth are dioecious which means they have male and female plants.
- The stem is hairless like green pigweed.

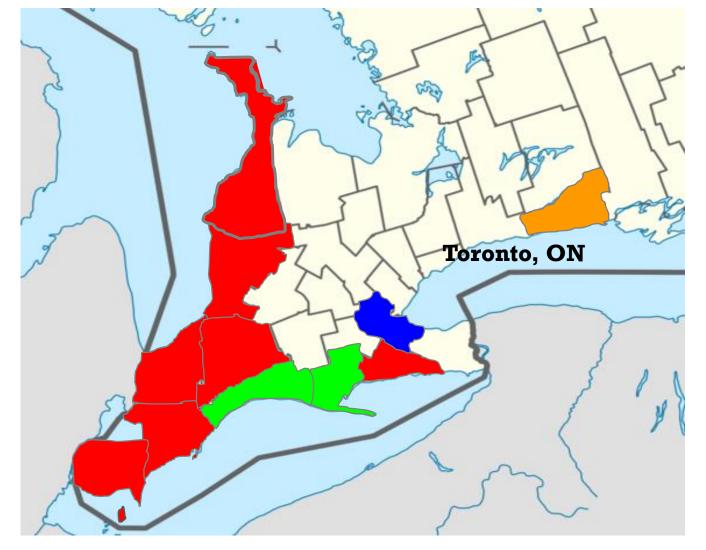






Herbicide Resistant Waterhemp in Ontario 2020





Pigweed Species Redroot pigweed

Redroot pigweed seedling

- notched tip
- small fine hairs
- ovate shaped leaves

Green and smooth pigweed very similar



Pigweed Species Redroot pigweed



Redroot pigweed has a very hairy stem that can be seen with the naked eye.

Pigweed Species Green pigweed

- notched tip
- small fine hairs
- ovate shaped leaves.

Redroot and smooth pigweed very similar





Pigweed Species **Green pigweed**

Green pigweed has a hairless, smooth stem.







Pigweed Species
Smooth pigweed





Pigweed Species
Smooth pigweed







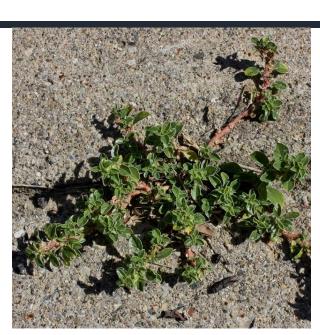




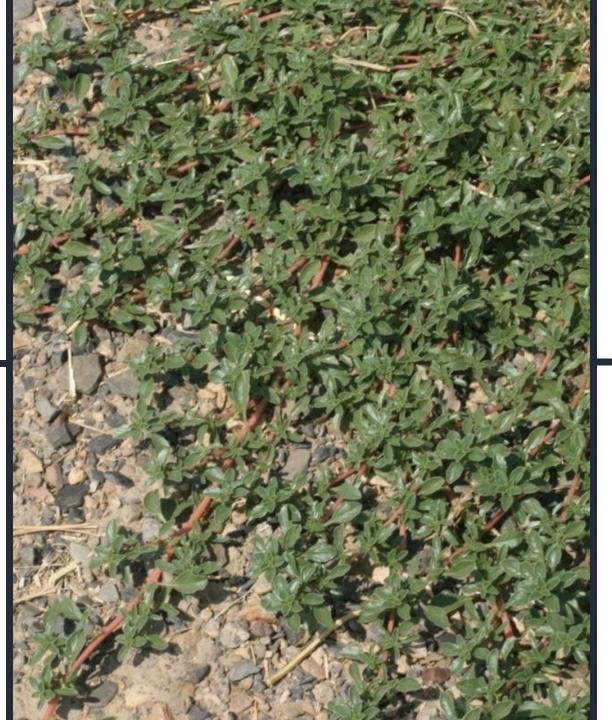
Pigweed Species Tumble pigweed

Tumble pigweed has the ability to break off at the plant base and spread seeds as the plant rolls in the wind.

Pigweed Species Prostrate pigweed



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Pigweed Species Prostrate pigweed

Prostrate pigweed can be easily confused with purslane and various types of spurge

purslane



Pigweed Species Spiny amaranth

Spiny amaranth is a day neutral plant and is unaffected by shortening day length to trigger flowering like other pigweed species