

Scouting for Potato Weeds & Herbicide Injury

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REDROOT PIGWEED

(Amaranthus retroflexus)

LIFE CYCLE: Annual

COTYLEDONS: Linear to oblong
Often reddish violet beneath

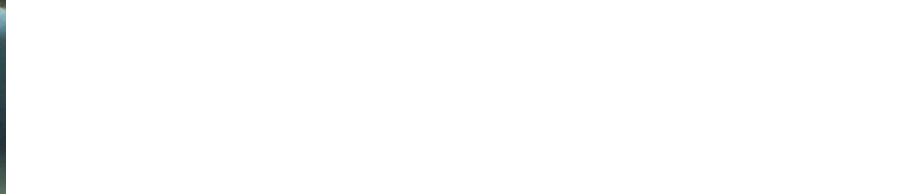
LEAVES: Alternate
Oblong to ovate shaped
Apex of first few leaves indented
Entire margins
Often sparsely hairy

OTHER: Hypocotyl often reddish violet
Stem hairy

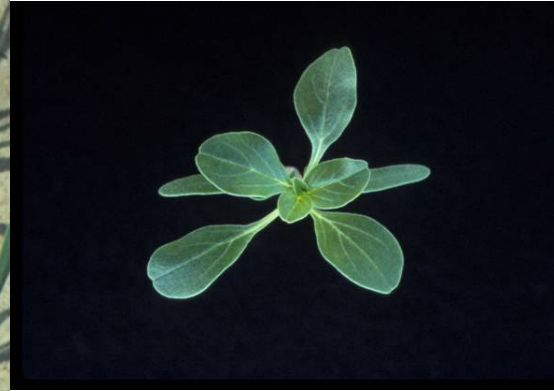


Redroot Pigweed





Prostrate Pigweed



Waterhemp



Waterhemp / Redroot Pigweed



COMMON LAMBSQUARTERS

(Chenopodium album)

LIFE CYCLE: Annual

COTYLEDONS: Linear to oblong

LEAVES: First leaves opposite, later alternate
Ovate shaped
Nearly entire margins, later unevenly toothed
Glabrous
Mealy above and beneath

OTHER: Hypocotyl often red violet
beneath







Cutleaf nightshade







Cutleaf nightshade

1. Berries remain green
2. Calyx is medium in size
3. Lobes of calyx extent outward



EASTERN BLACK NIGHTSHADE

(*Solanum ptycanthum*)

LIFE CYCLE: Annual

COTYLEDONS: Ovate
Often sparsely hairy
Often purple beneath

LEAVES: Alternate
Ovate shaped
Entire undulating margins,
later unevenly toothed
Often purple beneath
Often sparsely hairy

OTHER: Hypocotyl often purple
Often confused with seedling PIGWEEDS











E. Black nightshade

1. Berries turn black/purple
2. Berries in umbrella clusters
3. Calyx is smallest in size
4. Lobes of calyx recurve away

Black nightshade

1. Berries turn black/purple
2. Berries in racemose (grapes)
3. Calyx is medium in size
4. Lobes of calyx extent outward

HAIRY NIGHTSHADE

(Solanum sarachoides)

LIFE CYCLE: Annual

COTYLEDONS: Ovate
Densely hairy

LEAVES: Alternate
Ovate shaped
Entire undulating margins,
later unevenly toothed
Densely hairy







WE



Hairy nightshade

1. Berries remain green
2. Calyx is largest in size
3. Lobes of calyx enclose half the berry

COMMON RAGWEED

(Ambrosia artemisiifolia)

LIFE CYCLE: Annual

COTYLEDONS: Spatulate

LEAVES: Opposite
Pinnately lobed
Hairy

OTHER: Hypocotyl often purple







GIANT RAGWEED

(Ambrosia trifida)

LIFE CYCLE: Annual

COTYLEDONS: Spatulate

LEAVES:

Opposite

Palmately lobed, 3 lobes

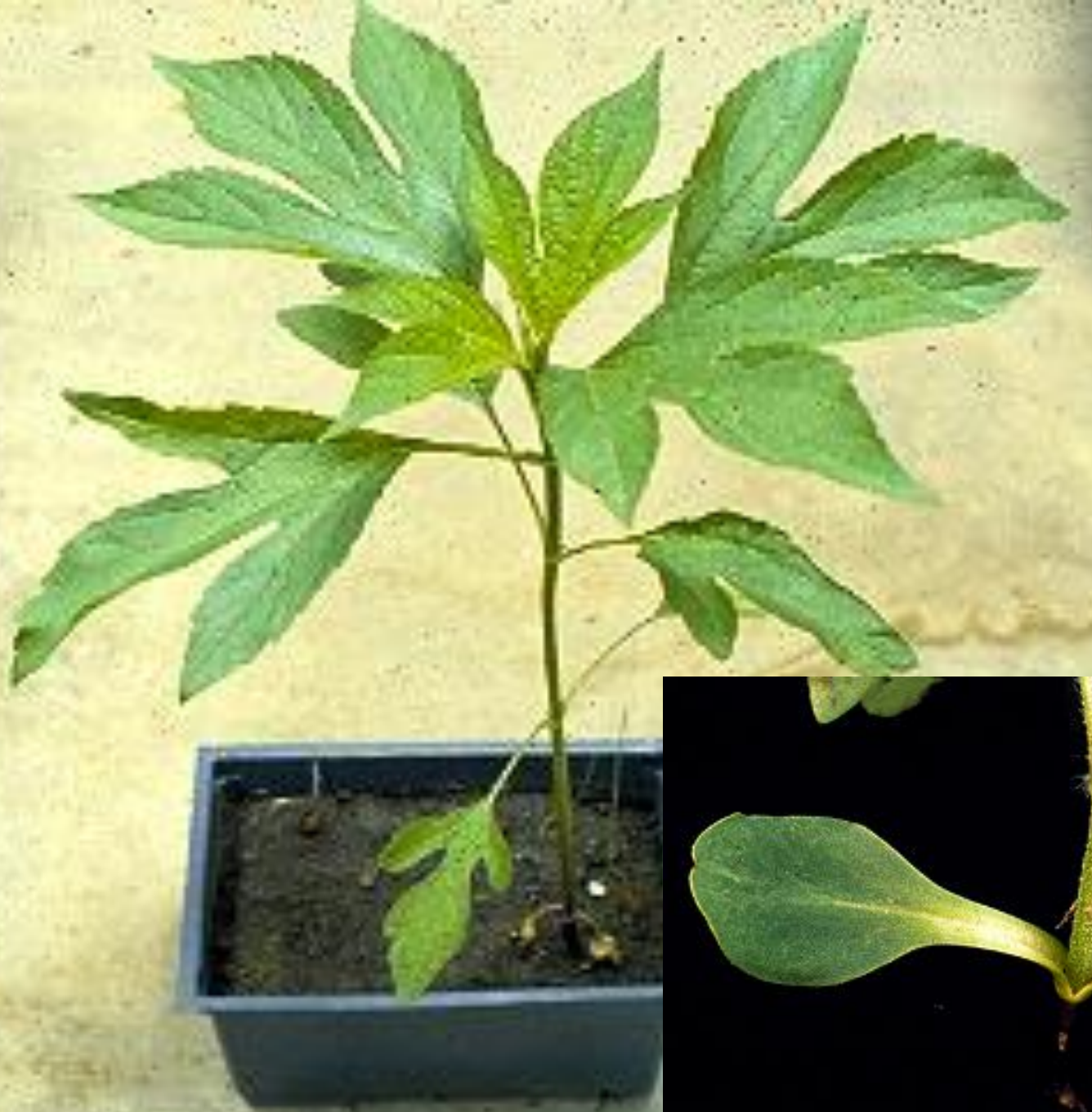
(later occasionally 5 lobes)

Margins may be toothed

Hairy

Rough







WILD CUCUMBER

(Echinocystis lobata)

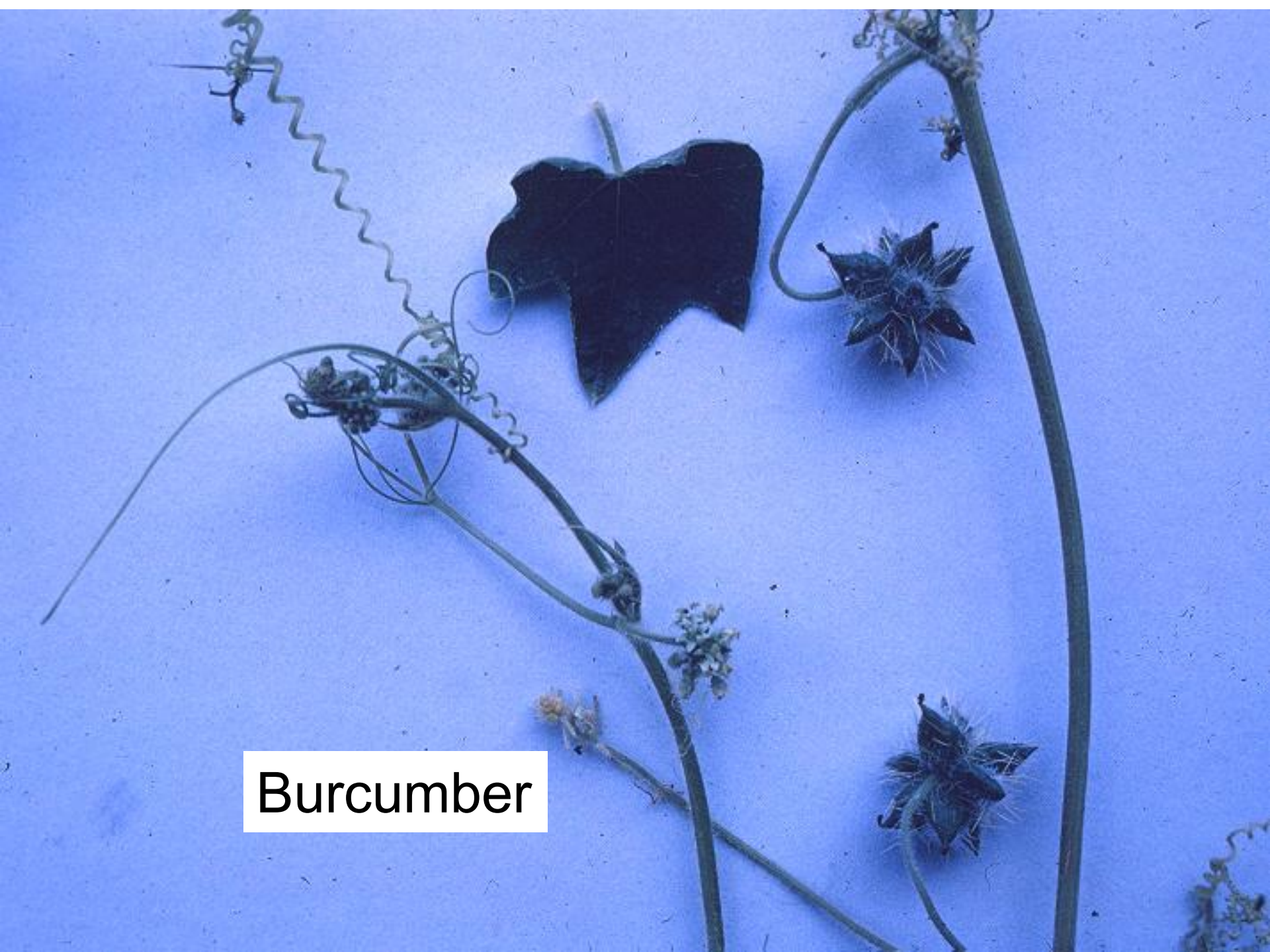
LIFE CYCLE: Annual

COTYLEDONS: Oval
Thick
Hairy
Prominent veins

LEAVES: Alternate
Five sharp-angled, pointed, palmate lobes
Toothed margins
Hairy

OTHER: Creeping vine



A photograph of a Burcumber plant specimen against a light blue background. The specimen includes several green stems, some with small, light-colored flowers or buds. A prominent feature is a large, dark, lobed leaf with a deeply five-lobed shape. Several thin, curly tendrils are also visible, extending from the stems. The overall appearance is that of a climbing or trailing plant.

Burcumber

COMMON COCKLEBUR

(Xanthium pensylvanicum)

LIFE CYCLE: Annual

COTYLEDONS: Lanceolate
Large, thick

LEAVES: First two opposite, later alternate
Ovate shaped
Margins may be toothed
Three main veins, palmate venation
Rough

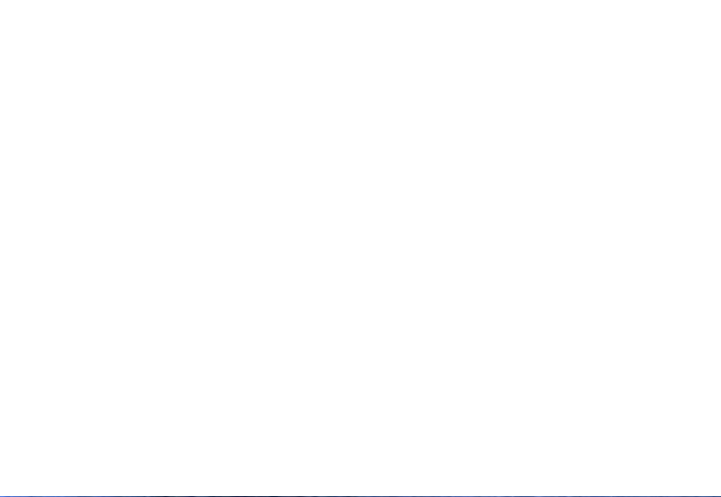
OTHER: Hypocotyl purple
Stem with scattered purple to
black spots











ANNUAL SUNFLOWER

(Helianthus annuus)

LIFE CYCLE: Annual

COTYLEDONS: Oval to spatulate

LEAVES: Opposite
Oval to oblong shaped
Margins may be toothed
Three main veins, palmate venation
Rough

OTHER: Often confused with **COMMON COCKLEBUR**
Stem with stiff white hairs







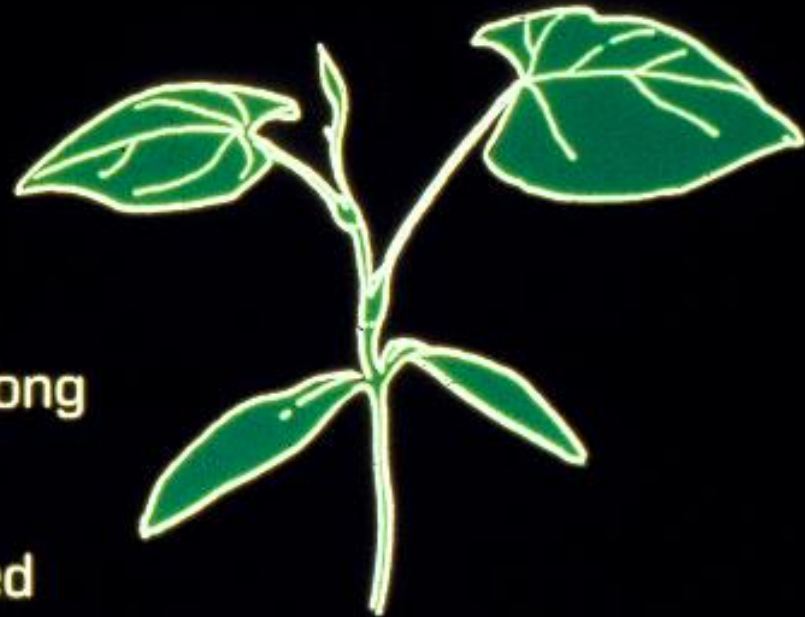
WILD BUCKWHEAT
(*Polygonum convolvulus*)

LIFE CYCLE: Annual

COTYLEDONS: Lanceolate to oblong

LEAVES: Alternate
Arrowhead shaped
Entire margins

OTHER: Creeping vine
Hypocotyl often reddish violet
Ocrea









What weed is this?

- A. Waterhemp
- B. Redroot pigweed
- C. Palmer amaranth
- D. Lambsquarters
- E. Nick's favorite



What is this weed?

- A. Redroot pigweed
- B. Waterhemp
- C. Common lambsquarters
- D. Common ragweed
- E. Nick's favorite



What is this weed?

- A. Hairy nightshade
- B. Cutleaf nightshade
- C. Bitter-sweet nightshade
- D. Eastern black nightshade
- E. Black nightshade
- F. Nick's favorite



Name this weed



Name this weed



Name this weed

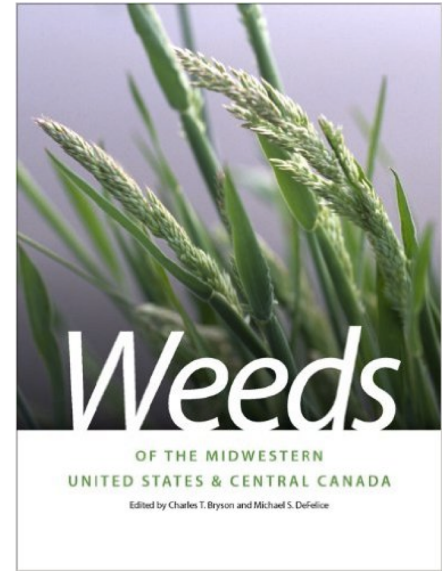


Name this weed



Weed ID helps

- Weeds of the Midwest (book)
- ID Weeds (app)
- Extension weed personnel
- z.umn.edu/spud
 - Identification



Exposure to Herbicides

- Soil Carryover
- Particle drift (including inversions)
- Contamination of spraying equipment
- Contaminated water
- Volatilization
- Misapplication
- Spot spraying



Metribuzin activity

- More active in soils with:
 1. pH > 7.5
 2. Low organic matter
 3. Stressed plants
- Foliar: symptoms can be severe when metribuzin is applied when plant metabolism is slowed, or within 3 days after periods of cool, wet, or cloudy weather.



Metribuzin injury

Matrix (rimsulfuron)

- pH
 - Water solubility increases as pH increases
- Broken down by acid hydrolysis
 - $\text{pH} > 6.8$ = no hydrolysis
 - As temperature increases and pH decreases below 6.8, hydrolysis increases.
- At $\text{pH} > 6.8$ increased herbicide activity

Matrix injury



Dinitroanilines (DNAs)

Sonalan, Prowl, Treflan

- Strongly adsorbed to soil colloids and OM
- Inhibit cell division
- Persist in dry soils



Prowl injury



Chloroacetamides (Dual/Outlook)

- Bound to OM
- Broken down by soil microbes
- Breaks down quicker in warm temperatures
- Root & shoot inhibitor



PPOs (Reflex, Chateau)

- Weakly adsorbed by OM and clay
- Becomes available with soil moisture
- Mobility and availability for plant uptake increases as soil pH increases above 6.5
- Cool or dry conditions reduce breakdown.
- Degradation by soil microbes

Reflex injury





Fomesafen
3.2 oz/a



Fomesafen
0.2 pt/a

Chateau (flumioxazin)

- Adsorbs to OM and clay
- Weakly bound; becomes available with soil moisture.
- High precipitation can cause injury to shoots underground



Chateau injury



Chateau injury





Clopyralid
3.2 oz/a

Clopyralid
1 oz/a



Glyphosate – 1st generation exposure

- Leaves may become chlorotic/necrotic
- Reduction in plant height, leaf size
- Tubers can be malformed
- Yields are often reduced



Glyphosate – 2nd generation

- Erratic and slow emergence pattern
- Bending, twisting, and yellowing of leaves
- Multiple stems from an eye
- ‘Cauliflower’ or ‘candelabra’ formation of stems
- Enlarged stems



Dicamba Injury Symptoms

- Epinasty, stem twisting, and leaf cupping
- Stem swelling and elongation
- Can cause yield loss to potato





Red Norland

Ivory Crisp

Russet Burbank

4 oz/a dicamba, mid-bulking



Non-treated



Dicamba 2.8 oz/a



**Dicamba 0.6 oz/a +
Glyphosate 1 oz/a**



Questions, Comments?

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