TARGETED WEED CONTROL IN POTATO

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What’s up for today?

Know your nightshades

Witch’s Brews – targeted control

UI results
Know your nightshades

- Hairy nightshade (*Solanum physalifolium*) is a hard-to-control nightshade weed in potato production fields.
- Cutleaf (*S. triflorum*) and Eastern black nightshade (*S. ptycanthum*) are also in these areas.
- Black (*S. nigrum*) and hairy nightshade are known to produce hybrids which can be aggressive.
**HAIRY NIGHTSHADE**

Introduced from South America in the 1800’s
- First collected in ballast at Nanaimo, Vancouver Island in 1887

**Solanum physalifolium** (SOLSA)
- The weed formerly known as *Solanum sarrachoides*
- Same family as potato (*Solanum tuberosum*)

**Problem weed in potatoes**
- *Competition resulting in yield losses, harvest interference; hosts potato pests*
Hairy Nightshade

Annual – 12 to 24 inches
- However, hairy nightshade with spreading growth is common

Germinates in early spring and continues germinating throughout the summer
- Doesn’t need light to germinate
- Germinates under wide temperature range

Produces flowers and fruit until the end of the growing season in PNW:
- Can produce viable seed as soon as 4 to 5 weeks after flowering and as late as 6 to 7 weeks before a killing frost - A light frost does not kill
Hairy nightshade leaves are light green and covered with numerous fine, short glandular hairs especially along the underside of the main vein.

- Entire plant is covered with hairs.
A large plant can produce 1700+ berries
  • 10 to 35 seeds per berry

Innate dormancy for 4+ months after maturity
  • Seed buried in the field can develop dormancy when exposed to high temperatures

Longevity in soil:
  5 yrs = 90% germination
  8 yrs = 2% germination
  • Reports of germination after 39 years in soil

If seed production is allowed, hairy nightshade control becomes even more difficult next time potatoes are planted in a 3 or 4 year rotation
Hairy Nightshade

Seed production example

800 berries/plant x 10 seeds/berry
= 8,000 seeds/plant

1 plant/sq ft density

43,560 sq ft/A

43,560 sq ft/A x 1 plant/sq ft x 8,000 seeds/plant

= 348,480,000 seeds/A !!!
CUTLEAF NIGHTSHADE
(Solanum triflorum Nutt.)

- Native to North America
- Shorter germination window than other nightshades
- Sparsely hairy; the leaves are a few centimeters long and are deeply cut into tooth-like lobes
- Prostrate growth – spreading stems up to 2 ft wide
  - Rarely grows more than 12 inches tall
The flower is usually white, but is occasionally purple-tinged.

- The fruit is a berry roughly a ½ inch diameter.

Supposedly has disagreeable odor – other nightshade weeds do not have this characteristic.

Prism (rimsulfuron) does not control cutleaf nightshade.
Hairy nightshade is sometimes mistaken for cutleaf nightshade

Both plants in this photo are hairy nightshade

Hairy nightshade with wavy and smooth leaf margins

Cutleaf nightshade
Eastern black nightshade

(*S. ptycanthum* Dunal)

- Native to the Americas?
- Annual, highly branched, 1 to 3 ft tall
- Germinates from May through July
- Eastern black nightshade leaves are dark green, not hairy, and are often reddish-purple on underside
  - Leaves often are covered with holes from flea beetle feeding
Berries are first green then turn black/purple as they ripen.

Can produce 1,000 or more berries per plant.

- 50 to 100 seeds per

Matrix resistance in Midwest states and possibly Canada (Millman et al. 2000)
Black nightshade (*Solanum nigrum* L.)

- Introduced from Europe
- Annual - grows up to 3 feet tall and are usually erect
- Shallowly lobed, egg-shaped leaves that may reach 4 inches long
- Stems and leaves are not generally hairy, although the upper surface of the leaves may bear some rough, sparse hairs
- Berries are first green then turn black/purple as they ripen
  - 15 to 60 seeds per berry
Hairy nightshade

Black nightshade
Hairy and black nightshade can hybridize

Hairy nightshade

Black nightshade

Hybrid
More hairy vs Eastern black nightshade

Hairy nightshade is more drought tolerant than Eastern black nightshade

Eastern black nightshade more shade tolerant than HNS

Hairy nightshade emerges earlier than Eastern black nightshade and grows faster first 21 days
HNS height max mid-July
EBN height t max mid-August