HS1176

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American Black Nightshade Biology and Control in Fruiting Vegetables, Cucurbits, and Small Fruits[1]

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American black nightshade is found in cultivated fields, field edges, roadsides, pastures, and waste areas of Florida. It is very common in fruiting vegetable fields, and it is becoming more prevalent in cucurbit and strawberry production as well. It is one of the few weeds with documented resistance to paraquat, which is one of the most commonly used products in the row middles of vegetable plasticulture fields. This resistance has added an increased importance to preemergent control of this weed, as postemergent options are limited.

Classification

Common name: American black nightshade

Scientific name: *Solanum americanum* P. Mill.

Family: Solanaceae

Seedling Identification

Cotyledons are small and spoon shaped, with a prominent midrib on the bottom of the cotyledon. They are green on both surfaces. The first leaf has a smooth to slightly wavy margin and often has a black to purple pigment on the underside of the leaf. Additional leaves will emerge in an alternate pattern (Figure 1).

Figure 1. American black nightshade seedling in a tomato field.

Mature Plant

Leaves are alternate, 2–6 in. long and 1–4 in. wide, with margins that vary from smooth to wavy or slightly crenate (Bryson and DeFelice 2009). Leaves can vary in hairiness from slight to moderately pubescent. Roots are fibrous from a shallow taproot. The flowers are in clusters of up to 15 and found in the leaf axils. The fruits are berries that start out green with white flecks and turn black at maturity. The berries contain granules that are called stone cells.

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Management Considerations

American black nightshade is a prolific seed producer with up to 110 seeds produced per berry (Bryson and DeFelice 2009). It does not commonly escape fumigation, but under suboptimum fumigation conditions, it can become a severe problem in the planting holes. Once it has emerged from the planting holes, it is very difficult to control, and hand removal is often the only option. Preemergent control is best since most of the postemergent control strategies involve paraquat. This weed goes to seed late in the production season and should be removed from the field after the final crop harvest using herbicides or cultivation. If left to reproduce after the removal of the polyethylene mulch, it will replenish the seed bank and become a problem in the field for years to come (Figure 2).

Figure 2. American black nightshade with berries at the end of the strawberry production season.

Chemical Control – Preemergence

Tomato and Pepper – Application under the polyethylene plastic mulch of oxyfluorfen (Goal 2XL® or Goaltender®) provides good control of nightshade. When control is desired in the row middles, flumioxazin (Chateau® SW) provides good to excellent control. Row middle applications require rain or overhead irrigation to activate the herbicide.

Cucurbits – On bare-ground plantings and in row middles, the combination of ethalfluralin and clomazone (Strategy®) provides fair to good control of nightshade.

Strawberry – Oxyfluorfen provides good control when used under polyethylene mulch. Flumioxazin provides good to excellent control of nightshade and is registered for use in row middles.

Blueberry –Flumioxazin provides excellent control of nightshade.

Chemical Control – Postemergence

There are no over-the-top or directed products for control of American black nightshade in pepper, tomato, cucurbits, and strawberry.

Tomato and Pepper – In the row middles, paraquat (Gramoxone Inteon®)—unless there are resistant biotypes—or carfentrazone (Aim® EC or EW) provides good control of small seedlings; larger plants will regrow. For excellent control of nightshade in tomato row middles, the use of lactofen (Cobra®) is recommended if the plants are less than 6 in. tall.

Cucurbits – In the row middles, paraquat (unless there are resistant biotypes) or carfentrazone can be applied but will only provide good control of small seedlings; larger plants will regrow.

Strawberry – In the row middles, paraquat (unless there are resistant biotypes) or carfentrazone can be applied but will only provide good control of small seedlings; larger plants will regrow. Glyphosate (Roundup®-type products) can be used in the row middles to provide excellent control of nightshade.

Blueberry – In the row middles or directed to the base of the plants (no contact with green foliage or bark), paraquat (unless there are resistant biotypes) or carfentrazone can be applied but will only provide good control of small seedlings; larger plants will regrow. Glyphosate can be used with the same precautions as the previously mentioned products to provide excellent control of nightshade. Flumioxazin provides good postemergent control of nightshade.

Conclusion

American black nightshade is very common in fruiting vegetables and needs to be controlled with preemergent herbicides in season and postemergent

herbicides during crop destruction to limit seed production. The same can be said of cucurbit and strawberry production fields since the population of nightshade will increase if an effective management plan is not prepared and implemented.

Literature Cited

Bryson, C. T., and M. S. DeFelice, eds. 2009. *Weeds of the South.* Athens: University of Georgia Press.