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Ornamental Sweetpotato Intumescence:
A Physiological Disorder

Sporadic green bumps and clusters of translucent or white wart-like lesions were recently observed among veins of dark-leaf ornamental sweetpotato vines. These abnormalities growing on the leaf surface are a result of a physiological disorder, intumescence.

During a recent greenhouse visit, I inspected a crop of dark purple ornamental sweetpotato (*Ipomoea batatas*) plants. The matured leaves were exhibiting abnormal growth on the upper surface (Fig. 1). The growth ranged from sporadic green bumps to translucent or white lesions to black out-growths (Fig. 2).

At closer examination, the small green bumps were rising between the veins of the leaf and along the mid-rib. Though the green bumps were intermittent, I noticed a pattern among the leaves. I found some leaves to only exhibit small green bumps, while others, the green bumps were starting to enlarge and extrude out from the leaf surface, turning translucent (Fig. 3). The enlarged translucent lesions appeared white due to the intensity of out-growth (Fig. 4) that were present along or on the mid-rib and

Figure 1. Mature leaves of sweetpotato vines exhibiting abnormal, translucent out-growths on the upper leaf surface.

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most of the growth occurring at the leaf base (Fig. 5).

In some instances, I found the out-growth to be black (Fig. 6). While the majority of the abnormal out-growth occurred on the upper leaf surface, I did find some growth arising from the leaf petiole. The abnormal growth is a physiological disorder termed, intumescence, however other common and interchangeable names include: excrescences, neoplasms, galls, genetic tumors, lesions, enations, and oedemata.

Causative Factors

Intumescence development on leaves and petioles can have an impact on the aesthetic value of ornamental crops. You may be wondering, “What causes this physiological disorder?” The causative factor related to intumescence development is rather vague. Many have proposed intumescence development to be a result of air contamination, carbohydrate balance, chemical application, excess water, genetics, hormones and hormone concentration, humidity, light quality and quantity (intensity), and temperature. To date, there is no cure for intumescence development on ornamental sweetpotato. The best method to avoid intumescence

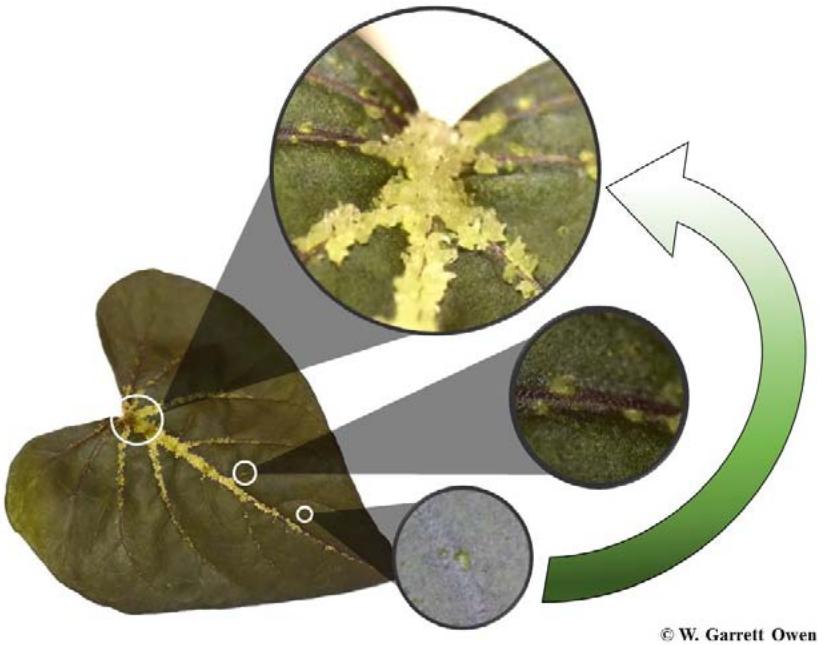

Figure 2. Abnormal growth on the upper leaf ranged from sporadic green bumps to translucent or white lesions to black out-growths.

development on ornamental sweetpotato crops would be to select cultivars that are less susceptible. Trials conducted at Kansas State University determined which ornamental sweetpotato cultivars were the least and most susceptible to intumescence development (Table 1). For more information, watch the two e-GRO webinars: Blisters, Bumps and Lesions: The Physiological Disorders of Intumescence and Edema (**Link to Part 1**) and (**Link to Part 2**).

Literature Cited

Craver, J. K., C.T. Miller, M.G. Cruz, K.A. Williams. 2014. Intumescences: Further Investigations into an Elusive Physiological Disorder. Greenhouse Production News. 24(9):32-40.

Figure 3. Small green bumps protrude out from the leaf surface, turning translucent or white along the mid-rib.

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Figure 4. Microscope view of enlarged translucent lesions present along the mid-rib of an ornamental sweetpotato leaf.

Figure 5. Enlarged translucent lesions appear white due to the intensity of out-growth that are present along or on the mid-rib and with most of the growth occurring at the leaf base.

Figure 6. Translucent out-growth turn black and become dry.

Table 1. List of ornamental sweetpotato *(Ipomoea batatas)* cultivars screened in a trial conducted at Kansas State University (Craver et al., 2014).

Symptomatic Cultivars (cultivars having less than 5% leaves affected by intumescence)	Leaf Color	Plant Habit	Leaf Shape
'Bright Ideas Black'	deep-purple	trailing	palmate, longer, thin lobes
'Bright Ideas Lime'	yellow-green	compact	palmate, shorter, thick lobes
'Bright Ideas Rusty Red'	bronze-red, green	compact	shield-shaped
'Desana Compact Red'	bronze-red, green	trailing	palmate, shorter, thick lobes
'Sidekick Black'	deep-purple	compact	palmate, longer, thin lobes
'Sweet Caroline Green Yellow'	green with yellow/white streaking	compact	palmate, longer, thin lobes
'Sweet Caroline Sweetheart Purple'	deep-purple	trailing	heart-shaped
'Sweet Georgia Bronze'	bronze-red, green	compact	shield-shaped
'Sweet Georgia Heart Light Green'	yellow-green	compact	heart-shaped
Highly Symptomatic Cultivars (cultivars having more than 20% leaves affected by intumescence)			
'Black Heart'	deep-purple	trailing	heart-shaped
'Blackie'	deep-purple	trailing	palmate, longer, thin lobes
'Desana Bronze'	red-bronze	trailing	heart-shaped
'South of the Border Chipotle'	deep-purple with green splotches	trailing	heart-shaped
'Sweet Caroline Bronze'	bronze-red	trailing	palmate, shorter, thick lobes
'Sweet Caroline Sweetheart Light Green'	yellow-green	compact	heart-shaped
'Sweet Caroline Sweetheart Red'	bronze-red, green	trailing	heart-shaped
'Tricolor'	pink-white-green	compact	shield-shaped
Non-Symptomatic Cultivars			
'Desana Lime'	yellow-green	trailing	heart-shaped
'FloraMia Nero'	deep-purple	compact	palmate, shorter, thick lobes
'Illusion Emerald Lace'	yellow-green	trailing	palmate, longer, very thin lobes
'Illusion Garnet Lace'	bronze-red	compact	palmate, longer, very thin lobes
'Illusion Midnight Lace'	deep-purple	trailing	palmate, longer, very thin lobes
'Margarita'	yellow-green	trailing	heart-shaped
'Sidekick Black Heart'	deep-purple	compact	heart-shaped
'Sidekick Lime'	yellow-green	compact	heart-shaped
'South of the Border Chihuahua'	yellow-green	compact	palmate, shorter, thick lobes
'South of the Border Guacamole'	green-bronze	trailing	palmate, shorter, thick lobes
'Sweet Caroline Bewitched'	deep-purple	compact	shield-shaped
'Sweet Caroline Light Green'	yellow-green	trailing	palmate, shorter, thick lobes
'Sweet Caroline Raven'	deep-purple	compact	palmate, shorter, thick lobes
'Sweet Caroline Red'	bronze-red	trailing	palmate, shorter, thick lobes
'Sweet Georgia Bullfrog'	deep-purple with green splotches	compact	palmate, longer, thin lobes
'Sweet Georgia Heart Deep Purple'	deep-purple	compact	palmate, shorter, thick lobes
'Sweet Georgia Heart Purple'	deep-purple	trailing	heart-shaped
'Sweet Georgia Heart Red'	bronze-red, green	compact	heart-shaped
'Sweet Georgia Light Green'	yellow-green	compact	palmate, shorter, thick lobes

(Craver et al., 2014)