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Disease and Insect Resistant Ornamental Plants

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Buxus

Boxwood

Buxus is a genus of leafy evergreen shrubs and small trees commonly known as boxwood. Two of the most common types are *B. sempervirens* (American) and *B. sempervirens* 'Suffruticosa' (English). However, according to The American Boxwood Society, there are about 148 commercially available species and cultivars that vary greatly in size, shape, growth rate, leaf characteristics and hardiness. Known for their dense growth habit and resistance to deer browsing, boxwoods are often grown as hedges.

Boxwood blight is the most serious disease of *Buxus* in landscapes and nurseries. Insect pests include boxwood leafminer, boxwood mite and boxwood psyllid.

DISEASES

Boxwood Blight, also known as box blight, is a disease that affects plants in the Buxaceae family which includes *Buxus*, *Sarcococca,* and *Pachysandra*. It is caused by the fungal pathogen *Calonectria pseudonaviculata* (syns. *Cylindrocladium pseudonaviculatum* and *C. buxicola*). Discovered in the UK in 1994, it was first confirmed in the US in Connecticut and North Carolina in 2011. It was reported in Delaware, Maryland, New Jersey, and New York in 2013 (9) and has since been detected in at least 25 states (1).

Boxwood blight is aggressive and can quickly infect and destroy plants in landscape and nursery settings. It is most active under warm conditions when foliage remains wet for prolonged periods from irrigation, rain, or high humidity. Symptoms first appear on leaves as dark spots which coalesce to cover the entire leaf. Infected leaves drop and stems near infected leaves develop black lesions or cankers.

While differences in the relative susceptibility of some species and cultivars have been reported, new boxwood selections, bred for resistance to this disease, are needed. Breeders at Herplant Nursery in Belgium and in the US at Saunders Nursery in VA are working to develop resistant cultivars (1).

Boxwood Blight				
Species/Hybrids	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
Buxus balearica		6		
Buxus harlandii		5, 11		
Buxus harlandii	Richard	11		
Buxus microphylla	Grace Hendrick Phillips		5, 11	
	Green Pillow		5, 11	
	Jim Stauffer		5	
	John Baldwin	5, 11		
	Little Missy	11		
Buxus microphylla var. *japonica*	Golden Dream	5, 11		
	Green Beauty	5, 11		
	Jim Stauffer	11		
	Morris Dwarf			5, 11
	Morris Midget			5, 9
	Winter Gem	11, 17	5	
	Wintergreen	11		
Buxus microphylla var. *sinica*	Franklin's Gem	11		
Buxus sempervirens			11	2, 5, 8, 12, 17
Buxus sempervirens	Arborescens			17
	Buddy		11	
	Decussata	17		
	Dee Runk	11	5	
	Denmark			17
	Elegantissima			5, 11
	Fastigiata	11	5	
	Handsworthiensis			17
	Jensen			5, 11
	Justin Brouwers			5, 11
	Marginata			5
	Northern New York			17
	Northland			17
	Pendula			17
	Rotundifolia			17
	Scupi			17
	Vardar Valley		11	
Buxus sempervirens var. *suffruticosa*				2, 5, 6, 11, 12, 17

Boxwood Blight				
Species/Hybrids	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
Buxus sempervirens var. *suffruticosa*	True Dwarf			8
Buxus sinica var. *insularis*				6
Buxus sinica var. *insularis*	Korean	8		
	Nana	5, 11		
	Pincushion	17		
	Winter Beauty	17		
	Winter Gem*	8		
	Wintergreen*	17		
Buxus sp. (54326*H)		17		
Buxus x 'Glencoe'	Chicagoland Green™		11	5
Buxus x	Gordo ('Conrowe')		5	
	Green Gem		5, 11	
	Green Ice	17		
	Green Mound	17	5, 11	
	Green Mountain		5, 8, 11	
	Green Velvet		8, 11	

*syn. *B. microphylla* var. *japonica* 'Winter Gem' and 'Wintergreen' (Missouri Botanical Garden)

Volutella Blight of boxwood is caused by the fungal pathogen *Pseudonectria buxi* (syn. *Volutella buxi*). Favored by high humidity and poor air circulation, it is often a secondary infection on weakened or injured plants causing leaves and stems to turn yellow and die back. Plants may survive, but their aesthetic value is diminished. Significant economic losses in Canadian nurseries have been reported (16).

Researchers at the University of Guelph compared several commonly grown cultivars and report a range of susceptibility.

Volutella Blight				
Species/Hybrids	Cultivar	Reference		
		Least Susceptible	Intermediate	Most Susceptible
Buxus x	Chicagoland Green™			14
	Green Beauty			14
	Green Gem			15
	Green Mound		15	
	Green Mountain		15	
	Green Velvet		15	
	Pincushion	15		

INSECTS

Boxwood Leafminer, *Monarthropalpus falvus*, is the most destructive insect pest of boxwoods in landscapes and nurseries. Native to Europe, it is found throughout North America wherever boxwoods are grown. Larval feeding causes yellow, blistered and wrinkled leaves. Heavy infestations result in leaf drop, sparse areas and stunted growth. Plant resistant varieties to minimize leafminer populations.

Boxwood Leafminer				
Species/Hybrids	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
Buxus harlandii		11		4, 7
Buxus harlandii	Richard	11		
Buxus microphylla				4, 7
Buxus microphylla	Grace Hendrick Phillips	11		
	Green Pillow	11		
	John Baldwin		11	
	Little Missy		11	
Buxus microphylla var. *japonica*	Golden Dream	11		
	Green Beauty		3, 11	
	Jim Stauffer		11	
	Morris Dwarf	11		
	Morris Midget		11	
	National			3, 10
	Winter Gem	11		
	Wintergreen		11	
Buxus microphylla var. *sinica*	Franklin's Gem	11		
Buxus sempervirens			11	
Buxus sempervirens	Arborescens		3	
	Argenteo-variegata	4, 7		
	Belleville		3	
	Buddy	11		
	Dee Runk		11	
	Elegantissima		11	
	Fastigiata		11	
	Handsworthiensis	3, 10		
	Jensen		11	
	Justin Brouwers			11
	Memorial	10		
	Myrtifolia			3, 10
	Newport Blue	12		
	Pendula	4, 7		
	Pyramidalis		3	
	Vardar Valley	3, 10, 11, 12		

Boxwood Leafminer				
Species/Hybrids	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
Buxus sempervirens var. *suffruticosa*		7, 11	3	
Buxus sinica var. *insularis*	Nana	11		
Buxus x 'Glencoe'	Chicagoland Green™			11
Buxus x	Green Gem			11
	Green Mound		11	
	Green Mountain		11	
	Green Velvet			11

Boxwood Psyllid, *Psylla buxi*, is a common pest of boxwoods. The nymph stage feeds on new foliage causing distinctive cupping of leaves. Damage is mostly aesthetic and not detrimental to the plant. Partial resistance has been reported for *B. microphylla* 'Fiorii', *B. sempervirens* 'Arborescens', *B.* x 'Glencoe' ('Chicagoland Green'™), and hybrids 'Green Mountain' and 'Green Velvet'. Least preferred cultivars include *B. microphylla* 'Sunnyside', *B. sempervirens* 'Suffruticosa', *B. sinica* var. *insularis* 'Winter Beauty' and hybrids 'Green Gem' and 'Green Mound' (2).

Boxwood Mite, *Eurytetranychus buxi*, is a type of spider mite that causes white stippling on leaf surfaces. Damage is often superficial, but severe infestations can result in discoloration of foliage and leaf drop. *Buxus microphylla* var. *japonica*, is less susceptible than *B. sempervirens* and *B. sempervirens* var. *suffruticosa* (7, 13).

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