



Disease and Insect Resistant Ornamental Plants

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MALUS

Flowering Crabapple

The genus *Malus* includes orchard apples and crabapples. They are closely related, differing mainly in fruit size. Flowering crabapples are one of the most widely grown small ornamental trees in the Northeast and Midwest. Popular in both commercial and residential landscapes for their stunning spring flower displays, there are many selections available with a wide diversity in tree size and shape, flower color, and fruit color and persistence.

Crabapples are prone to several diseases, including apple scab, fire blight, powdery mildew and cedar-apple rust. The most serious fungal disease is apple scab, and susceptible cultivars may require routine preventive fungicide sprays to protect the plant. There are resistant cultivars available. However, it is important to note that there may be significant regional differences in disease resistance—a cultivar that performs well in one area may do poorly in another. There are also cultivars resistant to insect pests such as Japanese beetle, but disease resistance should be the first consideration.



DISEASES

Apple Scab is a disease of *Malus* trees caused by the fungus *Venturia inaequalis*. Favored by mild, wet weather, the disease causes lesions on leaves and fruit resulting in premature leaf drop and discolored, disfigured fruit. While usually not fatal, affected trees are weakened by defoliation and lose their ornamental value.

Apple Scab			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus adstringens</i>	Hopa		3
<i>Malus baccata</i>	Jackii	1, 3, 4, 5, 8, 11, 21, 22	
<i>Malus coronaria</i>	Charlottae		5
	Nieuwlandiana		5

Apple Scab			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus coronaria</i> var. <i>dasycalyx</i>			11
<i>Malus floribunda</i>		4, 8, 19, 21, 22	3
<i>Malus glabrata</i>			11
<i>Malus halliana</i>	Parkmanii	5, 8, 22	3
<i>Malus halliana</i> var. <i>spontanea</i>		11	
<i>Malus hunnanensis</i>	Veitchii	8	
<i>Malus hupehensis</i>		4, 5, 8	
<i>Malus ioensis</i>		5	
<i>Malus ioensis</i>	Prairie Rose	12	
<i>Malus kirghisorum</i>			11
<i>Malus sargentii</i>		1, 3, 4, 6, 8, 10, 12, 17, 19, 21, 22	
<i>Malus sargentii</i>	Firebird®	5	
	Rosea		5
	Roseglow	5	
	Satin Cloud	5	
	Tina	3, 4, 6, 12, 15, 22	
<i>Malus sieboldii</i>		5	
<i>Malus sieboldii</i> var. <i>zumi</i>		4	
<i>Malus sieboldii</i> var. <i>zumi</i>	Calocarpa	3, 4, 6, 8, 12, 19, 22	
	Wooster	4, 11	
<i>Malus spectabilis</i>	Riversii		11
<i>Malus tschonoskii</i>		3, 8, 11	
<i>Malus</i> x	Adams	5, 6, 8, 11, 12, 19, 22	3, 4
	Adirondack	3, 4, 5, 12, 15, 17, 22, 24	
	Amberina		4, 5
	American Beauty		5
	American Masterpiece		3
	American Salute		3
	American Spirit		3
	American Triumph		3
	Baskatong	5, 21, 22	
	Beverly	1, 3, 4, 8, 11	
	Bob White	3, 4, 8, 11, 19, 21, 22	5
	Brandywine® ('Branzam')		3, 4

Apple Scab			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus x</i>	Bridal Bouquet	5	
	Callaway	3	
	Camelot™ ('Camzam')	3, 4	
	Canary		3
	Candied Apple®	8	3, 4
	Candy mint	3	
	Canterbury™ ('Canterzam')	3, 5	
	Cardinal ('Cardinal' PP 7147)	12	
	Centennial	4	
	Centurion® ('Centzam')	6, 15	3, 4, 11
	Christmas Holly® ('Chrishozam')	6, 8, 19, 22	5
	Cinderella™ ('Cinzam')	3	5
	Coralburst® ('Coralcole')		3, 4
	David	3, 4, 5, 8, 15, 19, 22	
	Dolgo	3, 4, 8, 12, 19	15
	Donald Wyman	4, 5, 6, 8, 12, 19	3
	Dorothea		5
	Doubloons		3, 4, 5
	Eleyi		5
	Ellen Gerhart		5
	Evelyn		5
	Excalibur™ ('Excazam')	3, 5	
	Firebird® ('Select A' PP 12621)	3, 12	
	Foxfire	3	
	Glen Mills/Winter Gem		3
	Golden Raindrops® ('Schmidcutleaf')	3, 5, 12, 17, 22	
	Guinevere	3	
	Hamlet	3	
	Harvest Gold® ('Hargozam')	4, 6, 8	3
	Henningii	8	3
	Holiday Gold	3	
	Hopa		6, 11
	Indian Magic		3, 4, 8, 11
Indian Summer	5, 6, 19	3, 4, 11, 21	
Ivory Spear™ ('JFS KW214MX')	12		
Jewelberry	5, 6, 8, 19, 22	3, 4	
Jewelcole	11		

Apple Scab			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus x</i>	King Arthur® ('Kinarzam')	3, 5	
	Lancelot™ ('Lanzam')	3, 4, 5, 15	
	Liset	3, 4, 5, 6, 8	
	Louisa	3, 12, 15, 17, 21	4, 5
	Lollipop® ('Lollizam')	3, 12	
	Ludwick	4	
	Madonna® ('Mazam')		3, 5
	Makamik	4, 5	
	Manbeck's Weeper		3
	Marilee® ('Jarmin' PP 14337)	12	
	Marshall Oyama	5	
	Mary Potter	3, 8, 11, 22	4, 6
	Midwest	11	
	Molten Lava® ('Molazam')	4, 8, 11, 17, 19, 22	3
	Narragansett	5, 6	3
	Ormiston Roy	3, 4, 5, 8, 17, 19, 21, 22	
	Pink Perfection		5
	Pink Princess™ ('Parrsi')	3, 12	4
	Pink Satin		3, 5
	Pink Spires		4, 5
	Prairie Maid	3, 5, 11, 21, 22	
	Prairifire	3, 4, 5, 6, 11, 12, 15, 17, 19, 21, 22	
	Professor Sprenger	4, 8, 19, 22	3, 5
	Profusion	8	3, 4
	Purple Prince	3, 4, 5, 11, 12, 22	
	Radiant		3, 4, 5, 8, 11, 12
	Ralph Shay	8	3, 4
	Raspberry Spear™ ('JFS KW213MX')	12	
	Rawhide	3	
	Red Barron	8	3, 4, 5, 11
	Red Jade	8	3, 4, 11
	Red Jewel™ ('Jewelcole')	3, 4, 8, 12, 21, 22	15
	Red Silver		5
Red Splendor	8	3, 4	
Red Swan	3, 4, 5		
Rejoice™ ('Rejzam')	12		

Apple Scab			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus x</i>	Robinson	8	3, 4, 11
	Rosseau	5	
	Royal Beauty	12	
	Royal Fountain®		3, 5
	Royal Gem™	5	
	Royal Raindrops® (‘JFS-KW5’ PP 14375)	12	
	Royal Ruby		5
	Royal Scepter™ (‘Roysezam’)		3
	Royalty		3, 4, 5, 8, 12
	Ruby Dayze™ (‘JFS KW139MX’)	12	
	Ruby Luster		3, 8
	Selkirk	8	3, 4
	Sentinel	8, 15, 22	3, 4
	Serenade	5	
	Silver Drift		3
	Silver Moon	1, 3, 8, 11, 19, 21, 22	4
	Sinai Fire	3, 4, 5	
	Sissipuk	5	
	Snowcloud		5
	Snowdrift	8, 12	3, 4
	Snow Magic®		5
	Sparkler		5
	Sparkling Sprite® (‘JFS-KW207’)	12	
	Spring Snow		3, 4, 5, 12
	Strathmore		5
	Strawberry Parfait	3, 4, 8	
	Sugar Tyme® (‘Sutyzam’)	4, 5, 6, 8, 12, 15, 19, 21, 22	3
	Thunderchild		3, 5
	Tom’s Pink	11	
	Velvet Pillar™ (‘Velvetcole’)	8	3, 4, 5, 11
	Volcano	5	
	White Angel® (‘Inglis’)	1, 3, 4, 6, 8, 11, 19, 21, 22	
	White Candle		5
White Cascade® (‘Cascole’)	4, 8	3	
Winter Gold	8	3, 4	

Fire Blight is a disease of *Malus* and other plants in the rose family caused by the bacterium *Erwinia amylovora*. Named for the scorched appearance of affected leaves, blossoms and twigs, it can cause severe damage and death in nursery and landscape settings. Fire blight is favored by warm, humid weather, so it is especially prevalent in the Southeast. Insects and rain can spread the bacteria. Cultural practices that prolong succulent growth such as excess fertilization and heavy pruning can increase disease incidence and severity.

Fire Blight			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus baccata</i>	Jackii	8, 10, 26	4
<i>Malus halliana</i>	Parkmanii		8
<i>Malus hunnanensis</i>	Veitchii	8	
<i>Malus hupehensis</i>			4, 5, 8
<i>Malus ioensis</i>	Prairie Rose		5
<i>Malus floribunda</i>		4	8
<i>Malus sargentii</i>		4, 8, 12, 15, 17, 19, 26	
<i>Malus sargentii</i>	Firebird®	5	
	Rosea		5
	Tina	4, 5, 12, 15, 22	
<i>Malus sieboldii</i> var. <i>zumi</i>			4
<i>Malus sieboldii</i> var. <i>zumi</i>	Calocarpa	2, 8, 10, 12, 19	4, 5
	Wooster		4
<i>Malus spectabilis</i>		5	
<i>Malus spectabilis</i>	Riversii	5	
<i>Malus tschonoskii</i>		8	5
<i>Malus</i> x	Adams	4, 5, 6, 8, 10, 12, 19, 26	
	Adirondack	2, 4, 5, 12, 15, 17, 26	
	Amberina	4	
	Basketong	5, 22, 26	
	Beverly	8	4
	Bob White	8, 10, 19, 26	4, 5
	Brandywine® ('Branzam')		4
	Bridal Bouquet	5	
	Camelot™ ('Camzam')	4	
	Candied Apple®	4, 8	
	Cardinal ('Cardinal' PP 7147)	12	
	Centennial	4	
	Centurion® ('Centzam')	4, 6, 15, 22	
	Coralburst® ('Coralcole')	4, 10, 12, 15	
	Christmas Holly® ('Chrisozam')	6, 8, 19	5

Fire Blight			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus x</i>	David	2, 4, 8, 10, 15, 19, 22, 26	
	Dolgo	4, 8, 10, 12, 15, 19, 22, 26	
	Donald Wyman	4, 5, 6, 8, 19, 26	
	Dorothea		5
	Doubloons	4	
	Firebird® ('Select A' PP 12621)	12	
	Golden Raindrops® ('Schmidtcutleaf')		5, 12
	Harvest Gold® ('Hargozam')		4, 8
	Henningii	8	
	Indian Magic	8, 12	4
	Indian Summer	4, 5, 6, 10, 19, 26	
	Ivory Spear™ ('JFS KW214MX')	12	
	Jewelberry	6, 8, 10, 19	4, 26
	Liset	6, 8, 10, 22, 26	4
	Lollipop® ('Lollizam')	12, 15	
	Louisa	4, 10, 12, 15, 17, 26	
	Ludwick	4	
	Makamik		4
	Marilee® ('Jarmin' PP 14337)	12	
	Marshall Oyama	5	
	Mary Potter	8	4
	Molten Lava® ('Molazam')	4, 8, 17, 19	
	Ormiston Roy	8, 17, 26	4, 10
	Pink Princess™ ('Parrsi')	12	
	Pink Spires		4
	Prairifire	4, 5, 6, 7, 12, 15, 17, 19, 26	
	Professor Sprenger	4, 8	5
	Profusion	6, 8, 10, 12, 15, 19, 22, 26	4
	Pink Perfection		5
	Pink Princess™ ('Parrsi')	12	4
	Purple Prince	4, 12	
	Radiant	4, 8, 10, 12, 15, 26	
Ralph Shay	8	4	
Raspberry Spear™ ('JFS KW213MX')	12		

Fire Blight			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus x</i>	Red Jewel™ ('Jewelcole')	8	4
	Rejoice™ ('Rejzam')	12	
	Red Barron	4, 8, 12, 15	
	Red Jade		4, 8
	Red Splendor	8	4
	Red Swan	4	
	Robinson	4, 8, 10, 15, 26	
	Rosseau	5	
	Royal Beauty	12	
	Royal Gem™	5	
	Royalty	8	4, 5
	Royal Raindrops® ('JFS-KW5' PP 14375)	12	
	Ruby Dayze™ ('JFS KW139MX')	12	
	Selkirk	8	4
	Sentinel	8	4
	Shaker's Gold		5
	Show Time™ ('Shotizam')	12	
	Silver Moon	8	5
	Sinai Fire	4	
	Sissipuk	5	
	Snowdrift		4, 8
	Sparkling Sprite® ('JFS-KW207')	12	
	Spring Snow		4
	Strawberry Parfait	4, 8	
	Sugar Tyme® ('Sutyzam')	4, 5, 6, 8, 12, 15, 19, 22	10, 26
	Velvet Pillar™ ('Velvetcole')	8	4
	White Angel® ('Inglis')	6, 8, 10, 19, 26	4
	White Candle		5
White Cascade® ('Cascole')	8	4	
Winter Gold	8	4	

Cedar-Apple Rust is a disease caused by the fungus *Gymnosporangium juniperi-virginianae*. The rust requires two hosts to complete its lifecycle and can infect Eastern red cedar (*J. virginiana*) and other junipers. The alternate hosts are primarily apple and crabapple. The disease is often minor and rarely kills trees, but the bright orange spots that develop on leaves are highly visible and severe infections may result in premature leaf drop. To minimize this disease on crabapple, avoid planting near junipers.

Cedar-Apple Rust			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus baccata</i>	Jackii	4, 8, 21	
<i>Malus coronaria</i>			5
<i>Malus floribunda</i>		4, 8, 22	
<i>Malus halliana</i>	Parkmanii		8
<i>Malus hunnanensis</i>	Veitchii	8	
<i>Malus hupehensis</i>		4	
<i>Malus ioensis</i>			5
<i>Malus ioensis</i>	Plena		5
	Prairie Rose		12
<i>Malus sargentii</i>		4, 8, 12, 15, 22	
<i>Malus sargentii</i>	Firebird®	5	
	Tina	4, 5, 12, 15, 22	
<i>Malus sieboldii</i> var. <i>zumi</i>		4	
<i>Malus sieboldii</i> var. <i>zumi</i>	Calocarpa	4, 8, 12, 22, 25	
	Wooster	4	
<i>Malus tschonoskii</i>		8	
<i>Malus</i> x	Adams	5, 8, 12, 22	4
	Adirondack	4, 5, 12, 15, 24	
	Amberina	4	
	Basketong	5, 22	
	Beverly	4, 8, 25	
	Bob White	4, 8, 22	
	Brandywine® ('Branzam')	15	4, 5
	Camelot™ ('Camzam')	4	
	Candied Apple®	4, 8	
	Cardinal ('Cardinal' PP 7147)	12	
	Centennial	4	
	Centurion® ('Centzam')	4, 5, 15	
	Christmas Holly® ('Chrishozam')	8	
	Coralburst® ('Coralcole')	4, 12, 15	
	David	4, 8, 15, 22	
	Dolgo	4, 8, 12, 15, 25	
Donald Wyman	4, 8, 12		

Cedar-Apple Rust			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus x</i>	Doubloons	4	
	Ellwangeriana	17	
	Firebird® ('Select A' PP 12621)	12	
	Golden Raindrops® ('Schmidcutleaf')	5, 12	
	Harvest Gold® ('Hargozam')	4, 8, 12	
	Henningii	8	
	Henry Kohankie	17	
	Indian Magic	4, 8, 12, 15	
	Indian Summer	4, 5	
	Jewelberry	4, 8	
	Ivory Spear™ ('JFS KW214MX')	12	
	Lancelot	15	
	Liset	4, 8, 25	
	Lollipop® ('Lollizam')	12, 15	
	Louisa	4, 12, 15, 5	
	Ludwick	4	
	Makamik	4	
	Marilee® ('Jarmin' PP 14337)	12	
	Mary Potter	4, 8, 22	
	Molten Lava® ('Molazam')	5, 8, 22	4
	Narragansett	5, 25	
	Ormiston Roy	4, 8, 17, 22	
	Perfect Purple	12	
	Pink Princess™ ('Parrsi')	12	
	Pink Spires		4
	Prairifire	4, 5, 6, 12, 14, 15	
	Professor Sprenger	4, 8, 22	
	Profusion	4, 8, 12, 15	
	Pink Princess™ ('Parrsi')	12	4
	Purple Prince	4, 12	
	Radiant	4, 8, 12, 15	
	Ralph Shay		4, 8
	Raspberry Spear™ ('JFS KW213MX')	12	
Red Barron	4, 8, 12, 15, 17		
Red Jade	4, 8, 12		
Red Jewel™ ('Jewelcole')	4, 8, 15, 22, 25		
Red Splendor	4, 8		

Cedar-Apple Rust			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus x</i>	Red Swan	4	
	Rejoice™ ('Rejzam')	12	
	Robinson	4, 8, 15	
	Royal Beauty	12	
	Royal Gem™	5	
	Royal Raindrops® ('JFS-KW5' PP 14375)	12, 15	
	Royalty	4, 8, 12	
	Ruby Dayze™ ('JFS KW139MX')	12	
	Selkirk	8	4
	Sentinel	4, 8, 15, 22	
	Show Time™ ('Shotizam')	12	
	Silver Moon	8	
	Sinai Fire	4	
	Snowdrift	4, 8, 12	
	Sparkling Sprite® ('JFS-KW207')	12	
	Spring Snow	4, 12, 15	
	Strawberry Parfait	4, 8	
	Sugar Tyme® ('Sutyzam')	4, 5, 8, 12, 15, 22	
	Thunderchild	15	
	Velvet Pillar™ ('Velvetcole')	8	4
White Angel® ('Inglis')	5, 8, 25	4	
White Cascade® ('Cascole')	8	4	
Winter Gold	4, 8		

Powdery Mildew is a common fungal disease of crabapple. The disease is active during periods of warmth and humidity, causing grayish-white patches on leaves and fruit. Planting trees in sites with good air circulation and in full sunlight is key to minimizing infection.

Powdery Mildew			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus baccata</i>	Jackii	8	4
<i>Malus floribunda</i>		4	
<i>Malus halliana</i>	Parkmanii	8	
<i>Malus hunnanensis</i>	Veitchii	8	
<i>Malus hupehensis</i>		4, 8	
<i>Malus ioensis</i>	Prairie Rose	12	

Powdery Mildew			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus sargentii</i>		4, 8, 12, 15, 17, 19, 22	
<i>Malus sargentii</i>	Firebird®	5	
	Tina	4, 12	
<i>Malus sieboldii</i> var. <i>zumi</i>		4	
<i>Malus sieboldii</i> var. <i>zumi</i>	Calocarpa	4, 8, 12, 19, 22	
	Wooster	4	
<i>Malus tschonoskii</i>			8
<i>Malus</i> x	Adams	8, 12, 15	4
	Adirondack	4, 5, 12, 15, 17, 24	
	Amberina	4	
	Beverly	4, 8	
	Bob White	4, 8	
	Brandywine® ('Branzam')	15	4
	Camelot™ ('Camzam')	4	
	Candied Apple®	4, 8	
	Cardinal ('Cardinal' PP 7147)	12	
	Centennial	4	
	Centurion® ('Centzam')	4	
	Christmas Holly® ('Chrishozam')	8	
	Coralburst® ('Coralcole')	4, 12	
	David	4, 5, 8, 15, 19, 22	
	Dolgo	4, 8, 12, 15, 19	
	Donald Wyman	4, 5, 8, 12, 19	
	Doubloons	4	
	Firebird® ('Select A' PP 12621)	12	
	Golden Raindrops® ('Schmidcutleaf')	5, 12	
	Harvest Gold® ('Hargozam')	4, 8, 12	
	Henningii	8	
	Indian Magic	4, 8, 12, 15, 19	
	Indian Summer	4, 5	
	Ivory Spear™ ('JFS KW214MX')	12	
	Jewelberry	4, 8	
	Liset	8	4
	Lollipop® ('Lollizam')	12, 15	
	Louisa	4, 12, 15, 17	
	Ludwick	4	

Powdery Mildew			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus x</i>	Makamik		4, 5
	Marilee® ('Jarmin' PP 14337)	12	
	Mary Potter	8	4
	Molten Lava® ('Molazam')	4, 8, 17, 19, 22	
	Ormiston Roy	4, 8, 17, 19, 22	
	Perfect Purple	12	
	Pink Princess™ ('Parrsi')	12	4
	Pink Spires		4
	Prairifire	4, 12, 15, 17, 19	
	Professor Sprenger	4, 8, 19, 22	
	Profusion	4, 8, 12, 15	
	Purple Prince	4, 12	
	Radiant	8, 15	4
	Ralph Shay	4, 8	
	Raspberry Spear™ ('JFS KW213MX')	12	
	Red Barron	4, 8, 12, 15	
	Red Jade	8	4
	Red Jewel™ ('Jewelcole')	4, 8, 12	
	Red Splendor	8	4
	Red Swan	4	
	Rejoice™ ('Rejzam')	12	
	Robinson	4, 8	
	Royal Beauty	12	
	Royal Gem™	5	
	Royal Raindrops® ('JFS-KW5' PP 14375)	12	
	Royalty	8, 12	4
	Ruby Dayze™ ('JFS KW139MX')	12	
	Selkirk	4, 8	
	Sentinel	4, 8	
	Show Time™ ('Shotizam')	12	
	Silver Moon	8	
	Sinai Fire	4	
	Snowdrift	4, 8, 12	
	Sparkling Sprite® ('JFS-KW207')	12	
Spring Snow	4, 12, 15		
Strawberry Parfait	4, 8		
Sugar Tyme® ('Sutyzam')	4, 8, 12, 15, 19, 22		

Powdery Mildew			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus x</i>	Thunderchild	15	
	Velvet Pillar™ ('Velvetcole')	8	4
	White Angel® ('Inglis')	4, 8	
	White Cascade® ('Cascole')	4, 8	
	Winter Gold	4, 8	

INSECTS

Japanese Beetle, *Popillia japonica*, is a common foliage feeder of many ornamentals. Crabapples are a preferred host (13). Resistant selections have been reported, but make sure to consider disease resistance too.

Japanese Beetle			
Species/Hybrids	Cultivar	Reference	
		Resistant	Susceptible
<i>Malus baccata</i>	Jackii	8, 9, 16, 18, 20, 21, 23	
<i>Malus floribunda</i>		5, 16	
<i>Malus hupehensis</i>		5	
<i>Malus sargentii</i>		5	
<i>Malus sargentii</i>	Candymint Sargent	5	
<i>Malus x</i>	Baskatong		16
	Brandywine	16	
	David	5, 16	
	Dolgo		16
	Golden Raindrops® ('Schmidtcutleaf')	5	
	Harvest Gold® ('Hargozam')	8, 9, 16, 18, 21, 23	
	Jewelberry	8, 16, 18, 21, 23	
	Liset		23
	Louisa	5, 18	
	Madonna	5	
	Mary Potter	5	
	Ormiston Roy	5	
	Pink Satin	5	
	Radiant		16, 23
	Red Splendor		16, 23
	Royalty		16, 23
Ruby Luster		23	
Strawberry Parfait	5		

REFERENCES

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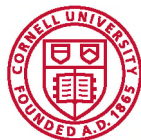
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