

Salix purpurea 'Allegany'



The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'Allegany', a fast-growing shrub willow from their willow breeding program. 'Allegany' is a high-yielding variety that is disease resistant, produces multiple small stems, and is well suited for biomass plantings, snowfences, streambank restoration, and riparian buffers.



Photo by Ben Balliard



Photo by Laura Wayne

Salix purpurea 'Allegany'



Botanical Name: *Salix purpurea* 'Allegany'
(Family: Salicaceae)

Hardiness: U.S.D.A. Zones 4 - 6

Development: 'Allegany' was produced through controlled willow breeding in 1999 as part of a research project to produce new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'Allegany' was produced by crossing *Salix purpurea* 'SH3' with *S. purpurea* '95058'.

Significance: 'Allegany' is a shrub willow cultivar displaying exceptionally rapid growth, producing greater than 45% more stem area than 'SV1', a current production variety, in yield trials, with low incidence of rust disease or damage by beetle or sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Dark green oblong leaves, typically 2-3 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Brown when young, turning green and smooth with age; yellow-orange buds in winter.

Flowers: Female, early spring.

Seeds: Not known to be pollinated under field conditions.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, streambank restoration, living snowfences, and riparian buffers. Dried stems can be used in basketry.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

Fact sheet prepared by Kimberly Cameron, Lawrence Smart, Benjamin Ballard, Timothy Volk, and Lawrence Abrahamson.

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Salix sachalinensis × *S. miyabeana* 'Canastota'



The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'Canastota' shrub willow from their willow breeding program. 'Canastota' is a high-yielding shrub willow that is disease resistant, produces multiple small stems, and is aesthetically appealing. It is well suited for biomass plantings, privacy hedges, snowfences, and ornamental plantings.



Salix sachalinensis × *S. miyabeana* 'Canastota'



Botanical Name: *Salix sachalinensis* × *S. miyabeana* 'Canastota'

(Family: Salicaceae) U.S. Plant Patent 17,724
issued May 15, 2007

Hardiness: U.S.D.A. Zones 4 - 6

Development: 'Canastota' was produced through controlled willow breeding in 1999 as part of a research project to produce new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'Canastota' was produced by crossing *Salix sachalinensis* 'SX61' with *S. miyabeana* 'SX64'.

Significance: 'Canastota' is a shrub willow cultivar displaying exceptionally rapid growth, producing greater than 15% more woody biomass than its parent ('SX61') in a selection trial, with low incidence of rust disease or damage by beetle or sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, upright, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Green oblong leaves, typically 3.5-5 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Grey-orange when young, turning yellow-green with slightly cracked bark with age; dark red dormant buds in winter.

Flowers: Male, early spring.

Seeds: No seeds produced.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, living snowfences, privacy hedges, and ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

Fact sheet prepared by Kimberly Cameron, Lawrence Smart, Timothy Volk, and Lawrence Abrahamson.

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Salix purpurea 'Fish Creek'

The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'Fish Creek', a fast-growing shrub willow from their willow breeding program. 'Fish Creek' is a high-yielding variety that is disease resistant, produces multiple small stems, and is well suited for biomass plantings, snowfences, streambank restoration, and riparian buffers.



Photo by Laura Wayne



Photo by Kimberly Cameron



Photo by Kimberly Cameron

Salix purpurea 'Fish Creek'



Botanical Name: *Salix purpurea* 'Fish Creek' U.S. Plant Patent 17,710
(Family: Salicaceae) issued May 8, 2007

Hardiness: U.S.D.A. Zones 4 - 6

Development: 'Fish Creek' was produced through controlled willow breeding in 1998 as part of a research project to produce new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'Fish Creek' was produced by crossing *Salix purpurea* '94006' with *S. purpurea* '94001'.

Significance: 'Fish Creek' is a shrub willow cultivar displaying exceptionally rapid growth, producing greater than 30% more woody biomass than its parents in yield trials, with low incidence of rust disease or damage by beetle or sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Dark green oblong leaves, typically 2-3 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Brown when young, turning green and smooth with age; yellow-orange buds in winter.

Flowers: Male, early spring.

Seeds: No seeds produced.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, streambank restoration, living snowfences, and riparian buffers. Dried stems can be used in basketry.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix purpurea × *S. miyabeana* 'Millbrook'

The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'Millbrook' shrub willow from their willow breeding program. 'Millbrook' is a high-yielding shrub willow that is disease resistant, produces multiple small stems, and is aesthetically appealing. It is well suited for biomass plantings, privacy hedges, snowfences, and ornamental plantings.



Salix purpurea × *S. miyabeana* 'Millbrook'



Botanical Name: *Salix purpurea* × *S. miyabeana* 'Millbrook'

(Family: Salicaceae)

U.S. Plant Patent 17,646

Hardiness: U.S.D.A. Zones 4 - 6

issued April 24, 2007

Development: 'Millbrook' was produced through controlled willow breeding in 1999 as part of a research project to produce new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'Millbrook' was produced by crossing *Salix purpurea* '95026' with *S. miyabeana* 'SX64'.

Significance: 'Millbrook' is a shrub willow cultivar displaying exceptionally rapid growth, producing greater than 65% more woody biomass than a production variety 'SX67' in a selection trial, and exhibiting low incidence of rust disease or damage by beetle or sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, upright, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Green oblong leaves, typically 3-3.5 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Grey-orange when young, turning yellow-green with slightly rough bark and red lenticels with age; red-orange buds in winter.

Flowers: Female, early spring.

Seeds: Not known to be pollinated under field conditions.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, privacy hedges, living snow-fences, and ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

Fact sheet prepared by Kimberly Cameron, Lawrence Smart, Timothy Volk, and Lawrence Abrahamson.

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Salix purpurea × *S. miyabeana* 'Oneida'

The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'Oneida' shrub willow from their willow breeding program. 'Oneida' is a high-yielding shrub willow that is disease resistant, produces multiple small stems, and is aesthetically appealing. It is well suited for biomass plantings, privacy hedges, snowfences, and ornamental plantings.



Salix purpurea × *S. miyabeana* 'Oneida'



Botanical Name: *Salix purpurea* × *S. miyabeana* 'Oneida'

(Family: Salicaceae)

U.S. Plant Patent 17,682
issued May 1, 2007

Hardiness: U.S.D.A. Zones 4 - 6

Development: 'Oneida' was produced through controlled willow breeding in 1999 as part of a research project to produce new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'Oneida' was produced by crossing *Salix purpurea* '94006' with *S. miyabeana* 'SX67'.

Significance: 'Oneida' is a shrub willow cultivar displaying exceptionally rapid growth, producing greater than 50% more woody biomass than one of its parents ('SX67') in a selection trial, and exhibiting low incidence of rust disease, mammal browsing, or damage by beetle or sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, upright, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Green oblong leaves, typically 3-4.5 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Grey-orange when young, turning yellow-green with slightly cracking bark and red lenticels with age; dark red buds in winter.

Flowers: Male, early spring.

Seeds: No seeds produced.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, privacy hedges, living snow-fences, and ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix purpurea 'Onondaga'

The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'Onondaga', a fast-growing shrub willow from their willow breeding program. 'Onondaga' is a high-yielding variety that is disease resistant, produces multiple small stems, and is well suited for biomass plantings, snowfences, streambank restoration, and riparian buffers.



Salix purpurea 'Onondaga'



Botanical Name: *Salix purpurea* 'Onondaga'
(Family: Salicaceae)

Hardiness: U.S.D.A. Zones 4 - 6

Development: 'Onondaga' was produced through controlled willow breeding in 1999 as part of a research project to produce new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'Onondaga' was produced by crossing *Salix purpurea* 'SH3' with *S. purpurea* '94002'.

Significance: 'Onondaga' is a shrub willow cultivar displaying exceptionally rapid growth, producing greater than 10% more stem area than 'SV1', a current production variety, in yield trials, with low incidence of rust disease or damage by beetle or sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Dark green oblong leaves, typically 2-3 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Brown when young, turning green and smooth with age; yellow-orange buds in winter.

Flowers: Male, early spring.

Seeds: No seeds produced.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, streambank restoration, living snowfences, and riparian buffers. Dried stems can be used in basketry.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix viminalis × *S. miyabeana* 'Otisco'

The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'Otisco' shrub willow from their willow breeding program. 'Otisco' is a high-yielding shrub willow that is disease resistant, produces multiple small stems, and is aesthetically appealing. It is well suited for biomass plantings, privacy hedges, snowfences, and ornamental plantings.



Salix viminalis × *S. miyabeana* 'Otisco'



Botanical Name: *Salix viminalis* × *S. miyabeana* 'Otisco'

(Family: Salicaceae)

US Plant Patent 17,997

Issued September 11, 2007

Hardiness: U.S.D.A. Zones 4 - 6

Development: 'Otisco' was produced through controlled willow breeding in 1999 as part of a research project to produce new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'Otisco' was produced by crossing *Salix viminalis* 'SV2' with *S. miyabeana* 'SX64'.

Significance: 'Otisco' is a shrub willow cultivar displaying exceptionally rapid growth, producing greater than 40% more woody biomass than production variety 'SX67' in a selection trial, and exhibiting low incidence of rust disease or damage by beetle or sawfly. Woody stems can be harvested every three to four years and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, upright, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Green oblong leaves, typically 3-4 inches long, 0.5-1 inch wide, with foliage April through October in Zone 5.

Bark: Grey-orange when young, turning yellow-green with slightly cracked bark with age; red-orange buds in winter.

Flowers: Male, early spring.

Seeds: No seeds produced.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, living snowfences, privacy hedges and ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix viminalis × *S. miyabeana* ‘Owasco’



The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents ‘Owasco’ shrub willow from their willow breeding program. ‘Owasco’ is a high-yielding shrub willow that is disease resistant, produces multiple small stems, and is well suited for biomass plantings, privacy hedges, living snowfences, and ornamental plantings.



Salix viminalis × *S. miyabeana* 'Owasco'



Botanical Name: *Salix viminalis* × *S. miyabeana* 'Owasco'

(Family: Salicaceae)

U.S. Plant Patent 17,845

issued July 3, 2007

Hardiness: U.S.D.A. Zones 4 - 6

Development: 'Owasco' was produced through controlled willow breeding in 1999 as part of a research project to produce new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'Owasco' was produced by crossing *Salix viminalis* 'SV7' with *S. miyabeana* 'SX64'.

Significance: 'Owasco' is a shrub willow cultivar displaying exceptionally rapid growth, producing greater than 75% more woody biomass than production variety 'SX67' in a selection trial, with low incidence of rust disease or damage by beetle or sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, upright, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Green oblong alternate leaves, typically 2.5-3.5 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Grey-orange when young, turning yellow-green with age; red-orange buds in winter.

Flowers: Female, early spring.

Seeds: Not known to be pollinated under field conditions.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, privacy hedges, snowfences, and ornamental plantings.

Distribution: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix eriocephala 'S25'



The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'S25', a member of the North American native species, *Salix eriocephala*. 'S25' is moderately disease resistant, and a high biomass producer, so it is well suited for streambank restoration, riparian buffers, privacy hedges, biomass plantations, and ornamental plantings.



Salix eriocephala 'S25'



Photo by Kimberly Cameron

Botanical Name: *Salix eriocephala* 'S25'
(Family: Salicaceae)

Hardiness: U.S.D.A. Zones 4 - 6

Origins: 'S25' was produced through controlled breeding at the University of Toronto as part of a research project to develop new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'S25' was produced by crossing *S. eriocephala* '16' with *S. eriocephala* '276'.

Significance: 'S25' is a shrub willow cultivar displaying rapid growth, annually produces 4-6 dry tons of woody biomass per acre in yield trials, displays low incidence of damage by sawfly, and moderate susceptibility to rust and deer/rabbit browse. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Dark green oblong leaves with stipules, typically 2-3 inches long, 1-1.5 inches wide, with foliage April through October in Zone 5.

Bark: Brown when young, turning green and slightly rough with age; light orange buds in winter.

Flowers: Female, early spring.

Seeds: Seeds produced early spring.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for biomass plantings, streambank restoration, riparian buffers, privacy hedges, and in ornamental plantings. Dried stems can be used in basketry.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix caprea hybrid 'S365'



The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'S365', a pussy willow variety of shrub willow. 'S365' is a hybrid variety that is disease resistant, produces multiple small stems, and is well suited for streambank restoration, riparian buffers privacy hedges and in ornamental plantings.



Photo by Benjamin Ballard



Photo by Kimberly Cameron



Photo by Benjamin Ballard

Salix caprea hybrid 'S365'



Photo by Kim Cameron

Botanical Name: *Salix caprea* hybrid 'S365'
(Family: Salicaceae)

Hardiness: U.S.D.A. Zones 4 - 6

Origins: 'S365' is a triploid hybrid variety obtained from the University of Toronto as part of a research project to develop new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. Its identity is in question, but is most likely *S. caprea* × *S. cinerea*.

Significance: 'S365' is a shrub willow cultivar displaying rapid growth, annually producing 2-4 dry tons of woody biomass per acre in yield trials, and displays low incidence of rust disease or damage by sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years. This variety produces abundant attractive flower stems for arrangements or decoration.

Description:

Height and Width: 10-15 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Dark green oblong leaves, typically 2-3 inches long, 1-1.5 inches wide, with foliage April through October in Zone 5.

Bark: Brown when young, turning green and smooth with age; yellow-orange buds in winter.

Flowers: Male-sterile, early spring.

Seeds: No seeds produced.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for streambank restoration, riparian buffers, privacy hedges, and in ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix sachalinensis × *S. miyabeana* 'Sherburne'



The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'Sherburne' shrub willow from their willow breeding program. 'Sherburne' is a high-yielding hybrid variety that is disease and pest resistant, produces multiple small stems, and is aesthetically appealing. It is well suited for biomass plantings, privacy hedges, snowfences, and ornamental plantings.



Salix sachalinensis × *S. miyabeana* 'Sherburne'



Botanical Name: *Salix sachalinensis* × *S. miyabeana* 'Sherburne'
(Family: Salicaceae)

Hardiness: U.S.D.A. Zones 4 - 6

Development: 'Sherburne' was produced through controlled willow breeding in 1998 as part of a research project to produce new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'Sherburne' was produced by crossing *Salix sachalinensis* 'SX61' with *S. miyabeana* 'SX67'.

Significance: 'Sherburne' is a shrub willow cultivar displaying exceptionally rapid growth, producing greater than 20% more woody biomass than SV1, a current production variety, in selection trial, with low incidence of rust disease or damage by beetle or sawfly. Woody stems can be harvested every three to four years and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown in 2 x 3 foot spacing.

Habit: Fast-growing, upright, deciduous shrub with multiple small diameter vertical stems.

Foliage: Green oblong leaves, typically 3.5-5 inches long, 0.5-1 inch wide, with foliage April through October in zone 5.

Bark: Grey-orange when young, turning yellow-green with slightly cracked bark with age; dark red dormant buds in winter.

Flowers: Female, early spring.

Seeds: Not known to be pollinated under field conditions.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, living snowfences, privacy hedges, and ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix × dasyclados 'SV1'

The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'SV1', a fast-growing shrub willow. 'SV1' produces high biomass yields across a variety of sites, is disease resistant and moderately pest resistant, and is well suited for biomass plantings and privacy hedges.



Photo by Benjamin Ballard



Photo by Kimberly Cameron



Photo by Kimberly Cameron

Salix × *dasyclados* 'SV1'



Botanical Name: *Salix* × *dasyclados* 'SV1'
(Family: Salicaceae)

Hardiness: U.S.D.A. Zones 4 - 6

Origins: 'SV1' was obtained from the University of Toronto as part of a research project to develop new willow varieties that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. It was originally collected in Brantford, Ontario.

Significance: 'SV1' is a shrub willow cultivar displaying exceptionally rapid growth, annually producing 4-6 dry tons of woody biomass per acre in yield trials, and displays low incidence of rust disease or damage by sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Dark green oblong leaves, typically 2-3 inches long, 1-1.5 inches wide, with foliage April through October in Zone 5.

Bark: Brown when young, turning green and smooth with age.

Flowers: Female, early spring.

Seeds: Viable seeds produced in early spring.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, privacy hedges, and in ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

Fact sheet prepared by Kimberly Cameron, Lawrence Smart, Benjamin Ballard, Timothy Volk, and Lawrence Abrahamson.

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Salix sachalinensis 'SX61'



The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'SX61', a fast-growing shrub willow. 'SX61' produces high biomass yields, is disease and beetle resistant, and is well suited for biomass plantings, privacy hedges, and living structures.



Salix sachalinensis 'SX61'



Photo by Kim Cameron

Botanical Name: *Salix sachalinensis* 'SX61'
(Family: Salicaceae)

Hardiness: U.S.D.A. Zones 4 - 6

Origin: 'SX61' was obtained from the University of Toronto as part of a research project to develop new willow varieties that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. *S. sachalinensis* is native to Asia.

Significance: 'SX61' is a shrub willow cultivar displaying exceptionally rapid growth, produces 4-6 dry tons of woody biomass per acre in yield trials, and displays low incidence of rust disease or damage by beetle. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Green oblong leaves, typically 3-3.5 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Three year old stem is slightly rough and grey-green in color.

Flowers: Female, early spring.

Seeds: Viable seeds produced in early spring.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, privacy hedges, living snow-fences and in ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix miyabeana 'SX64'

The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'SX64', a fast-growing shrub willow. 'SX64' is a high-yielding variety that is disease and beetle resistant. It grows well on a variety of sites and is well suited for biomass plantings and privacy hedges.



Photo by Benjamin Ballard



Photo by Kimberly Cameron



Photo by Kimberly Cameron

Salix miyabeana 'SX64'



Photo by Kimberly Cameron

Botanical Name: *Salix sachalinensis* 'SX64'
(Family: Salicaceae)

Hardiness: U.S.D.A. Zones 4 - 6

Origin: 'SX64' was obtained from the University of Toronto as part of a research project to develop new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. *S. miyabeana* is native to Asia.

Significance: 'SX64' is a shrub willow cultivar displaying exceptionally rapid growth, annually produces 4-6 dry tons of woody biomass per acre in yield trials, and displays low incidence of rust disease or damage by beetle or sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Green oblong leaves, typically 3-3.5 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Three-year old stem is green with slightly cracking bark and raised lenticels.

Flowers: Male, early spring.

Pollen: Viable pollen produced in early spring.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, privacy hedges, living snow-fences and in ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix miyabeana 'SX67'



The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'SX67', a fast-growing shrub willow. 'SX67' produces high biomass yields across a variety of sites. It is disease and beetle resistant, and is well suited for biomass plantings and privacy hedges.



Photo by Benjamin Ballard



Photo by Kimberly Cameron



Photo by Kimberly Cameron

Salix miyabeana 'SX67'



Photo by Kimberly Cameron

Botanical Name: *Salix sachalinensis* 'SX67'
(Family: Salicaceae)

Hardiness: U.S.D.A. Zones 4 - 6

Origin: 'SX67' was obtained from the University of Toronto as part of a research project to develop new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. *S. miyabeana* is native to Asia.

Significance: 'SX67' is a shrub willow cultivar displaying exceptionally rapid growth, annually produces 4-6 dry tons of woody biomass per acre in yield trials, and displays low incidence of rust disease or damage by beetle. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Green oblong leaves, typically 3-3.5 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Three-year old stem is green with slightly cracking bark and red lenticels.

Flowers: Male, early spring.

Pollen: Viable pollen produced in early spring.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, privacy hedges, living snowfences and in ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

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Salix viminalis × *S. miyabeana* 'Tully Champion'



The State University of New York College of Environmental Science and Forestry (SUNY-ESF) presents 'Tully Champion' shrub willow from their willow breeding program. 'Tully Champion' is a high-yielding shrub willow that is disease resistant, produces multiple small stems, and is aesthetically appealing. It is well suited for biomass plantings, privacy hedges, snowfences, and ornamental plantings.



Salix viminalis × *S. miyabeana* 'Tully Champion'



Botanical Name: *Salix viminalis* × *S. miyabeana* 'Tully Champion'

(Family: Salicaceae)

US Plant Patent 17,946

Hardiness: U.S.D.A. Zones 4 - 6

Issued: August 28, 2007

Development: 'Tully Champion' was produced through controlled willow breeding in 1999 as part of a research project to produce new willow cultivars that generate high biomass yields on a variety of sites, display resistance to diseases and pests, and possess agronomic traits suitable for mechanical planting, harvesting, and post-harvest processing. 'Tully Champion' was produced by crossing *Salix viminalis* 'SV2' with *S. miyabeana* 'SX67'.

Significance: 'Tully Champion' is a shrub willow cultivar displaying exceptionally rapid growth, producing greater than twice the woody biomass as one of its parents ('SX67') in a selection trial, and exhibiting low incidence of rust disease or damage by beetle or sawfly. Woody stems can be harvested every three to four years, and new shoots will re-sprout the following season. Repeated harvesting of shrub willow plantations can be sustained for at least 15 years.

Description:

Height and Width: 15-20 feet tall, 3-5 foot crown spread at 3 years when grown at 2 x 3 foot spacing.

Habit: Fast-growing, upright, deciduous shrub with multiple small-diameter, vertical stems.

Foliage: Green oblong leaves, typically 3-3.5 inches long, 0.5-1 inches wide, with foliage April through October in Zone 5.

Bark: Grey-orange when young, turning yellow-green with age; red buds in winter.

Flowers: Female, early spring.

Seeds: Not known to be pollinated under field conditions.

Culture: Adaptable to a wide range of soil and moisture conditions. Prefers maximum sunlight.

Propagation: Roots easily from dormant stem cuttings.

Uses: Excellent for bioenergy plantations, living snowfences, privacy hedges, and ornamental plantings.

Availability: Available from Double A Willow (www.doubleawillow.com) beginning Spring 2007.

For information on the SUNY-ESF Willow Biomass Program go to www.esf.edu/willow.

Fact sheet prepared by Kimberly Cameron, Lawrence Smart, Timothy Volk, and Lawrence Abrahamson.

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