



#### Characteristics

#### **Conservation Plant Characteristics**

Panicum virgatum L. switchgrass PAVI2

#### **Summary**

Duration Perennial Federal T/E Status

Growth Habit Graminoid National Wetland Indicator UPL, FACW

**Native Status** 

## Morphology/Physiology

| Active Growth Period        | Summer   | Fruit/Seed Conspicuous      | No          |
|-----------------------------|----------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Moderate | Growth Form                 | Rhizomatous |
| Bloat                       | None     | Growth Rate                 | Rapid       |
| C:N Ratio                   | Medium   | Height at Base Age, Maximum |             |
| Coppice Potential           | No       | Height at Maturity          | 5           |
| Fall Conspicuous            | No       | Known Allelopath            | No          |
| Fire Resistant              | No       | Leaf Retention              | No          |
| Flower Color                | Yellow   | Lifespan                    | Long        |
| Flower Conspicuous          | No       | Low Growing Grass           | No          |
| Foliage Color               | Green    | Nitrogen Fixation           |             |
| Foliage Porosity Summer     | Dense    | Resprout Ability            | No          |
| Foliage Porosity Winter     | Dense    | Shape and Orientation       | Erect       |
| Foliage Texture             | Coarse   | Toxicity                    | None        |
| Fruit/Seed Color            | Brown    |                             |             |

#### **Growth Requirements**

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium     |
|----------------------------------|--------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5        |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 8          |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | No     | Precipitation, Minimum             | 12         |
| Drought Tolerance                | Medium | Precipitation, Maximum             | 60         |
| Fertility Requirement            | High   | Root Depth, Minimum                | 12         |
| Fire Tolerance                   | High   | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 120    | Shade Tolerance                    | Intolerant |

| Hedge Tolerance  | None                | Temperature, Minimum (°F) | -43    |
|--|---------------------|---------------------------|--------|
| Reproduction   |                     |                           |        |
| Bloom Period   | Mid Summer          | Propagated By Cuttings    | No     |
|  |                     | Propagated By Seed        | Yes    |
| Commercial Availability Fruit/Seed Abundance                   | Routinely Available |                           | No     |
|  | High                | Propagated By Sod         |        |
| Fruit/Seed Period Begin  | Summer              | Propagated By Sprigs      | No     |
| Fruit/Seed Period End  | Fall                | Propagated By Tubers      | No     |
| Fruit/Seed Persistence   | No                  | Seed Per Pound            | 259000 |
| Propagated By Bare Root  | No                  | Seed Spread Rate          | Slow   |
| Propagated By Bulbs  | No                  | Seedling Vigor            | Medium |
| Propagated By Container  | No                  | Small Grain               | No     |
| Propagated By Corms  | No                  | Vegetative Spread Rate    | Slow   |
|  |                     |                           |        |
| Suitibility/Use  |                     |                           |        |
| Berry/Nut/Seed Product   | No                  | Palatable Browse Animal   | Medium |
| Christmas Tree Product   | No                  | Palatable Graze Animal    | High   |
| Fodder Product   | Yes                 | Palatable Human           | No     |
| Fuelwood Product   | None                | Post Product              | No     |
| Lumber Product   | No                  | Protein Potential         | Medium |
| Naval Store Product  | No                  | Pulpwood Product          | No     |
| Nursery Stock Product  | No                  | Veneer Product            | No     |
|  |                     |                           |        |
| Panicum virgatum L.<br>switchgrass<br>PAVI2<br>Cultivar: Alamo |                     |                           |        |
| Summary  |                     |                           |        |

## Summary

| Duration      | Perennial | Federal T/E Status         |           |
|---------------|-----------|----------------------------|-----------|
| Growth Habit  | Graminoid | National Wetland Indicator | UPL, FACW |
| Native Status |           |                            |           |
|               |           |                            |           |

## Morphology/Physiology

| Active Growth Period        | Summer   | Fruit/Seed Conspicuous      | No          |
|-----------------------------|----------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Moderate | Growth Form                 | Rhizomatous |
| Bloat                       | None     | Growth Rate                 | Rapid       |
| C:N Ratio                   | High     | Height at Base Age, Maximum |             |
| Coppice Potential           | No       | Height at Maturity          | 6           |
| Fall Conspicuous            | No       | Known Allelopath            | No          |
| Fire Resistant              | No       | Leaf Retention              | No          |
| Flower Color                | Yellow   | Lifespan                    | Long        |

| Flower Conspicuous      | No     | Low Growing Grass     | No    |
|-------------------------|--------|-----------------------|-------|
| Foliage Color           | Green  | Nitrogen Fixation     |       |
| Foliage Porosity Summer | Dense  | Resprout Ability      | No    |
| Foliage Porosity Winter | Dense  | Shape and Orientation | Erect |
| Foliage Texture         | Coarse | Toxicity              | None  |
| Fruit/Seed Color        | Brown  |                       |       |

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | High       |
|----------------------------------|--------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5        |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.5        |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | No     | Precipitation, Minimum             | 20         |
| Drought Tolerance                | Medium | Precipitation, Maximum             | 40         |
| Fertility Requirement            | High   | Root Depth, Minimum                | 12         |
| Fire Tolerance                   | High   | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 150    | Shade Tolerance                    | Intolerant |
| Hedge Tolerance                  | None   | Temperature, Minimum (°F)          | -10        |

## Reproduction

| Bloom Period            | Late Summer         | Propagated By Cuttings | No       |
|-------------------------|---------------------|------------------------|----------|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes      |
| Fruit/Seed Abundance    | High                | Propagated By Sod      | No       |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No       |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No       |
| Fruit/Seed Persistence  | No                  | Seed Per Pound         | 259000   |
| Propagated By Bare Root | No                  | Seed Spread Rate       | Slow     |
| Propagated By Bulbs     | No                  | Seedling Vigor         | High     |
| Propagated By Container | No                  | Small Grain            | No       |
| Propagated By Corms     | No                  | Vegetative Spread Rate | Moderate |

## Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |
| Lumber Product         | No   | Protein Potential       | Medium |
| Naval Store Product    | No   | Pulpwood Product        | No     |
| Nursery Stock Product  | No   | Veneer Product          | No     |

# Panicum virgatum L.

## switchgrass PAVI2

**Cultivar: Blackwell** 

| Su | m | m | а | rv |
|----|---|---|---|----|
|    |   |   |   |    |

Federal T/E Status Duration Perennial

Growth Habit Graminoid National Wetland Indicator UPL, FACW

Native Status

## Morphology/Physiology

| Active Growth Period        | Summer   | Fruit/Seed Conspicuous      | No          |
|-----------------------------|----------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Moderate | Growth Form                 | Rhizomatous |
| Bloat                       | None     | Growth Rate                 | Rapid       |
| C:N Ratio                   | Medium   | Height at Base Age, Maximum |             |
| Coppice Potential           | No       | Height at Maturity          | 4           |
| Fall Conspicuous            | No       | Known Allelopath            | No          |
| Fire Resistant              | No       | Leaf Retention              | No          |
| Flower Color                | Yellow   | Lifespan                    | Long        |
| Flower Conspicuous          | No       | Low Growing Grass           | No          |
| Foliage Color               | Green    | Nitrogen Fixation           |             |
| Foliage Porosity Summer     | Dense    | Resprout Ability            | No          |
| Foliage Porosity Winter     | Moderate | Shape and Orientation       | Erect       |
| Foliage Texture             | Medium   | Toxicity                    | None        |
| Fruit/Seed Color            | Brown    |                             |             |

## **Growth Requirements**

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium     |
|----------------------------------|--------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5        |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.5        |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | Yes    | Precipitation, Minimum             | 18         |
| Drought Tolerance                | Medium | Precipitation, Maximum             | 50         |
| Fertility Requirement            | High   | Root Depth, Minimum                | 12         |
| Fire Tolerance                   | High   | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 135    | Shade Tolerance                    | Intolerant |
| Hedge Tolerance                  | None   | Temperature, Minimum (°F)          | -33        |

## Reproduction

| Bloom Period            | Mid Summer          | Propagated By Cuttings | No  |
|-------------------------|---------------------|------------------------|-----|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes |
| Fruit/Seed Abundance    | High                | Propagated By Sod      | No  |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No  |

| Fruit/Seed Period End   | Fall | Propagated By Tubers   | No       |
|-------------------------|------|------------------------|----------|
| Fruit/Seed Persistence  | No   | Seed Per Pound         | 259000   |
| Propagated By Bare Root | No   | Seed Spread Rate       | Slow     |
| Propagated By Bulbs     | No   | Seedling Vigor         | Medium   |
| Propagated By Container | No   | Small Grain            | No       |
| Propagated By Corms     | No   | Vegetative Spread Rate | Moderate |

## Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |
| Lumber Product         | No   | Protein Potential       | Medium |
| Naval Store Product    | No   | Pulpwood Product        | No     |
| Nursery Stock Product  | No   | Veneer Product          | No     |

Panicum virgatum L. switchgrass PAVI2

**Cultivar: Cave-in-Rock** 

## Summary

| Duration      | Perennial | Federal T/E Status         |           |
|---------------|-----------|----------------------------|-----------|
| Growth Habit  | Graminoid | National Wetland Indicator | UPL, FACW |
| Native Status |           |                            |           |

Summer

Fruit/Seed Conspicuous

No

## Morphology/Physiology

Active Growth Period

| After Harvest Regrowth Rate | Moderate | Growth Form                 | Rhizomatous |
|-----------------------------|----------|-----------------------------|-------------|
| Bloat                       | None     | Growth Rate                 | Rapid       |
| C:N Ratio                   | Medium   | Height at Base Age, Maximum |             |
| Coppice Potential           | No       | Height at Maturity          | 5.5         |
| Fall Conspicuous            | No       | Known Allelopath            | No          |
| Fire Resistant              | No       | Leaf Retention              | No          |
| Flower Color                | Yellow   | Lifespan                    | Long        |
| Flower Conspicuous          | No       | Low Growing Grass           | No          |
| Foliage Color               | Green    | Nitrogen Fixation           |             |
| Foliage Porosity Summer     | Dense    | Resprout Ability            | No          |
| Foliage Porosity Winter     | Dense    | Shape and Orientation       | Erect       |
| Foliage Texture             | Fine     | Toxicity                    | None        |
| Fruit/Seed Color            | Brown    |                             |             |

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium     |
|----------------------------------|--------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5        |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.7        |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | Yes    | Precipitation, Minimum             | 24         |
| Drought Tolerance                | Medium | Precipitation, Maximum             | 60         |
| Fertility Requirement            | High   | Root Depth, Minimum                | 12         |
| Fire Tolerance                   | High   | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 145    | Shade Tolerance                    | Intolerant |
| Hedge Tolerance                  | None   | Temperature, Minimum (°F)          | -33        |

# Reproduction

| Bloom Period            | Late Summer         | Propagated By Cuttings | No       |
|-------------------------|---------------------|------------------------|----------|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes      |
| Fruit/Seed Abundance    | High                | Propagated By Sod      | No       |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No       |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No       |
| Fruit/Seed Persistence  | No                  | Seed Per Pound         | 259000   |
| Propagated By Bare Root | No                  | Seed Spread Rate       | Slow     |
| Propagated By Bulbs     | No                  | Seedling Vigor         | High     |
| Propagated By Container | No                  | Small Grain            | No       |
| Propagated By Corms     | No                  | Vegetative Spread Rate | Moderate |

#### Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |
| Lumber Product         | No   | Protein Potential       | Medium |
| Naval Store Product    | No   | Pulpwood Product        | No     |
| Nursery Stock Product  | No   | Veneer Product          | No     |

Panicum virgatum L. switchgrass PAVI2

**Cultivar: Dacotah** 

#### **Summary**

| Duration     | Perennial | Federal T/E Status         |           |
|--------------|-----------|----------------------------|-----------|
| Growth Habit | Graminoid | National Wetland Indicator | UPL, FACW |

Native Status

## Morphology/Physiology

| Active Growth Period        | Summer     | Fruit/Seed Conspicuous      | No          |
|-----------------------------|------------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Slow       | Growth Form                 | Rhizomatous |
| Bloat                       | None       | Growth Rate                 | Rapid       |
| C:N Ratio                   | Medium     | Height at Base Age, Maximum |             |
| Coppice Potential           | No         | Height at Maturity          | 2.5         |
| Fall Conspicuous            | No         | Known Allelopath            | No          |
| Fire Resistant              | No         | Leaf Retention              | No          |
| Flower Color                | Yellow     | Lifespan                    | Long        |
| Flower Conspicuous          | No         | Low Growing Grass           | No          |
| Foliage Color               | Gray-Green | Nitrogen Fixation           |             |
| Foliage Porosity Summer     | Dense      | Resprout Ability            | No          |
| Foliage Porosity Winter     | Porous     | Shape and Orientation       | Erect       |
| Foliage Texture             | Coarse     | Toxicity                    | None        |
| Fruit/Seed Color            | Brown      |                             |             |

# **Growth Requirements**

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium     |
|----------------------------------|--------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5        |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.5        |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | Yes    | Precipitation, Minimum             | 16         |
| Drought Tolerance                | Medium | Precipitation, Maximum             | 24         |
| Fertility Requirement            | Medium | Root Depth, Minimum                | 12         |
| Fire Tolerance                   | High   | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 90     | Shade Tolerance                    | Intolerant |
| Hedge Tolerance                  | None   | Temperature, Minimum (°F)          | -43        |

# Reproduction

| Bloom Period            | Mid Summer          | Propagated By Cuttings | No     |
|-------------------------|---------------------|------------------------|--------|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes    |
| Fruit/Seed Abundance    | High                | Propagated By Sod      | No     |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No     |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No     |
| Fruit/Seed Persistence  | No                  | Seed Per Pound         | 259000 |
| Propagated By Bare Root | No                  | Seed Spread Rate       | Slow   |
| Propagated By Bulbs     | No                  | Seedling Vigor         | Medium |
| Propagated By Container | No                  | Small Grain            | No     |
| Propagated By Corms     | No                  | Vegetative Spread Rate | Slow   |
|                         |                     |                        |        |

## Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |
| Lumber Product         | No   | Protein Potential       | Medium |
| Naval Store Product    | No   | Pulpwood Product        | No     |
| Nursery Stock Product  | No   | Veneer Product          | No     |

Panicum virgatum L. switchgrass PAVI2

**Cultivar: Forestburg** 

#### **Summary**

| Duration     | Perennial | Federal T/E Status         |           |
|--------------|-----------|----------------------------|-----------|
| Growth Habit | Graminoid | National Wetland Indicator | UPL, FACW |

**Native Status** 

#### Morphology/Physiology

| Active Growth Period        | Summer   | Fruit/Seed Conspicuous      | No          |
|-----------------------------|----------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Moderate | Growth Form                 | Rhizomatous |
| Bloat                       | None     | Growth Rate                 | Rapid       |
| C:N Ratio                   | Low      | Height at Base Age, Maximum |             |
| Coppice Potential           | No       | Height at Maturity          | 2.5         |
| Fall Conspicuous            | No       | Known Allelopath            | No          |
| Fire Resistant              | No       | Leaf Retention              | No          |
| Flower Color                | Yellow   | Lifespan                    | Long        |
| Flower Conspicuous          | No       | Low Growing Grass           | No          |
| Foliage Color               | Green    | Nitrogen Fixation           |             |
| Foliage Porosity Summer     | Dense    | Resprout Ability            | No          |
| Foliage Porosity Winter     | Moderate | Shape and Orientation       | Erect       |
| Foliage Texture             | Medium   | Toxicity                    | None        |
| Fruit/Seed Color            | Brown    |                             |             |

## **Growth Requirements**

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium |
|----------------------------------|--------|------------------------------------|--------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5    |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.5    |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |        |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |        |

| Cold Stratification Required | No     | Precipitation, Minimum    | 14         |
|------------------------------|--------|---------------------------|------------|
| Drought Tolerance            | Medium | Precipitation, Maximum    | 45         |
| Fertility Requirement        | High   | Root Depth, Minimum       | 12         |
| Fire Tolerance               | High   | Salinity Tolerance        | Medium     |
| Frost Free Days, Minimum     | 100    | Shade Tolerance           | Intolerant |
| Hedge Tolerance              |        | Temperature, Minimum (°F) | -33        |

| Bloom Period            | Early Summer        | Propagated By Cuttings | No       |
|-------------------------|---------------------|------------------------|----------|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes      |
| Fruit/Seed Abundance    | Medium              | Propagated By Sod      | No       |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No       |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No       |
| Fruit/Seed Persistence  | No                  | Seed Per Pound         | 259000   |
| Propagated By Bare Root | No                  | Seed Spread Rate       | Moderate |
| Propagated By Bulbs     | No                  | Seedling Vigor         | Low      |
| Propagated By Container | No                  | Small Grain            | No       |
| Propagated By Corms     | No                  | Vegetative Spread Rate | Slow     |

## Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |
| Lumber Product         | No   | Protein Potential       | Medium |
| Naval Store Product    | No   | Pulpwood Product        | No     |
| Nursery Stock Product  | No   | Veneer Product          | No     |

Panicum virgatum L. switchgrass PAVI2

**Cultivar: Grenville** 

#### **Summary**

| Duration     | Perennial | Federal T/E Status         |           |
|--------------|-----------|----------------------------|-----------|
| Growth Habit | Graminoid | National Wetland Indicator | UPL, FACW |

**Native Status** 

## Morphology/Physiology

| Active Growth Period        | Summer   | Fruit/Seed Conspicuous | No          |
|-----------------------------|----------|------------------------|-------------|
| After Harvest Regrowth Rate | Moderate | Growth Form            | Rhizomatous |
| Bloat                       | None     | Growth Rate            | Rapid       |

| C:N Ratio               | Medium     | Height at Base Age, Maximum |       |
|-------------------------|------------|-----------------------------|-------|
| Coppice Potential       | No         | Height at Maturity          | 4     |
| Fall Conspicuous        | No         | Known Allelopath            | No    |
| Fire Resistant          | No         | Leaf Retention              | No    |
| Flower Color            | Yellow     | Lifespan                    | Long  |
| Flower Conspicuous      | No         | Low Growing Grass           | No    |
| Foliage Color           | Gray-Green | Nitrogen Fixation           |       |
| Foliage Porosity Summer | Dense      | Resprout Ability            | No    |
| Foliage Porosity Winter | Moderate   | Shape and Orientation       | Erect |
| Foliage Texture         | Medium     | Toxicity                    | None  |
| Fruit/Seed Color        | Brown      |                             |       |

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium     |
|----------------------------------|--------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5        |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.5        |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | No     | Precipitation, Minimum             | 14         |
| Drought Tolerance                | Medium | Precipitation, Maximum             | 30         |
| Fertility Requirement            | High   | Root Depth, Minimum                | 12         |
| Fire Tolerance                   | High   | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 180    | Shade Tolerance                    | Intolerant |
| Hedge Tolerance                  |        | Temperature, Minimum (°F)          | -23        |

## Reproduction

| Bloom Period            | Late Summer         | Propagated By Cuttings | No       |
|-------------------------|---------------------|------------------------|----------|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes      |
| Fruit/Seed Abundance    | High                | Propagated By Sod      | No       |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No       |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No       |
| Fruit/Seed Persistence  | No                  | Seed Per Pound         | 259000   |
| Propagated By Bare Root | No                  | Seed Spread Rate       | Moderate |
| Propagated By Bulbs     | No                  | Seedling Vigor         | Medium   |
| Propagated By Container | No                  | Small Grain            | No       |
| Propagated By Corms     | No                  | Vegetative Spread Rate | Slow     |
|                         |                     |                        |          |

# Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |

No

| Lumber Product        | No | Protein Potential | Medium |
|-----------------------|----|-------------------|--------|
| Naval Store Product   | No | Pulpwood Product  | No     |
| Nursery Stock Product | No | Veneer Product    | No     |

Panicum virgatum L. switchgrass PAVI2

**Cultivar: Kanlow** 

#### **Summary**

Duration Perennial Federal T/E Status

Summer

Growth Habit Graminoid National Wetland Indicator UPL, FACW

Fruit/Seed Conspicuous

**Native Status** 

## Morphology/Physiology

Active Growth Period

|                             |            | •                           |             |
|-----------------------------|------------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Moderate   | Growth Form                 | Rhizomatous |
| Bloat                       | None       | Growth Rate                 | Rapid       |
| C:N Ratio                   | Medium     | Height at Base Age, Maximum |             |
| Coppice Potential           | No         | Height at Maturity          | 6           |
| Fall Conspicuous            | No         | Known Allelopath            | No          |
| Fire Resistant              | No         | Leaf Retention              | No          |
| Flower Color                | Yellow     | Lifespan                    | Long        |
| Flower Conspicuous          | No         | Low Growing Grass           | No          |
| Foliage Color               | Gray-Green | Nitrogen Fixation           |             |
| Foliage Porosity Summer     | Dense      | Resprout Ability            | No          |
| Foliage Porosity Winter     | Moderate   | Shape and Orientation       | Erect       |
| Foliage Texture             | Coarse     | Toxicity                    | None        |
| Fruit/Seed Color            | Brown      |                             |             |
|                             |            |                             |             |

#### **Growth Requirements**

| Adapted To Coarse Textured Soils | Yes  | Moisture Use                       | Medium     |
|----------------------------------|------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes  | pH, Minimum                        | 4.5        |
| Adapted To Fine Textured Soils   | Yes  | pH, Maximum                        | 7.5        |
| Anaerobic Tolerance              | High | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low  | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | No   | Precipitation, Minimum             | 20         |
| Drought Tolerance                | Low  | Precipitation, Maximum             | 40         |
| Fertility Requirement            | High | Root Depth, Minimum                | 12         |
| Fire Tolerance                   | High | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 160  | Shade Tolerance                    | Intolerant |
| Hedge Tolerance                  |      | Temperature, Minimum (°F)          | -28        |

| Bloom Period            | Mid Summer          | Propagated By Cuttings | No       |
|-------------------------|---------------------|------------------------|----------|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes      |
| Fruit/Seed Abundance    | High                | Propagated By Sod      | No       |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No       |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No       |
| Fruit/Seed Persistence  | No                  | Seed Per Pound         | 259000   |
| Propagated By Bare Root | No                  | Seed Spread Rate       | Moderate |
| Propagated By Bulbs     | No                  | Seedling Vigor         | Medium   |
| Propagated By Container | No                  | Small Grain            | No       |
| Propagated By Corms     | No                  | Vegetative Spread Rate | Slow     |

#### Suitibility/Use

Berry/Nut/Seed Product No Palatable Browse Animal Medium **Christmas Tree Product** No Palatable Graze Animal High Fodder Product Yes Palatable Human No **Fuelwood Product** Post Product None No Protein Potential **Lumber Product** No Medium **Naval Store Product** No **Pulpwood Product** No **Nursery Stock Product** Veneer Product No No

Panicum virgatum L. switchgrass PAVI2

**Cultivar: Nebraska 28** 

#### **Summary**

| Duration      | Perennial | Federal T/E Status         |           |
|---------------|-----------|----------------------------|-----------|
| Growth Habit  | Graminoid | National Wetland Indicator | UPL, FACW |
| Native Status |           |                            |           |

#### Morphology/Physiology

| Active Growth Period        | Summer   | Fruit/Seed Conspicuous      | No          |
|-----------------------------|----------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Moderate | Growth Form                 | Rhizomatous |
| Bloat                       | None     | Growth Rate                 | Rapid       |
| C:N Ratio                   | Medium   | Height at Base Age, Maximum |             |
| Coppice Potential           | No       | Height at Maturity          | 4           |
| Fall Conspicuous            | No       | Known Allelopath            | No          |
| Fire Resistant              | No       | Leaf Retention              | No          |
| Flower Color                | Yellow   | Lifespan                    | Long        |
| Flower Conspicuous          | No       | Low Growing Grass           | No          |

| Foliage Color           | Gray-Green | Nitrogen Fixation     |       |
|-------------------------|------------|-----------------------|-------|
| Foliage Porosity Summer | Dense      | Resprout Ability      | No    |
| Foliage Porosity Winter | Moderate   | Shape and Orientation | Erect |
| Foliage Texture         | Medium     | Toxicity              | None  |
| Fruit/Seed Color        | Brown      |                       |       |

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium     |
|----------------------------------|--------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4          |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.5        |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | No     | Precipitation, Minimum             | 16         |
| Drought Tolerance                | Medium | Precipitation, Maximum             | 45         |
| Fertility Requirement            | High   | Root Depth, Minimum                | 16         |
| Fire Tolerance                   | High   | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 145    | Shade Tolerance                    | Intolerant |
| Hedge Tolerance                  |        | Temperature, Minimum (°F)          | -28        |

## Reproduction

| Bloom Period            | Mid Summer          | Propagated By Cuttings | No       |
|-------------------------|---------------------|------------------------|----------|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes      |
| Fruit/Seed Abundance    | High                | Propagated By Sod      | No       |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No       |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No       |
| Fruit/Seed Persistence  | No                  | Seed Per Pound         | 259000   |
| Propagated By Bare Root | No                  | Seed Spread Rate       | Moderate |
| Propagated By Bulbs     | No                  | Seedling Vigor         | Medium   |
| Propagated By Container | No                  | Small Grain            | No       |
| Propagated By Corms     | No                  | Vegetative Spread Rate | Slow     |

## Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |
| Lumber Product         | No   | Protein Potential       | Medium |
| Naval Store Product    | No   | Pulpwood Product        | No     |
| Nursery Stock Product  | No   | Veneer Product          | No     |

# Panicum virgatum L. switchgrass

#### PAVI2

# **Cultivar: Pathfinder**

| Sı | ım | m | arv | v |
|----|----|---|-----|---|
|    |    |   |     |   |

Duration Perennial Federal T/E Status

Brown

**Growth Habit** Graminoid National Wetland Indicator UPL, FACW

Native Status

## Morphology/Physiology

| Active Growth Period        | Summer     | Fruit/Seed Conspicuous      | No          |
|-----------------------------|------------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Moderate   | Growth Form                 | Rhizomatous |
| Bloat                       | None       | Growth Rate                 | Rapid       |
| C:N Ratio                   | Medium     | Height at Base Age, Maximum |             |
| Coppice Potential           | No         | Height at Maturity          | 4.5         |
| Fall Conspicuous            | No         | Known Allelopath            | No          |
| Fire Resistant              | No         | Leaf Retention              | No          |
| Flower Color                | Yellow     | Lifespan                    | Long        |
| Flower Conspicuous          | No         | Low Growing Grass           | No          |
| Foliage Color               | Gray-Green | Nitrogen Fixation           |             |
| Foliage Porosity Summer     | Dense      | Resprout Ability            | No          |
| Foliage Porosity Winter     | Moderate   | Shape and Orientation       | Erect       |
| Foliage Texture             | Coarse     | Toxicity                    | None        |

## **Growth Requirements**

Fruit/Seed Color

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium     |
|----------------------------------|--------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5        |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.5        |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | No     | Precipitation, Minimum             | 16         |
| Drought Tolerance                | Medium | Precipitation, Maximum             | 45         |
| Fertility Requirement            | High   | Root Depth, Minimum                | 12         |
| Fire Tolerance                   | High   | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 150    | Shade Tolerance                    | Intolerant |
| Hedge Tolerance                  |        | Temperature, Minimum (°F)          | -33        |

## Reproduction

| Bloom Period            | Mid Summer          | Propagated By Cuttings | No  |
|-------------------------|---------------------|------------------------|-----|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes |
| Fruit/Seed Abundance    | High                | Propagated By Sod      | No  |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No  |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No  |

| Fruit/Seed Persistence  | No | Seed Per Pound         | 259000   |
|-------------------------|----|------------------------|----------|
| Propagated By Bare Root | No | Seed Spread Rate       | Moderate |
| Propagated By Bulbs     | No | Seedling Vigor         | Medium   |
| Propagated By Container | No | Small Grain            | No       |
| Propagated By Corms     | No | Vegetative Spread Rate | Slow     |

#### Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |
| Lumber Product         | No   | Protein Potential       | Medium |
| Naval Store Product    | No   | Pulpwood Product        | No     |
| Nursery Stock Product  | No   | Veneer Product          | No     |

Panicum virgatum L. switchgrass PAVI2

**Cultivar: Shelter** 

#### Summary

Native Status

| Duration     | Perennial | Federal I/E Status         |           |
|--------------|-----------|----------------------------|-----------|
| Growth Habit | Graminoid | National Wetland Indicator | UPL, FACW |

Morphology/Physiology

| Active Growth Period        | Summer   | Fruit/Seed Conspicuous      | No          |
|-----------------------------|----------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Moderate | Growth Form                 | Rhizomatous |
| Bloat                       | None     | Growth Rate                 | Rapid       |
| C: N Ratio                  | High     | Height at Base Age, Maximum |             |
| Coppice Potential           | No       | Height at Maturity          | 4.5         |
| Fall Conspicuous            | No       | Known Allelopath            | No          |
| Fire Resistant              | No       | Leaf Retention              | No          |
| Flower Color                | Yellow   | Lifespan                    | Long        |
| Flower Conspicuous          | No       | Low Growing Grass           | No          |
| Foliage Color               | Green    | Nitrogen Fixation           |             |
| Foliage Porosity Summer     | Dense    | Resprout Ability            | No          |
| Foliage Porosity Winter     | Moderate | Shape and Orientation       | Erect       |
| Foliage Texture             | Coarse   | Toxicity                    | None        |
| Fruit/Seed Color            | Brown    |                             |             |

## **Growth Requirements**

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium     |
|----------------------------------|--------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5        |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.5        |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | No     | Precipitation, Minimum             | 30         |
| Drought Tolerance                | Medium | Precipitation, Maximum             | 45         |
| Fertility Requirement            | High   | Root Depth, Minimum                | 12         |
| Fire Tolerance                   | High   | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 145    | Shade Tolerance                    | Intolerant |
| Hedge Tolerance                  |        | Temperature, Minimum (°F)          | -23        |

| Bloom Period            | Mid Summer          | Propagated By Cuttings | No       |
|-------------------------|---------------------|------------------------|----------|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes      |
| Fruit/Seed Abundance    | Medium              | Propagated By Sod      | No       |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No       |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No       |
| Fruit/Seed Persistence  | No                  | Seed Per Pound         | 259000   |
| Propagated By Bare Root | No                  | Seed Spread Rate       | Moderate |
| Propagated By Bulbs     | No                  | Seedling Vigor         | Low      |
| Propagated By Container | No                  | Small Grain            | No       |
| Propagated By Corms     | No                  | Vegetative Spread Rate | Slow     |

# Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |
| Lumber Product         | No   | Protein Potential       | Medium |
| Naval Store Product    | No   | Pulpwood Product        | No     |
| Nursery Stock Product  | No   | Veneer Product          | No     |

Panicum virgatum L. switchgrass PAVI2

**Cultivar: Summer** 

# Summary

| Duration      | Perennial | Federal T/E Status         |           |
|---------------|-----------|----------------------------|-----------|
| Growth Habit  | Graminoid | National Wetland Indicator | UPL, FACW |
| Native Status |           |                            |           |

4/14/2008 11:59 AM 16 of 19

# Morphology/Physiology

| Active Growth Period        | Summer     | Fruit/Seed Conspicuous      | No          |
|-----------------------------|------------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Moderate   | Growth Form                 | Rhizomatous |
| Bloat                       | None       | Growth Rate                 | Rapid       |
| C:N Ratio                   | Medium     | Height at Base Age, Maximum |             |
| Coppice Potential           | No         | Height at Maturity          | 4.5         |
| Fall Conspicuous            | No         | Known Allelopath            | No          |
| Fire Resistant              | No         | Leaf Retention              | No          |
| Flower Color                | Yellow     | Lifespan                    | Long        |
| Flower Conspicuous          | No         | Low Growing Grass           | No          |
| Foliage Color               | Gray-Green | Nitrogen Fixation           |             |
| Foliage Porosity Summer     | Dense      | Resprout Ability            | No          |
| Foliage Porosity Winter     | Moderate   | Shape and Orientation       | Erect       |
| Foliage Texture             | Coarse     | Toxicity                    | None        |
| Fruit/Seed Color            | Brown      |                             |             |

## **Growth Requirements**

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium     |
|----------------------------------|--------|------------------------------------|------------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5        |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.5        |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |            |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |            |
| Cold Stratification Required     | No     | Precipitation, Minimum             | 13         |
| Drought Tolerance                | Medium | Precipitation, Maximum             | 45         |
| Fertility Requirement            | High   | Root Depth, Minimum                | 12         |
| Fire Tolerance                   | High   | Salinity Tolerance                 | Medium     |
| Frost Free Days, Minimum         | 140    | Shade Tolerance                    | Intolerant |
| Hedge Tolerance                  |        | Temperature, Minimum (°F)          | -33        |

## Reproduction

| Bloom Period            | Fall                | Propagated By Cuttings | No       |
|-------------------------|---------------------|------------------------|----------|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes      |
| Fruit/Seed Abundance    | High                | Propagated By Sod      | No       |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No       |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No       |
| Fruit/Seed Persistence  | No                  | Seed Per Pound         | 259000   |
| Propagated By Bare Root | No                  | Seed Spread Rate       | Moderate |
| Propagated By Bulbs     | No                  | Seedling Vigor         | Medium   |
| Propagated By Container | No                  | Small Grain            | No       |
| Propagated By Corms     | No                  | Vegetative Spread Rate | Slow     |
|                         |                     |                        |          |

No

## Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |
| Lumber Product         | No   | Protein Potential       | Medium |
| Naval Store Product    | No   | Pulpwood Product        | No     |
| Nursery Stock Product  | No   | Veneer Product          | No     |

Panicum virgatum L. switchgrass PAVI2

**Cultivar: Trailblazer** 

#### **Summary**

| Duration     | Perennial | Federal T/E Status         |           |
|--------------|-----------|----------------------------|-----------|
| Growth Habit | Graminoid | National Wetland Indicator | UPL, FACW |

Summer

**Native Status** 

## Morphology/Physiology

Active Growth Period

|                             |            | •                           |             |
|-----------------------------|------------|-----------------------------|-------------|
| After Harvest Regrowth Rate | Moderate   | Growth Form                 | Rhizomatous |
| Bloat                       | None       | Growth Rate                 | Rapid       |
| C:N Ratio                   | Medium     | Height at Base Age, Maximum |             |
| Coppice Potential           | No         | Height at Maturity          | 5           |
| Fall Conspicuous            | No         | Known Allelopath            | No          |
| Fire Resistant              | No         | Leaf Retention              | No          |
| Flower Color                | Yellow     | Lifespan                    | Long        |
| Flower Conspicuous          | No         | Low Growing Grass           | No          |
| Foliage Color               | Gray-Green | Nitrogen Fixation           |             |
| Foliage Porosity Summer     | Dense      | Resprout Ability            | No          |
| Foliage Porosity Winter     | Dense      | Shape and Orientation       | Erect       |
| Foliage Texture             | Medium     | Toxicity                    | None        |
| Fruit/Seed Color            | Brown      |                             |             |

Fruit/Seed Conspicuous

## **Growth Requirements**

| Adapted To Coarse Textured Soils | Yes    | Moisture Use                       | Medium |
|----------------------------------|--------|------------------------------------|--------|
| Adapted To Medium Textured Soils | Yes    | pH, Minimum                        | 4.5    |
| Adapted To Fine Textured Soils   | Yes    | pH, Maximum                        | 7.7    |
| Anaerobic Tolerance              | Medium | Planting Density Per Acre, Minimum |        |
| CaCO3 Tolerance                  | Low    | Planting Density Per Acre, Maximum |        |
| Cold Stratification Required     | No     | Precipitation, Minimum             | 13     |

| Drought Tolerance        | Medium | Precipitation, Maximum    | 42         |
|--------------------------|--------|---------------------------|------------|
| Fertility Requirement    | High   | Root Depth, Minimum       | 12         |
| Fire Tolerance           | High   | Salinity Tolerance        | Medium     |
| Frost Free Days, Minimum | 150    | Shade Tolerance           | Intolerant |
| Hedge Tolerance          | None   | Temperature, Minimum (°F) | -33        |

| Bloom Period            | Late Summer         | Propagated By Cuttings | No     |
|-------------------------|---------------------|------------------------|--------|
| Commercial Availability | Routinely Available | Propagated By Seed     | Yes    |
| Fruit/Seed Abundance    | High                | Propagated By Sod      | No     |
| Fruit/Seed Period Begin | Summer              | Propagated By Sprigs   | No     |
| Fruit/Seed Period End   | Fall                | Propagated By Tubers   | No     |
| Fruit/Seed Persistence  | No                  | Seed Per Pound         | 259000 |
| Propagated By Bare Root | No                  | Seed Spread Rate       | Slow   |
| Propagated By Bulbs     | No                  | Seedling Vigor         | Medium |
| Propagated By Container | No                  | Small Grain            | No     |
| Propagated By Corms     | No                  | Vegetative Spread Rate | Slow   |

# Suitibility/Use

| Berry/Nut/Seed Product | No   | Palatable Browse Animal | Medium |
|------------------------|------|-------------------------|--------|
| Christmas Tree Product | No   | Palatable Graze Animal  | High   |
| Fodder Product         | Yes  | Palatable Human         | No     |
| Fuelwood Product       | None | Post Product            | No     |
| Lumber Product         | No   | Protein Potential       | Medium |
| Naval Store Product    | No   | Pulpwood Product        | No     |
| Nursery Stock Product  | No   | Veneer Product          | No     |

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