Diversity Issues

- Deficiency of adapted, winter hardy, pest resistant woody plants suitable for park and recreational landscape use in North Dakota
- Much of the current commercially available nursery stock is not suitable for ND.
- Need to increase plant diversity in response to disease and insect pest issues.
- Planting and cultural limitations often lead to monoculture plantings within communities.

Monoculture Planting

- Trees that perform well have increased use
  - Elm, Ash, Maple
  - Often planted in high percentages
  - Each have disease and pest issues
- Diversity Planting Guidelines
  - No more than 20% of a family
    - Betulaceae – Birch Family
  - No more than 10% of a genus within a family
    - Birch (Betula spp.), Alder (Alnus spp.), American hornbeam (Carpinus caroliniana) American hophornbeam (Ostrya virginiana)
  - No more than 5% of a species within a genus
    - Paper Birch (Betula papyrifera)
- Guidelines often not followed
  - Williston residential park in 2013 was planted with 100% green ash, no diversity

'Look Around' Rule

- This rule is helpful for homeowners and landscaper working on a smaller scale.
- This rule states when you select a tree; look around, if you see a lot of a particular species, plant something else.
Emerald Ash Borer

- Infests Ash species
- Discovered 2002 near Detroit, MI
- Discovered 2009 in MN
- Responsible for killing millions of trees across the U.S.

Asian Longhorn Beetle

- Infests
  - Maple, Buckeye, Willow, Elm, Birch, Hackberry, Ash, Poplar and Mountain-ash
- Discovered 2013 in MN

Dutch Elm Disease

- Infests American Elm
- Confirmed in ND
- Suggested to plant resistant hybrids or cultivars
Spruce Needle Cast Disease

- Infests Colorado Blue Spruce and Black Hills Spruce
- Confirmed in ND

Tree Diversity Suggestions

Prairie Expedition® American Elm
(*Ulmus americana* 'Lewis & Clark')

Deciduous

Prairie Expedition® Foliage

Prairie Expedition® Boulevard Planting

DED Resistant
Bur Oak
(*Quercus macrocarpa*)

- North Dakota's only oak species.
- Long lived, 250 to 500 years.
- Large spreading form may limit where it can be planted successfully in the landscape.

Urban Pinnacle® Bur Oak
(*Quercus macrocarpa 'JFS-KW3' PP 22815*)

Undergoing propagation and trial by the Woody Plants Program

Photo by Greg Morgenson, NDSU

Upright Bur Oak
*Quercus macrocarpa TS13052*
Prairie Stature® Oak
*Quercus x bimundorum* ‘Midwest’

Mongolian Oak
(*Quercus mongolica*)

Northern Flare® Sugar Maple
*Acer saccharum* ‘Sisseton’

Common Hackberry – *Celtis occidentalis*
- Bark is uniquely corky
- Attractiveness of the bark is subjective.
- Urban tolerant.
- Great tree for poor conditions.
- Leaves often have unattractive hackberry nipple galls.

Photos by [http://commons.wikimedia.org](http://commons.wikimedia.org)
American Hophornbeam
(Ostrya virginiana)

Northern Acclaim® Thornless Honey-locust
(Gleditsia triacanthos var. inermis ‘Harve’)

Streetkeeper® Honeylocust

Kentucky Coffeetree (Gymnocladus dioicus)

- Hardy zone 3
- Separate male and female trees
- No serious insect or disease problems.
- Drought and air pollution tolerant.
- Late to leaf out.
Amur Corktree
*Phellodendron amurense*
- Bark is heavy and corky.
- 40 x 50’
- Horizontally spreading branches create interesting shape.
- Unusually free of pests and disease issues.
- Drought tolerant.

Dakota Pinnacle® Asian White Birch *Betula platyphylla* ‘Fargo’ (PP10963)

Prairie Dream® Paper Birch *Betula papyrifera* ‘Varen’ (PP15,768)
Ohio Buckeye

Prairie Torch® Hybrid Buckeye Aesculus x 'Bergeson'

Prairie Torch® Buckeye

Autumn Splendor Buckeye

Homestead Buckeye

Upright Ohio Buckeye Aesculus glabra ‘NDSU 13006’

- Potential NDSU future release.
- 2012 with drought, no leaf scorch.
- 12' wide
- Being evaluated by Carlton Plants, LLC (Dayton, OR)

Photos by Greg Morgenson, NDSU
Flowering

Pagoda Dogwood (*Cornus alternifolia*)

- Hardy zone 3
- Growing to 25 feet with a trunk up to 6 inches in diameter.
- Tiered horizontal branching.
- Small white flowers with black persisting berries.
- Shade tolerant.

Japanese Tree Lilac (*Syringa reticulata*)

Golden Eclipse Japanese Tree Lilac

Copper Curls® Pekin Lilac

*Syringa reticulata* spp. *pekinensis* ‘SunDak’

JTL flowers and bark
Copper Curls® Pekin Lilac  
*Syringa reticulata spp. pekinensis* ‘SunDak’

Prairie Gem® Flowering Pear  
*Pyrus ussuriensis* ‘MorDak’

Also: Beijing Gold®, China Snow®, Summer Charm®

Spring Welcome® Magnolia  
*Magnolia x loebneri* ‘Ruth’

Swiss Stone Pine (*Pinus cembra*)

- Extremely cold hardy
- Slow-growing, medium-sized pine
- Narrow pyramidal shape in its youth, gradually becoming more rounded.
- Typically grows 30-40’ tall in cultivation.
- Deer tolerant.
- Very resistant to white pine blister rust.
- Can get salt burn along roadsides.
- ‘Chalet’ or ‘Herman’

Evergreens

- Extremly cold hardy
- Slow-growing, medium-sized pine
- Narrow pyramidal shape in its youth, gradually becoming more rounded.
- Typically grows 30-40’ tall in cultivation.
- Deer tolerant.
- Very resistant to white pine blister rust.
- Can get salt burn along roadsides.
- ‘Chalet’ or ‘Herman’
Swiss Stone Pine (*Pinus cembra*)

*Prairie Statesman® Swiss Stone Pine*

Royal Splendor® Norway Spruce (*Picea abies* ‘Noel’)

- NDSU Release
- 40 x 25’
- Maintains a narrowly pyramidal form which is not typical of the species which typically develops drooping pendulous tertiary branchlets when mature.
- Medium to fast growth rate.
- Resistant to needle cast diseases
- Available from Iseli Nursery and Oregon Pride Nurseries

Green Canyon™ Rocky Mountain Douglas-fir (*Pseudotsuga menziesii* var. *glauca* ‘Winterscape’)

Balsam Fir (*Abies balsamifera*)