National Elm Trial
Bismarck, North Dakota

- Established: 2005, with replacement trees or additional cultivars added in each year 2006 to 2009.
- Located on in Bismarck, ND.
- 22 elm cultivars were planted
- All Alee, Dynasty, New Harmony and Princeton trees died within 2 years, so were considered “not established.”
- Growing site conditions were severe due to periodic damage from severe drought, weed competition, tillage, rabbit girdling, hail, and a tornado.
National Elm Trial
Bismarck, North Dakota Location

- The public may view the elms, but arrangement for access through locked gate is via the Bismarck Director of Service Operations (http://www.bismarcknd.gov/index.aspx?nid=96).
- The trees are located on the south side of Bismarck Landfill (2111 N 52nd St) along 17th Ave. NE, starting east of 66th St. NE.
- Plot will be removed pending funding of a state facility.
National Elm Trial
North Dakota Contacts

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Rating Notes on Bismarck, ND Elms

• The performance of each tree was rated based on a combination of health, vigor, and crown form. Rating scale: Excellent - 5 points; Very good - 4 points; Good - 3 points; Fair - 2 points; Poor - 1 point; Dead - 0 points.

• Tree performance was based on trees that established, whether or not they were alive in 2014.

• Height, crown width (CW), and diameter breast height (dbh) growth rates were the average of trees that established.

• Crown shape was based on trees that were alive in 2014.
Height Growth/Year

The graph shows the height growth per year for various species, with error bars indicating variability. The species listed include Lewis & Clark, New Harmony, Princeton, Valley Forge, Frontier, Morton Stalwart, Pioneer, Homestead, Patriot, Morton Red Tip, Morton, Emer II, JFS Bieberich, Morton Plainsman, New Horizon, Morton Glossy, and Prospector. The x-axis represents the species, and the y-axis shows the height growth per year (m) with error bars indicating variability.
Crown Width Growth/Year

The chart shows the crown width growth per year for various tree varieties. The y-axis represents crown width growth per year in meters (m), and the x-axis lists the tree varieties, including Lewis & Clark, New Harmony, Princeton, Valley Forge, Frontier, Morton Stalwart, Pioneer, Homestead, Patriot, Morton Red Tip, Morton, Emer II, JFS Bieberich, Morton Plainsman, New Horizon, Morton Glossy, and Prospector. Each bar indicates the average growth with error bars showing the variability.
Cultivar Ratings

The diagram above shows the ratings for various cultivars across different criteria: Foliar_insect_damage, Scale_insect_damage, Disease_damage, and Vigor_rating. Each cultivar is represented by a bar, with the height indicating the rating from 1 (poor) to 5 (excellent). The cultivars are listed on the x-axis, and the y-axis represents the rating. The chart allows for a clear comparison of how each cultivar performs in terms of disease and insect damage resistance and vigour.
‘Emerald Sunshine’ ® (*Ulmus propinqua*)

- Date: Fall 2014
- Survival: 75%
- Performance rating: 0.3
- Diameter at 1.4m (cm): N/A
- Diameter growth rate (cm/yr): 0.2
- Height (m): N/A
- Height growth rate (cm/yr): 1.5
- Crown shape: oval
- Crown width (m): N/A
- Crown width growth rate (cm/yr): 6.4
- Insects: N/A
- Disease: N/A

‘Princeton’ (*Ulmus americana*)

- Date: Fall 2014
- Survival: 0%
- Performance rating:
- Diameter at 1.4m (cm): N/A
- Diameter growth rate (cm/yr): N/A
- Height (m): N/A
- Height growth rate (cm/yr): N/A
- Crown shape: N/A
- Crown width (m): N/A
- Crown width growth rate (cm/yr): N/A
- Insects: N/A
- Disease: N/A

No pictures available

No picture available since no trees established
‘Frontier’ (*Ulmus carpinifolia X U. parvifolia*)

- Date: Fall 2014
- Survival: 50%
- Performance rating: 0.5
- Diameter at 1.4m (cm): N/A
- Diameter growth rate (cm/yr): 0.1
- Height (m): N/A
- Height growth rate (cm/yr): 2.1
- Crown shape: Oval
- Crown width (m): N/A
- Crown width growth rate (cm/yr): 0.0
- Insects: N/A
- Disease: N/A

‘Homestead’ (*U. glabra X U. carpinifolia X U. pumila*)

- Date: Fall 2014 Pictures 2015
- Survival: 80%
- Performance rating: 1.5
- Diameter at 1.4m (cm): N/A
- Diameter growth rate (cm/yr): 0.7
- Height (m): N/A
- Height growth rate (cm/yr): 7.6
- Crown shape: Vase (oval)
- Crown width (m): N/A
- Crown width growth rate (cm/yr): 19.2
- Insects: N/A
- Disease: N/A
‘Morton Glossy’ Triumph™ (U. pumila X U. japonica X U. wilsoniana)

Date: Fall 2014/Pictures 2015
Survival: 100%
Performance rating: 5.0
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): 0.9
Height (m): N/A
Height growth rate (cm/yr): 24.4
Crown shape: Vase
Crown width (m): N/A
Crown width growth rate (cm/yr): 29.0
Insects: N/A
Disease: N/A

‘Morton Plainsman’ Vanguard™ (U. pumila X U. japonica)

Date: Fall 2014/Pictures 2015
Survival: 80%
Performance rating: 4.0
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): 1.3
Height (m): N/A
Height growth rate (cm/yr): 37.2
Crown shape: Vase
Crown width (m): N/A
Crown width growth rate (cm/yr): 44.2
Insects: N/A
Disease: N/A
‘Morton Red Tip’ Danada Charm™ (U. japonica X U. wilsoniana)

Date: Fall 2014/Pictures 2015
Survival: 100%
Performance rating: 5.0
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): 1.3
Height (m): N/A
Height growth rate (cm/yr): 33.8
Crown shape: Vase
Crown width (m): N/A
Crown width growth rate (cm/yr): 41.8
Insects: N/A
Disease: N/A

‘Morton Stalwart’ Commendation™ (U. carpinifolia X U. pumila X U. wilsoniana)

Date: Fall 2014/Pictures 2015
Survival: 100%
Performance rating: 3.4
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): 0.9
Height (m): N/A
Height growth rate (cm/yr): 18.2
Crown shape: Oval (Vase)
Crown width (m): N/A
Crown width growth rate (cm/yr): 33.2
Insects: N/A
Disease: N/A
‘Morton’ Accolade ® (*U. japonica X U. wilsoniana*)

- Date: Fall 2014/Pictures 2015
- Survival: 60%
- Performance Rating: 3.0
- Diameter at 1.4m (cm): N/A
- Diameter growth rate (cm/yr): 0.9
- Height (m): N/A
- Height Growth rate (cm/yr): 25.3
- Crown shape: Oval (Vase)
- Crown width (m): N/A
- Crown width growth rate (cm/yr): 55.2
- Insects: N/A
- Disease: N/A

‘New Horizon’ (*U. pumila X U. japonica*)

- Date: Fall 2014/Pictures 2015
- Survival: 100%
- Performance rating: 5.0
- Diameter at 1.4m (cm): N/A
- Diameter growth rate (cm/yr): 1.2
- Height (m): N/A
- Height growth rate (cm/yr): 32.0
- Crown shape: Oval
- Crown width (m): N/A
- Crown width growth rate (cm/yr): 34.1
- Insects: N/A
- Disease: N/A
‘Patriot’ (U. glabra X U. carpinifolia X U. pumila) X U. wilsoniana

Date: Fall 2014/Pictures 2015
Survival: 40%
Performance rating: 2.0
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): 1.0
Height (m): N/A
Height growth rate (cm/yr): 10.4
Crown shape: Vase to oval
Crown width (m): N/A
Crown width growth rate (cm/yr): 22.9
Insects: N/A
Disease: N/A

‘Pioneer’ (U. glabra X U. carpinifolia)

Date: Fall 2014/Pictures 2015
Survival: 80%
Performance rating: 3.6
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): 0.9
Height (m): N/A
Height growth rate (cm/yr): 21.9
Crown shape: Oval (Vase)
Crown width (m): N/A
Crown width growth rate (cm/yr): 30.8
Insects: N/A
Disease: N/A
‘Prospector’ (*U. wilsoniana*)

- Date: Fall 2014/Pictures 2015
- Survival: 0%
- Performance rating: 0.0
- Diameter at 1.4m (cm): N/A
- Diameter growth rate (cm/yr): N/A
- Height (m): N/A
- Height growth rate (cm/yr): N/A
- Crown shape: N/A
- Crown width (m): N/A
- Crown width growth rate (cm/yr): N/A
- Insects: N/A
- Disease: N/A

‘Valley Forge’ (*U. americana*)

- Date: Fall 2014/Pictures 2015
- Survival: 20%
- Performance rating: 0.0
- Diameter at 1.4m (cm): N/A
- Diameter growth rate (cm/yr): 0.3
- Height (m): N/A
- Height growth rate (cm/yr): 0.0
- Crown shape: Vase
- Crown width (m): N/A
- Crown width growth rate (cm/yr): 18.9
- Insects: N/A
- Disease: N/A
‘New Harmony’ (*U. americana*)

Jefferson was found to be the same species as Princeton

No pictures available since no trees established

Date: Fall 2014
Survival: 0%
Performance rating: N/A
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): N/A
Height (m): N/A
Height growth rate (cm/yr): N/A
Crown shape: N/A
Crown width (m): N/A
Crown width growth rate(cm/yr): N/A
Insects: N/A
Disease: N/A

‘Jefferson’ (*U. americana*)

Not planted at this site

Date: Fall 2014
Survival: N/A
Performance rating: N/A
Diameter at 1.4m (cm): N/A
Diameter growth rate: N/A
Height (m): N/A
Height growth rate: N/A
Crown shape: N/A
Crown width (m): N/A
Crown width growth rate: N/A
Insects: N/A
Disease: N/A
‘Lewis and Clark’ Prairie Expedition
® (U.americana)

Date: Fall 2014/Pictures 2015
Survival: 80%
Performance rating: 3.0
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): 0.8
Height (m): N/A
Height growth rate (cm/yr): 23.8
Crown shape: Vase (oval)
Crown width (m): N/A
Crown width growth rate (cm/yr): 29.9
Insects: N/A
Disease: N/A

‘Athena Classic’ Lacebark Elm (U. parvifolia)

Date: Fall 2014/
Survival: N/A %
Diameter at 1.4m (cm): N/A
Height (m): N/A
Crown shape: N/A
Crown width (m): N/A
Insects: N/A
Disease: N/A

Not planted at this site
“Dynasty’ (*U. parvifolia*)

Date: Fall 2014/Pictures 2015
Survival: 0%
Performance rating: 0.0
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): N/A
Height (m): N/A
Height growth rate (cm/yr): N/A
Crown shape: N/A
Crown width (m): N/A
Crown width growth rate (cm/yr): N/A
Insects: N/A
Disease: N/A

‘Regal’ (*Ulmus x ‘Regal’*)

Date: Fall 2014
Survival: 20%
Performance rating: 1.0
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): 0.0
Height (m): N/A
Height growth rate (cm/yr): 0.0
Crown shape: Oval
Crown width (m): N/A
Crown width growth rate (cm/yr): 4.0
Insects: N/A
Disease: N/A

No pictures available since no trees established

No picture available only one tree established
‘Discovery’ (*U. japonica*)

Date: Fall 2014/Pictures 2015
Survival: 0%
Performance rating: 0.0
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): N/A
Height (m): N/A
Height growth rate (cm/yr): N/A
Crown shape: N/A
Crown width (m): N/A
Crown width growth rate (cm/yr): N/A
Insects: N/A
Disease: N/A

‘Cathedral’ (*U. pumila* X *U. japonica* X *U. wilsoniana*)

Date: Fall 2014
Survival: 80%
Performance rating: 2.2
Diameter at 1.4m (cm): N/A
Diameter growth rate (cm/yr): 0.2
Height (m): N/A
Height growth rate (cm/yr): 6.7
Crown shape: Oval to Vase
Crown width (m): N/A
Crown width growth rate (cm/yr): 11.6
Insects: N/A
Disease: N/A

No picture available since no trees survived