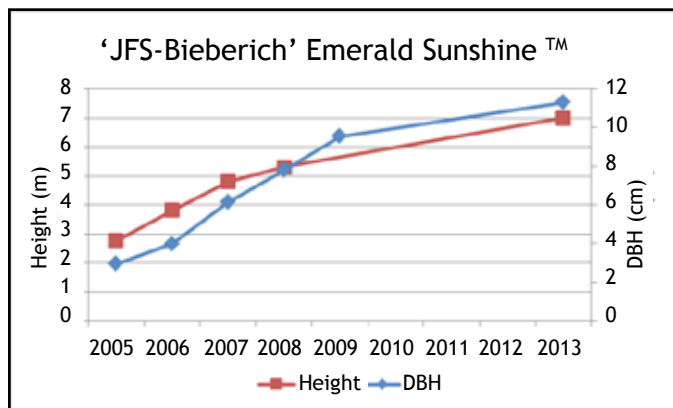


Summary of new elm selection trials

Greg McPherson, PhD, Co-authors: Shannon Albers, Larry Costello, James Harding, and Elena Aguaron

IN 2005, 14 CULTIVARS OF ELM TREES WERE planted on the UC Davis campus. This planting was part of the National Elm Trial, conducted in 18 locations across the nation. Trees for the study were provided by J. F. Schmidt and Sons and Princeton nurseries. The purpose of the study was to determine the growth and horticultural performance of commercially available Dutch elm disease resistant cultivars in various climate regimes. The results of the UC Davis trials after 3 growing seasons was published in the Fall 2009 issue of the *Western Arborist*. Most of the test trees were removed after the various parameters were measured in 2009. One example of each of the 8 best performing cultivars was left to monitor until the study was concluded in 2013. The following report summarizes the data collected on tree growth, habit, pruning requirements, and pest resistance for 8 of the elm cultivars from 2005 to 2013.

Cultivar: 'JFS-Bieberich' Emerald Sunshine™
Parentage: *Ulmus propinqua*



Elm cultivar 'JFS-Bieberich' Emerald Sunshine™ (aka 'Clone D') was measured in 2013 at 7 meters tall with a DBH of 11.3 cm. When last measured in 2008, it was well-received and given a rating of A+. Our visit in 2013 revealed the tree had extreme suckering at the base.

Pruning requirement category: *Least.*

Elm leaf beetle chewing damage category: *Least.*



Photo taken: 08/23/2013



Suckers removed.
 Photo taken: 08/29/2013

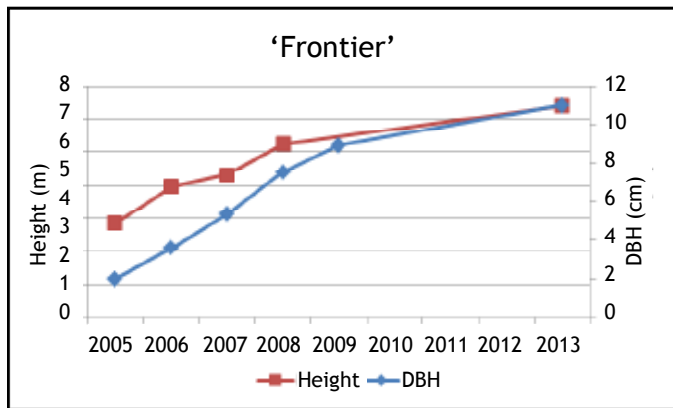


(Above) The leaves of 'JFS-Bieberich' Emerald Sunshine™ are of medium size. New growth and the back of the leaves are covered with a soft pubescence.
 Photo taken: 08/29/2013

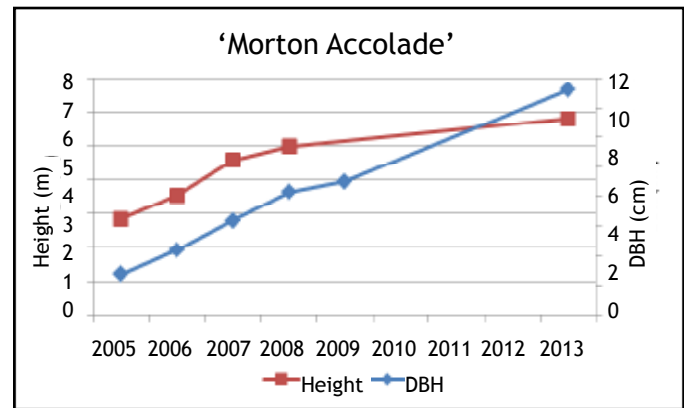


(Right) Branching structure; while given a low pruning rating in 2008, this cultivar may require more care as it ages.
 Photo taken: 08/29/2013

Cultivar: 'Frontier'
 Parentage: *Ulmus carpinifolia* X *Ulmus parvifolia*



Cultivar: 'Morton Accolade'
 Parentage: *Ulmus japonica* X *Ulmus wilsoniana*



Elm cultivar 'Frontier' was measured in 2013 at 6.4 meters tall with a DBH of 11 cm. In 2008 it was given a rating of A+ and it was observed to have red fall foliage. In 2013 we noted that it was rangy with sparse foliage; there was also suckering midway along the trunk.

Pruning requirement category: Least.

Elm leaf beetle chewing damage category: Least.

Elm cultivar 'Morton Accolade' was measured in 2013 at 5.8 meters tall with a DBH of 15.2 cm. Our observations at the time the measurements were taken noted that the crown appeared scraggly along the outer edges and there was suckering midway along the trunk. The interior of the crown was dense offering welcome shade.

Pruning requirement category: Intermediate.

Elm leaf beetle chewing damage category: Least.



Photo taken: 08/23/2013



Photo taken: 08/23/2013



(Left) The leaves of 'Frontier' are small in size and demonstrate symptoms of boron toxicity. They were also the palest green among the other elms trialed. Photo taken: 08/29/2013



Branches have wide angle of attachment and high aspect ratio. Pruning would be required to establish a sturdy, well-spaced canopy. Photo taken: 08/29/2013

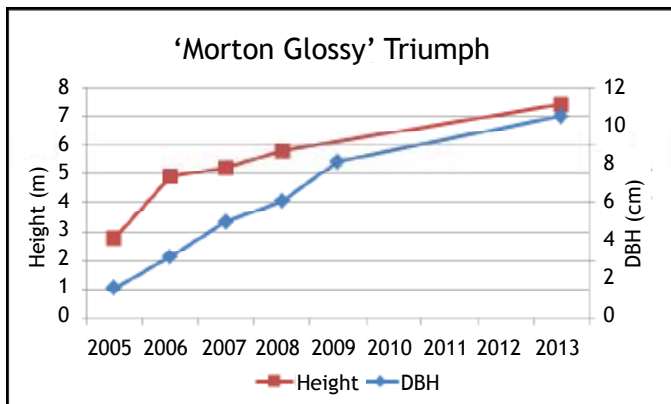


The leaves of 'Morton Accolade' are small to medium in size. Photo taken: 08/29/2013

(Right) Narrow crotch angles led to included bark. The high aspect ratio also makes this tree weaker and thus more prone to breakage. Photo taken: 08/29/2013



Cultivar: 'Morton Glossy' Triumph
Parentage: *Ulmus pumila* X *Ulmus japonica* X *Ulmus*



wilsoniana

Elm cultivar 'Morton Glossy' Triumph was measured in 2013 at 7.4 meters tall with a DBH of 17.5 cm. In 2013 it was our second top selection due to its pleasing crown shape, dense foliage, and lack of suckering.

There was minor leaf damage due to insect pests, but this did not greatly detract from the appearance of the tree.



Photo taken: 08/23/2013

Pruning requirement category: Intermediate.

Elm leaf beetle chewing damage category: Intermediate.

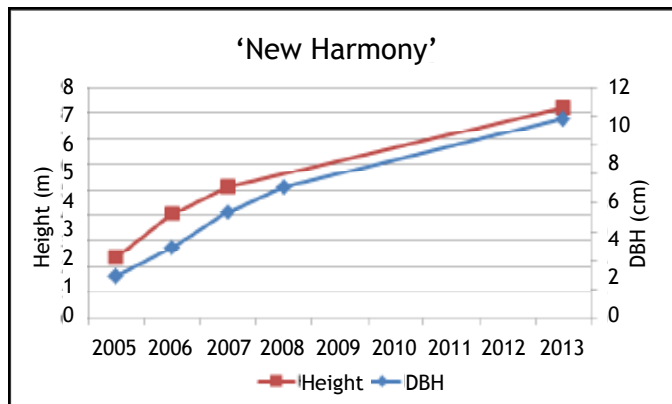


The leaves of 'Morton Glossy' are medium in size and are longer than they are wide. They also had deep green coloration. Photo taken: 08/29/2013



(Lower left) Branch structure; this cultivar was rated as intermediate. Note the included bark on the lower branch. Photo taken: 08/29/2013

Cultivar: 'New Harmony'
Parentage: *Ulmus americana*



Elm cultivar 'New Harmony' was measured in 2013 to be 8.2 meters tall with a DBH of 13.8 cm. In 2008 this tree was given a B+ and it was noted to be liked among the observers. In 2013 we liked this tree for its large leaves that were dark green on top and lighter underneath. This tree was also the most columnar of the elms being trialed. It was our third top selection.



Photo taken: 08/23/2013

Pruning requirement category: Least.

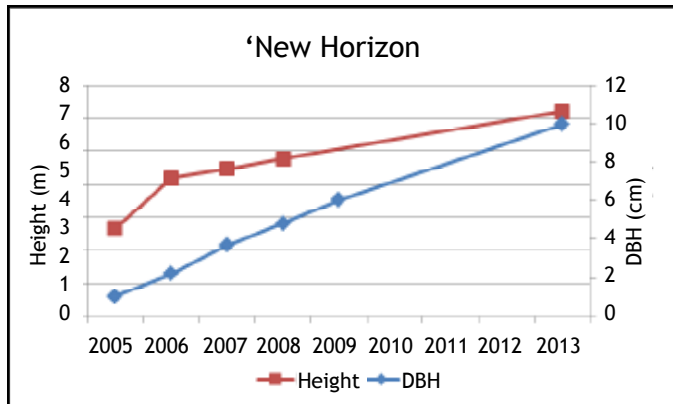
Due to the columnar habit of this cultivar, branch attachment is narrow and close to the trunk. Photo taken: 08/29/2013



'New Harmony' had the largest leaves with a striking contrast between the dark green coloration on top and the silvery pubescence below. Photo taken: 08/29/2013



Cultivar: 'New Horizon'
Parentage: *Ulmus pumila* X *Ulmus japonica*



Elm cultivar 'New Horizon' was measured in 2013 to be 6.2 meters tall with a DBH of 24.9 cm (the largest DBH observed). In 2008 it was noted to be a "great tree". From afar, this tree was among the favorites in 2013 due to its well-shaped, dense crown; overlooking the suckering. Closer observations revealed extensive insect leaf-chewing damage to the crown.



Photo taken: 08/23/2013

Pruning requirement category: Most.

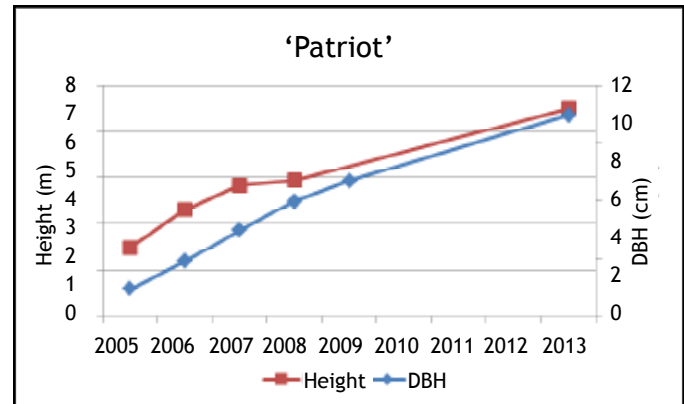
Elm leaf beetle chewing damage category: Intermediate.

(Right) The leaves of 'New Horizon' suffered the most damage from elm leaf beetles. The majority of the canopy was affected. Photo taken: 08/29/2013



(Left) Branch structure; in 2008 it was noted that this cultivar would require intensive pruning. Photo taken: 08/29/2013

Cultivar: 'Patriot'
Parentage: (*Ulmus glabra* X *Ulmus carpinifolia* X *Ulmus pumila*) X *Ulmus wilsoniana*



Elm cultivar 'Patriot' was measured in 2013 to have a height of 9 meters (the tallest observed) and a DBH of 17.4 cm. In 2008 it was noted to be a "tall and skinny" elm, but was well liked and given an A+. In 2013 it was observed to have good branch structure (well-placed in the canopy with sturdy crotch angles) and small leaves. The overall pleasing shape and dense canopy made this elm the number one selection among the measurement crew.



Photo taken: 08/23/2013

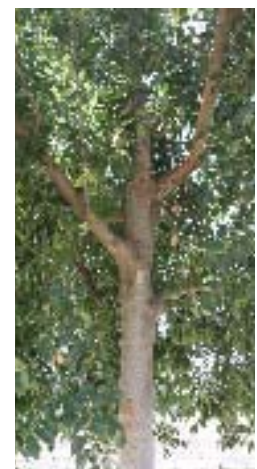
Pruning requirement category: Most.

Elm leaf beetle chewing damage category: Least.

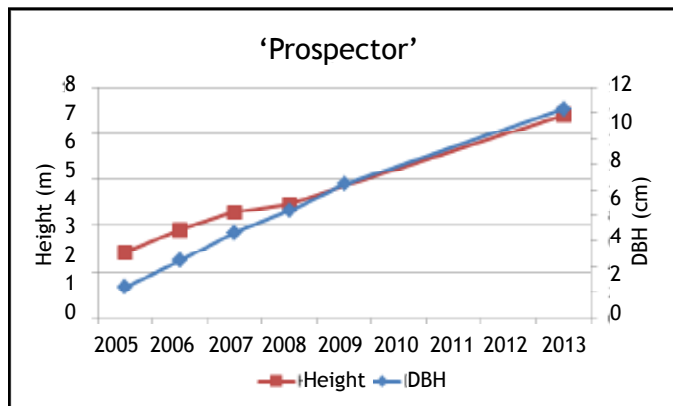


(Above) 'Patriot' had dark green leaves. Photo taken: 08/29/2013

(Right) Branch structure; this cultivar was noted in 2008 to require intensive pruning. Photo taken: 08/29/2013



Cultivar: 'Prospector'
Parentage: *Ulmus wilsoniana*



Elm cultivar 'Prospector' was measured in 2013 to have a height of 8.8 meters and a DBH of 16.3 cm. In 2008 it was given a grade of B-. In 2013 it was observed to have a large, open canopy with minimal suckering.

Pruning requirement category: Most.
Elm leaf beetle chewing damage category: Least.

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Photo taken: 08/23/2013



Branch structure; in 2008 it was noted that this cultivar would require intensive pruning. Photo taken: 08/29/2013



(Left) 'Prospector' appeared to be the most sensitive to boron; the margins showing signs of toxicity. Photo taken: 08/29/2013

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