

KSU HORTICULTURE RESEARCH CENTER ORNAMENTALS TESTING PROGRAM

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The KSU Horticulture Research Center at Wichita, Kansas is located geographically in the middle of the transition zone (USDA zone 6) and midway between the main campus of Kansas State University in Manhattan, KS (zone 5) and Oklahoma State University in Stillwater, OK (zone 7). A major component of the ornamental research program at this facility is the evaluation of species and cultivars for the nursery industry and the large urban audience of Wichita. Climate is characterized by cold, dry winters and hot summers with extreme fluctuations in temperature ranging from - 18" to 110 °F and an average rainfall of 28-30 inches per year. Emphasis is placed on stress-related field tests for winter hardiness, heat and drought stress and adaptability for landscape use. Information on performance is provided to nurserymen, propagators and other industry groups in the region (Pair 1986).

Specific projects as outlined below include being a trial site for the USDA Regional Plant Introduction Station at Ames, IA. An example of a new plant introduction received for evaluation in 1973 is the Shantung or

Purpleblow Maple (Acer truncatum) . The species is well adapted to arid regions, hardy throughout zones 5 & 6, has shown no leaf scorch nor insect and disease pests and produces a late maroon fall color. It has been propagated as a new plant introduction for the southern Great Plains (Pair 1986).

A recent participant in the National Crabapple Evaluation, coordinated by the Morton Arboretum, over 50 crabapple selections have been evaluated for flowering, fruiting, disease incidence and ornamental characteristics. New cultivars are added each year as they are introduced by the nursery industry.

A specific, stress related, hard maple trial includes 10 selections of Acer saccharum and A. nigrum being evaluated for growth, drought stress, fall color and leaf tatter. This species and cultivar trial which began in 1983 has shown considerable difference in growth and performance among cultivars . Among the most notable results is the superior growth, fall color and lack of leaf tatter by the Caddo maple, a southern ecotype of

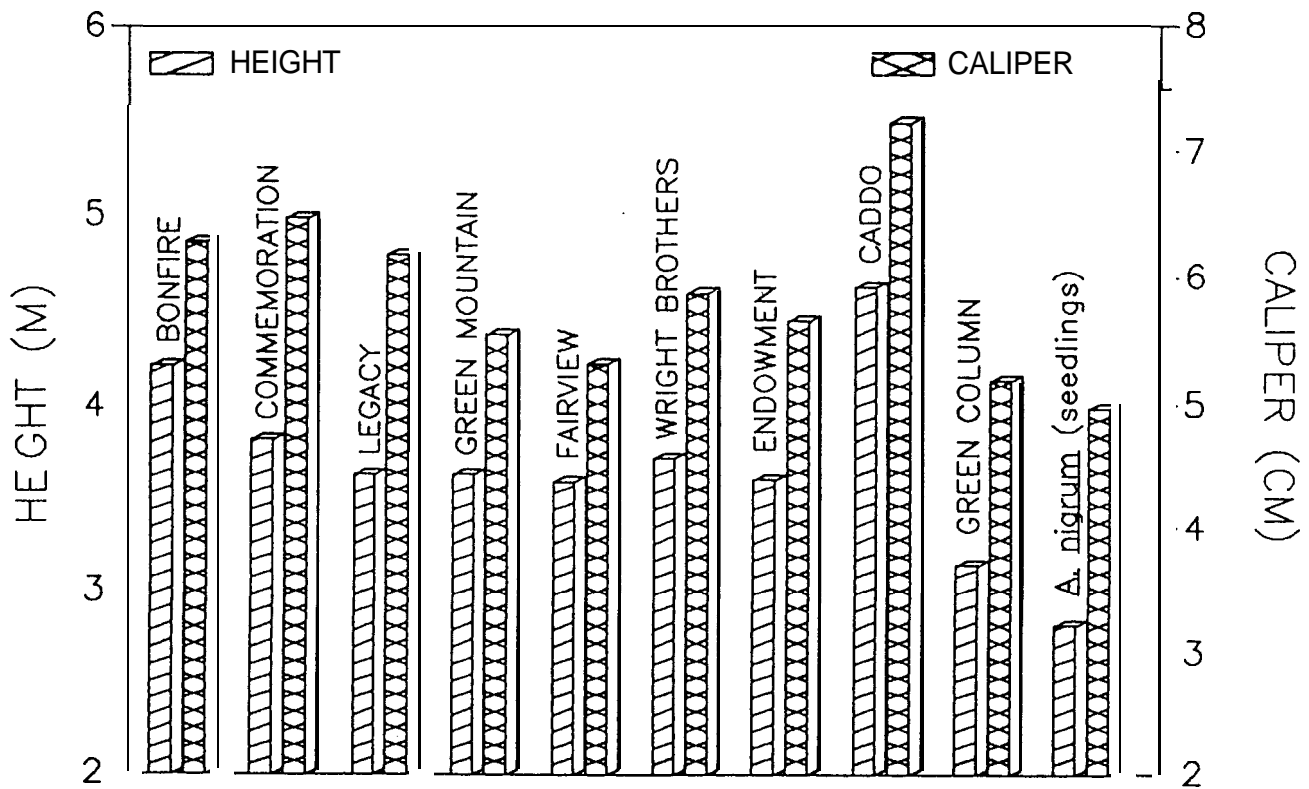


Figure 1. Six Years Growth of Maple Cultivars

sugar maple native to Oklahoma which grew to an excess of 4.5 meters in 6 years (Fig. 1). Other very vigorous cultivars were ‘Bonfire’ except leaf tatter was quite severe and ‘Commemoration’ which was resistant to tatter.

To specifically focus on the leaf tatter of this maple collection, Liz Conley, a student working with Dr. Ellen Paporozzi of the University of Nebraska collected leaf samples at periodic intervals to examine cellular differences that may be responsible for variations in leaf tatter. *Acer saccharum* cultivars ‘Green Mountain’ and ‘Legacy’ were compared with Caddo maple seedlings from April

through October. Samples were measured for leaf area, width and petiole size and then embedded and sectioned for anatomical observations. Preliminary observations indicate that ‘Green Mountain’ which was quite susceptible to leaf tatter under our conditions, had larger, thicker leaves, which contained more spongy mesophyll than the smaller leaves from the Caddo seedlings. ‘Legacy’ and Caddo seedling sugar maples are less susceptible to tatter. ‘Legacy’ leaves, which are intermediate in size, had less spongy mesophyll than ‘Green Mountain’, but more spongy mesophyll than Caddo seedling leaves. Whether this thickness difference is the cause

for leaf tatter in maples is still under investigation.

Recently a greater emphasis has been placed on selections among stress -tolerant species showing superior performance and having potential for release as new cultivars. An example is an evaluation of numerous selections of male, thornless, Osage orange (Maclura pomifera). This dioecious species has proven its merits as a drought tolerant and pest resistant species for use in windbreaks in the Plains states and is now being suggested as an urban tree for difficult planting sites. Obviously, the two objections for an ornamental species are the stout thorns on juvenile growth and large grapefruit size, globular fruit on female trees. Several male cultivars occur in the nursery industry, but most produce considerable thorny, juvenile growth the first few years in production. In a trial comparing named cultivars with several local trees identified as thornless male specimens, one selection named 'Wichita' has been recently introduced. Other selections are still being evaluated. Propagation is easily accomplished by budding on softwood and hardwood cuttings (Pair et al. 1981).

Another well adapted ornamental species is the Lacebark or true Chinese elm (Ulmus parvifolia). It continues to be in great demand as an attractive, pest -resistant species with good drought tolerance and adaptability to clay soil. Numerous cultivars are being evaluated including a comparison with the champion tree of the species at

Garden City, KS, a giant specimen with qualities which are deserving of a cultivar. It has now been propagated vegetatively for further evaluation on other sites.

Due to the diversity in the climate of Kansas, a concerted effort is made to test species at various locations within the state via a network of branch stations. Each year five species of trees are planted at five locations to examine performance, especially of the more arid sites of western Kansas. Several new species have been found which are hardy and tolerate more alkaline conditions (Hensley , D.S. et al. 1989). Examples of trees adapted state wide are Crataegus crus-galli inermis, Quercus shumardii and Acer truncatum .

In addition to tree evaluations, a variety of dwarf shrub species have been tested. A trial of 30 species and cultivars was recently evaluated in field trials at Hays and Wichita, KS, representing zones 5 and 6 respectively. Results are summarized in Report of Progress No. 601 available from the Kansas Agricultural Experiment Station (Pair et al. 1990).

Although predominately woody plant evaluations are conducted at the research center, numerous herbaceous species are also tested, including annual flowers, perennials and ornamental grasses. Results of plant investigations from field trials help to expand the existing horticulture industry as well as supply the growing demand by the

large, urban population center of the Wichita area.

LITERATURE CITED

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