

## **THE NEBRASKA STATEWIDE ARBORETUM AND ITS PLANT INTRODUCTION PROGRAM**

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The Nebraska Statewide Arboretum was incorporated as a non-profit organization (501 c-3) in 1978, its mission being to: “operate exclusively for educational and research purposes to promote knowledge, appreciation and use of indigenous and introduced flora of Nebraska and for the benefit of citizens and government entities of Nebraska.”

The Nebraska Statewide Arboretum is affiliated with the University of Nebraska, and receives operating support from its institute of Agriculture and Natural Resources, but has an independent advisory board and raises much of its own funds through individual and corporate memberships, and gifts and grants.

The NSA is a multiple-site arboretum, an association of independent, affiliated arboretum sites located across the State of Nebraska. It has grown from three charter sites in 1978 to forty-two sites in 1990. The affiliated sites are located at schools, college and university campuses, public parks, natural resource districts, hospitals, state and federal

lands and other areas generally open to the public. They range in size and complexity from small display areas with good labeling to large, full -scale botanical enterprises. Three of five University of Nebraska Regional Research and Extension Centers are affiliated sites, as are the two campuses of the University of Nebraska – Lincoln, the four state colleges, the Technical Agriculture College and five private colleges and universities. The State Fair, the State Capitol and the Nebraska National Forest also have arboreta.

Affited sites pay a membership fee, and in return they receive educational and professional literature, training sessions for curators, design and program expertise, signs and labels, centralized computer plant records, promotion and advertising and new and unusual plants for trial and display. Sites applying for NSA membership must meet minimum administrative, collections and educational criteria, and once accepted by the NSA Board, are categorized as organizing, associate, and fully

accredited sites according to a periodic standards of excellence review.

Over 800 individual and corporate members receive a number of periodic publications, including the bi-monthly magazine "Garden", a quarterly journal "The Seed" and a newsletter "Leafings." Members are invited to participate in events such as Spring Affair, which is an annual perennial plant sale and garden symposium, and the annual Trees for Nebraska Conference. There are other benefits, such as member discounts and the opportunity to purchase excess trial plants at cost.

The NSA full-time staff consists of a Director, Education Director, Curator of Plants and a Secretary, all university employees. Other part-time seasonal, or full-time temporary employees are hired through grants or other private funds. There is a great reliance on volunteers and board committees for many tasks, including special events, promotions, fund raising and membership drives.

In addition to the usual functions of publishing, events, educational programs, membership and curation, the NSA is also a major distributor of matching grant funds. For the past four years, and for at least several years into the future, NSA has been and will be the vehicle for distributing over one million dollars in matching grant monies to Nebraska communities for landscape projects, which include arboretum development, school and campus beautification and street tree

and park enhancement. By 1992, over sixty Nebraska communities will have availed themselves of this unique opportunity, which has been funded by the Peter Kiewit Foundation of Omaha, Nebraska. The NSA, through this unique grant opportunity, has become a major factor in Nebraska community development.

In the relatively short time since its inception, much of the energy of the NSA has been devoted to building the organization, through expanding the categories of membership, and developing funding and promotional opportunities. As the Nebraska Statewide Arboretum matures organizationally an expanding emphasis will necessarily be put upon plant introductions, trials and records, since collections are necessarily the core program of any arboretum or botanical garden.

Since the NSA is an organization of many various sites, scattered across an immense geographic area which vegetatively is comprised of prairie-forest border in the east, true prairie, and short grass prairie in the west, with many other minor ecotypes also represented, the combined collection is rather eclectic. And, although native plants are represented at most sites, and the NSA is a regional cooperator for the Center for Plant Conservation, the collections are primarily introduced plants, the majority of which are trees and shrubs. Upon reflection this is to be expected, since the state is intensely agricultural and the greatest horticultural interest

and need is for trees for shade and shelter in a harsh environment, and for other tough, showy, and serviceable plants for urban areas and exposed homesteads.

Almost all NSA arboreta had rather extensive collections when they became affiliated. Many collections were not well documented, and some lacked records entirely. The NSA has addressed this problem through a program of collection verification and accessioning, and to date four of the largest sites have been professionally verified and labeled. Voucher specimens have been placed in the University of Nebraska Herbarium, and the accession records have been transferred to a central computer data base. This task has been accomplished through institute of Museum Services grants, and further grants have been applied for. The plant records of twenty additional sites have been centrally recorded, but scientific validation has not yet been done.

At this juncture, 1,381 separate taxa have been centrally recorded from 24 sites. This represents a large gene pool with which to expand the collections of affiliated sites, for both research and display. The plants, and others which are added to the central accession records in the near future, are an extremely valuable biological resource in the state.

The plant introduction program of the NSA, of course, does not rely only upon existing plants located at member arboreta, as valuable as that may be.

In the past, many new or underutilized horticultural varieties have been purchased as seedlings and distributed to affiliated sites, and propagules have been collected of regional wild plants of horticultural merit. These efforts, although valuable, have not been on a scale appropriate to the mission and resources of the NSA. A major new effort at plant introduction, from a variety of sources, for testing and display is currently underway.

The new research effort was begun with a development campaign which was instituted in the fall of 1989. One aspect of the development program has been named "New Trees for Nebraska," and a general research and introduction program, utilizing the specific research potential of affiliated arboreta located in the four major geoclimatic regions of the state (Northeast, Southeast, Central and West), has been outlined. The development effort, to raise funds from private and public sources for new programs, is open-ended and will continue indefinitely, until sufficient funds are raised to make progress in the various programmatic areas. At this point, the spring of 1990, several thousand dollars have been raised specifically for the New Trees for Nebraska project. Although this is not a large sum, it will provide literally, seed money for the program, and as the program grows so, we are convinced, will the contributions.

It has become self-evident, however, that it is much harder to sell research or education as a concept to

the general public for fund raising than it is to sell bricks and mortar projects, or other immediately visible acquisitions.

The Nebraska Statewide Arboretum Curator of Plants, John Gibson, has developed the following rationale for plant introductions and trials at participating research sites. Plant adaptability to Nebraska is dictated primarily by climate (although alkaline soils are also a factor) and standard climatic isolines should be the basic research parameter. Areas of similar geoclimatic occurrence should be delineated, and a research site established for the main geoclimatic regions.

Replicated trials of genetically similar new introductions should be established at these research sites, consideration being given to suitable soils, moisture and insulation. Data from these sites should be collected in the spring and fall for a number of conservative years and the variation analyzed. Inferences can then be drawn regarding general adaptability of particular plants to various geoclimatic regions.

The plant adaptability testing will be both macro -(regional) and micro-climatic, so that highly desirable ornamental plants which would not survive general climatic conditions can be evaluated for use in protected places.

A plant propagation and distribution program will distribute valuable new

cultivars and underutilized species and varieties to the member institutions for display and more thorough testing. The 1990 plant distribution list contains 20 new taxa available for affiliated sites.

In addition to NSA's own plant gene pool, new plants for trial can come from a variety of other sources.

In recent years, index semini have become a less favored source of new collection and research plants, because of the general lack of good provenance data, and the narrowness of the gene pool at the donor site. But selected index semini cultivar presentations, are still a good, inexpensive source of trial plants.

Other botanical gardens, within the region or in climatically synonymous locations, are a good source for scion wood of interesting cultivars. since much of our needs and interests revolve around the testing of cultivars, new introductions from other institutions such as the National Arboretum, the USDA, and regional gardens, as well as commercial sources, will also be utilized.

The Nebraska Statewide Arboretum, itself an organization of independent, affiliated sites, looks toward increased formal cooperation in plant testing with other botanical institutions, either on a bilateral or multi-lateral basis. The Morton Arboretum and the Minnesota Landscape Arboretum are two institutions which we have approached, and the NSA is a charter member of

the recently formed Institute for the Development of Hardy Landscape Plants.

The limited staff size of the NSA does not lend itself to classical plant hunting on other continents, although this might be undertaken if suitable funding were found. This does not prohibit it from plant explorations into productive ecotones and refugia in the Midwest, Great Plains and intermountain regions, and that is a part of our program. For example, stands of Betula papyrifera and Carpinus caroliniana occur in the Niobrara River Valley in northern Nebraska, four hundred miles south of its normal range. Similarly, Pinus ponderosa proceeds from the west into the same valley, and these populations are worthy of extensive testing for general adaptability throughout the state. Other nearby wild sources for plant introductions exist as well, such as in the Rulo Hills along the Missouri River, which contain native populations of Aseminea triloba, Cercis canadensis and Acer saccharum, and other outlying elements of the eastern deciduous forest.

The record keeping and analysis of data which once would have proven

daunting for an organization such as the Nebraska Statewide Arboretum are now practical and realistic, since the advent of the computer and specialized software. This factor, combined with dedicated professional staff, we are certain will lead towards a great horticultural and botanical enrichment of the State of Nebraska in the ensuing **years.**

The Nebraska Statewide Arboretum is still on a growth curve regarding membership, number of sites and number and complexity of programs. We expect membership to reach 1,000 and arboretum sites to reach 50 within a year. The decade of the "Nineties", already focused on environmental concerns, seems promising for an organization which blends science, amenity horticulture and environmental improvement in its endeavors. This seems particularly appropriate, since Nebraska is the home of Arbor Day, and has been known for over a century as "The Tree Planter's State." The Nebraska Statewide Arboretum owes its uniqueness and perhaps its very existence, to these historical antecedents.

