



Match the Tree Flower Pictures
Answers on page 163

- 1. Ohio Buckeye
- 2. Sweetheart Mayday
- 3. Norkent Apple
- 4. Gladiator Crab
- 5. Sugar Maple
- 6. Pear
- 7. Princess Kay Plum
- 8. Chokecherry
- 9. Courageous Crab



Seven Top Tips for Tree Collectors on the Prairies

by Rick Durand

Guest editor Rick Durand has a Forestry Degree from Lakehead University and has been directly involved in the development and/or introduction of over 40 cultivars of perennials, trees and shrubs for the prairie market. Rick is currently the Research Coordinator for the Canadian Nursery Landscape Association and the Project Leader of the Western Nursery Growers' Group Tree Trials.

As with all connoisseurs, tree collectors take a great interest in what they collect and a few are downright passionate about their trees! It is hard to pigeon-hole a tree collector because the hobby is as varied as the location of weather stations in the world. A Norway Maple (*Acer platanoides*) would be considered a prize possession in Calgary – but a noxious weed in southern Ontario. The rarity of the tree is not necessarily the main reason for a collection. Other motivating factors to collect include cultural or sacred importance, superstition/good luck, historical significance, heritage preservation or ornamental improvement. I am a tree improvement person who became a tree collector by default. At present

I have amassed a large collection of exotic trees on my 12 acres and, unfortunately, I must now contemplate whether there is a limit!

The majority of tree collectors, whom I have met on the prairies, are motivated to grow trees rarely found there. They take great pride in presenting ‘an exotic tree’ to a visitor. They have become very resourceful and inventive to keep some of these prize possessions healthy and protected from the extremes of cold and heat typical of our challenging prairie climate. Sometimes there is a fine line between a tree that is collectable, and a tree that dies and becomes a liability or hazard. I consider a collector tree as one that does not winterkill more than

40% of the entire tree in any given year. If the tree sustains more than 40% damage it is hard to keep the integrity and dignity of the tree, and, in my assessment, it should be removed.

Here are my seven top tips for keeping your collector tree alive and thriving:

1. Plan and research

Review the literature in books or on the internet and select trees that are categorized as one zone warmer than where you live. For example, Winnipeg is zone 3 and most collector trees will come from zone 4 and rarely zone 5 or warmer. The Western Nursery Growers' Group's

Shagbark Hickory

(WNGG) website <www.prairietrees.ca> is starting to provide some research-based data on hardiness. The failed trees (trees that have sustained more than 40% winterkill in a given year) will be listed once data are available. The list of collector trees will appear in 2014 when the first trees in the trial have been subjected to at least five winters. (See the next article on the WNGG Tree trial.)

Every collector tree seems to have slightly different needs for survival. Some trees, such as Honeylocust, require a high number of heat units during the growing season. Others, such as Shagbark Hickory, prefer a long growing season. Still others can require a high amount of humidity, such as Lindens and Sugar Maples. Select trees best suited to your conditions.

2. Location, location – create a microclimate!

Select a location that is most suitable for the amount of sunlight the tree will require. The location should have good drainage and wind protection, as well as low traffic to reduce soil compaction. If you are limited by space, select a smaller collector tree that will fit your yard. Here are some ways to create a *microclimate* to maximize the growth of your tree. Good wind protection is best afforded by a fence or wall, or a barrier provided by mature coniferous trees. Creating a *heat bank* provides the collector tree with an opportunity to receive close



Sugar Maple

to the required amount of heat units during the growing season. Stone or cement patios are a good example of a heat bank. They absorb the heat of day and release that heat during the cooler night, which, in turn, can make a significant difference in the process of hardening off for some less hardy trees. A good rule of thumb is that if you can grow sweet corn successfully, then you can grow some of the zone 4 and 5 trees that require the same amount of heat units. To optimise the amount of heat units you require in your yard, you need to plant on the warmer south or west side. The one tree that is the crown jewel in prairie rare tree collecting is *Ginkgo biloba*. It consistently fails under unaltered prairie conditions, but on a rare occasion when the Ginkgo is grown in a court yard situation or surrounded by greenhouses with perhaps some modified exhaust fans blowing on it, a prairie height specimen tree of Ginkgo thrives!

An extreme tree collector who wants the rarest of plants growing in the prairie landscape must provide sufficient cover in the late fall and winter. Growing rare trees such as Japanese Maples can be achieved by growing them in a container that is moveable in a moment's notice, such as when an arctic high pressure system swoops down and quickly changes the air temperature from a pleasant fall temperature of 15°C down to -15°C. For best results, the containerized plant should be stored in a building such



as a heated garage that has a range of temperatures between plus +5°C and -5 °C with humidity no less than 30%. Some indirect sunlight should be provided to maintain a normalized rhythm for the tree.

It is no surprise that southern Manitoba has the widest variety of collector trees growing on the Prairies. Even though Winnipeg is significantly colder in the winter than Calgary and Edmonton AB, many collector trees perform better in Winnipeg because of the higher amounts of precipitation and humidity, and warm summer nights. Collector trees are more likely to withstand the very cold January temperatures if they have had enough lead time in October and November to prepare. It

is the cool summers, or wet and cool falls, that predisposes many of the collector trees to an early demise.

3. Older is better!

Purchase a collector tree that is already 4–5 ft (125–150 cm) tall and is well-rooted. These nursery grown trees have begun to slow down in their annual growth patterns and are therefore less susceptible to winter tip kill. If you purchase a smaller tree, make sure that you do not encourage rapid growth. Therefore, in the first growing season, keep fertilization to a minimum (or not at all) and focus on watering the tree regularly during establishment.



Manchurian Maple

Rick Durand

4. Limit fall growth – help trees shut down early

Reduce your watering significantly after the heat of the summer is over, generally by mid-August. Discouraging late season growth helps in the *hardening off* process. If your collector tree is sustaining a lot of winterkill you may want to allow other plant material such as annuals, perennials or your lawn (turf grass) to grow on top of the entire root zone to reduce the moisture available to the tree roots.

5. Avoid fall pruning

Do not prune your collector trees later than early August. Late pruning may cause the tree to re-flush and grow more branches that will not have time to harden off. It is best to prune trees in the early spring before the leaves flush, typically in late March when the temperatures are above -10°C. The only exception would be trees that are *bleeders* (where the sap runs in early spring) such as maples and birches; for these trees it is best to wait until the leaves have flushed before pruning them.

6. Protect the bark

Trees such as Norway Maple are very susceptible to sunscald in the winter. If a reflective barrier or substance is put around or on the bark, it will significantly reduce splitting of the bark. You can protect the bark with plastic white wraps (or as a last resort,

paint the bark on the main stem with white exterior latex house paint). Planting a Norway Maple in a forest condition (multiple trees in one area) will also significantly reduce sunscald.

7. Try, try again!

Do not give up the first time you fail to establish a collector tree. There are many reasons why it may not have survived and every year varies from the other. You have little control over the weather! You can expect that, over time, some of your tree collection may succumb as a result of a severely cold winter. I enjoyed a Northern Catalpa (*Catalpa speciosa*) for over twenty years in my urban back yard (see the photo on page 1). The flowering display in June-July was spectacular and worth the effort. However, after experiencing two cool summers in a row, which caused the flowers to come out later, the next spring the 25' (7.5 M) tree showed no signs of life – 100% dieback! However, interestingly, the Chinese Catalpa (*Catalpa ovata*) in my front yard, did survive.

Trends do change in rare tree collecting as they do in other types of collecting. Trees such as Black Walnut, English Oak, Norway Maples (Crimson King, Deborah), Freeman Maples, Sugar Maple and Honeylocust that were considered rare on the




English Oak acorn

prairies ten years ago, are now more common due to better availability through local retail centres and reasonable performance in prairie yards. Today, the rare and unusual trees that are grown routinely in zones 4 and 5 in the United States, but are hard to find at a local retail outlet, are: the hickories (bitternut *Carya cordiformis* and shagbark *Carya ovata*); many Asian maples and a number of common cultivars of maple; the elusive Ginkgo; a few tender flowering crabapples and southern oaks.

Tree collecting in prairie Canada requires you to bring your 'A-game' into play. To be successful, keep this list of 7 Top Tips at your fingertips, then keep your fingers crossed for suitable weather and good luck. 🌱

A garden without trees scarcely deserves to be called a garden.



Prairie T.R.U.S.T. Project

A Western Nursery Growers' Group (WNGG) Project

by Rick Durand

Rick Durand

Some of the best ideas have come during the heat of battle or through necessity. In this case, the Prairie T.R.U.S.T. Project, (Testing of Rural and Urban Shade Trees) grew from both an ongoing crisis with the infestation of many North American tree species by foreign diseases and insects, and the need to diversify the tree species in our cities and farm shelterbelts. The current list of trees we plant in our landscape is very short and incomplete. In the past, we have put our efforts into planting a few species of trees and now need to evaluate other tree species to diversify our tree population. As government funded research in this area has declined,

this crisis has mobilized the commercial nurseries to start a process of identifying resistant varieties and/or new species adaptable to the rigorous prairie climate.

An invasion of tropical insects and diseases into North America

Quietly but steadily there has been an invasion of exotic insects and tree diseases into North America. These arrive hidden in imported goods, mostly from China, including wooden crates, packaging materials and goods made out of wood. Our apparently insatiable demand for cheap foreign goods has come at a high price for North American trees. Our trees have little or no natural

resistance to these new insects and diseases. Certain tree species are at great and serious risk.

Emerald Ash Borer, Asian Long Horned Beetle, Sudden Oak Death, Aspen Bronze Leaf Disease, Banded Bark Elm Beetle and Japanese Beetle are a few of the insects and diseases that threaten our existing city trees, rural shelterbelts and forest trees. Some of these pests are already here, and may become permanent in time as they spread through the prairie region. They could leave a band of destruction affecting a broad range of species including ash, aspen and oak. Ironically, many of these susceptible tree species were planted on the prairies as replacements to the American Elm that was severely decimated by Dutch Elm Disease when it entered Manitoba in 1975. We are now looking to identify new replacements for the original substitution trees. Once introduced to North America the exotic diseases and insects migrate to previously 'untouched' areas, and this process speeds up through

human intervention, such as transporting them to new areas, hidden inside our firewood.

Past tree plantings have been undiversified

Management of these pests is made difficult since many of our tree plantings in the past century have consisted of only a few species. We have created a smorgasbord of Elm, Ash and Poplar and, in many cases, in straight lines that are evenly spaced providing easy access. The deciduous trees planted in roadside shelterbelts are mainly Green Ash and a few cultivars of Poplar. The predominant trees growing on public spaces in prairie towns and cities are Green Ash and American Elm. The spread of Dutch Elm Disease (DED) throughout Manitoba and Saskatchewan has devastated many areas, particularly in unmanaged regions. The war on DED is far from over and battles will become overwhelming if two more aggressive vectors (carriers of the disease), the European and the Banded Elm Bark beetles, become established.

The threat of Emerald Ash Borer (EAB) is real and this insect could wipe out all native ash growing in shelterbelts, urban centres and native forest in the next 25 years. This sounds sur-



(clockwise from left) Emerald Ash Borer, Asian Long Horned Beetle, Banded Bark Elm Beetle and Japanese Beetle

real but that scenario is exactly what happened to the American Chestnut (*Castanea dentata*) in Eastern North America during the last century. In February 2011, I had the opportunity to see, touch and feel two mature specimens of American Chestnut growing in their natural habitat, close to the shores of Lake Erie. These trees were the only ones of their type around for miles, while 100 years ago the American Chestnut was one of the dominant trees growing in the hardwood forests.

A loss of government funded tree research

Woody ornamentals research programs for the prairie provinces have been downsized over the past two decades. The Morden Research Station (Morden, MB), the University of Alberta research program, as well as the Alberta Agriculture Research Institute at Brooks, Alberta, have severely reduced or totally cut out woody ornamental (trees and shrubs)

research in their programs. The University of Manitoba's horticulture degree program was discontinued in 2007. The University of Saskatchewan still has an active horticulture program but it, too, is reducing its program. This trend of reducing woody plant horticultural research on the prairies is disconcerting, especially when there is such a great need for new plants to keep the prairie rural and urban areas treed. The introduction of a variety of new plants adapted to the harsher urban climate improves the environment, diversifies plant material and ameliorates the management of the urban pests.

WNGG Project to improve diversification

The Western Nursery Growers' Group (WNGG), the only organization representing nursery growers (retail and wholesale) across all four western provinces, decided to accept the challenge of identifying new tree cultivars/selections by setting up an eight year tree trial at four locations on the prairies. The WNGG tree committee designed the Prairie TRUST project to test approximately 150 cultivars/selections that are either new to the region or previously not in widespread cultivation, but have shown anecdotal evidence for hardiness in these climate zones. In 2008 I was hired by WNGG to be the project manager. The project received financial assistance from a wide spectrum of government and



Damage caused
by Native Ash
borer

private stakeholders whose unwavering support keep this important project running. The main supporters are: MRAC (Manitoba Rural Adaptation Council Inc.), Alberta Agriculture and Food Council, Agriculture Council of Saskatchewan Inc., ARDI (Agricultural and Rural Development Initiatives) Manitoba, the Canadian government, the Manitoba government, Western Nursery Growers' Group (WNGG) and many members of the WNGG (independent nurseries), Landscape Manitoba, Landscape Alberta and the City of Winnipeg.



Locations of trial

The planting sites are located at: Jeffries Nurseries, Portage la Prairie (west of Winnipeg, MB); Lakeshore Tree Farm, Saskatoon, SK; Eagle Lake Nursery, Strathmore (east of Calgary, AB); and two sites in the Edmonton, AB area at the City of Edmonton's Old Man Creek Nursery and the Pereira and Moniz Nursery. There is another Saskatchewan site to test only elm trees at the Agroforestry Development Centre at Indian Head. No elms were tested in Saskatoon or the Alberta sites since the DED has not yet been reported there. It is illegal to transport elm from an area of DED infection to an area not infected with DED. Some of the American Elms planted decades ago at the Agroforestry Development Centre in Indian Head, SK are infected with DED.

Length of trial

The Prairie TRUST project planting started in 2008 and will end in 2016. Individual trees will be measured and evaluated every June for six years.

Number of trees in trial

There are over 750 trees planted at each site. This includes over 150 cultivars/selections and 5 replications of each.

Grading of trees in trial

Once the tree has been subjected to a minimum of five winters the tree will be given a grade. The grade will be based on a number of parameters including: cold hardiness, insect and disease resistance, flowering, fruit production, and the amount of suckering at the tree base. A tree with a grade of zero percent

is considered dead and a grade of 100% would be ideal. The trees with grades between 90 to 100% would be considered 'Graduates'. Trees with grade marks between 60 to 89% would be called 'Collector Trees'. Trees with grade marks below 60% would be 'Failed Trees'. Grade marks may vary at the four different sites for the same tree (due to variability in soil, climate, precipitation, and so on). Therefore, it is important to determine which site is most similar to your community's climate.

The Graduates will be recommended for the area the site trial represents. For example, the Manitoba site at Portage la Prairie would represent the zone 3 area in southern Manitoba while the Saskatoon area would represent most of the agricultural area in Saskatchewan that is located in hardiness zone 2. The Strathmore site represents the Chinook area while the Edmonton sites represent central Alberta as far north as Edmonton. The Saskatoon site that is located in zone 2 would represent northern Alberta in a similar zone. The trees listed as Collector Trees are recommended only for private yards where a significant

amount of annual maintenance is available, since the tree will have obvious winter die-back on the branches and main stem. Failed Trees will not be recommended for any application since these trees will be very susceptible to winter cold and/or a specific insect or disease.

The Prairie TRUST project is committed to research-based evidence that will provide gardeners and commercial growers with information about prairie-hardy recommended trees. The list of trees graded by performance will be the basis of a guideline for recommended trees to be used for a generation (next 20 to 30 years).

In 2017, the results of the Prairie TRUST project will be widely presented through local garden centres, media, the Internet and perhaps in a book or other publication. The gardener, municipal forester, landscaper or private landowner can be confident when purchasing or recommending a tree that has been properly tested on the prairies, and shown to be prairie hardy with a high resistance to insects, disease and prairie environmental factors. Visit www.prairietrees.ca for more information on this project. 🌱

