CULTIVAR EVALUATION
IN MANITOBA

LANDSCAPE MANITOBA GROW-16
FEBRUARY 25, 2016

PHILIP RONALD, PH.D.
There is a need to diversify the current palette of viable trees for the coldest zones of Western Canada. The Prairie Provinces have few options for street trees and shelterbelts. Our two most viable species, Elm and Ash, are under threat from foreign pests.

It is useful to "put the final nail in the coffin" for some of the more tender selections that have been promoted in our area. This will prevent nurseries and municipalities from repeating failures, as they will have solid data to help them decide what to try and what to forget."
JEFFRIES NURSERIES - PORTAGE LA PRAIRIE, MANITOBA  
ZONE 3, HIGH RAINFALL AND HEAT UNITS

LAKESHORE TREE FARMS - SASKATOON, SASKATCHEWAN  
ZONE 2A, EXTREME COLD, SHORT SEASON

EAGLE LAKE NURSERIES - STRATHMORE, ALBERTA  
ZONE 3 WITH CHINOOKS, MODERATE HEAT UNITS

OLD MAN CREEK NURSERY - EDMONTON, ALBERTA  
ZONE 3, NO CHINOOKS, MODERATE RAINFALL

PFRA SHELTERBELT - INDIAN HEAD, SASKATCHEWAN  
ZONE 2B, LOW RAINFALL, MODERATE HEAT UNITS
PROJECT LEADER:
RICK DURAND

SITE MANAGERS/TRIAL SITE:
AARON KRAHN, LAKESHORE TREE FARMS
ANITA HEUVER/ERIN MORTREUIL, EAGLE LAKE NURSERIES
BILL SCHROEDER, AGRO-FORESTRY DEVELOPMENT
JOE MONIZ, PEREIRA AND MONIZ LANDSCAPE
JENNY WHEELER/BEV MINSKY, CITY OF EDMONTON
PHILIP RONALD, JEFFRIES NURSERIES
260 CULTIVARS PLANTED OVER 6 YEARS

STAGE 1
May 15, 2008

STAGE 2
May 12, 2009

STAGE 3
May 12, 2010

STAGE 4
May 16, 2011

STAGE 5
May 24, 2012

STAGE 6
May 24, 2013
ANNUAL MEASURES:

- Total Height
- Caliper at ground level
- Width at widest point
- Vigour
- Hardiness
- Flowers
- Seed/Fruit
- Disease & Insects

TREES IN THE TRIAL ARE ASSIGNED A RATING:

1. when the tree has been subjected to five winters, or
2. when the bole of the tree exceeds 80 mm

Goldspur®
TREES THAT PERFORMED BEST AND SUSTAINED NO MORE THAN 10% WINTER KILL DURING THE TRIAL PERIOD.

THESE TREES MUST HAVE A HIGH TO COMPLETE RESISTANCE TO DISEASE AND INSECTS, WELL ADAPTED TO PRAIRIE SOILS AND DISPLAY ORNAMENTAL VALUE.

EXAMPLES:

MANCANA ASH
RUSSIAN MTN ASH
GOLDSPUR AMUR CHERRY
TREES THAT SUSTAINED BETWEEN 10 - 40% WINTER KILL DURING THE TRIAL PERIOD.

THESE TREES MUST HAVE A HIGH TO COMPLETE RESISTANCE TO DISEASE AND INSECTS, WELL ADAPTED TO PRAIRIE SOILS AND DISPLAY A DOMINATE ORNAMENTAL VALUE.

THESE TREES WILL REQUIRE MORE ANNUAL PRUNING THAN THE GRADUATES SINCE THE COLLECTOR TREES WILL HAVE A SIGNIFICANT AMOUNT DEAD BRANCHES DUE TO WINTER KILL.

EXAMPLES:

OAK LEAF MOUNTAIN ASH
NORTHERN ACCLAIM LOCUST
TREES THAT SUSTAINED MORE THAN 40% WINTER KILL DURING THE TRIAL PERIOD.

THESE TREES ARE NOT RECOMMENDED TO BE PLANTED SINCE THE WINTER KILL WILL SEVERELY DISTORT THE NATURAL LOOK OF THE TREE.

THE OWNER OF THE TREE WILL HAVE TO INVEST A SIGNIFICANT AMOUNT OF TIME EACH YEAR TO PRUNE THE DEAD WOOD FOUND ON THE TREE.

EXAMPLES:

GINKGO
PINK HORSECHESNUT
Sienna Glen®

U.S. cvs do not have sufficient hardiness.

JNL selections will be available in 2017.

Freeman Maple

Cultivars tested:

- Aut. Fantasy
- Matador
- Sienna Glen

0603
U.S. CVS DO NOT HAVE SUFFICIENT HARDINESS

INFERNO AND UNITY PERFORM WELL IN ZONE 3
RED MAPLE

CULTIVARS TESTED:

AUT. FLAME

AUT. RADIANCE

AUT. SPIRE

SCARLET JEWEL

RUBY FROST

RED ROCKET

NO ISSUE WITH HARDINESS IN ZONE 3

BUT CHLOROSIS IS A PROBLEM ON ALL CVS
NONE OF THE CVS TESTED SURVIVED IN ZONE 3

COLLECTOR TREES: REQUIRE SHELTER AND A GRASSED PLANTING SITE

NORWAY MAPLE

CULTIVARS TESTED:

PARKWAY

HELENA

EMERALD LUSTRE
TARTARIAN MAPLE

CULTIVARS TESTED:
- HOT WINGS
- RUGGED CHARM
- PATTERN PERFECT

NO ISSUE WITH WINTER HARDINESS IN ZONE 3

BUT ANTHRACNOSE IS A PROBLEM ON ALL CVS
**HOT WINGS** has outstanding red samaras for up to 6 weeks.

**PATTERN PERFECT** has better form but no fruit colour.

**TARTARIAN MAPLE**

SAMARA COLOUR COMPARISON ON SEPT 4/14
AMUR MAPLE

CULTIVARS TESTED:

ROYAL CROWN

RUBY SLIPPERS

VENTURA

Royal Crown®

Ruby Slippers®

ROYAL CROWN HAS RESISTANCE TO IRON CHLOROSIS ON ALKALINE SOILS

RUBY SLIPPERS HAS RED SAMARA COLOUR AND GOOD FORM; PLANTED IN SPRING 2013
BUT AUTUMN SPLENDOR IS SUPERIOR FOR EARLY DEVELOPMENT OF RED FALL COLOUR.
Planted in May 2008

Photo in September 2009

Good example of a failed tree

FORT MCNAIR PINK
CULTIVARS TESTED:

WINTER HARDY AND DROUGHT TOLERANT

A MAGNET FOR SAPSUCKERS
U.S. CVS do not have sufficient hardiness

Standing Ovation® is winter hardy but a very slow grower

Spring Flurry

Service Berry

Cultivars tested:

- Autumn Brilliance
- Princess Diana
- Spring Flurry
- Snowcloud
- Standing Ovation
BIRCH CULTIVARS TESTED:

PRAIRIE DREAM
DAKOTA PINNACLE
PARKLAND PILLAR
PRAIRIE VISION
RENAISSANCE REFLECTION

PRAIRIE DREAM IS AN OUTSTANDING CULTIVAR WITH WHITE BARK AT AN EARLY AGE

BRONZE BIRCH BORER IS A REAL PROBLEM ON ASIAN WHITE BIRCH
NOBILITY WHITE ASH OUTPERFORMED 4 OTHER CULTIVARS

NOBILITY OFFERS SUPERIOR COLD HARDINESS AND EARLY, PURPLE FALL COLOUR
Planted in May 2008
Photo in September 2009
AMUR MAACKIA CULTIVARS TESTED:
MAGNIFICENT MAGENTA
SUMMERTIME SEEDLING
SIBERIAN CRABAPPLE

CULTIVARS TESTED:
- Starlite®
- Spring Snow
- Starlimage

STARLITE HAS A PYRAMIDAL FORM AND TINY RETAINED FRUIT

SPRING SNOW HAS A ROUNDED FORM AND IS FRUITLESS
Cultivars tested:

- Courageous
- Gladiator
- Pink Spires
- Red Baron
- Royal Mist
- Thunderchild

**Thunderchild** has a spreading form, poor scab resistance.

**Gladiator** has an upright form, high scab resistance.
**SCAB RATINGS:**

0% - Starlite

10-20% - Gladiator, Courageous

Over 50% - Spring Snow, Pink Spires, Thunderchild
KATEPWA did not survive in the trial; effect of fall moisture?

SUNDANCER offers fast growth, a narrow crown and high disease resistance.
CHERRY & PLUM

CULTIVARS TESTED:
- GOLDRUSH
- GOLDSPUR
- PRINCESS KAY
- SPUR SCHUBERT

Spur Schubert

Goldspur®

Goldspur® produces a dense crown and calipers well.

Spur Schubert has improved form over original but still gets black knot.
PRAIRIE GEM HAS A ROUND CROWN AND VERY LARGE FRUIT

NAVIGATOR HAS AN UPRIGHT CROWN

CULTIVARS TESTED:
- EARLY GOLD
- MOUNTAIN FROST
- NAVIGATOR
- PRAIRIE GEM
- USSURIAN PEAR
OAK CULTIVARS TESTED:

- **SHOOTING STAR**
  Northern Pin Oak grows on a Bur Oak root

- **URBAN PINNACLE**
  Appears to be hardy but is too slow to grow

- **MAJESTIC SKIES**
- **REGAL PRINCE**
- **HERITAGE**
- **URBAN PINNACLE**
Planted in May 2008
Photo in September 2009

REGAL PRINCE HYBRID OAK

Good example of a failed tree
MTN ASH

CULTIVARS TESTED:

BLACK HAWK

CARDINAL ROYAL

OAK LEAF

PYRAMIDAL

RED CASCADE

RUSSIAN

RUSSIAN IS STILL THE GOLD STANDARD

OAKLEAF IS NOT RELIABLY COLD HARDY IN ZONE 3
MANY CULTIVARS OF TREE LILAC HAVE SUFFICIENT WINTER HARDINESS

VARIATION IN:
CROWN FORM
FLOWER QUALITY

MORE TIME IS NEEDED TO BETTER DISTINGUISH THE TOP PERFORMER IN THIS GROUP

TREE LILAC
CULTIVARS TESTED:
BOULEVARD
GOLDEN ECLIPSE
IVORY PILLAR
IVORY SILK
SHOGUN
SNOWCAP
SNOWDANCE

Ivory Pillar
Snowdance
PANICLE COMPARISON ON JUNE 23/12

Shogun®

Ivory Pillar
American Sentry

More time is needed to better distinguish the top performer in this group.

American Sentry

ALL CVS TESTED WERE HARDY IN ZONE 3, SOME DIFFERENCE IN FALL SHUT DOWN

American Sentry

AMERICAN LINDEN

CULTIVARS TESTED:

AMERICAN SENTRY

BOULEVARD

FRONTYARD

REDMOND

TRUE NORTH
Most of the Cordata CVS tested were graduates.

Golden Cascade is the industry standard with weeping form and golden fall colour.
HYBRID LINDEN

CULTIVARS TESTED:

DROPMORE
GLENLEVEN

BOTH HYBRID CVS TESTED WERE GRADUATES

DROPMORE IS THE INDUSTRY STANDARD WITH HARDINESS IN ZONES 2 & 3
LINDEN CULTIVARS TESTED:

- **HARVEST GOLD**
  - Offers upright crown, golden fall colour, exfoliating bark
- **SKINUR**
  - Features very large leaves and a broad, upright crown
- **MONGOLIAN WINDANCER**
- **MONGOLIAN SKINUR**
- **MANCHURIAN SKINUR**
SURPRISE! THE HYBRID ELMS FROM MORTON ARBORETUM HAVE RELEVANCE IN ZONE 3

ALL CULTIVARS ARE RESISTANT TO DED
TRIUMPH HAS THE MOST DESIRABLE CROWN FORM
SHRUB CULTIVAR TRIAL

Site: west side of Jeffries Nurseries - Young farm

Clean, cultivated sandy loam - no mulch, but some snow cover

160 cultivars planted in 2013, 2014 and 2015
WHY TRIAL SHRUBS?

We need to sift through the hundreds of new cultivars to arrive at a short list for Manitoba.

WHAT PERCENTAGE OF NEW DO YOU ADD & OLD DO YOU DROP?

“MARKETING DOES NOT ALWAYS LEAD A GREAT PLANT”

“PLANTS CAN’T READ OR WRITE”
SOURCE PLANTS:

5 TRIAL PLANTS OF NEW CULTIVARS

ADAMSON, BAILEY, BYLANDS, SPRING MEADOW, VAN BELLE

EVALUATE:

WINTER HARDINESS

MATURE SIZE / HABIT

PEST RESISTANCE

TIMING/DURATION OF FLOWERING

COLOUR/QUALITY OF FOLIAGE

HOW?

Collect as many cultivars as possible

Include species that are not used in MB
SPRING RATINGS

Assess winter damage or winter kill on a 0-5 scale

Thundercloud Elder
SUMMER RATINGS

Assess size, habit, flower and foliage quality
PLANTS KILLED OUTRIGHT

Ratings made on May 21/15

CULTIVAR FAILURES

SHRUBS:

HEDGEROWS GOLD DOGWOOD
THUNDERCLOUD ELDER
BLACK LACE ELDER
SHOW OFF FORSYTHIA
BELLA ANNA HYDRANGEA
DARTS RED SPIREA
CARNIVAL WEIGELA
GHOST WEIGELA
TANGO WEIGELA
WINE & ROSES WEIGELA

VINES:

SUMMER CASCADE WISTERIA
ATOMIC RED TRUMPET VINE
Lotus Moon Pearlbush
Exocorda x macrantha ‘Bailmoon’

Rated zone 4, but never tested in zone 3
No winter damage after 1 year in trial
Compare closely related cultivars for subtle differences:

**Mature size**

**Growth habit**

Lemon Candy

Dart’s Gold
WEIGELA

17 cultivars planted on June 10/14

Photos taken on May 16/15

Spilled Wine (5/5)

Wine & Roses (1/5)
WEIGELA

17 cultivars planted on June 10/14

Photos taken on May 16/15

April Snow (5/5)

Rainbow Sensation (1/5)
Planted June 10, 2014
Ratings made on May 21, 2015
One test winter

WEIGELA HARDINESS RATINGS

5 RATING – NO WINTER DIEBACK
APRIL SNOW
MERLOT PINK
RUMBA
SPIPPLED WINE

4 RATING – MINOR WINTER DIEBACK
MERLOT ROSE
MY MONET
POLKA
SONIC BLOOM PINK

3 RATING – MODERATE WINTER DIEBACK
RED PRINCE

1-2 RATING – MAJOR WINTER DIEBACK
DARK HORSE
GHOST
MINUET
RAINBOW SENSATION
SONIC BLOOM PEARL
WINE & ROSES

0 RATING – DEAD
CARNIVAL
TANGO
9 cultivars planted on June 10, 2014

Photos taken on May 16/15
5 RATING – NO WINTER DIEBACK

CONCORDE
EMERALD CAROUSEL

4 RATING – MINOR WINTER DIEBACK

ROYAL BURGUNDY
SUNSATION

3 RATING – MODERATE WINTER DIEBACK

CHERRY BOMB
JADE CAROUSEL
ROSE GLOW
ROYAL CLOAK

2 RATING – MAJOR WINTER DIEBACK

RUBY CAROUSEL
SPIREA

21 cultivars planted on June 6, 2013

3 cultivars planted on June 10, 2014

Photos taken on May 16/15
Pink Parasols Spirea - Spiraea fritschiana ‘Wilma’

Species is native to China and Korea
Rated zone 4
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<th>CRA</th>
<th>SPIREA HARDINESS RATINGS</th>
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<tr>
<td>5 RATING – NO WINTER DIEBACK</td>
<td>21 cultivars planted on June 6, 2013</td>
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<tr>
<td>GOLDMOUND</td>
<td>SNOWHITE</td>
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<td>GUMBALL</td>
<td>SUNDROP</td>
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<td>LITTLE PRINCESS</td>
<td>THREELOBE</td>
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<td>PINK PARASOLS</td>
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<td>4 RATING – MINOR WINTER DIEBACK</td>
<td>3 cultivars planted on June 10, 2014</td>
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<td>FAIRY QUEEN</td>
<td>DOUBLE PLAY GOLD</td>
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<td>FIREGOLD</td>
<td>GOLDEN GLITTER</td>
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<td>TOR</td>
<td>DOUBLE PLAY ARTIST</td>
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<td>3 RATING – MODERATE WINTER DIEBACK</td>
<td>Ratings made on May 21/15</td>
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<td>FLAMING MOUND</td>
<td>NEON FLASH</td>
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<td>GOLDFLAME</td>
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<td>ANTHONY WATERER</td>
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<td>FLOWERING CHOICE</td>
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<td>SUPERSTAR</td>
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<td>1 RATING – MAJOR WINTER DIEBACK</td>
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<td>DARTS RED</td>
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DOGWOOD

19 cultivars planted on June 6, 2013

Ratings made on May 21/15

Red Gnome

Pucker Up
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<td>CREAM CRACKER</td>
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<td>BATON ROUGE</td>
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<td>PRAIRIE FIRE</td>
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<td>RED GNOME</td>
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<td>BUDS YELLOW</td>
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<td>MORDEN AMBER</td>
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<td>RED TWIGGED</td>
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<th>4 RATING – MINOR WINTER DIEBACK</th>
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<td>GOLDEN VARIEGATED</td>
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<td>SILVER &amp; GOLD</td>
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The findings in this presentation are preliminary and should be treated as guidelines rather than steadfast facts.

A trial period of 5 years is less than ideal for true hardiness testing.
THANKS FOR LISTENING

PLEASE PICK UP A FREE TREE POSTER TODAY