Saskatoon Berry Production
Alberta Farm Fresh School 2014

Industry Overview

<table>
<thead>
<tr>
<th>Province</th>
<th>Total Acres</th>
<th>Bearing Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta</td>
<td>1650</td>
<td>1300+</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>1300</td>
<td>1100</td>
</tr>
<tr>
<td>Manitoba</td>
<td>715</td>
<td>375</td>
</tr>
</tbody>
</table>

Other provinces & regions have minimal production acres

ORCHARD REQUIREMENTS

Saskatoon Berry
- Rosaceae
- Amelanchier alnifolia
- Some common names:
  - Saskatoon berry
  - Serviceberry
  - Juneberry

Orchard Requirements – Topography

Northeast or East slope
- 1-5% slope (air & water drainage)
- Plant to allow air drainage
- Some shelter from prevailing winds

Orchard Requirements - Soil

- Range of soil types will work
- Ideal soil type
  - pH = 6-7.5
  - Sandy-loam to loam soils
  - 2-3 percent OM
Orchard Requirements - Climate

- Dormant / acclimated plants are very hardy
- Flowers can be damaged by spring frosts
- Plants require a minimum chilling period of approximately 3 months (0-4°C)

Biology

- Maturation
  - Juvenile tissues produced 3-4 years
  - Mixed flower/leaf buds after 4 years
  - Full production by approx. 7-10 years
- Pollination
  - Predominantly self-pollinated
  - Some cross pollination may occur

Cultivars – Plant Characteristics

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Height</th>
<th>Spread</th>
<th>Structure</th>
<th>Suckerling</th>
<th>Other Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honeywood</td>
<td>16ft (5m)</td>
<td>13ft (4m)</td>
<td>Upright, spreading</td>
<td>Low</td>
<td>Blooms later; uneven ripening</td>
</tr>
<tr>
<td>JB30</td>
<td>16ft (5m)</td>
<td>20ft (6m)</td>
<td>Compact</td>
<td>Low</td>
<td>Compact bush, large fruit</td>
</tr>
<tr>
<td>Martin</td>
<td>10ft (3m)</td>
<td>13ft (4m)</td>
<td>Round</td>
<td>Moderate</td>
<td>Uniform ripening</td>
</tr>
<tr>
<td>Nelson</td>
<td>5ft (1.5m)</td>
<td>5ft (1.5m)</td>
<td>Uniform</td>
<td>-</td>
<td>1 week later flowering</td>
</tr>
<tr>
<td>Northline</td>
<td>13ft (4m)</td>
<td>20ft (6m)</td>
<td>Upright, spreading</td>
<td>High</td>
<td>Very uniform seedlings; fruits at younger age</td>
</tr>
<tr>
<td>Pembina</td>
<td>16ft (5m)</td>
<td>16ft (5m)</td>
<td>Upright, slightly spreading</td>
<td>Low</td>
<td>Suitable for home gardens</td>
</tr>
<tr>
<td>Smokey</td>
<td>15ft (4.5m)</td>
<td>15ft (4.5m)</td>
<td>Upright, spreading</td>
<td>High</td>
<td>Later blooming</td>
</tr>
<tr>
<td>Thiessen</td>
<td>16ft (5m)</td>
<td>20ft (6m)</td>
<td>Round</td>
<td>Low</td>
<td>Uneven ripening; early flowering</td>
</tr>
</tbody>
</table>

Cultivars – Fruit Characteristics

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Colour</th>
<th>Size</th>
<th>Flavour</th>
<th>General Yield</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honeywood</td>
<td>Deep blue w/dark purple skin</td>
<td>0.5-0.6 in (13-15mm)</td>
<td>Full, tangy</td>
<td>Very high</td>
<td>Fresh; processing</td>
</tr>
<tr>
<td>JB30</td>
<td>Deep blue</td>
<td>0.7in (17mm)</td>
<td>Wild</td>
<td>High</td>
<td>Fresh; processing</td>
</tr>
<tr>
<td>Martin</td>
<td>Deep blue</td>
<td>0.6in (15mm)</td>
<td>Fresh, juicy</td>
<td>Medium</td>
<td>Fresh; processing</td>
</tr>
<tr>
<td>Nelson</td>
<td>Deep blue</td>
<td>0.5in (13mm)</td>
<td>Tangy, acidic</td>
<td>Fresh; processing</td>
<td></td>
</tr>
<tr>
<td>Northline</td>
<td>Deep blue</td>
<td>0.6in (16mm)</td>
<td>Full, sweet</td>
<td>Very high</td>
<td>Fresh; processing</td>
</tr>
<tr>
<td>Pembina</td>
<td>Deep blue</td>
<td>0.5in (14mm)</td>
<td>Full, tangy to moderately sweet</td>
<td>High</td>
<td>Fresh; processing; ornamental</td>
</tr>
<tr>
<td>Smokey</td>
<td>Deep blue</td>
<td>0.5in (14mm)</td>
<td>Mild, sweet; fleshy</td>
<td>Very high</td>
<td>Fresh; processing</td>
</tr>
<tr>
<td>Thiessen</td>
<td>Deep blue</td>
<td>0.5in (17mm)</td>
<td>Fresh, juicy</td>
<td>High</td>
<td>Fresh; processing</td>
</tr>
</tbody>
</table>

CULTIVARS & PROPAGATION
Propagation

- Plants can be propagated by:
  - Seedlings
  - Cuttings (different types)
  - Suckers
  - Tissue culture plants
- Seedlings vs. Clonal Plants
  - Most seedlings are variable
  - *Northline* seedlings are considered to be very consistent

PLANTING

Planting – Soil Preparation

- Pre-planting Preparation
  - Critical
    - Spray out weeds
    - Prepare soil (break soil, add OM/nutrients, etc)
  - Recommended 2 years prior to planting

Planting

- Methods
  - Traditional
  - Deep planting

Plant Spacing

- In-row spacing
  - 3-5 ft (1-1.5 m)
- Number of Plants
  - Depends on in & between-row spacing
  - 800-1200 plants per acre

Plant Spacing – U-pick

- Ensure space for mowing, spraying, etc.
- Prune to keep plants from looming over customers
- 12-16 feet (3.5-5 m)
Plant Spacing – Mechanical

- Ensure space for harvester, equipment, etc.
- Prune to keep plants properly shaped for different harvesters

17-20 feet (5-6m)

Mulch

- Organic or plastic mulch may be used in some orchards
- Applied as a strip at the base of the plants
  - 1-2 feet on either side of row
- Why?
  - Reduces moisture loss from soil
  - Reduces weed growth

Mulch (continued)

- Applied either before or at planting (plastic) or after planting (organic mulch)
- May need to be renewed periodically (organic)
- Special Considerations
  - Added cost
  - Irrigation (drip) laid underneath
  - Rodents may use as shelter

Alleyway Management

- Significant area between rows to be maintained
- Options:
  - Keep tilled (black dirt) – shallow cultivation
  - Plant (and maintain)
    - Clump grasses
    - Cover crops
    - Annual crops

Grassed alleyways with herbicide control at base of plants

Grassed alleyways with mulched base
Grassed alleyways with mid row used for crops

Orchard Maintenance - Fertility

- Pre-planting baseline levels (actual/acre)
  - N = 65 lb/ac (75kg/ha)
  - P = 90 lb/ac (100kg/ha)
  - K = 365 lb/ac (400kg/ha)
- At planting – apply 10-52-10 solution

Orchard Maintenance - Fertility

- Annual maintenance
  - Split application in mid-May and late June
    - N = 30-50 lb/ac (33-55kg/ha)
    - P = 20-40 lb/ac (22-44kg/ha)
    - Adjust rates for band application

Orchard Maintenance - Water

- Orchards can be irrigated or dryland
- Moisture requirements vary
- Critical moisture periods
  - During establishment (years 1-3)
  - During flower bud initiation
  - During fruit filling

Orchard Maintenance - Water

- Irrigation should always be from the bottom, rather than the top
  - No sprinkler irrigation
- Reduce irrigation August to October to improve winter hardening
Orchard Maintenance - Pruning

Why?
- Control height, size and shape
- Remove suckers
- Maintain health and productivity of orchard
- Remove diseased or damaged growth

When?
- Typically during dormant season
  - Late fall, late winter or very early spring
  - May remove diseased growth carefully during growing season

Amount of pruning can vary
1. Remove 25-33% annually (larger branches)
2. Selectively prune plant during different phases
   (establishment, training, production / maintenance)
3. Remove only larger or diseased/damaged growth
4. Rejuvenate – mow down and let regrow

Pruning & Harvester Type

- Row / plant width, density and height must be maintained to suit the type of harvester being used (if applicable)

Over the row / Upright harvester
- Tall plants / Narrow rows
- Prune to remove suckers and keep less than 18 inches

Side row / Sideways harvester
- Shorter plants / Thicker rows
- May not need to prune as much (remove suckers)
- Plants should be flexible and "bendy"

Pruning & Harvester Type

- Pre-planting preparation = KEY
- Pre-plant incorporated herbicides applied
- No herbicide use for first 1-2 years of establishment
- Post-establishment herbicides
  - Applied in fall or early spring
  - Avoid contact with plants
- Mechanical weed control must be careful & shallow

Orchard Maintenance – Weed Management
Herbicides

<table>
<thead>
<tr>
<th>Weed</th>
<th>Pre-planting</th>
<th>Planting Year</th>
<th>Fruit Year Pre-planting</th>
<th>Early Spring</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual grasses &amp; broadleaves</td>
<td>Glyphosate products (non-selective control)</td>
<td>Trifluralin products (Bonanza / Trelfan)</td>
<td>Poast Ultra (15 days)</td>
<td>Casoron G4 / G2 (9 months)</td>
<td></td>
</tr>
<tr>
<td>Canada Thistle</td>
<td>Casoron G4 / G2 (9 months)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Broadleaves</td>
<td>Linuron / Lorox (50 days)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Numbers in brackets indicate appropriate pre-harvest interval
** Adapted from MAFRI Fruit Crop Protection 2004

Orchard Maintenance – Pests

Harvest

- **Timing**
  - Typically mid-late July to mid-August
  - Depends on cultivar and season
- **Methods**
  - Mechanical
  - Hand
- Harvest in as cool conditions as possible
- Critical to remove field heat a.s.a.p. after harvest
- Remove debris or other contaminants
  - Blower
  - Destemmer
- Sorting / Grading
- Cooling
  - Hold at (0-5°C) and high humidity
  - Fresh shelf life = very short
- Freezing
- Processing

Post-Harvest - Handling
**Post-Harvest - Uses**

- Fresh
- Frozen
- Processed
  - Pies
  - Jams / jellies
  - Syrups
  - Juices
  - Etc.

**“Saskatoon Berry Production Manual”**

- Published 2013
- By Spencer, Bors, Matthews, Peters
- Available from Alberta Agriculture & Rural Development Publications
  
  [http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/ipc4687](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/ipc4687)

- Also available from SK & MB provincial fruit associations

**QUESTIONS?**

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Alberta Ag-Info Centre
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