Backyard Berries!

Growing Blueberries in the Home Garden

Lisa Wasko DeVetter
Associate Professor, Horticulture

Online Resource

https://smallfruits.wsu.edu/

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Small Fruit Horticulture Research & Extension Program

MOUNT VERNON NORTHWESTERN WASHINGTON RESEARCH AND EXTENSION CENTER

Welcome to the WSU Small Fruit Horticulture (SFH) program!

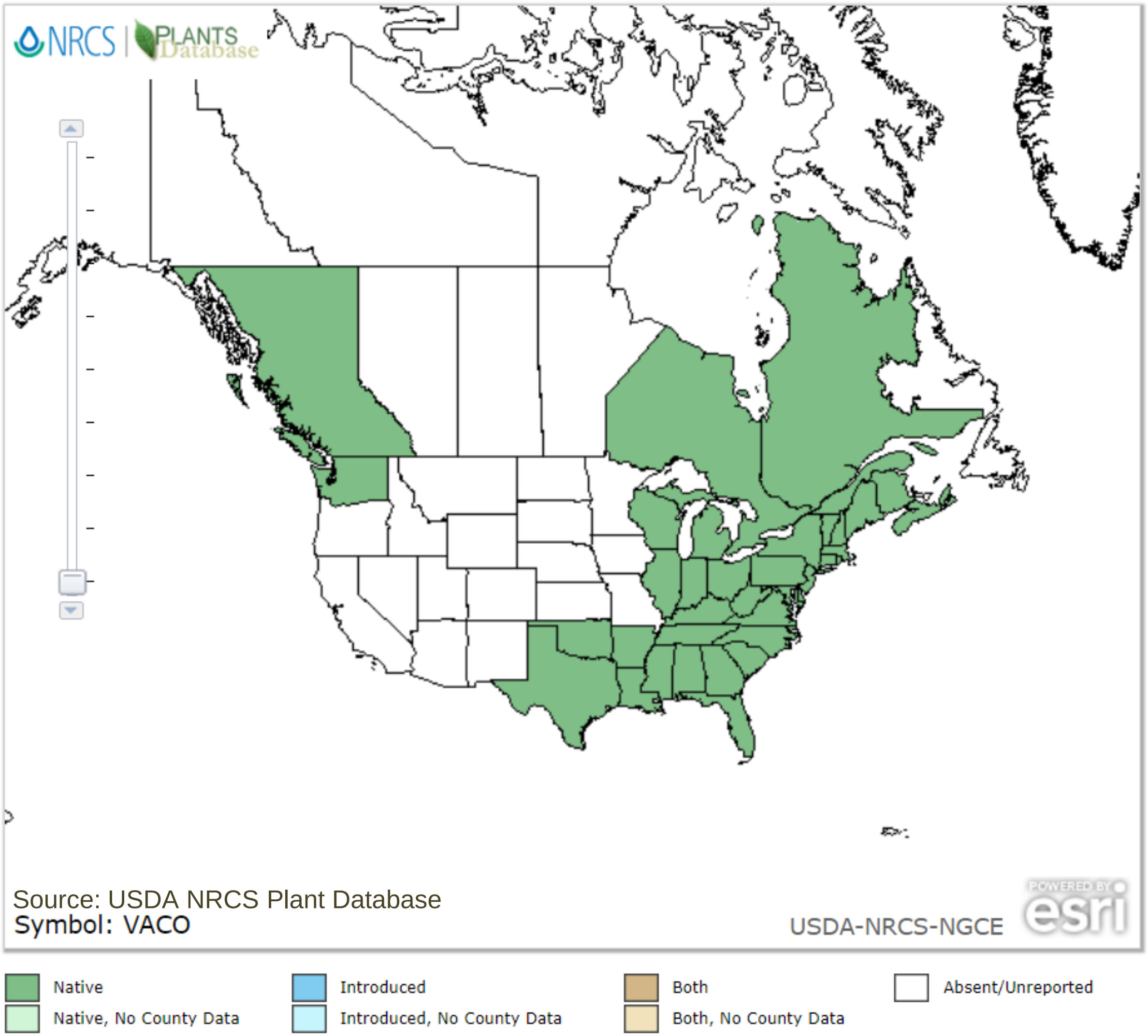
The focus of the SFH program is whole-plant physiology of small fruit crops in response to

View Information by Crop

High Bush Blueberry

Email: lisa.devetter@wsu.edu

Blueberry is a True Native Fruit



Distribution of *V. corymbosum*

Cranberry is also native!

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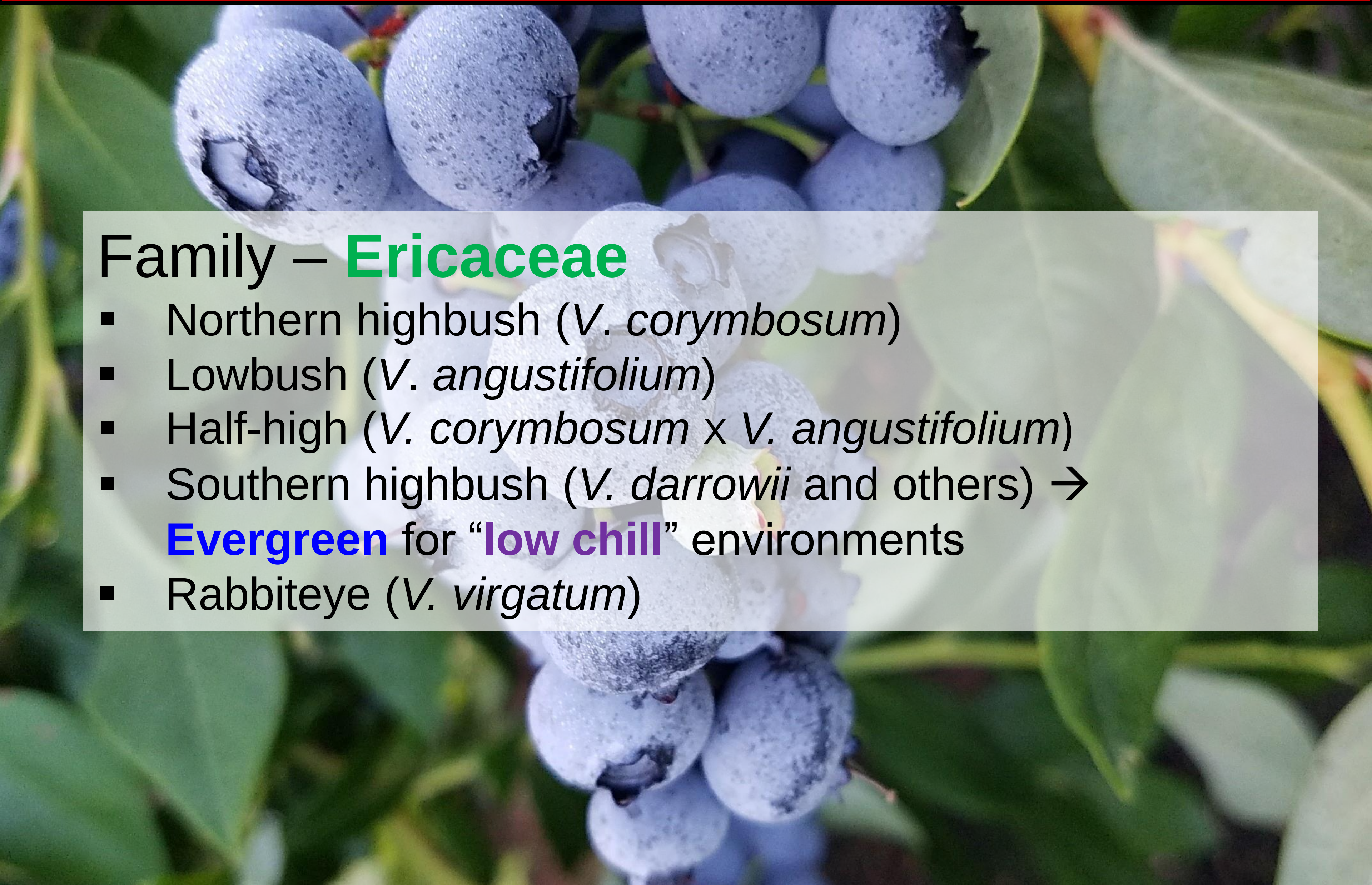
Blueberry - Genus *Vaccinium*



Family – **Ericaceae**

- Northern highbush (*V. corymbosum*)
- Lowbush (*V. angustifolium*)
- Half-high (*V. corymbosum* x *V. angustifolium*)
- Southern highbush (*V. darrowii* and others) → **Evergreen** for "**low chill**" environments
- Rabbiteye (*V. virgatum*)

Northern Highbush Blueberry – *Vaccinium corymbosum*

- Deciduous, perennial shrub native to North America
- Shallow rooted with no root hairs (**mycorrhizal**)
- **Crown forming**
- **Fresh and processed**
- 6-8 years to reach full production
- Long lived (40-50 years)
- 5-10 ft tall at maturity
- **High chill**

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Lowbush Blueberry – *V. angustifolium*

- **"Wild" blueberry**
- Managed stands in Maine and eastern Canada
- Deciduous, twiggy shrub
- **Rhizomatous**, also with mycorrhizae
- Burning and/or mowing in alternate years for **rejuvenation**
- Processed market

Images: iimpters and Audubon

Half-High Highbush Blueberry
V. corymbosum X *V. angustifolium*

- Cross between **high and low bush** types
- Much like northern highbush, but shorter
- Less **productive** than highbush
- Can be grown in **containers** or as **ornamentals**
- Planting can last 30+ years
- 1½ - 4 ft tall at maturity
- **High chill**

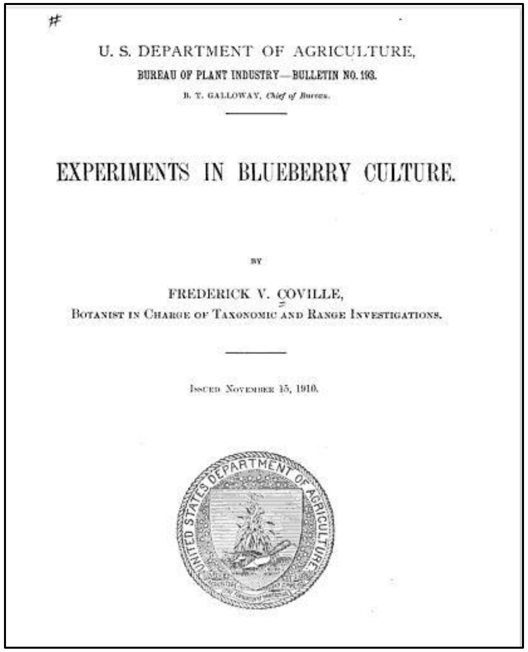
Southern Highbush Blueberry

- **Hybrids of *V. darrowii* and others**
- Developed for **low-chill areas** with warmer and dryer summers (e.g,. central CA)
- Cross-pollination recommended
- **Not recommended for PNW**

Images: Oregon Blueberry Farms and Nursery

Blueberry Domestication Timeline

- Blueberry was harvested from the **wild** prior to domestication
- Native Americans used them as a **medicine and for flavoring**
- 1983 – **Elizabeth White** noted their potential as an agricultural crop
- 1908 – USDA botanist, **Frederick Coville**, began selecting wild plants for breeding
- 1910 – Coville discovered blueberries grow best in **acidic** soil conditions and **published** his research
- 1911 – White began **on-farm collaborations** with Coville after reading *Experiments in Blueberries*


U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF PLANT INDUSTRY—BULLETIN NO. 193.
B. T. GALLOWAY, *Chief of Bureau*.

EXPERIMENTS IN BLUEBERRY CULTURE.

BY

FREDERICK V. COVILLE,
Botanist in Charge of Taxonomic and Range Investigations.

Issued November 15, 1910.

Source: https://www.blueberrycouncil.org/about-blueberries/history-of-blueberries/

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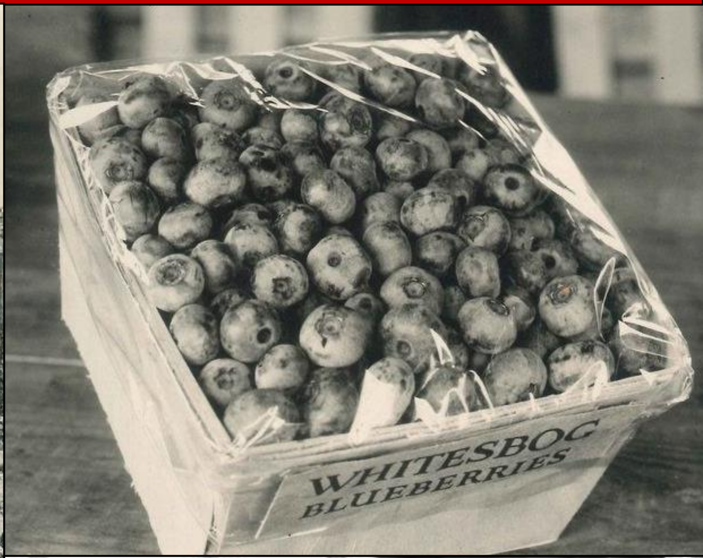
Blueberry Domestication Timeline

- 1916 – White and Coville's sold the first commercial crop in **Whitesbog, NJ**
- 1932 – NJ presents White with "**outstanding contribution to agriculture**" award
- 1942-1962 – >200,000 seedlings planted across 13 states
- 1974 – USDA announces July as **National Blueberry Month**
- 1990s – Research on blueberry **antioxidant activity** begins
- 2000s – Scientific research on **blueberry health attributes published**
- 2012 – Blueberries found in **4,000 products** (food, pet food, and cosmetics)
- 2016 – **100th anniversary of highbush blueberries**

Source: https://www.blueberrycouncil.org/about-blueberries/history-of-blueberries/

Blueberry's Early Days



Images: http://www.scc.rutgers.edu/njwomenshistory/Period_4/white.htm (top left) and Historic Whitesbog Village/Whitesbog Preservation Trust (right two).

Blueberries in Washington

- **Leading national producer**
  - 163 million pounds harvested from 16,700 acres in 2019
  - ~24% of national production
  - 70% of processed market
- **Lead national organic production**
  - 4.7 million pounds harvested from 1,400 certified acres in 2011
  - ~50% of national production

Source: NASS 2012, 2015, 2020

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Understanding Plant Growth and Development

Growth and Development - Shoots

- **Crown** – part of a perennial plant where roots and stems/canes emerge; at ground level
- **Canes** – large, primary stems that arise from crown
- Two main types of **shoots**
- Vegetative growth occurs in **flushes**

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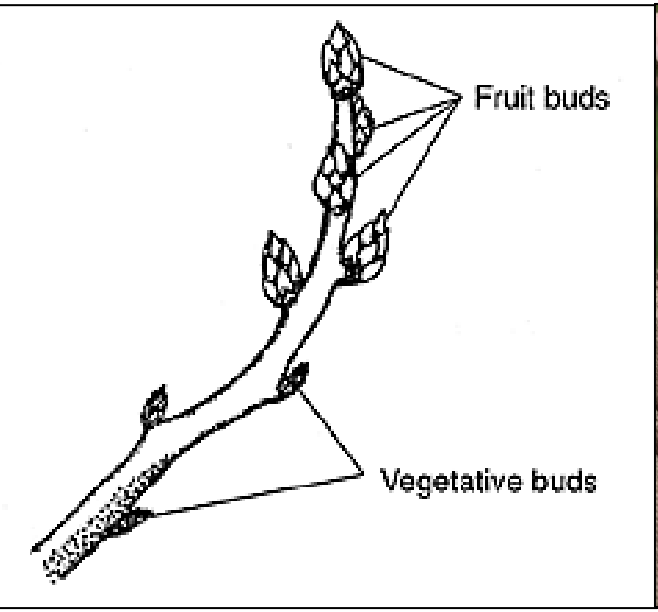
Growth and Development - Shoots

- Two shoot types:
  - **Laterals** – develop from vegetative buds on 1-year-old wood (last year's growth)
  - **Whips** – arise from latent buds on older wood at the base of the crown or higher up on the bush; vigorous and arrive after lateral shoots

Growth and Development - Buds



- Two types of buds on laterals:
  1) **Fruiting/floral**
  2) **Vegetative**
- Bud development initiated mid-summer and fall (when days are **shorter** and **cooler**)

Diagram: U.Maine

Growth and Development - Roots

- **Shallow rooted** (most within first 18 inches of soil)
- Not very extensive (within 1 ft from the crown), but depends on **soil type**
- **No root hairs!**
- Very **fine roots** (75% of roots are 30-50 µm in diameter)
- Fine roots associate with **ericoid mycorrhizae**
- Thicker roots important for anchorage, storage, and transport

Image: Strik, 2007

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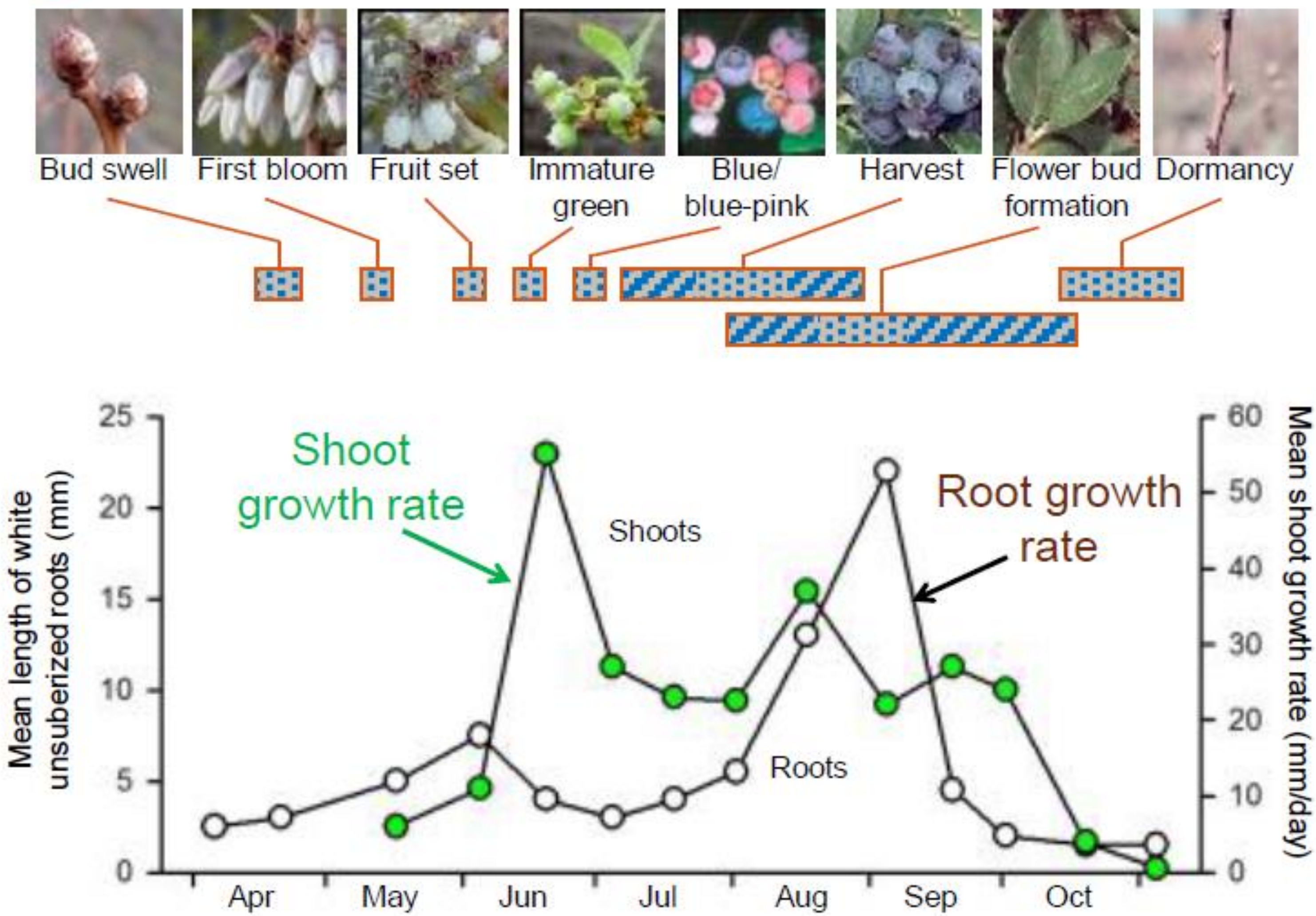
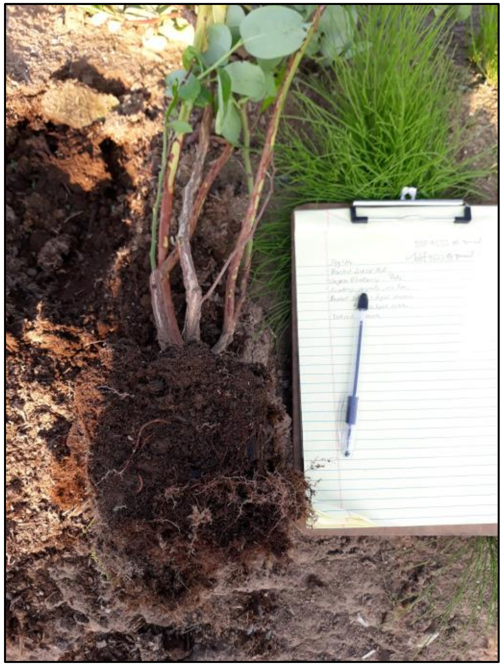
Growth and Development - Shoots



Adapted from Abbott and Gough, 1987

Planting

- **Late April-May or Aug.-Sept**. are good times to plant
- Space plants ~ 3 feet apart
- Dig holes **large enough** to accommodate all the roots and deep enough so you can cover the uppermost roots with 3 to 4 inches of soil (**but don't bury the crown!**)
- **Break up the root ball!**
- Pack the soil firmly around the roots
- **Mulch**
- **Irrigate thoroughly, frequently, and deeply**



Pollination

Pollination is Transfer of Pollen

- Pollination is the **transfer of pollen** from the male anther of a flower to the female stigma
- Adequate fruit set and berry development in blueberry relies on **good pollination**
- Ensure you have **pollinators** in the landscape
- **Cross-pollination** beneficial for most cultivars

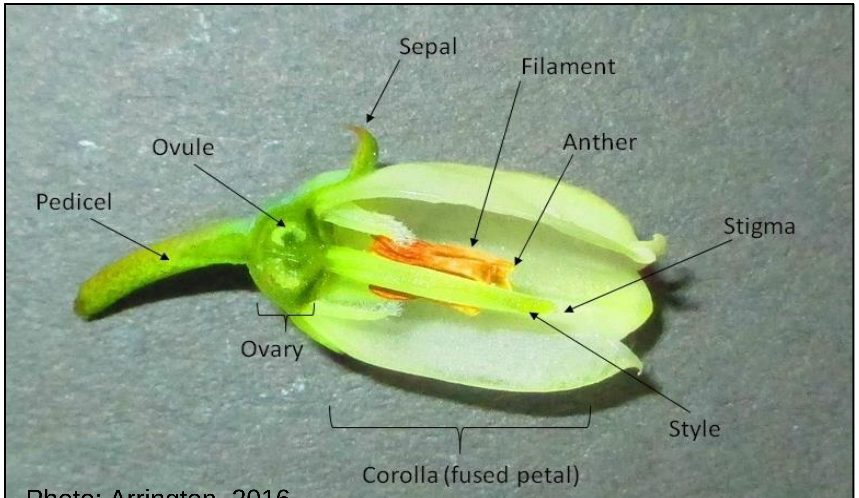


Photo: Arrington, 2016

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Honey Bees are the Primary Pollinators for Cultivated Blueberry

- **Honey bees** (*Apis mellifera*) are the primary pollinators in agriculture, pollinating over 130 crops
- **Italian (*ligustica*)** honey bee is the most commercially used sub-species
- **Weakness** of *ligustica* includes **poor foraging** at **temperatures below 55 °F**, with **moderate winds** (~12 mph), and with **precipitation**

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Fruit

- Fruit is a **berry**
- **Bloom** – powdery epicuticular wax
- Fruit develop within 2-3 months post pollination
- Irrigation important during **filling** for **size** and **flavor**
- Flavor concentrated in **skin**; differs by cultivar
- Mature bush can yield up to 20 lbs/bush

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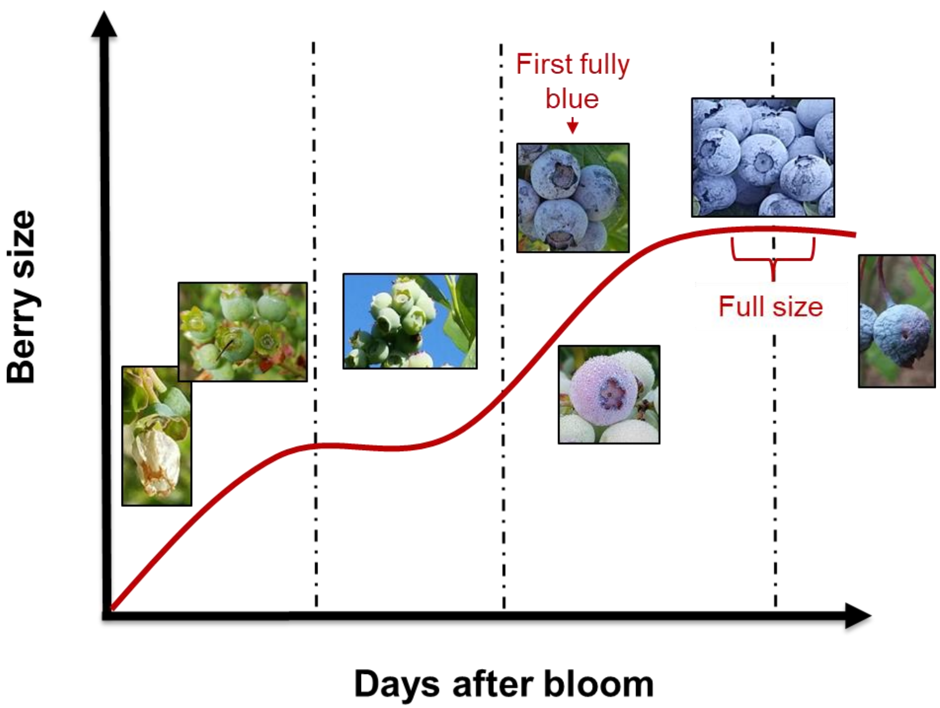
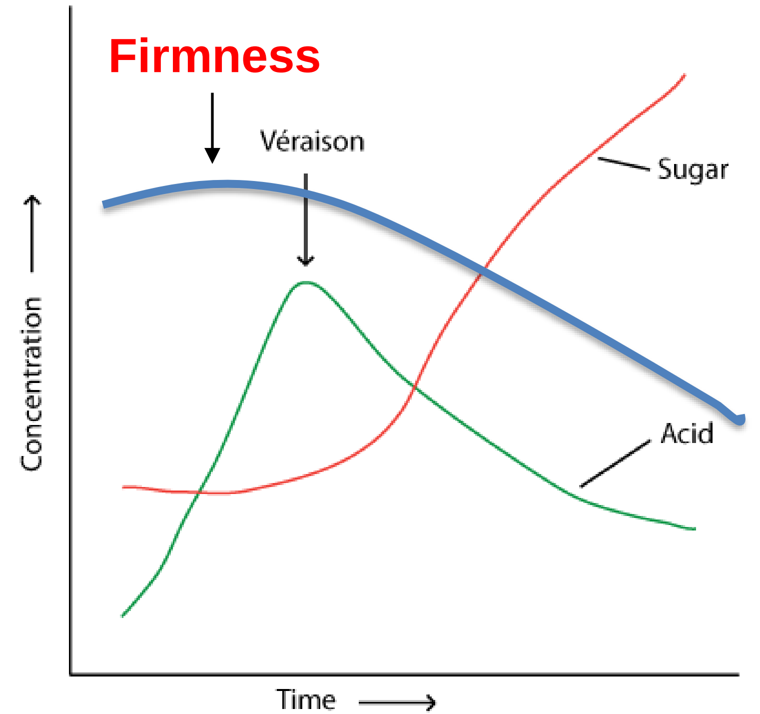
Development of Fruit Quality





Timing of harvest critical for optimal quality

Harvesting and Postharvest Care for Optimal Fruit Quality

- **Proper harvest time and interval (7-11 days)**
- **Reduce drop heights** (no more than 6 inches) during harvest and postharvest
- Avoid **compressing** fruit
- **Cool quickly!**
- Always follow **food safety guidelines**

Blueberry Break!
Washington Blueberries

WaGrown Blueberries S3E2: Samson Farms

https://youtu.be/z1rWzP6IekY

Nutrient Management

Plant Nutrients – A Review

- Goal of **fertilization** is to remove nutrient limitations (and make sure nothing is in excess)
- A nutrient is **essential** if it is needed for a plant to grow properly (and be productive)
- **Macronutrients** – needed in large quantities
- **Micronutrients** – needed in small quantities

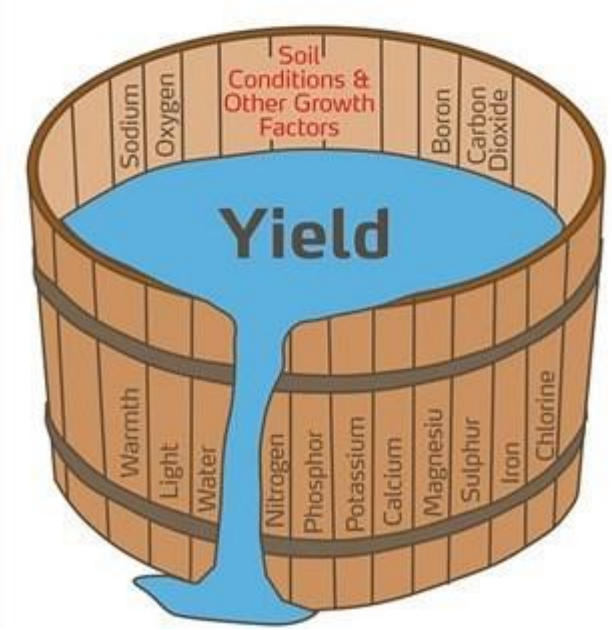


Image: SoilCares

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Nutrient Management in Blueberry

- Good nutrient management is **essential** for successful blueberry production
- Blueberries are adapted to **acidic soil conditions**
- Goal is to lower and maintain soil **pH = 4.2 – 5.5**
- Blueberry takes up predominately **ammonium nitrogen** (not nitrate)
- High **organic matter** ($\geq$ 3%) promotes good growth
- Blueberry is sensitive to amendments with **high salt content and pH**
- Important to modify soil pH and organic matter pre-plant

Pre-Plant Considerations

- Air and water drainage
- Access to quality irrigation water and ability to irrigate
- Adequate soil pH and organic matter→ soil test!

Recommended Soil Sufficiency Levels*

Nutrient	Range (ppm)
Phosphorus (Bray P)	25-40
Phosphorus (Olsen)	10-20
Potassium (K)	100-150
Calcium (Ca)	1,000
Magnesium (Mg)	60
Manganese (Mn)	20-60
Boron (B)	0.5-1.0

*Repurposed from Strik and Bryla, 2015.

NOTE

- **Target pH is 4.2 to 5.5**
- EC should be less than 2 dS/m
- Not advised to use soil tests to predict nitrogen availability

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Pre-Plant Considerations – Organic Matter

- Pre-plant incorporation of **Douglas fir sawdust** beneficial for **heavier soils**
- **Avoid** animal-based manures, cedar, oak, walnut, or any other sawdust
- Application:
  - 3.5 inches of sawdust in 3-foot-wide strips on 10-foot centers **(~19 units/acre)**
  - Add 5 lb N/unit of sawdust **(~95 lb N/acre)**
  - Incorporate to a depth of 10 inches

Acidifying Soils

- **Target pH is 4.2 to 5.5**
- If soil pH is above this range, need to apply an acid → **elemental sulfur (S°)**
- Amount of acid to apply depends on **initial pH**, **cation exchange capacity (CEC)**, and **free lime (residual carbonates)**
- Acidification takes time…
- Pre-plant is also a good time to apply **organic matter** (e.g. Douglas fir sawdust, orchard wood chips, peat moss, etc.)
- **Acidified irrigation water** for post plant pH management and alkaline water
- **Resources can help guide acidification**

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Acidifying Soils

EM 8857-E • February 2004
$2.00

Acidifying Soil for Crop Production West of the Cascade Mountains (Western Oregon and Washington)

D. Horneck, J. Hart, R. Stevens, S. Petrie, and J. Altland

Soil acidification sometimes is necessary for optimum plant growth west of the Cascade Mountain Range. Commercial producers of blueberries, azaleas, rhododendrons, and other ornamentals may need to reduce soil pH for optimum production.

Soil acidification is best performed prior to planting; it is much more difficult in established plantings. No routine soil test is available to determine soil acidification amendment rates. This publication is intended to provide guidelines for acidification of commercial fields. It is not intended for use with container-grown ornamentals.

Crop soil pH requirements

Table 1 lists optimum soil pH for selected crops grown in western Washington and Oregon. Soils in this region are naturally acidic. For most crops, liming to raise soil pH, rather than soil acidification, is needed. Blueberries and nursery crops such as azaleas and rhododendrons are exceptions. These "acid-loving" plants require a soil pH less than 6.0 and preferably below 5.5. Cultivation of these crops usually is the only reason to consider soil acidification west of the Cascade Mountain Range. Acidification of soil for production of these crops is common.

Plant symptoms when soil pH is too high

Plants are excellent indicators of the need for soil acidification. Several symptoms are exhibited when soil pH is too high. A common symptom is yellowing (chlorosis) of leaves, with prominent, contrasting green veins (Figure 1). Leaves may be smaller than normal, and leaf edges may be brown (Figure 2). Symptoms are observed

Figure 1.—Chlorosis with contrasting green veins.

Figure 2.—Chlorosis with brown leaf edges.

Table 1.—Optimum soil pH range for selected crops.*

Alfalfa	6.5–8.4
Vegetables	6.5–8.2
Garlic	6.5–7.5
Grass for seed or pastures	5.5–8.2
Fruit trees	6.0–8.0
Highbush blueberries and cranberries	4.5–5.5
Rabbiteye blueberries	4.2–5.0
Azaleas and rhododendrons	4.5–5.5
Field or silage corn	5.5–8.4
Wheat	5.5–8.4

*Soil pH determined in 1:2 soil:water ratio.

Donald Horneck, Extension agronomist, Oregon State University; John Hart, Extension soil scientist, Oregon State University; Robert Stevens, Extension soil scientist, Washington State University; Steven Petrie, superintendent, Columbia Basin Agricultural Research Center, Oregon State University; and James Altland, Extension faculty (nursery crops), North Willamette Research and Extension Center, Oregon State University.

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Nitrogen Fertility

- **Remember** - blueberry is adapted to use the **ammonium (NH_4)** form of nitrogen [not nitrate (NO_3)]
- **Use ammonium or ammonium-forming fertilizers**
- Apply annually based on tissue tests and/or field observations
- Symptoms of deficiency – **poor growth**, chlorosis (**yellowing**), and **leaf reddening**
- Don't apply excessive N fertilizer
  - Too much N can cause **excessive vigor** at the cost of fruit production and quality

Nitrogen Deficiency

Timing of Nitrogen Application

- Nitrogen fertilizer uptake begins at **bloom** and extends through **harvest**
- Start applications **early (5-10%) bloom** and continue through mid-June to mid-July

- For **dry/granular fertilizers**, **divide total rate into thirds** and apply:
  1) Late April to early May
  2) Mid May to late May
  3) Mid June

Fertigation of Nitrogen

- Start applications at **5-10% bloom** and continue until **start of harvest**
- Apply once every **two weeks to weekly**
- Place lines **close to soil** (under mulch)

Image: D. Bryla

Fertigation of Nitrogen

Image: D. Bryla

Place lines **close to soil** (under mulch)

Rates of Nitrogen Application (lb N/acre of highbush)

Year	Fertigation	Granular/dry Fertilizers**
1	90*	25 – 40†
2	90	40 – 50†
3	60	50 – 60
4	70	55 – 65
5	75	65 – 75
6	85	80 – 100
7	95	90 – 120
8+	100 – 150	100 – 140

*Based on Strik and Bryla (2015).
Modified from Hart et al. (2006) for field w/out surface mulch and assumes in-row spacing of 2.5 to 3 ft. **If sawdust mulch is used, add 25 lbs N/acre during years when mulch is reapplied.
†Assumes application by hand.

Half-high blueberries require less!

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Caution Using Composts in Blueberry

- **Animal-based composts** tend to be high in salt content, electrical conductivity (EC), and pH*
- **Goal is to keep compost pH < 6** (acidification may be required)

Source	Sample no.	pH	Electrical conductivity (EC)
Compost			
Dairy	9	7.6	6.1
Horse	5	7.8	3.3
Yard	5	7	4
Leaf	2	7.4	2.2
Mint	2	7.7	11.6
On-farm	5	6.8	6
Other organics			
Peat	1	4.8	0.7
Sawdust	1	5.2	0.4

*Reproduced from Sullivan and DeVetter, 2015.

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Some Organic Fertilizer Options

Organic nitrogen sources*

- Fish emulsion (4-0-2)
- WISErg™ (3-2-2)
- Blood meal (14-0-0)
- Feather meal (13/14-0-0)

- Soy protein hydrolysate
- Apply dry-based products **2-weeks before bloom** to allow for **mineralization**
- **pH should be <pH 6.0**, **EC < 4 dS/m** (with the saturated media extract method), and **K should be < 0.7%** (dry weight basis)

**Products listed above are not endorsed by WSU*

Mulching

- Blueberries benefit from mulch applications
- Apply 2-3 inches of mulch around plants
- Suitable mulch materials include **Doulas-fir sawdust** **untreated orchard wood chips**, **weed fabrics** ("weed mat"), etc.
- May need **additional nitrogen** (~25%) when using sawdust mulch due to nitrogen tie-up

Irrigation

- Blueberries have **shallow roots** and need **regular irrigation**
- Irrigate **new plants** frequently and deeply
- **Mature plants** require 1.5-3 inches of water per week
- Wet soil to ½-1 ft deep
- **No standing water!**
- Adjust for **soil type**
- Avoid overhead irrigation
- **Double drip** with ½-gallon emitters spaced every 18 inches under mulch ideal

Images: B. Strik

Cultivar Selection

Cultivar Selection

- **Cultivar** is a "**culti**vated **var**iety" (e.g. 'Honeycrisp')
- Successful cultivars need to be:
  - **Climatically adapted** (cold hardiness, growing degree days, and chilling requirement)
  - Adapted to **soil conditions**
  - Tolerant to key **pests or diseases**
  - Adequately **pollinated**
  - Suitable **maturity/harvest** date
  - Does the fruit characteristics meet your **needs?**

Cultivar Resources

A Pacific Northwest Extension Publication
Oregon State University • University of Idaho • Washington State University

PNW 656 • February 2014

Blueberry Cultivars for the Pacific Northwest

Bernadine C. Strik, Chad E. Finn, and Patrick P. Moore

'Bluecrop' (northern highbush)

There are five main types of blueberries grown in the United States: northern highbush, southern highbush, rabbiteye, lowbush, and half-high. The northern highbush is most common type grown worldwide and in the Pacific Northwest.

This publication briefly describes each type of blueberry. Tables 1 and 2 list cultivars that are suitable for the Pacific Northwest.

Northern Highbush Blueberries

Northern highbush blueberries (*Vaccinium corymbosum*) are native to much of the eastern and northeastern United States, from the Appalachian Mountains to the Atlantic Ocean. The plants grow 5 to 9 feet tall. One named selection from the wild, 'Rubel', was introduced in the early 1920s. Many commercial northern highbush cultivars have been developed through traditional breeding programs. Northern highbush cultivars are listed in Table 1.

Southern Highbush Blueberries

Southern highbush blueberries are complex hybrids of *V. corymbosum* and a native, evergreen Florida species (*V. darrowii*). The plants grow about 6 to 8 feet tall. In mild production regions, southern highbush blueberries can be grown in an evergreen system, in which the plants retain old leaves through the winter to advance the spring fruit crop.

This type was developed to allow blueberry production in low-chill areas (regions with mild winters,

Bernadine C. Strik, Extension berry crops professor, Oregon State University; Chad E. Finn, berry crops geneticist, USDA-ARS, Horticultural Crops Research Unit, Corvallis, Oregon; and Patrick P. Moore, scientist, Washington State University.

'Duke' and 'Draper' are most widely grown at a commercial levels, but still have challenges…

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Cultivar	Characteristics
Earliblue	Medium-to-large fruit, aromatic flavor, early, vigorous, erect, medium yield potential
Spartan	Large fruit, late bloom (avoids frost), but early ripening, vigorous, erect, does not tolerate heavy soils, concentrated ripening, medium-to-high yield potential
Patriot	Large fruit, more acidic, “red back”, concentrated ripening, small plants (<4 ft), adaptable to heavy soils and cold, sensitive to bacterial blight, nice fall foliage, medium yield potential
Toro	Very large fruit, good flavor, stocky and spreading, slower to establish, sensitive to root rots, high-to-very-high yield potential
Olympia	Medium fruit, sweet, vigorous and spreading plant, medium yield potential
Bluecrop	Medium-to-large fruit, classic flavor, susceptible to “red back” and tartness, vigorous and upright, need to prune correctly, medium-to-high yield potential
Jersey	Small fruit, classic flavor, large and spreading plants, “heirloom”, medium yield potential
Chandler	Large fruit (with good pruning), good flavor, long ripening window, medium sized plants, sensitive to bacterial blight, medium-to-high yield potential

Timing of Fruit Production

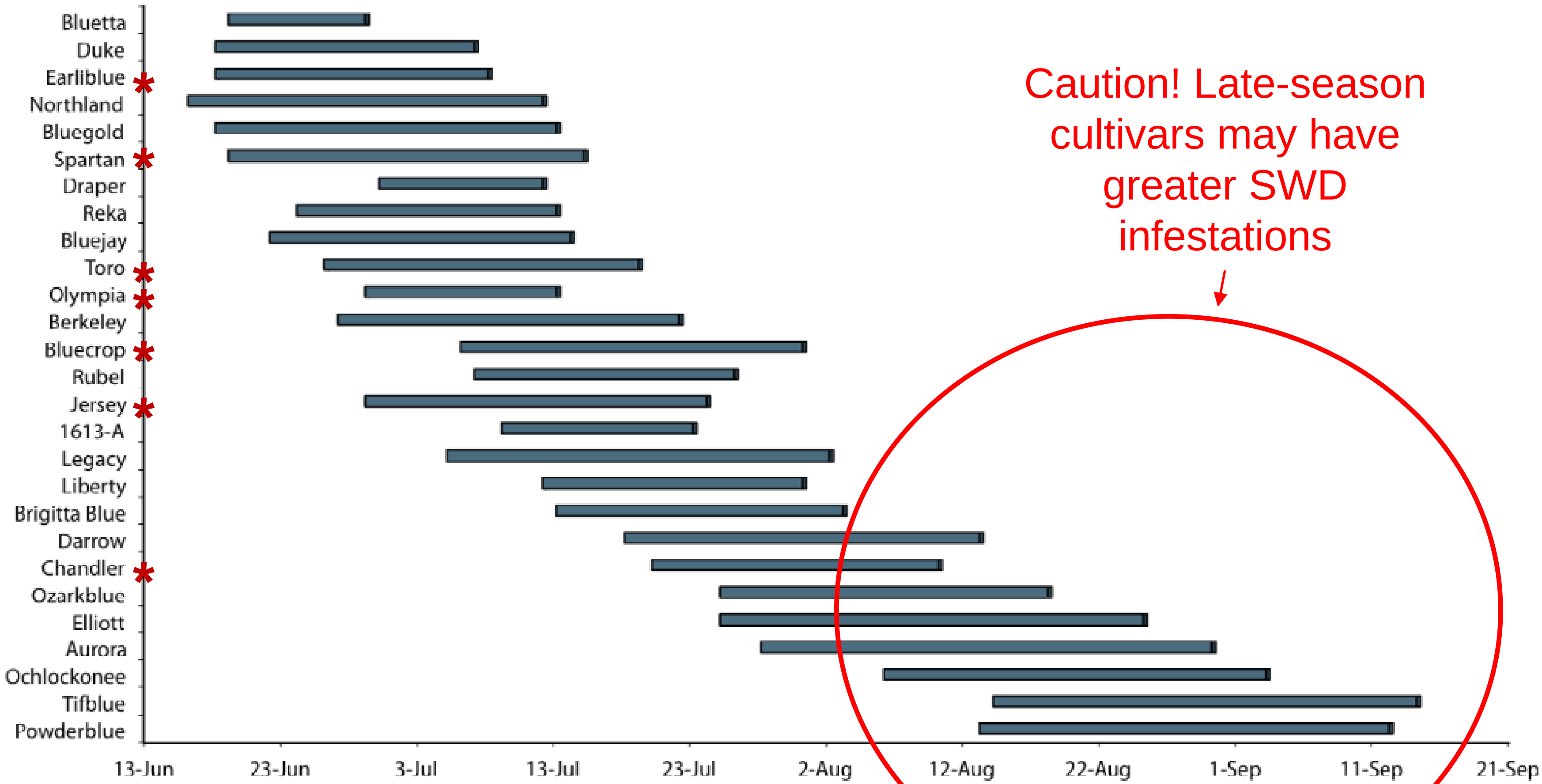

Figure 1. Approximate fruiting season of highbush and rabbiteye blueberry cultivars at the OSU North Willamette Research and Extension Center, Aurora, OR.

Bars represent harvest season for 5% to 95% of total yield. Cultivars are sorted by the date at which 50% percent of total yield has been harvested.

Ripening time can vary with year (weather) and cultural practices.

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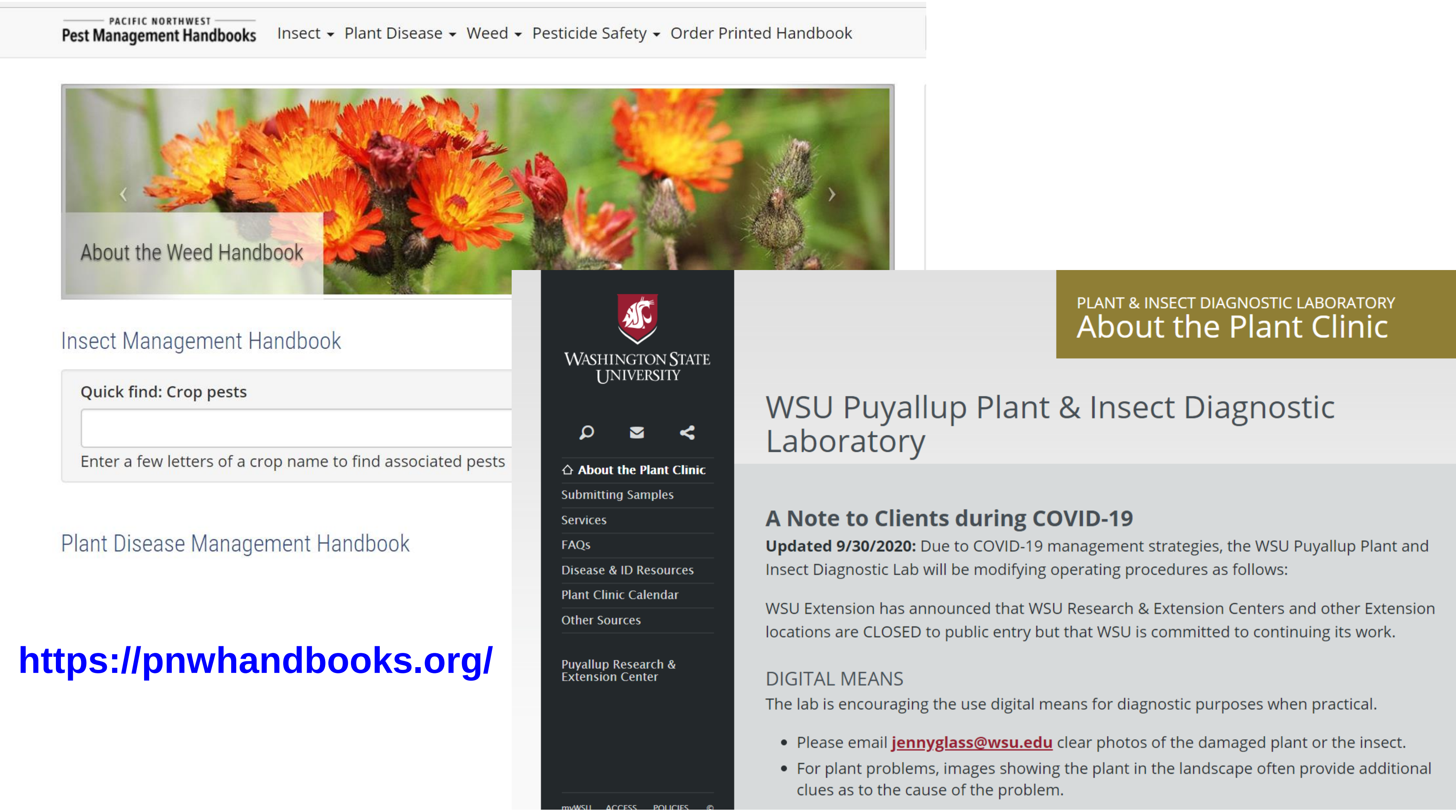
Plant Problems!



https://pnwhandbooks.org/

https://puyallup.wsu.edu/plantclinic/

Diseases – Mummy Berry

Monilinia vaccinii-corymbosi

- One of most **problematic diseases** in PNW
- **Primary infection** from overwintering “mummies” (apothecia)
- **Secondary infection** aided by **pollinators**, wind, and rain
- Manage with **sanitation**, **fungicides**, and/or **disrupt spore dispersal**

Images: OSU, Florence, and Haywood Photography, 2005

Diseases – Mummy Berry

Monilinia vaccinii-corymbosi

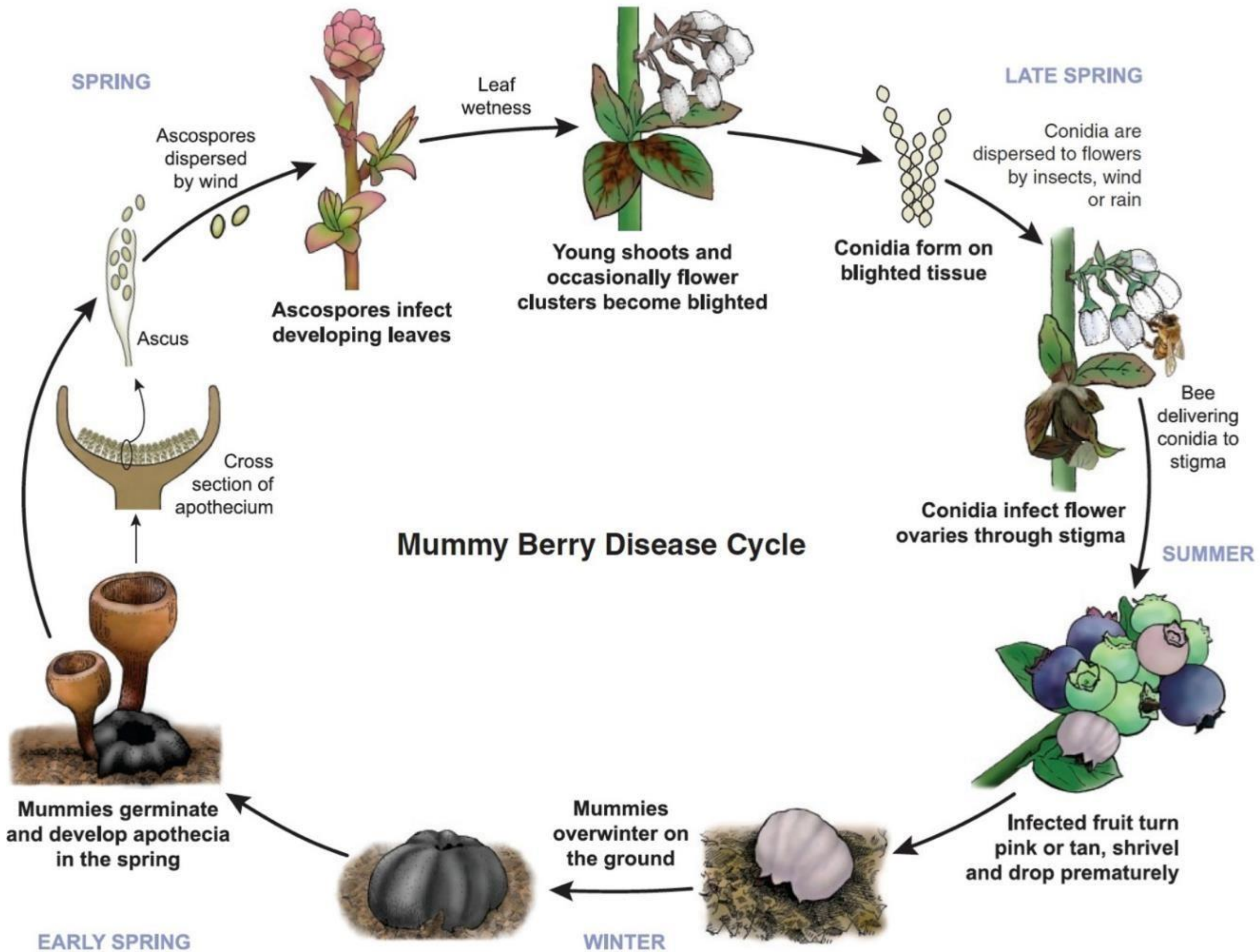


Diagram: WSU Extension

Cultural Management of Mummy Berry

- **Resistant cultivars**: Bluejay, Bluetta, and Olympia
- **Avoid very susceptible cultivars**: Blueray, Berkeley, Earliblue, and Northland
- **Bury mummies** through mulch or cultivation
- **Sanitation** – remove infested fruit

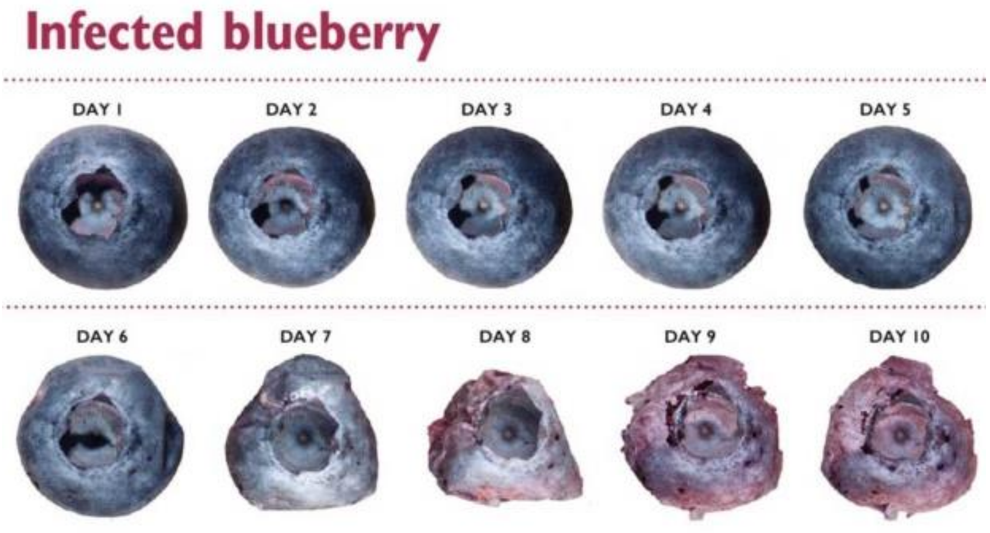
Images: Pscheidt, 2010 (top) and 2019 (bottom)

Other Diseases

- Botrytis blight (*Botrytis cinerea*)
- Shock virus

Images: OSU Plant Clinic and Pscheidt

Spotted wing drosophila (SWD; *Drosophila suzukii*)



- Monitor populations
- Pick frequently and cool
- Sanitation
- Prune for open and aerated plant canopy
- Exclusion netting

- **Spinosads** can provide 90-100% control and 5-7 days residual activity
  - Some formulations approved for organic
  - **Always read and follow the label!**

Images: E. Beers (left) and Ash Sial (right)

WS FS049E:

http://pubs.cahnrs.wsu.edu/publications/pubs/fs049e/

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SPOTTED WING DROSOPHILA (SWD) MONITORING, IDENTIFYING, AND FRUIT SAMPLING

By
B. S. Gerdeman, Department of Entomology, WSU Mount Vernon Northwestern Washington Research & Extension Center. **L. K. Tanigoshi**, Department of Entomology, WSU Mount Vernon Northwestern Washington Research & Extension Center. **G. Hollis Spitler**, Department of Entomology, WSU Mount Vernon Northwestern Washington Research & Extension Center.

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Spotted Wing Drosophila (SWD) Monitoring, Identifying, and Fruit Sampling

Introduction

Spotted wing drosophila (SWD, *Drosophila suzukii*) is a soft fruit pest, originates in Asia, and is in the same genus as other species commonly known as vinegar flies. SWD were discovered in California in 2008 and in Washington and Oregon in 2009. SWD are distinguished from other vinegar flies in that they lay their eggs in undamaged fruit still attached to plants. SWD can quickly destroy soft fruit such as blueberry, raspberry, strawberry, plum, peach, and cherry due to larvae feeding inside the fruit. SWD have a rapid reproductive cycle, and depending on environmental conditions, 4–10 generations can hatch each year in the Northwest.

Commercial and home fruit growers are encouraged to monitor SWD starting just before fruit begins to ripen and to apply control sprays when the first SWD are found in the monitoring traps or when there are local reports of SWD found in the area. For updates on local SWD findings, refer to the distribution maps.

This fact sheet describes how to make a monitoring trap, how to sample fruit, and how to identify SWD. For more information on SWD, including its biology, life cycle, and control, refer to websites in Washington (http://mtvernon.wsu.edu/ENTOMOLOGY/pests/SWD.html and http://extension.wsu.edu/swd/Pages/treeFruitLinks.aspx) and Oregon (http://swd.hort.oregonstate.edu/).

Monitoring Traps

Traps for monitoring SWD can easily be made at home:

- Use a clear plastic cup or deli container. A 16 oz plastic cup is ideal.
- Drill or punch 7–10 holes measuring 1/8 to 3/16-inch around the top edge of the cup (Figure 1a); flies will enter the trap through these holes. Leave a 3-inch section on one side of the container to pour out used vinegar.
- Add 1 inch of pure apple cider vinegar (not artificially flavored).
- Add 1–2 drops of unscented dish soap.
- Snap the lid in place and fasten tape over any openings in the lid to keep rainwater out.

Figure 1. A clear plastic drinking cup with holes punched in the top (a) and placed in raspberry (b), strawberry (c), and cherry (d) plantings as a SWD trap.

Set the traps in place to monitor SWD before fruit begins to ripen.

Caneberries and Blueberries: Hang the trap on a plant, stake, or trellis 3–5 ft above the ground within the shady, cooler side of the plant canopy (Figure 1b).

Strawberries: Place the trap on the ground or elevated slightly above the canopy on a stake within the strawberry row (Figure 1c).

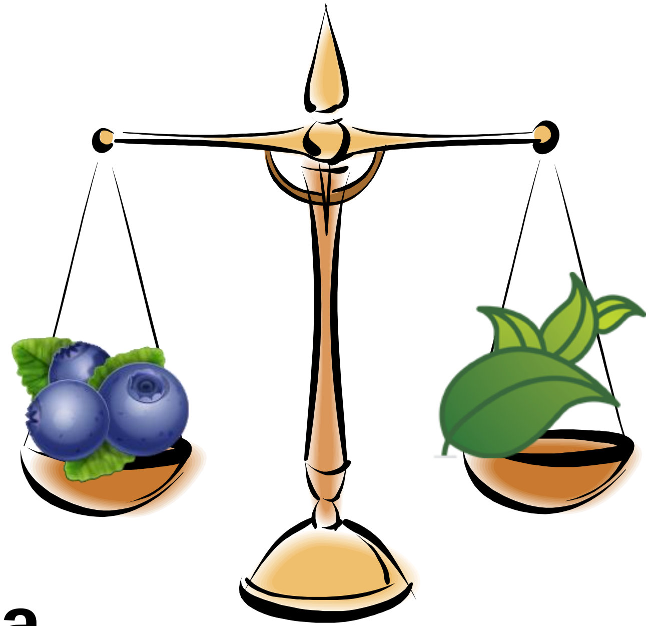
Tree Fruit: Hang the trap within easy reach or at eye level on the shady side of a tree (Figure 1d).

Place 1 trap in each crop or 1 trap per acre for large plantings. Entrance holes should be clear of leaves and fruit to allow easy entry by flies. Check traps for flies and replace vinegar weekly. Do not pour the vinegar from the trap on the ground, as it can attract SWD and affect trap results; remove the vinegar from the field and dispose elsewhere. Filter the trap contents over a fine screen or coffee drip filter placed in a hand-held colander (Figure 2) and examine with the naked eye

Pruning

Objectives

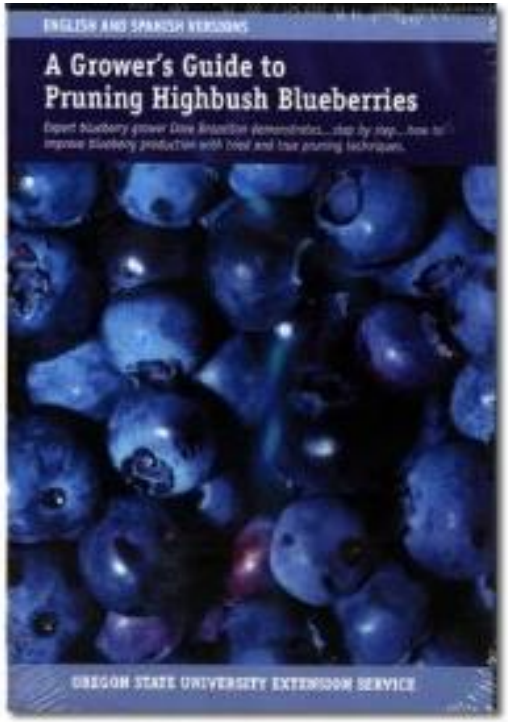
- Balance **vegetative** and **reproductive** growth
- Remove **unwanted** growth
- **Open canopy** for adequate light penetration and air circulation



- **Annual pruning is essential for a healthy and productive planting!**

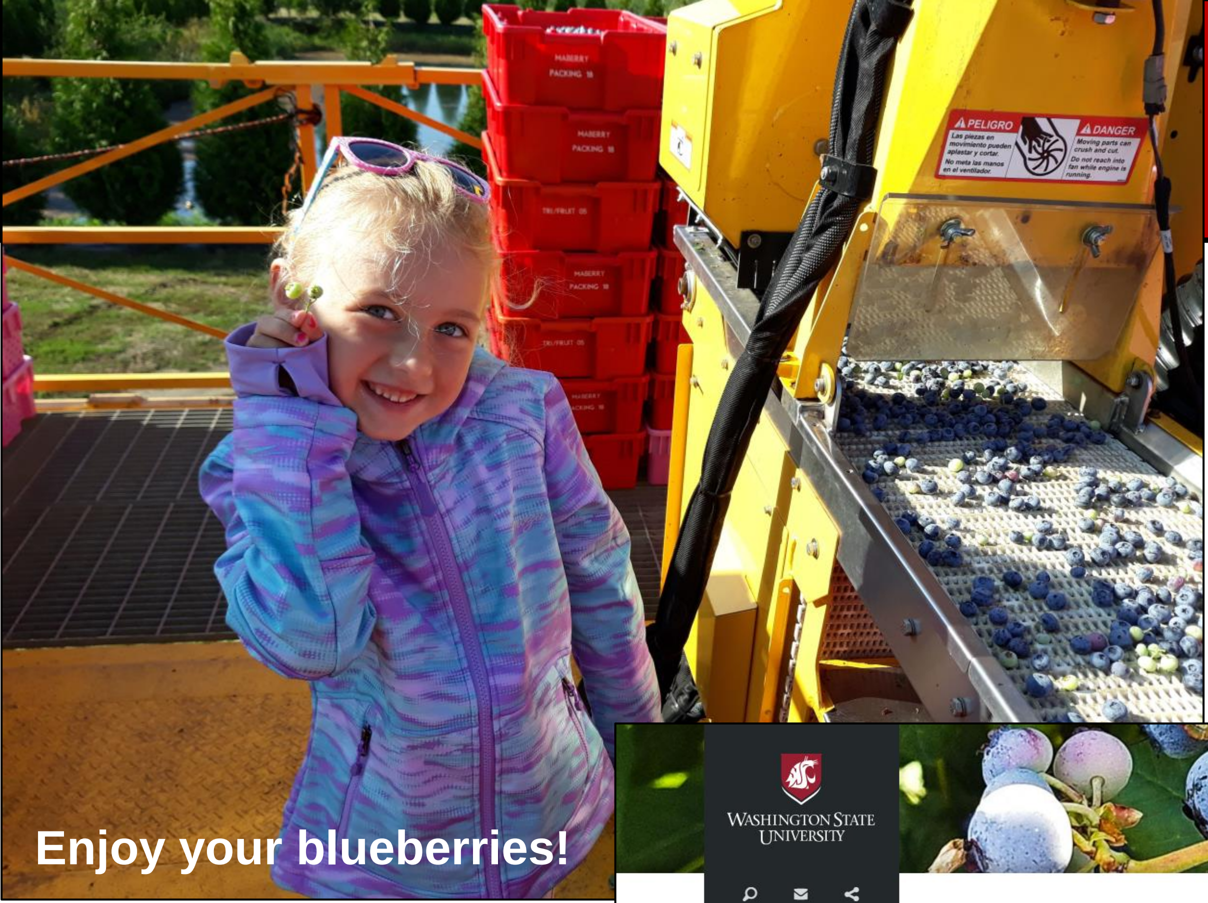
Pruning

- "**A Grower's Guide to Pruning Highbush Blueberries**" by Oregon State University
- Link: https://media.oregonstate.edu/media/t/0_05v1qew6
- A great video resource!



Washington State University

Conclusion



WASHINGTON STATE UNIVERSITY

- Home
- Small Fruit Horticulture Team
- **Highbush Blueberry**
- Red Raspberry
- Strawberry
- Plastic Mulches
- Projects and Activities
- Other Small Fruits
- Other Resources

- WSU Department of Horticulture ↗
- WSU NWREC Mount Vernon ↗

Highbush Blueberry

Highbush blueberry (*Vaccinium corymbosum*) is a woody perennial shrub that is a member of the heath, or Ericaceae, family. One unique feature of plants within this botanical family is that they require acidic soil conditions with pH ranges between 4 to 5 units. Other members in this plant family include lowblush blueberry, cranberry, huckleberry, rhododendrons, azalea, and heather.These shallow-rooted crops require specific conditions for successful production. Please review the information below to learn more about successful production of blueberry.

Production Overview

https://smallfruits.wsu.edu/blueberry/

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Thank you!
Any questions?

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