

# Intro to Small Fruit Production

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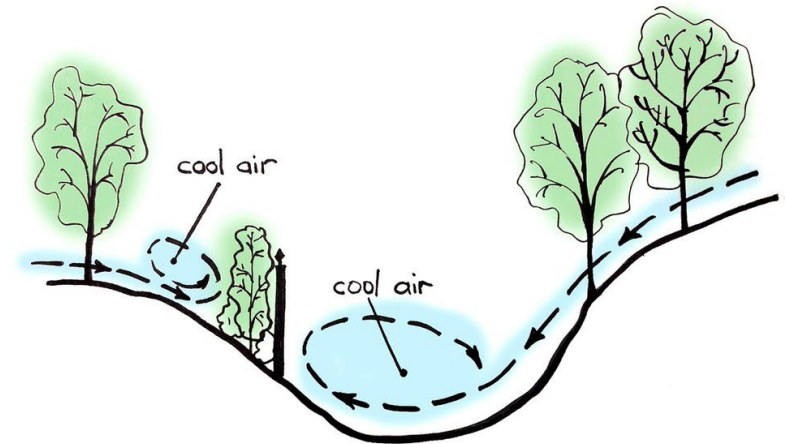
# Small Fruit

- Caneberries/Brambles
- Blueberries
- Grapes
- Strawberries
- And more!



# General Site Selection

- Sunlight
  - Full sun is preferred
- Soil Requirements
  - Sandy loam - clay loam
  - Good water drainage
  - Appropriate soil pH for the crop
    - For most, 6.2 - 6.8.
    - Blueberries require 4 - 5
- Avoid "frost pockets"



A scheme of a frost pocket formation.



# Market Potential

What is your desired market?

How does your system and infrastructure fit into these markets?

- Direct Sales
- Retailers
- Wholesale/Brokers



Johnny's Seeds



Napa Farmers Market





# CANE BERRIES

Blackberries and Raspberries



# Types of Caneberries

- Grouped by 4 plant characteristics:

- **Growth Habit**

- Trailing, semi-erect, or erect.

- **Fruiting Habit**

- Primocane or floricanne

- **Thorny or Thornless**

- **Fruit Color**

- Raspberries only



Erect



Semi-erect



Trailing



# Caneberries

- Perennial shrubs
- New canes grow from buds at the crown each year
- Shoots have a 2-year cycle
  - Primocane
  - Floricane
- Shallow roots
- Lots of types and varieties



Primocane leaves



Floricane leaves



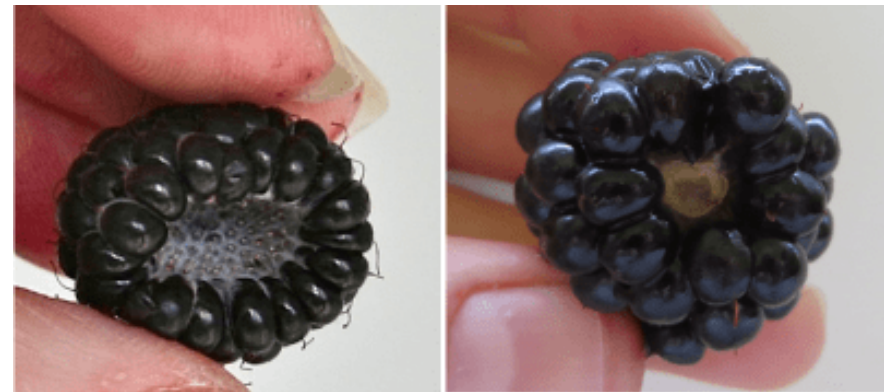
## Blackberries

- Thornless
  - Might be more interest for pick-your-own operations, or those where you just don't want to be scratched!
- Many tasty thorny varieties



## Raspberries

- Types are based on berry color
- Production and quality can be improved with trellising.
- Separate plantings of red and black raspberries by



*Black raspberry*

*Blackberry*





# Caneberries – Planting

- Planted from a dormant bare root plant.
- Set close to – 1' " lower than nursery level
- After planting cut stem 3-4 inches from the ground.
- Early spring planting acceptable most regions
- Fall planting enables a good root system to develop.



- Spacing – Blackberry
  - 10-12 ft between rows
  - Erect: plants 2-4 ft apart in row
  - Semi-erect and trailing types: 4-8 ft between plants
- Spacing – Raspberry
  - 8-15 feet rows, depending on equipment
  - Primocane fruiting: 2-3' apart in row
  - Floricane fruiting: 3-4' apart in row



# Caneberries – Soil Management

- Grow best with 3% or more organic matter.
- Mulch should be applied soon after setting plants and maintained throughout the life of the planting.
- Hardwood or softwood bark – 5-6 inches deep.



# Caneberries - Fertilization

- Manage for fertility ahead of time - six months to a year in advance of planting.
- Knowing soil organic matter content is helpful for determining the amount of nitrogen to apply.
- On fertile soils where good mulch is maintained, usually unnecessary to make an application of fertilizer at planting.
- Additional fertilizer should be added based on soil test recommendations.



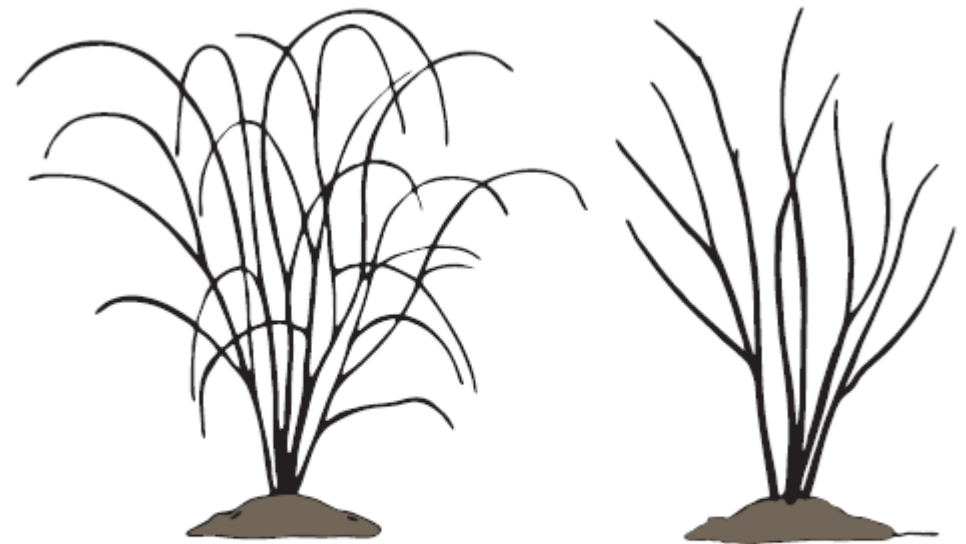
# Irrigation

- Drip irrigation is preferred.
- Caneberries need:
  - 1-2 inches of water per week during growing season
  - 2-3 inches per week during harvest.



# Caneberries – Pruning

- Pruning is the most time consuming and expensive part of commercial production
- The type of pruning done depends on the type of berry, and its growth habit
  - Floricane-fruiting – prune several times a year
  - Primocane-fruiting – pruned (mowed) only once during winter
  - Fruiting canes die once fruiting is completed.
- Pruning information can be found in the resources section.



**Figure 4. Left, an unpruned blackberry plant. Right, once plants are dormant, only retain four to five of the best canes.**

Virginia Cooperative Extension



# Caneberries - Trellising

- Trellis systems can increase yields by supporting the canopy surface.
- Trailing and erect-growing blackberries and black and purple raspberries need support.
  - Trellis, fence, tied to stakes
- Other caneberries can be trained to supports or with severe pruning, be grown as upright self-supporting plants.



# Example Trellis Systems

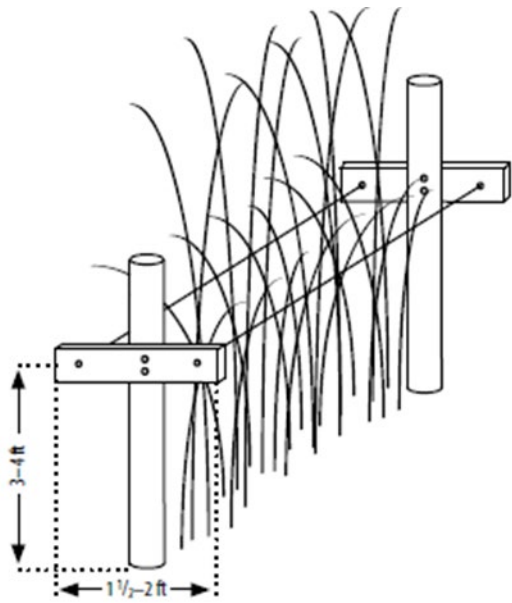


Figure 8.3. Supported hedgerow trellis.

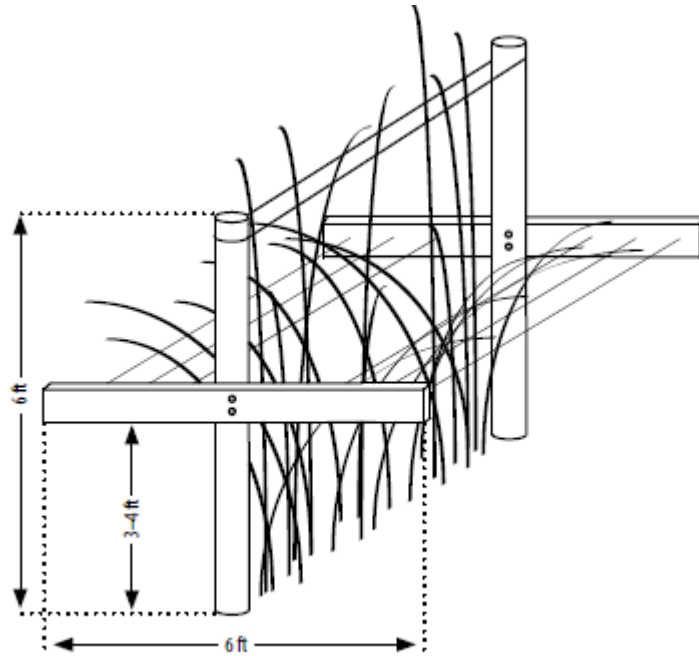


Figure 8.4. T or Lincoln trellis.

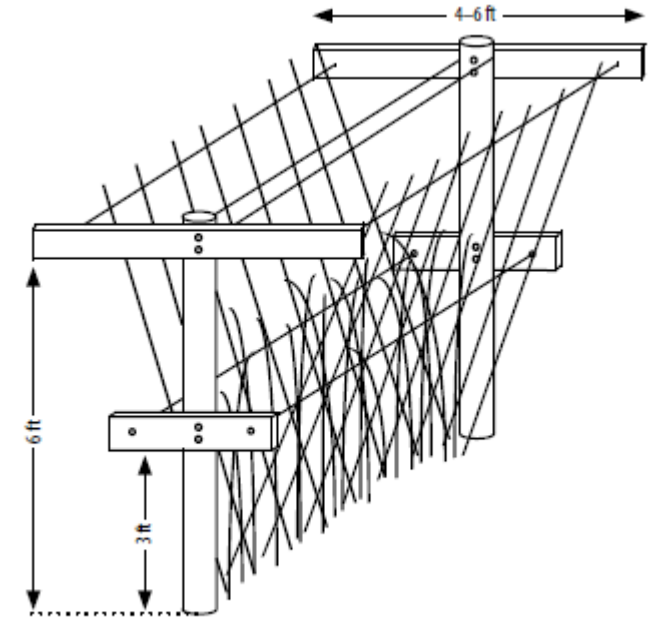


Figure 8.5. V trellis.



# Pollination

- Most commercial varieties are self-pollinating
- Most varieties are self-fruitful, but cross-pollination with pollen from other varieties can improve fruit weight and shape.
- Honeybees are the key pollinator.



The Peace Bee Farmer





# Production Costs

- 1 Acre of Blackberries:
  - Estimated total cost, materials and labor= \$10,542

Materials	Cost (\$)
Purchasing plants	1500.00
Mat, Landscape fabric, 14 rolls, 300 ft., each roll	850.00
25 mil-dripline, 5,200 ft. (2600 ft./roll)	582.00
A bag of dripline end plugs	20.00
A bag of risers dripline connectors	40.00
A big of dripline splices	40.00
PVC, 1.5" for submain, estimated 220 ft. long, 20	150.00
Riser materials, plus glue	100.00
T-Post, 465 of them, 7ft.	2600.00
End-post, 40 of them	520.00
Wire, 12 gage high tinsel, 6 rolls, 24000 ft.	600.00
Wire vises or gripples	600.00
Fertilizer, 10-20-20, 400-450 lbs.	110.00
Rental plastic mulch layer (two days)	250.00
Post-ponder rent or using augur	300.00
6.5 hp pimp and suction hose	900.00
<b>TOTAL MATERIAL</b>	<b>9162.00</b>

LABOR	\$
40 men hours to lay the plastic	400.00
16 men-hours for installing the end-post	160.00
40 men hours to install T-post	400.00
20 Man-hours to plant the blackberries	200.00
2 man-hours to plant grass seed plus seeds c	220.00
<b>TOTAL LABOR</b>	<b>1380.00</b>





# BLUEBERRIES



# Blueberry Production Timeline

- Time from planting:
  - Until first harvest
    - 3 years\*
  - Until full commercial harvest
    - 5 to 6 years\*
  - \*With proper management
- Productive life of planting
  - 15 to 20 years\*\*
  - \*\*If well maintained



# Blueberry Establishment Costs

- Range from \$4,500 to \$8,500/A
  - Land preparation
  - Plants
  - Labor
  - Irrigation
- Annual Production Costs
  - \$2,000-\$3,000/A
- ~5 years of production to cover establishment costs
- Sample budgets in Mid-Atlantic Berry Guide



# Blueberry Site Selection

- Soils
  - Medium-textured
  - Good water holding capacity
  - Well drained
- North facing slope
  - Air drainage
  - Delayed bloom
  - Disease prevention
- pH Adjustment
  - Preferred range **4.8-5**
  - Soil test 6+ months before planting
  - Apply sulfur or aluminum sulfate to lower pH
  - Mulch with old sawdust



# Blueberry Species

- Highbush
- Rabbiteye
- Lowbush - "wild"
- Many cultivars or varieties
  - Chosen based on production area temp and chilling requirements of different species
- Select varieties based on your desired harvest window
  - All season?
  - Specific harvest window?



# Blueberry Types

## Highbush

- Commercially most widely grown in Mid-Atlantic
- More winter hardy
- Less prone to frost damage
- More suited for Northern VA and mountain regions

## Rabbiteye

- Grown commercially in southern US
- Better suited for hotter climates
- Lower chilling requirement



# Planting

- Purchase 2-year old bare rooted or potted transplants from reputable nurseries.
- Bare root plants can be planted in late winter to early spring, during dormant season
- Potted plants can be planted in spring or fall.
- Raised beds
- Rows far enough for tractors or trucks, 9-14 feet
- Between plants, 4-8ft





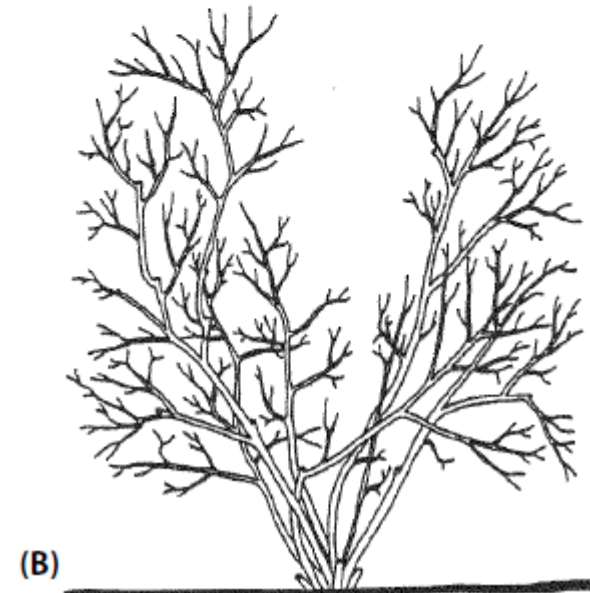
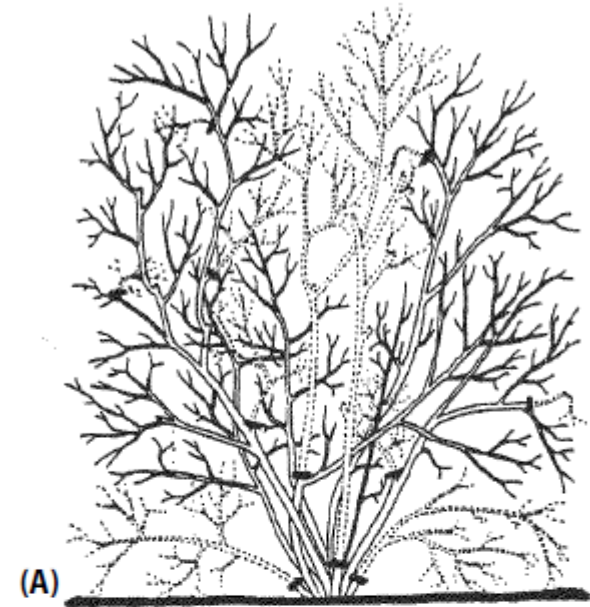
# Irrigation

- Blueberries need 1 inch water per week
- Trickle or Drip Irrigation preferred
  - Conserves moisture
  - Supplies adequate water
  - Decreases foliar diseases
- Overhead irrigation could be used for frost protection



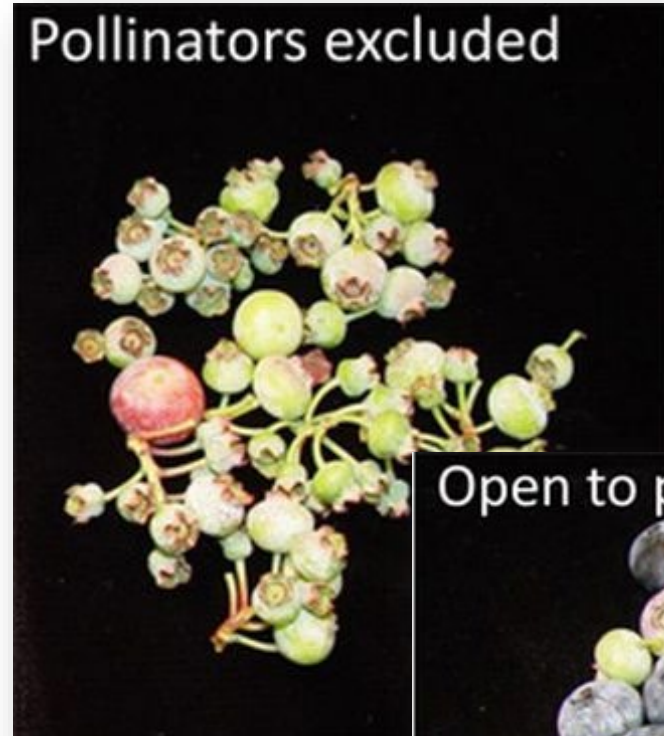
# Pruning

- Remove small twiggy growth to increase fruit size
- Pruning controls crop load and increases fruit quality
- Renew the older, decreasingly productive canes
- Replace with new canes
- Prune toward end of dormant season – March



# Pollination

- Rabbiteye will not self-pollinate - plant 2 or more varieties
- Most highbush blueberries will benefit from cross-pollination
  - Increased seeds per berry, fruit size, weight, better yield
- The use of several cultivars can allow for plants to pollinate each other, and extend the picking season.



# Pests

- Birds are the #1 pest
  - Can be covered with plastic netting or fabric cloth
  - Wires for noise
- Spotted Wing Drosophila
  - Pick when ripe



Cornell University



BC Blueberry Council



# Educational Resources

- **Mid Atlantic Berry Guide** - <https://rucore.libraries.rutgers.edu/rutgers-lib/43412/PDF/1>
- **Southern Region Small Fruit Consortium** - <https://smallfruits.org/>
- **Southeast Regional Caneberry Production Guide** - <https://content.ces.ncsu.edu/southeast-regional-caneberry-production-guide>
- **Blackberry Production Guide- Reza Rafie** - <https://www.vbgov.com/government/departments/agriculture/vce/Documents/2019%20Southeast%20VA%20Fruit%20and%20Vegetable%20Conference/BlackberryProduction-Rafie.pdf>
- **VSU Berry School**



# Presentation References

- Mid-Atlantic Berry Guide
- Small Fruit in the Home Garden -VCE
- Basics of Small Fruit Production - Michigan State University
- University of Kentucky - Blueberry Production

