
SMALL SCALE COMMERCIAL
BLUEBERRY PRODUCTION

1. Overview
2. Blueberry Species
3. Site selection
4. Planting
5. Fertilization
6. Irrigation
7. Pruning
8. Pests
9. Disease
10. Harvest
11. Frost Protection

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OVERVEIW

- Vaccinium species
  - Heath family (Ericaceae)
  - Native to North America
  - Related to azaleas, cranberries

BLUEBERRY SPECIES

- Rabbiteye (Vaccinum Virgatum syn. V. Ashei) native to the deep south, hexaploid 6X
- Highbush (Vaccinium corymbosum) “Northern Highbush” domesticated in NJ, but also native into the south; tetraploid 4X
- Southern Highbush (Vaccinum corymbosum X?) complex tetraploid 4X interspecific hybrids with lower chill requirement., greater soil adaptability

- “ The Southern Highbush [Blueberry] is a plant looking for a place to die”

  Gerard Krewer, Dixie Blueberry News, March 2003

VARIETY SELECTION

- Stems detach
- Don't crack
- Dry stem scar firm
- Good flavor (esp. not tart)
- Disease resistance
- Color (not too dark)
- Size
- Good bush survival
- Market prejudice
- Ripens at the right time
- Consistent Yield
- Pollination

RABBITEYE

- STANDARDS: Premier, Climax, Brightwell, Tifblue, Powderblue
- NEWER: Vernon, Krewer, Alapaha, Columbus, Ira, Ochlockonee, Onslow

HIGHBUSH

- STANDARDS: Earliblue, Patriot, Bluecrop, Berkeley, Jersey, Elliott
- NEWER: Duke, Aurora, Liberty, Draper

SOUTHERN HIGHBUSH

- STANDARDS: O'Neal, Star, New Hanover, Legacy
- NEWER: Rebel, Suziblue, Farthing, Camellia, Gupton

PLANT SELCTION

- Container grown or bare root
- Disease and virus free

Plant Selection

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- Disease and virus free

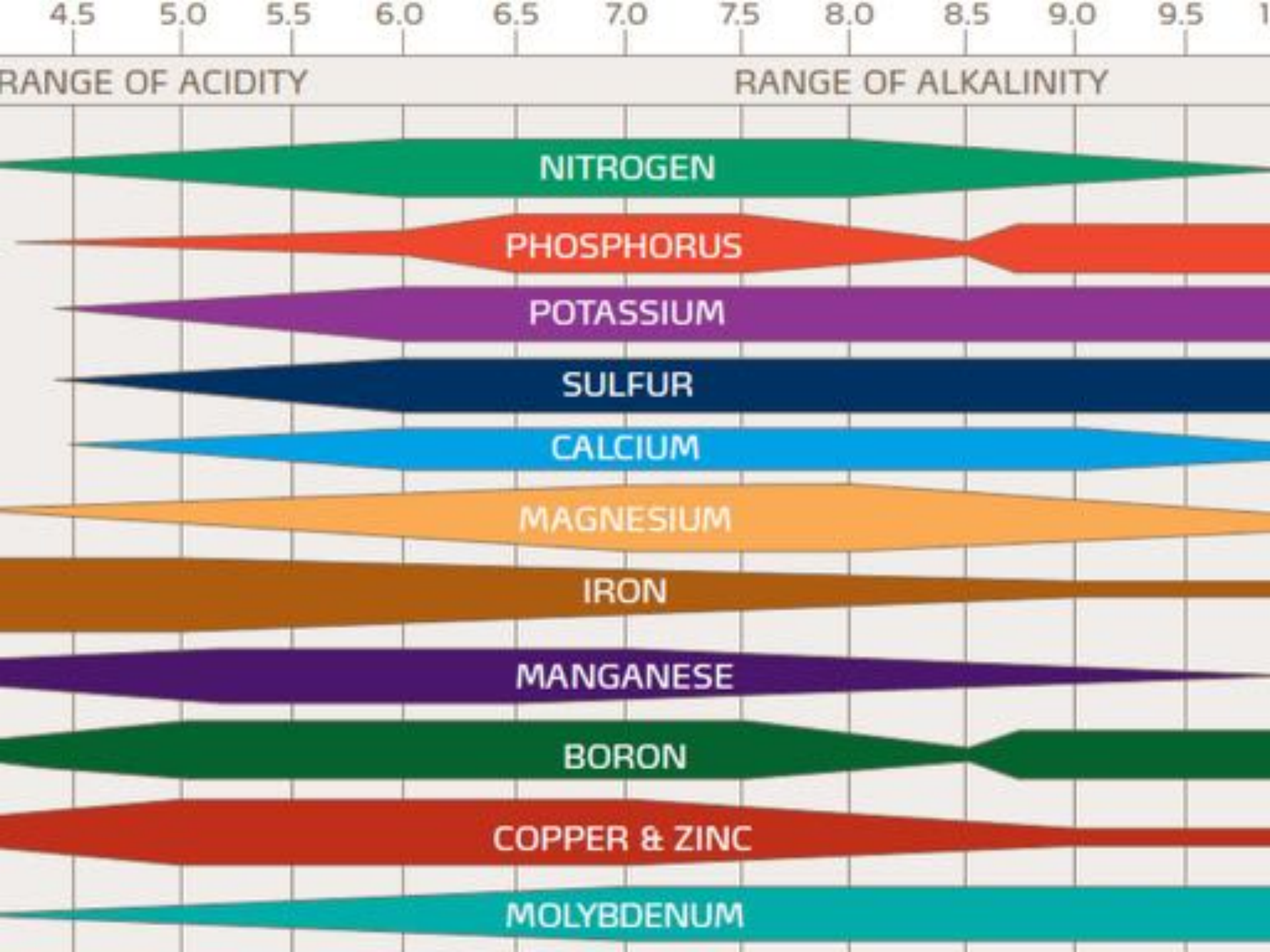
SITE SELECTION

- Sunny
- Well drained soil
- High organic matter
- Suitable soil
- Water supply for irrigation

Site preparation

SITE PREPARATION

- Test and amend soil
- Take care of any weed issues
- Build raised beds
- Add organic matter (pine bark or rotten sawdust)


4.5
5.0
5.5
6.0
6.5
7.0
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9.0
9.5
RANGE OF ACIDITY
RANGE OF ALKALINITY
NITROGEN
PHOSPHORUS
POTASSIUM
SULFUR
CALCIUM
MAGNESIUM
IRON
MANGANESE
BORON
COPPER & ZINC
MOLYBDENUM

PLANTING

WEED CONTROL

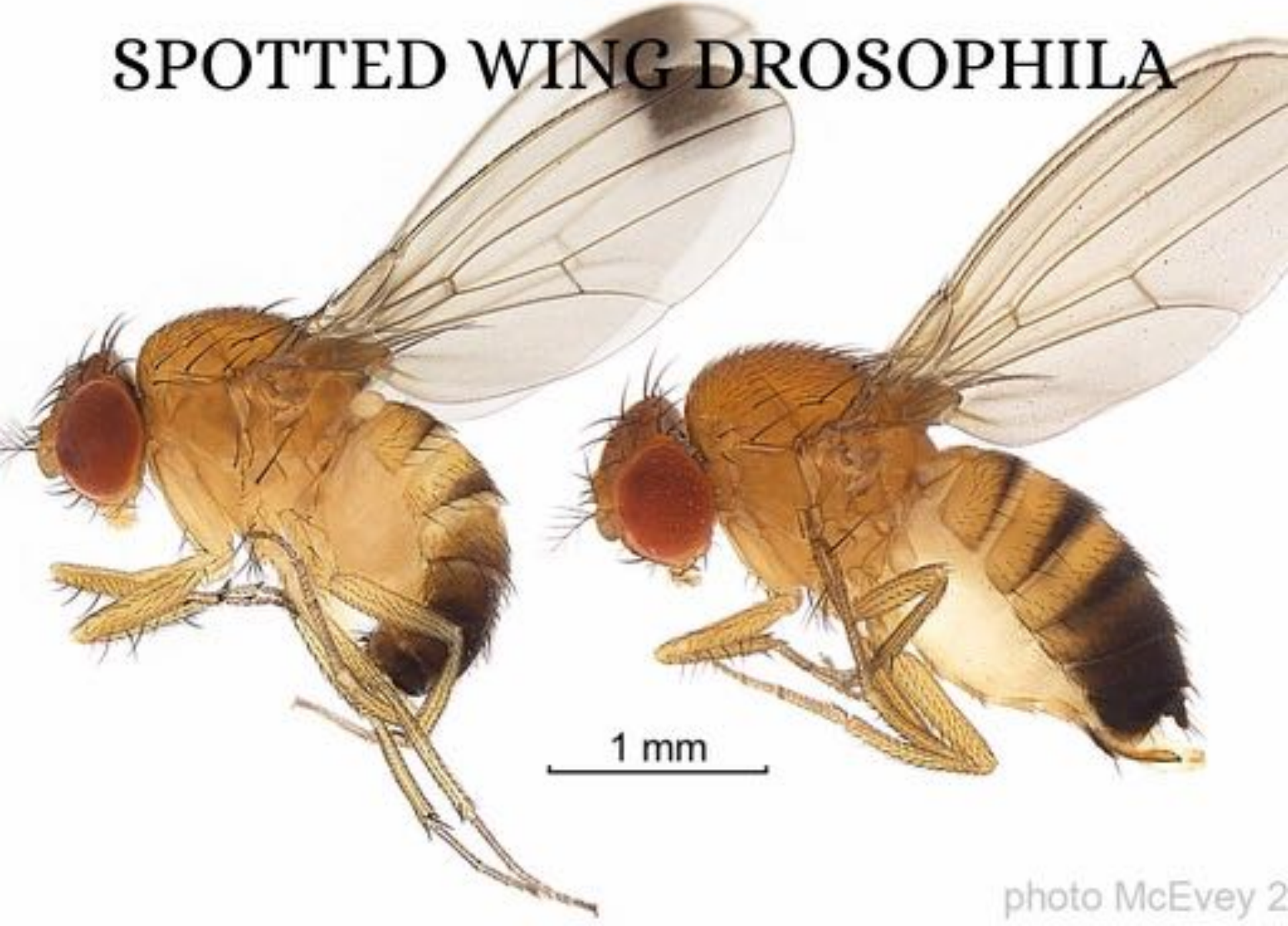
NITROGEN

- Chlorophyll (note central Mg atom connected to 4 N atoms)
- Nucleic acids (DNA, RNA) in each cell
- All proteins

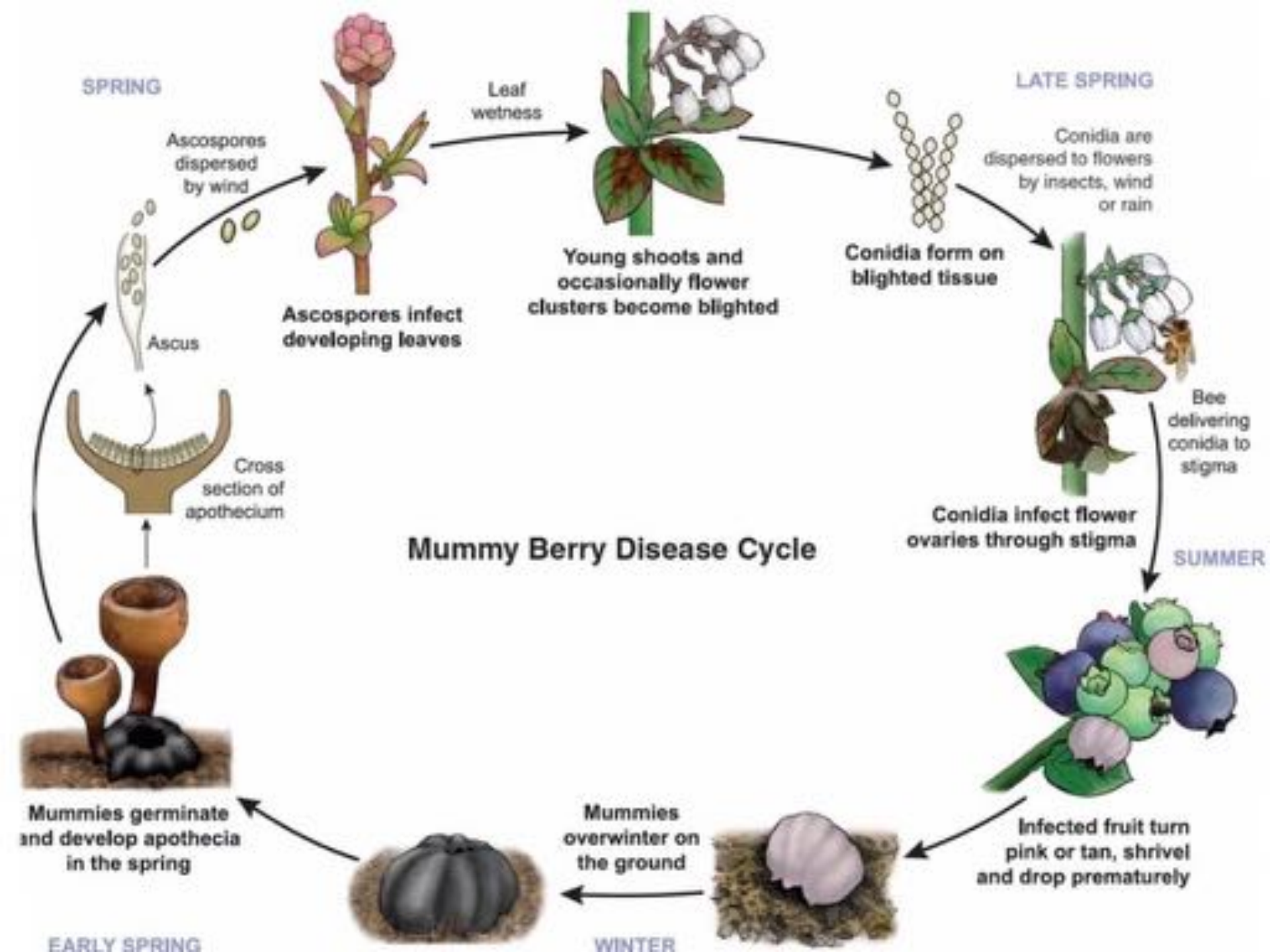

• 1st year: 54# N/A
• 2nd & 3rd year: 90# N/A
• 4th & beyond: 68-100# N/A


IRRIGATION

SPOTTED WING DROSOPHILA




MUMMY BERRY


SPRING
Ascospores dispersed by wind
Ascus
Cross section of apothecium
Ascospores infect developing leaves
Leaf wetness
Young shoots and occasionally flower clusters become blighted
LATE SPRING
Conidia form on blighted tissue
Conidia are dispersed to flowers by insects, wind or rain
Bee delivering conidia to stigma
Conidia infect flower ovaries through stigma
Mummy Berry Disease Cycle
SUMMER
Infected fruit turn pink or tan, shrivel and drop prematurely
Mummies overwinter on the ground
WINTER
EARLY SPRING
Mummies germinate and develop apothecia in the spring

Postharvest Ripe Rot Infection

Fungal pathogen: *Colletotrichum acutatum*

Visibly healthy fruit sorted/packed/held 7 d at 70°F

Handling surfaces (buckets, inspection belts, etc)	Clean	Dirty (surface contaminated with fungal spores)
Field Pack, Dry (no sorting)	1.5%	--
Sort Dry	2.1%	3.6%
Sort Wet	8.2%	63.5%

Cline, W. O. 1996. Postharvest Infection of Highbush Blueberries Following Contact with Infested Surfaces. HortScience 31:981-983


Frost Protection

SYSTEM DESIGN CONSIDERATIONS

- System that will provide at least 0.15” of water/acre/hour (68 gal/min).
  - A low-pressure design and pump that will deliver at least 55 psi with less than 10% variation between sprinklers
  - Pipe size based on flow rates
  - .Water for more than one night of operation. Desirably 3 nights.

PREPARATION THE DAY BEFORE A FREEZE

- Run and check system, repeat if >1% clogs.
  - Have rain suits, boots, high-intensity spotlights, wires to unclog sprinklers, wrench to remove nozzles, spare sprinklers.
  - Check drainage around the field.
  - Check shielded minimum thermometers.

STARTING, RUNNING AND STOPPING

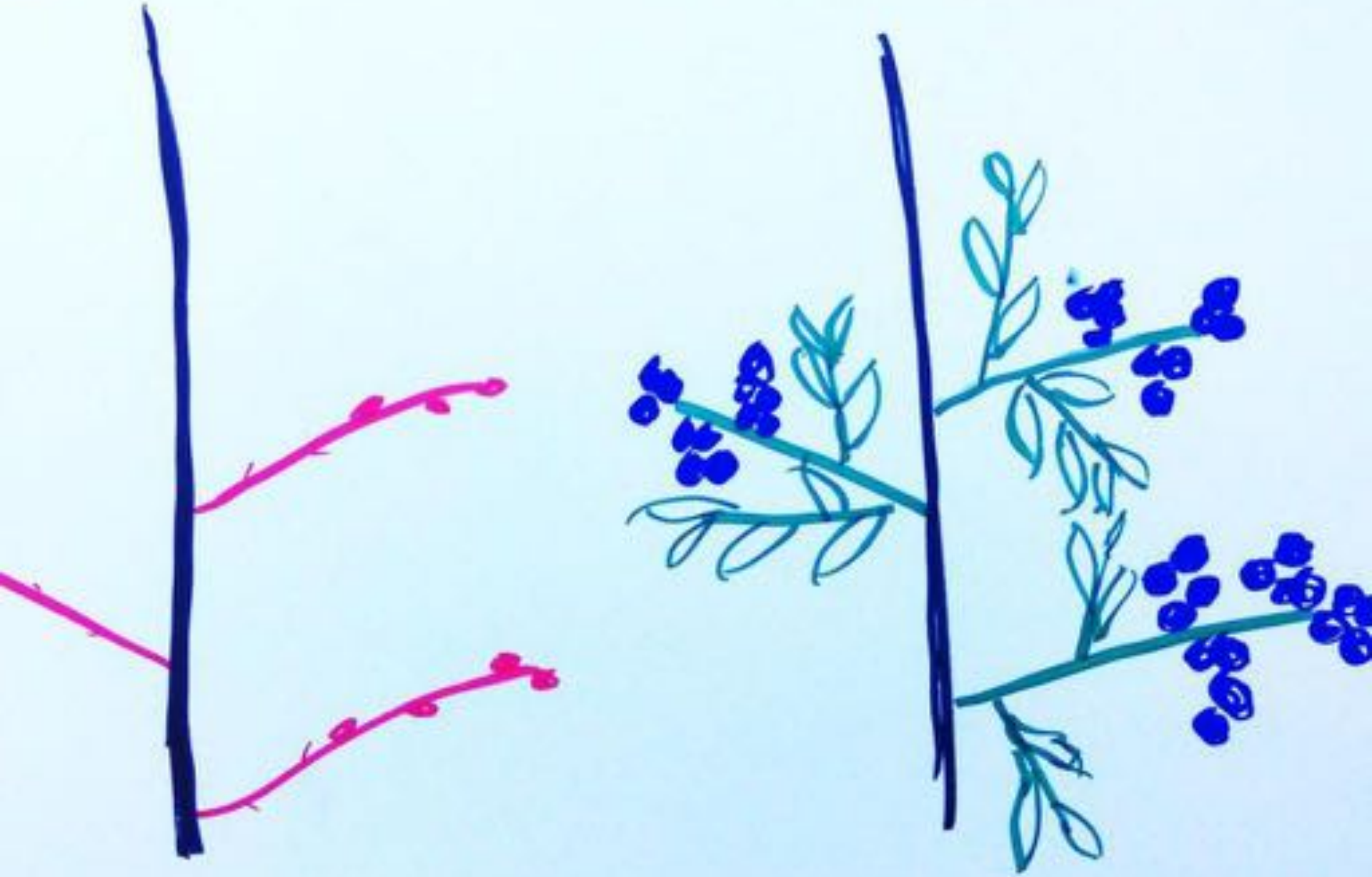
- Only begin if <28°F is expected for highbush and southern highbush, <30°F for rabbiteye.
  - On a still night with high humidity, get pumps running by 33°F. With low humidity 36-38°.
  - Thoroughly wet bushes, then reduce pressure. Increase pressure as temp drops, be sure your flow is high enough for temperature and wind.

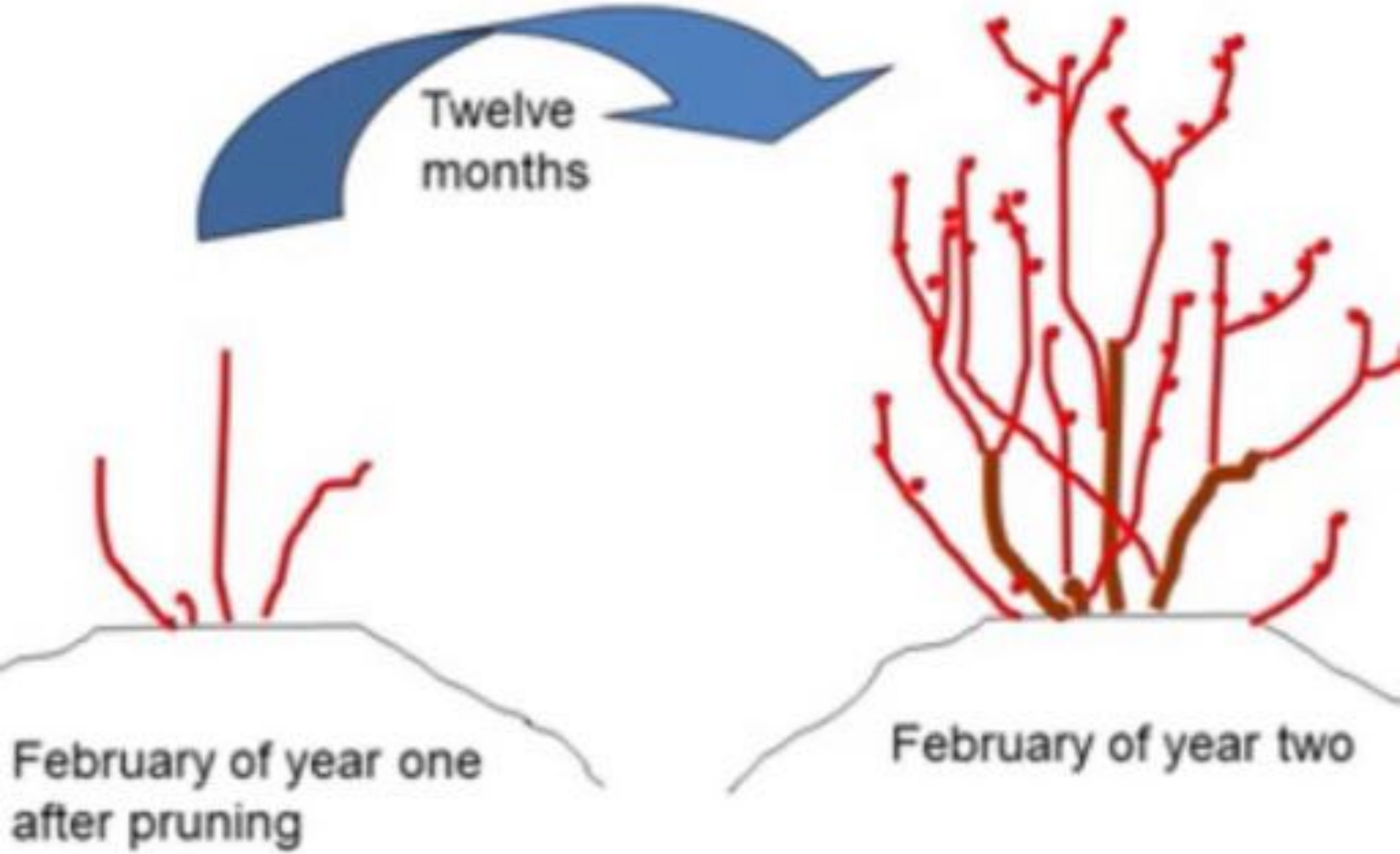
WARNING

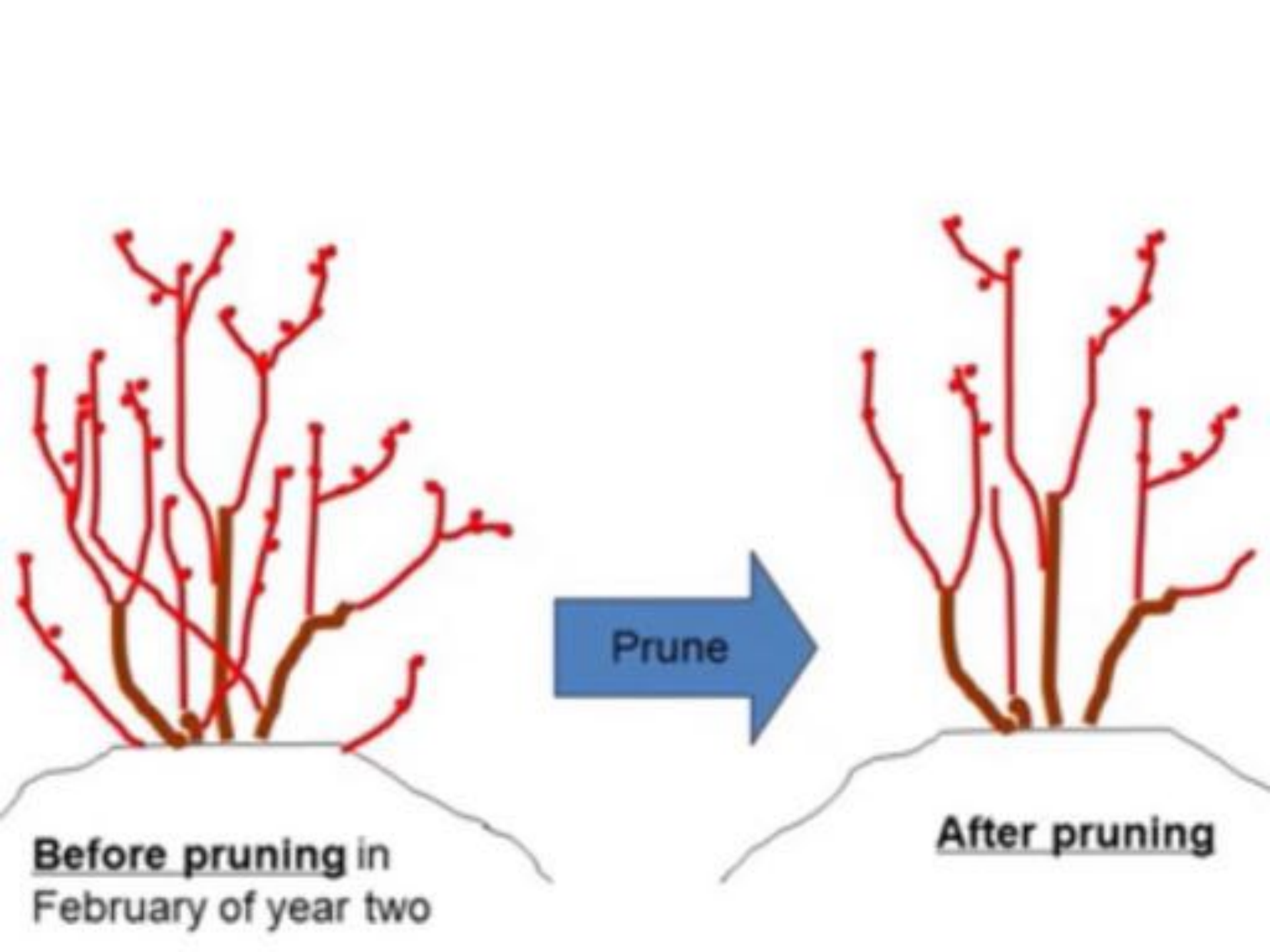
- If not done properly, freeze protection irrigation can be more damaging than doing nothing
  - Poor system design
  - Too cold
  - Too windy
  - Started protecting too late
  - Shut down too soon
  - System failure
  - Ran out of water

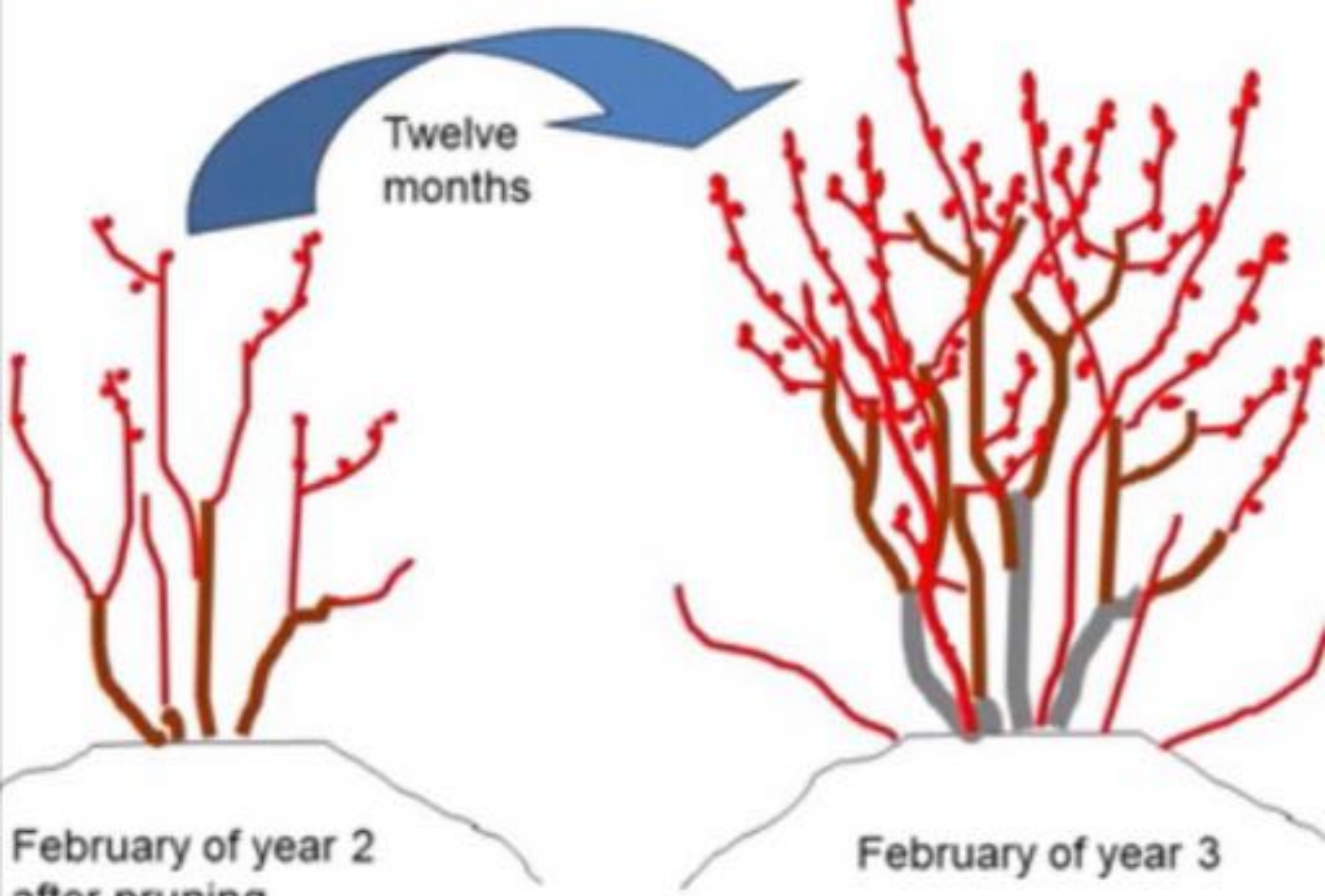

PRUNING

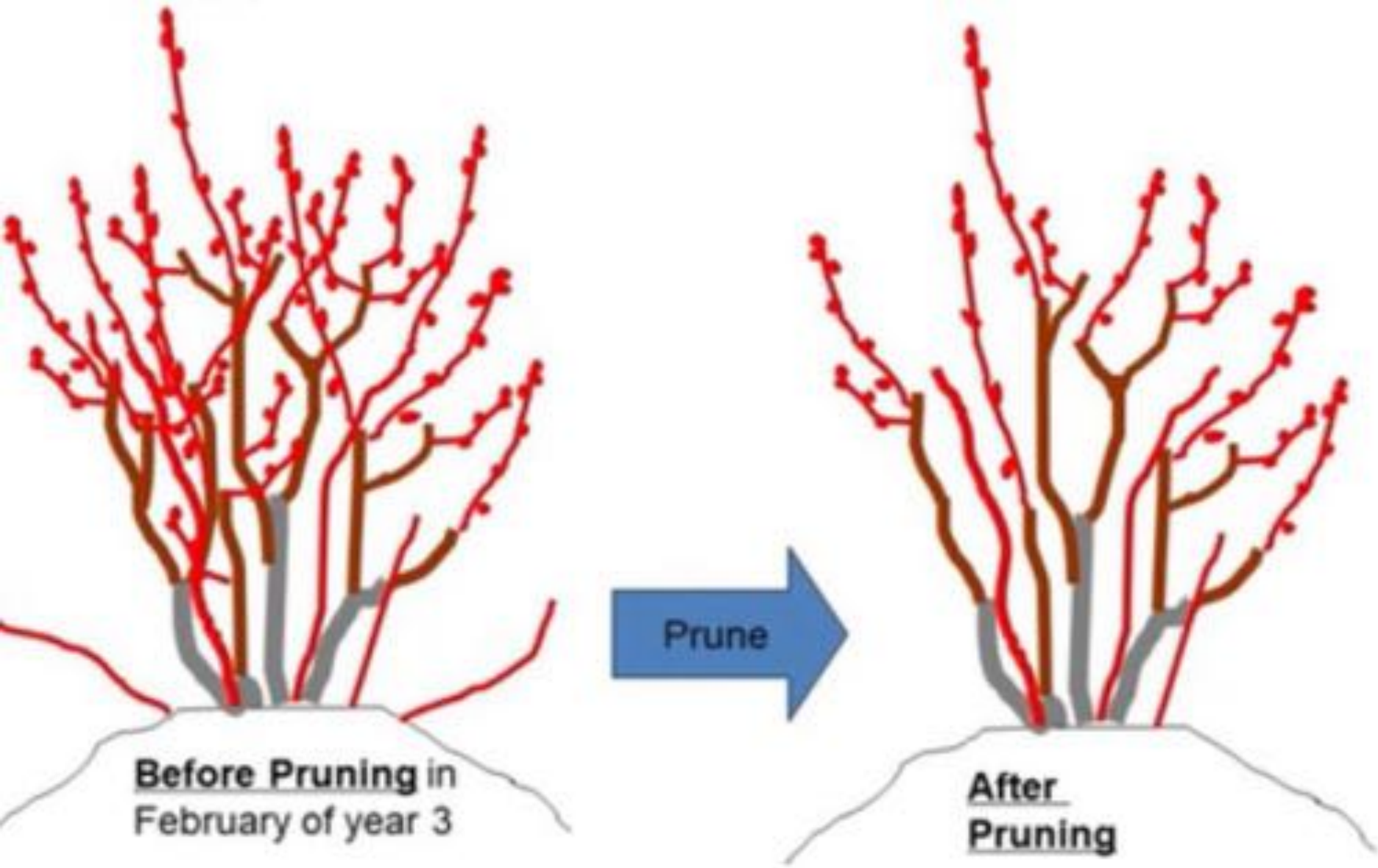





Twelve
months
February of year one
after pruning
February of year two


Prune
Before pruning in February of year two
After pruning


Twelve
months
February of year 2
after pruning
February of year 3


Prune
Before Pruning in
February of year 3
After
Pruning

BOTTOM UP PRUNING

- Narrow the base
- Remove crossovers and low-angled canes
- Remove 1-3 of the oldest canes, or even more depending on cultivar and vigor
- Head back and thin selectively to remove old “brushy” canes in the upper part of the bush

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