

# **Organic Bramble Production:**

site selection

cultivars

floor management

fertilization

# Types of Brambles

- Raspberry
  - Black, yellow, red or purple
  - Primocane fruiting or floricanes fruiting
- Blackberry
  - Erect, semi erect, trailing(dewberries)
  - Thorny or thornless
  - Primocane fruiting or floricanes fruiting
- Blackberry X Raspberry hybrids
  - Tayberry, wyeberr

# Plant Growth

- Biennial top and perennial root system
- First year shoots develop from vegetative buds on roots or from the basal buds of second year canes
- Canes are usually vegetative the first growing season (primocanes)
- Canes become reproductive in the 2nd growing season (floricanes)
- Floricanes die after fruiting
- Each year new primocanes emerge
- The plant crown and roots live many years

# Organic / Conventional – Similar Recommendations

- Cultivar Selection
  - Pruning
  - Irrigation

# Site Selection & Preparation

Site selection is the most important of the thousands of decisions a grower will have to make over the life of a planting.

Virtually **every** aspect of production and marketing will, at least in part, be affected by the choice of site.

# Elevation

- Elevation
  - Air circulation & water drainage
    - reduced pest pressures
  - Passive frost protection
  - (in windy areas, tops of hills may result in plant damage & dessication)

# Direction of Slope

- South-facing:
  - Greater potential for winter injury & frost damage
  - Soils tend to be thinner, lower in organic matter, droughty
- North-facing:
  - Canes break dormancy later in spring
  - Harvest delayed
- East-facing:
  - Morning sun dries off plant earlier in the day, thus reducing disease pressure

# Soils

- Well-drained
- Deep
- Fertile
- High organic matter content
- pH 6.0 to 6.5

# Site History

- Fruit crops
  - Crown gall
- Verticillium-susceptible crops:
  - tomatoes, potatoes, peppers, eggplant, tobacco
- Verticillium susceptible weeds:
  - Nightshade, ground cherry lambsquarter, horsenettle, pigweed, cocklebur

# Site Preparation

- Elimination of perennial (noxious) weeds
- Adjust soil pH & fertility based on soil test recommendations
- Eliminate “wet spots” in field
  - Consider constructing raised beds for raspberries
  - Tile drainage
- Remove barriers to air drainage from site
- Remove wild brambles within 300 to 400 ft. of planting site

# Cultivar Selection

# Cultivar Selection

- Disease resistance
- Reputable Nurseries
  - Virus-free
  - Nematode-free
- Chilling requirement

# Blackberry Disease Susceptibility

<u>Variety</u>	<u>Rosette</u>	<u>Orange Rust</u>	<u>Anthracnose</u>
Chickasaw	S	?	S
Choctaw	S	R	R(?)
Kiowa	S	R(?)	S
Shawnee	VS	R	R
Arapaho	R	?	R(?)
Apache	R(?)	R(?)	R(?)
Navaho	R	VS	R(?)
Ouachita	R	R(?)	S
Prime Jim	S*	R	S
Prime Jan	S*	R	S

R = resistant  
susceptible

R(?) = none observed

S = susceptible VS = very

\* = Not an issue with primocane bearers grown for fall crop only

# Chilling Requirements - Blackberry

- Kiowa 200 hours
- Choctaw 300 (?)
- Arapaho 400 – 500
- Ouachita 400 – 500 (?)
- Chickasaw 500 – 700
- Navaho 800 – 900
- Apache 800 – 900 (?)
- Chester 900
- Triple Crown (?)
- Hull 900(?)

# Raspberries

- Red –
  - Do best in areas having relatively cool summers & moderate winters
- Black –
  - Less tolerant of cold winter temperatures than Reds, more subject to diseases, lower yielding
- Purple –
  - Hybrid of red & black, possesses many characteristics of black raspberries
- Yellow –
  - Similar to reds

# Red Raspberry Cultivars - TN

## Summer Bearers

Higher Elevations:

Latham, Titan

Other Areas:

Dorman Red, Titan,  
Latham, Southland

## Primocane Bearers

Higher Elevations:

Heritage, Caroline,  
Amity(?)

Other Areas:

Autumn Bliss, Heritage,  
Southland

# Raspberry Cultivars - TN

## Yellow

- Fall Gold –
  - everbearing, hardy
- KiwiGold –
  - everbearing

## Purple

Royalty –

immune to raspberry aphids (transmit mosaic virus)

Brandywine –

very winter hardy

Estate (?) –

hardy, ripens 3 – 5 days after Brandywine

# Black Raspberry Cultivars - TN

- Black Hawk –
  - Hardy, resistant to anthracnose
- Jewel –
  - Resistant to anthracnose, hardy
- Cumberland (Blackcap) –
  - Large fruit, hardy

# Floor Management

# Floor Management

- Clean cultivation
  - Shallow cultivation to avoid damage to root systems
  - Establishment of winter cover crop in row middles
    - Rye or annual ryegrass
- Sodded row middles\*
  - Reduced erosion potential
  - Support for equipment
  - Use non-aggressive sods
  - Legumes can be a source of nitrogen BUT can harbor stinkbugs, tarnished plant bugs

# Mulching

- + Conserves moisture
- + Moderates temperatures in root zone
- + Decreases weed pressure
- + Increases yields
- Harbor voles
- Increase problems of *Phytophthora* root rot (especially on heavy soils, irrigated sites)

# Types of Mulches

- Straw
- Landscape fabrics
  - High initial cost
  - May last several years
  - Will become less permeable to water over time

# Weed Management

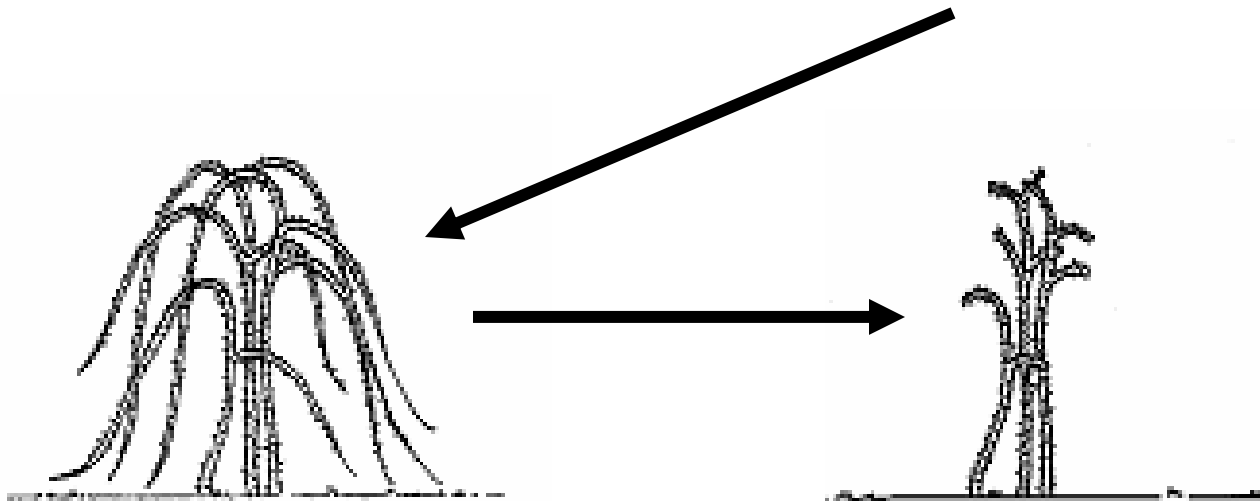
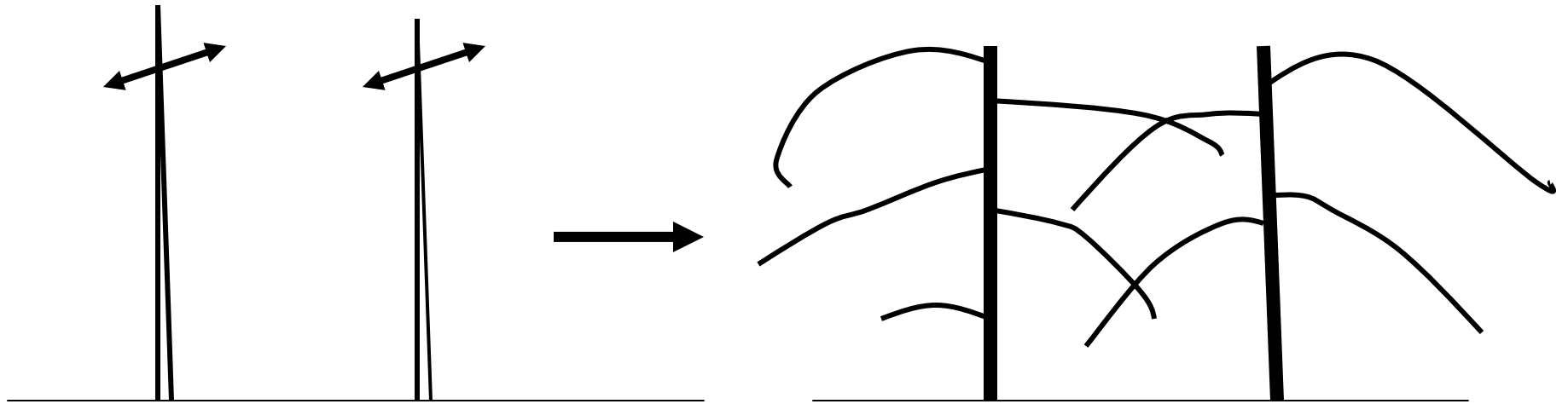
- Pre-plant weed control
- Suppression by use of cover crops
- Cultivation (grape hoe, Weed badger, Green Hoe)
  - Must be shallow to avoid root damage
- Hand weeding & hoeing
- Weeder geese
  - Control grasses & young broadleaf weeds
  - May eat ripe fruit, newly emerging primocanes

# Pruning & Trellising

# Pruning Blackberries, Black & Purple Raspberries Involves:

- Floricane removal following harvest
- Topping primocanes during the growing season (except for red raspberries)
- Removal of excess canes and weak canes
- Heading laterals in late winter
- Removal of lower laterals

# Primocane Topping, Heading Laterals



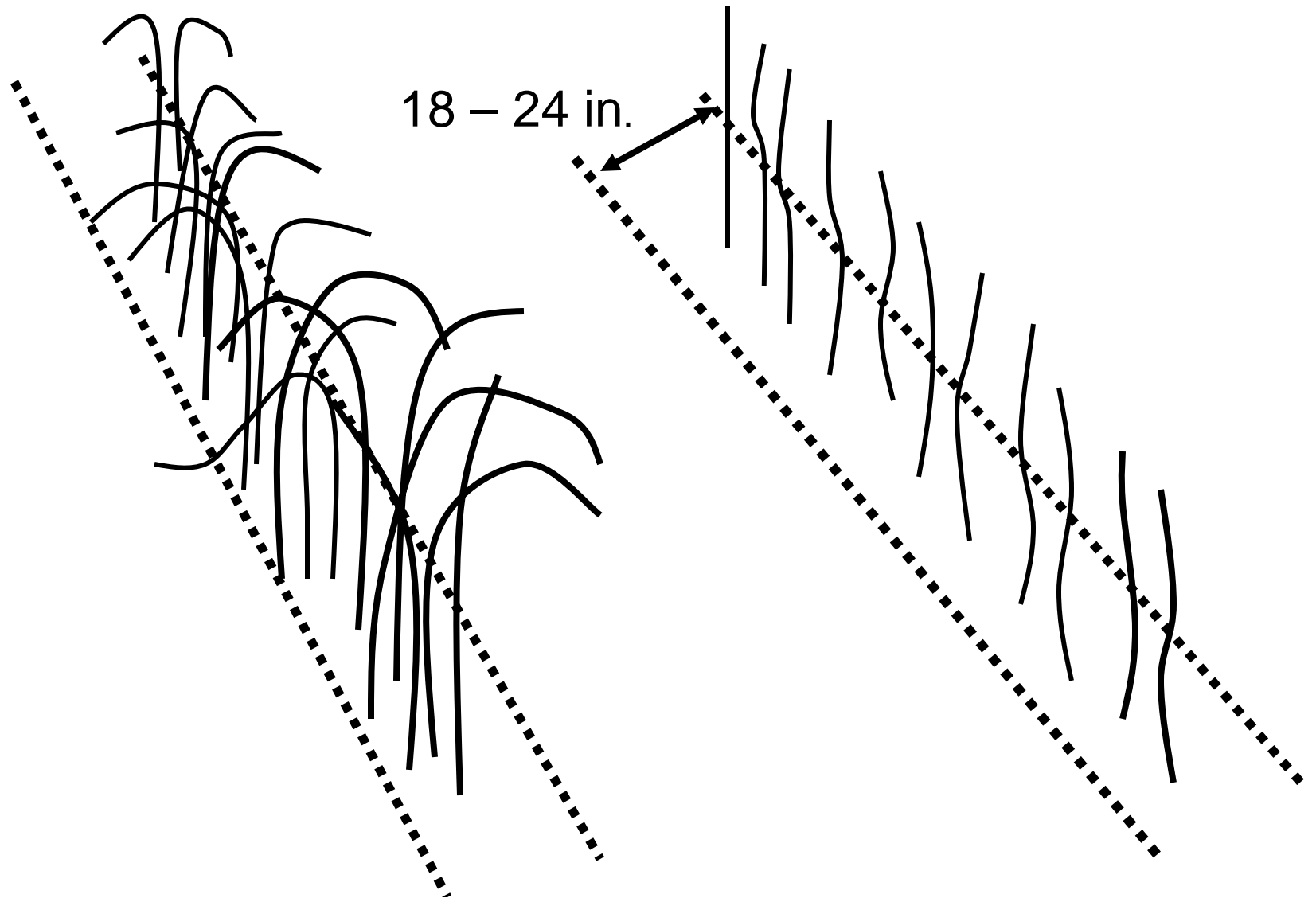
# Pruning Red Raspberries - Floricane fruiting, annual system Involves:

- Remove floricanes
  - Immediately after harvest for organic production

## Late Winter:

- Remove weak and broken canes
- Thin remaining canes to 3 – 4 /ft<sup>2</sup>
- Top remaining canes @ 4 – 5 ft.  
aboveground (remove at least 6 – 8")

# Pruning Red & Yellow Raspberries



# Pruning Primocane-fruiting Brambles Involves:

- Mowing off planting close to the ground in late winter
- (To delay harvest until late summer, mow again when new cane growth is about 1 ft. high)

# Floricane Removal

- Reduce insect & disease pressure
  - Remove immediately after harvest
    - Burning
    - Shredding and soil incorporation
- Increase light, air & spray penetration throughout the canopy

# Topping Primocanes During the Growing Season:

- Increases the erect nature of canes
- Promotes the development of lateral branches for increased yields
- Blackberries – top when primocanes are 6+ inches taller than topping height
  - Top at 42” for non-supported canes, 65” for supported canes
- Black & purple raspberries – top when primocanes are 4+ inches taller than topping height
  - Black raspberry – top at 28 to 30 inches
  - Purple raspberry – top at 36 to 42 inches

# Removal of Weak, Broken and Excess Canes:

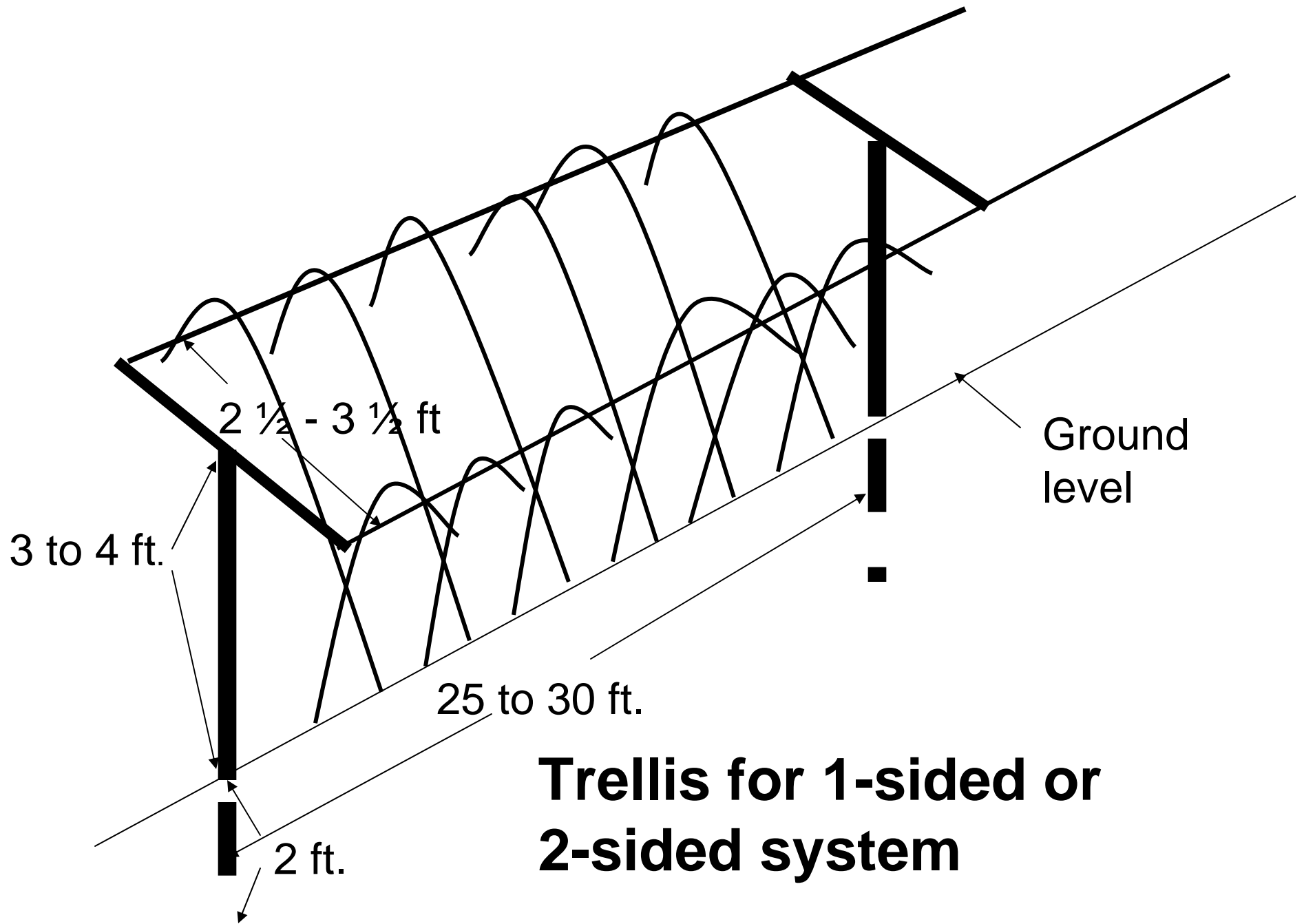
- Erect Blackberries – leave 6 strong floricanes / linear ft. of row
- Semi-erect blackberries – leave 4 to 8 strong floricanes / crown
- Red raspberries – thin to about 4 canes/ ft<sup>2</sup>
- Black & purple raspberries – leave 5 to 6 strong floricanes / hill

# Heading Laterals in Late Winter

- Blackberries –
  - Prune to 12 – 18” in length depending on strength of lateral
  - Remove laterals within 12 – 18” from ground
- Black & purple raspberries –
  - Cut large laterals back to 10 to 14” length
  - Remove or cut weaker laterals back to 4 – 10” in length
  - Remove laterals within 12’ of ground

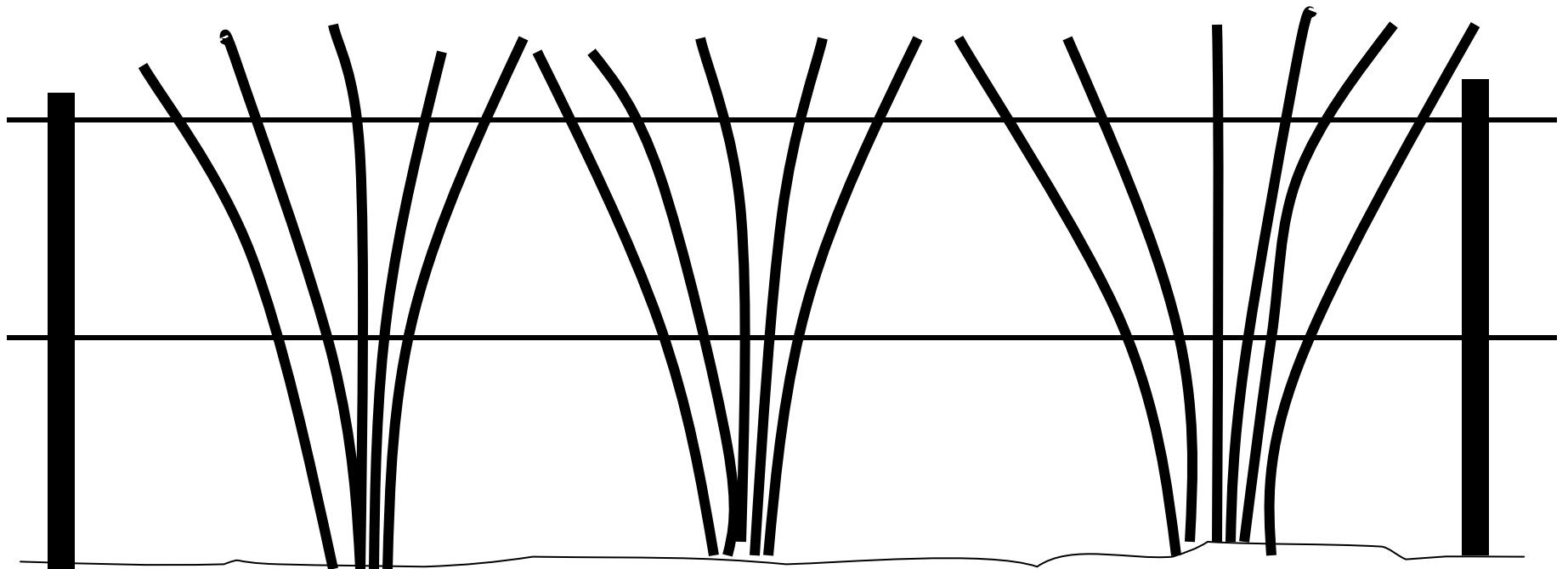
# Trellising

- Cane support
  - Increased sunlight exposure, air movement, spray penetration throughout the canopy
  - Easier management
    - Cleaner picking results in reduced attraction to picnic, sap, June and Japanese beetles
- \*for trailing & semi-erect cultivars, trellising is necessary to keep the fruit off the ground



**Trellis for 1-sided or 2-sided system**

# 2 Wire Trellis for Semi-Erect Blackberries



# Alternate Year Cropping

Rotation -

- 1<sup>st</sup> year:
  - Crop  $\frac{1}{2}$  of the field, mow off canes in winter
- 2<sup>nd</sup> year
  - Crop the 2<sup>nd</sup> half of the field, grow primocanes on the 1<sup>st</sup> half
- Repeat sequence in following years

# Alternate Year Cropping

- Increased primocane growth
- Heavier yields in floricanes rows
- Easier management
- Reduced pruning costs
- Alternate row cropping increases air movement through planting

# Fertilizing Brambles

# Determining Fertilizer Rates

- Soil Testing, Pre & Postplant
  - Tissue Analysis
    - Growth
  - Yields and quality

# Preplant Soil Preparation

- Begin in the year prior to planting
  - Adjust soil pH to 6.0 to 6.5
  - Avoid high levels of phosphorus
    - May increase problems with zinc deficiency
      - (poultry litter may be high in phosphates)
    - Avoid pre- or post-plant use of potassium chloride
      - Brambles are sensitive to chlorine salts

# Nitrogen Applications for Blackberries

- 1<sup>st</sup> year –
  - 25 to 50 lb/acre of actual N
  - 30 to 60 days after planting
- 2<sup>nd</sup> year –
  - 35 to 65 lb actual N/acre
  - Apply as a single or a split application
- 3<sup>rd</sup> & subsequent years
  - 60 to 80 lb N/acre, single or split application
- Collect leaf samples for foliar analysis from primocanes immediately after harvest

# Fertilizing Established Raspberries

- Total of 50 to 80 lbs. N per year
  - ½ in March
  - ½ in May
- Apply over a 3 ft. wide band on each side of row
- Collect leaves for foliar analysis from promocanes shortly after harvest

# Timing of Nitrogen Applications

- Establishment year
  - Delay application until canes have emerged
- Maintenance
  - Single prebloom spring application
  - OR
  - Split with 2<sup>nd</sup> application immediately after harvest

# Organic Nitrogen Sources

- Manures
- Compost
- Animal byproducts
- Vegetable or seed meals

# Nitrogen Availability

- Manures and compost
  - 50% available during year of application
  - 90% available in application year with fresh poultry manure
  - Balance available during subsequent years  
(be sure to figure it in annual applications)

# Manure as Fertilizer

- Fertilizer value usually highly variable
- Unbalanced in regards to N, P, K
- Specific application rates will be impossible to recommend
- Typical application rates:
  - Most manures – 1 to 4 tons/acre
  - Poultry manures – 1 to 2 tons/acre

# Timing of Manure Applications

- 120 days pre-harvest in crops where fruit may be in contact with the soil or soil can be splashed onto the fruit from rainfall or irrigation
- 90 days preharvest where fruit is elevated or shielded from soil contact
- Properly composted manures can be applied at higher rates & at times closer to harvest

# Other Organic Fertilizers

- Cottonseed Meal: 7-2-2 (NPK)
- Blood Meal: 12-1.3-0.7 (NPK)