Basics of Caneberry Production
A Western (California) perspective

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HEALTHY FOOD SYSTEMS

University of California
Agriculture and Natural Resources

Making a Difference for California

Overview

In California we produce much of the fresh market raspberry and blackberry production for US and some export markets

A significant proportion of this production comes from proprietary varieties and production systems

- *Driscoll's and their associate growing farms have led this effort in developing these varieties over the past 2-3 decades, now other growers as well*
- *Develop markets for all berries all year. + organic*

Number of independent growers with public varieties

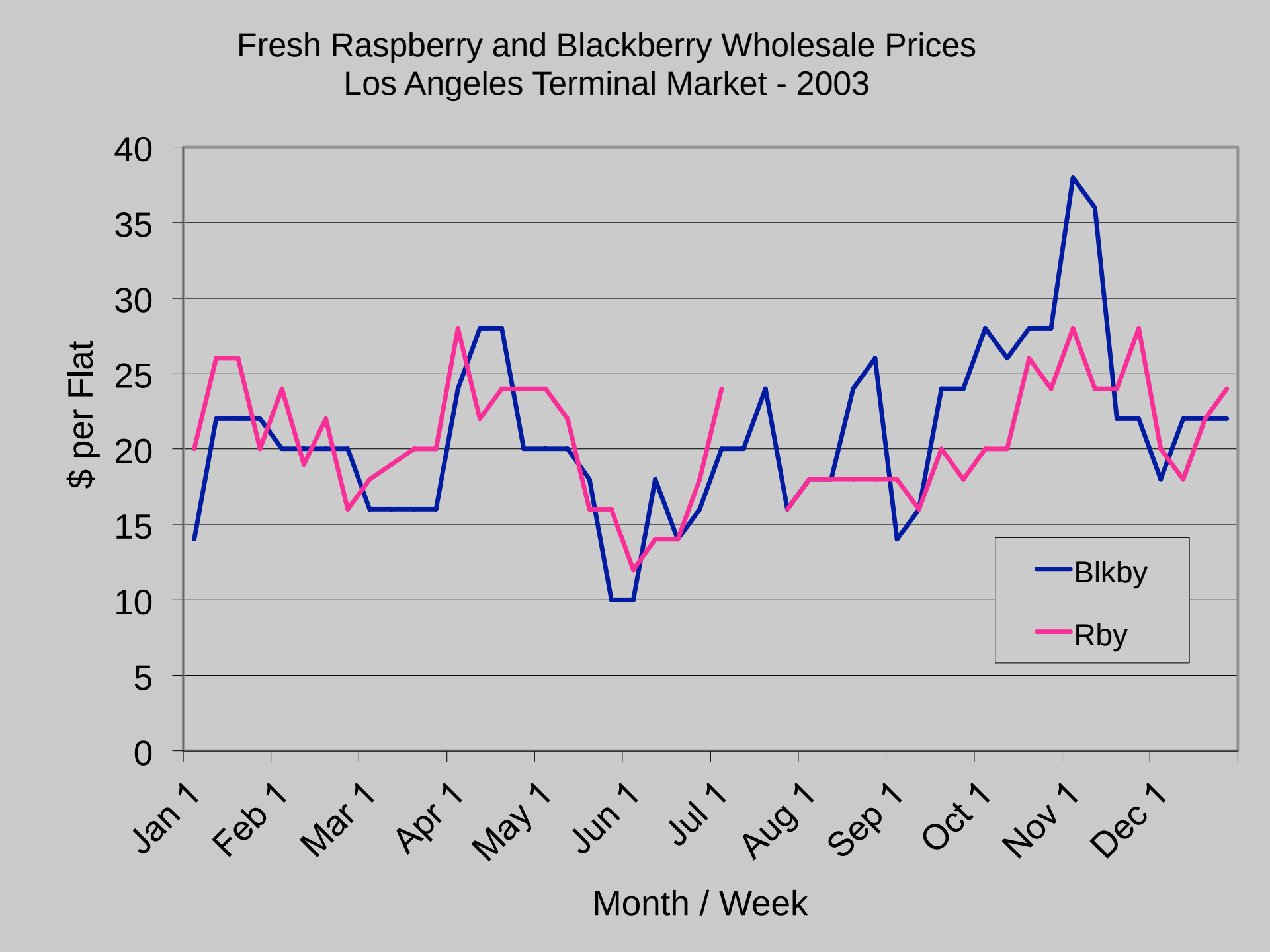
Timing of production?

Market window is critical > price and profitability

- *Start from the market and work backward*
  - *location? climate?*
  - *competitive advantages of current sources?*
- *Water availability?*
- *Organic VS Conventional?*

Eventually feeds to production system, variety selection and cultural practices, etc.

- relative mix of raspberry, blackberry, types, other?


Fresh Raspberry and Blackberry Wholesale Prices
Los Angeles Terminal Market - 2003
$ per Flat
40
35
30
25
20
15
10
5
0
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1
Nov 1
Dec 1
Month / Week
Blkby
Rby

Blackberry production windows

	Jan	Feb	Mar	Apr	May	Jun	Jul	Agt	Sep	Oct	Nov	Dec
Rosborough				XXX	XXX	XX						
Arapaho					XX	XXX	XXX	XXX	XXX	XXX	???	
Shawnee					X	XXX						
Navajo						XXX	XXX	XXX	XXX	XXX	???	
Ollalie					XX	XXX						
Boysen					X	XXX						
Black Satin							X	XXX	XXX	XXX	???	
Chester							X	XXX	XXX	XXX	???	
Choctaw							X	XXX	XXX	???		
Ouchita						XX	XXX	XXX	XXX	XXX	???	
Trip Crown							XX	XXX	XXX	???	???	
Apache							XXX	XXX	XXX	???	???	
Prime Jim?	???	???								XXX	XXX	X??
Prime Jan?	???	???								XXX	XXX	XX
Ark 45	???	???								???	???	???
Tupy?	???	???	???	???	???	???						

Variety selection overview

Raspberry

- *Primocane VS floricane fruiting*
- *Primocane also fall bearing or everbearing*
- *Upright, minor thorns*
- *Vigor can vary but newer varieties tend to be vigorous*

Blackberry

- *Traditionally only floricane*
- *New primocane types appear to offer more harvest flexibility*
- *Erect to trailing, thorny or smooth*
- *Very vigorous early varieties tend to be thorny*

Raspberrry

Flowers on new primocanes as well as second year canes

Fruits in year 1

Flexible harvest

Variety selection – raspberry

- *Primocane VS floricane fruiting*
  - *hard to justify floricane types with flexibility available from primocane types, perhaps for pik your own or specific fruit xteristics, or market window?*
- *Fruit quality, plant vigor, yield*
- *Fruit type – red / yellow?*
- *Heritage traditional for firmness*
  in more southern areas, Autumn Bliss, A. Britten,
  - *Joan J, Caroline, Himbo Top, Jaclyn, Josephine*
  - *Polka is showing great potential*
- *Anne is good yellow variety*

Traditional blackberry production …

- *inconsistent flavor, quality*
- *best taste > processing*
- *floricane fruiting types*
- *narrow, defined harvest period*

- *narrow, inconsistent, and limited availability*

Variety Selection – blackberries

- *Type – erect? spiny?*
  - back to market, timing, etc
- *Fruit quality? Sweet is especially important with blackberry*
- *In California tolerance for redberry mite or escape or treatment is very critical*
- *Primocane trait?*
- *Ouchita, Triple Crown of traditional varieties*
  Natchez is promising but no data.
  - now add Prime Jim, Prime Jan, Ark 45?

Most blackberry flowers on secondary branches of older (2nd yr) canes.

Floricane VS Primocane fruiting

Newer blackberry varieties in California

Erect, lower chill

Arapaho
Navajo
Apache (–T)
Chickasaw
Choctaw
Kiowa
Triple Crown (-T)
Ouchita (-T)
Natchez (?)

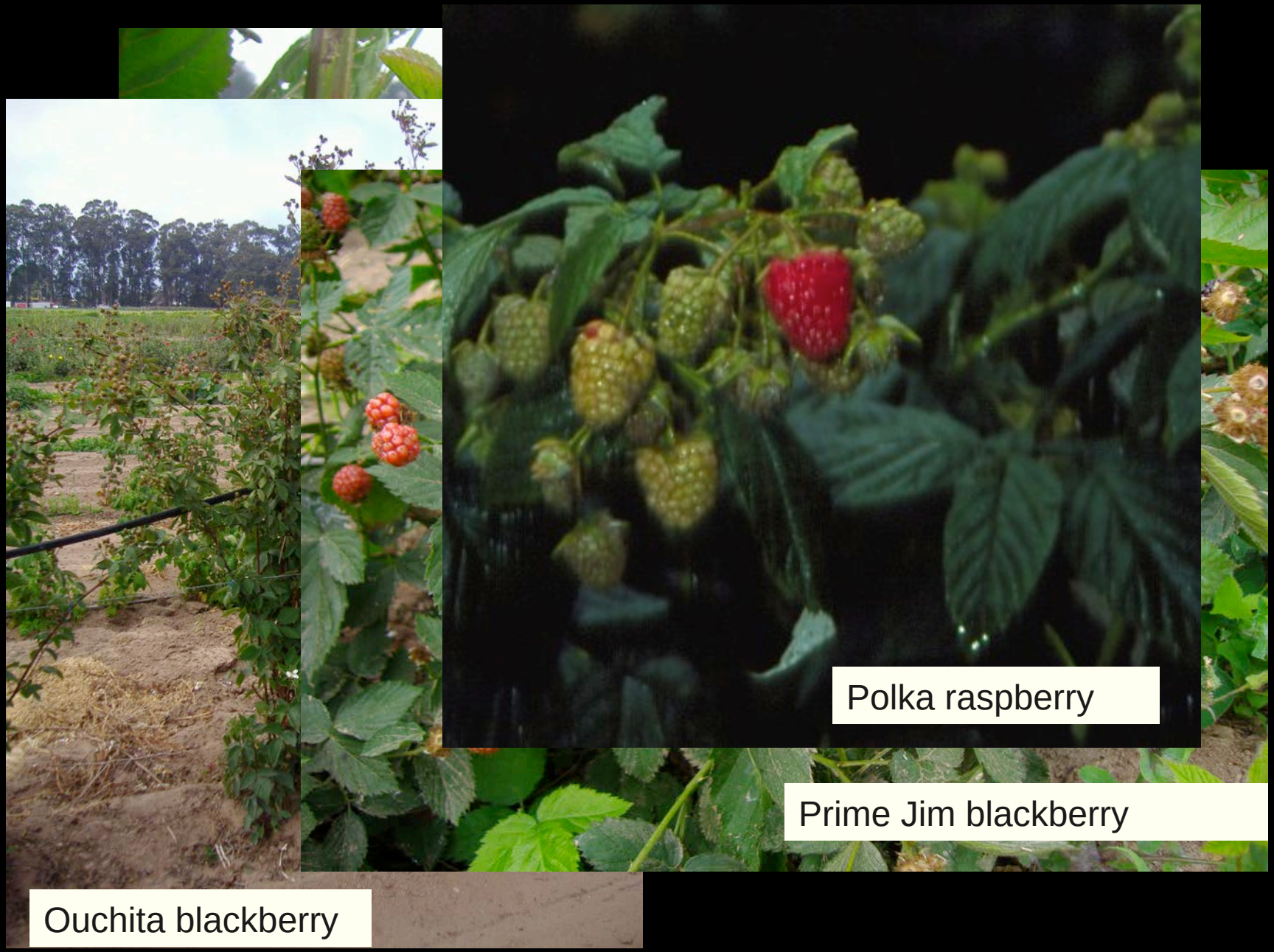
Tupy (replaces Brazos)
-- little, no chill

Primocane fruiting

Prime Jim
Prime Jan
Ark 45 (?)

Driscoll
Proprietary
(floricane to date)

Carmel
Eureka
Cowles


Polka raspberry
Prime Jim blackberry
Ouchita blackberry

Cultural Practices - Establishment

- *Raised beds, - except with sand or sandy loam with mulch*
- *Light or heavy soils if adequate drainage pH 5.5 –7; incorporate P, K and other needed nutrients (except N) in the bed at planting.*
- *Pretreatment with fumigant? Little effect after year 1.*
  - *still need raised beds*
  - *worthwhile for nematodes, analyze soil first*
- *Distance between row depends on equipment needs typically 6 – 10 ft.*

Cultural Practices - Establishment (continued)

- *Distance between plants 40”-50” for blackberry and variable for raspberry 1 – 3 ft.*
- *Irrigation furrow, sprinkler or drip. Drip allows more careful control of water, timely harvest, dry foliage, fertigation*
- *Trellising system? Single lines with blackberry VS double lines with raspberry*

  - Cement or heavy wooden posts at end, then wood

Water management

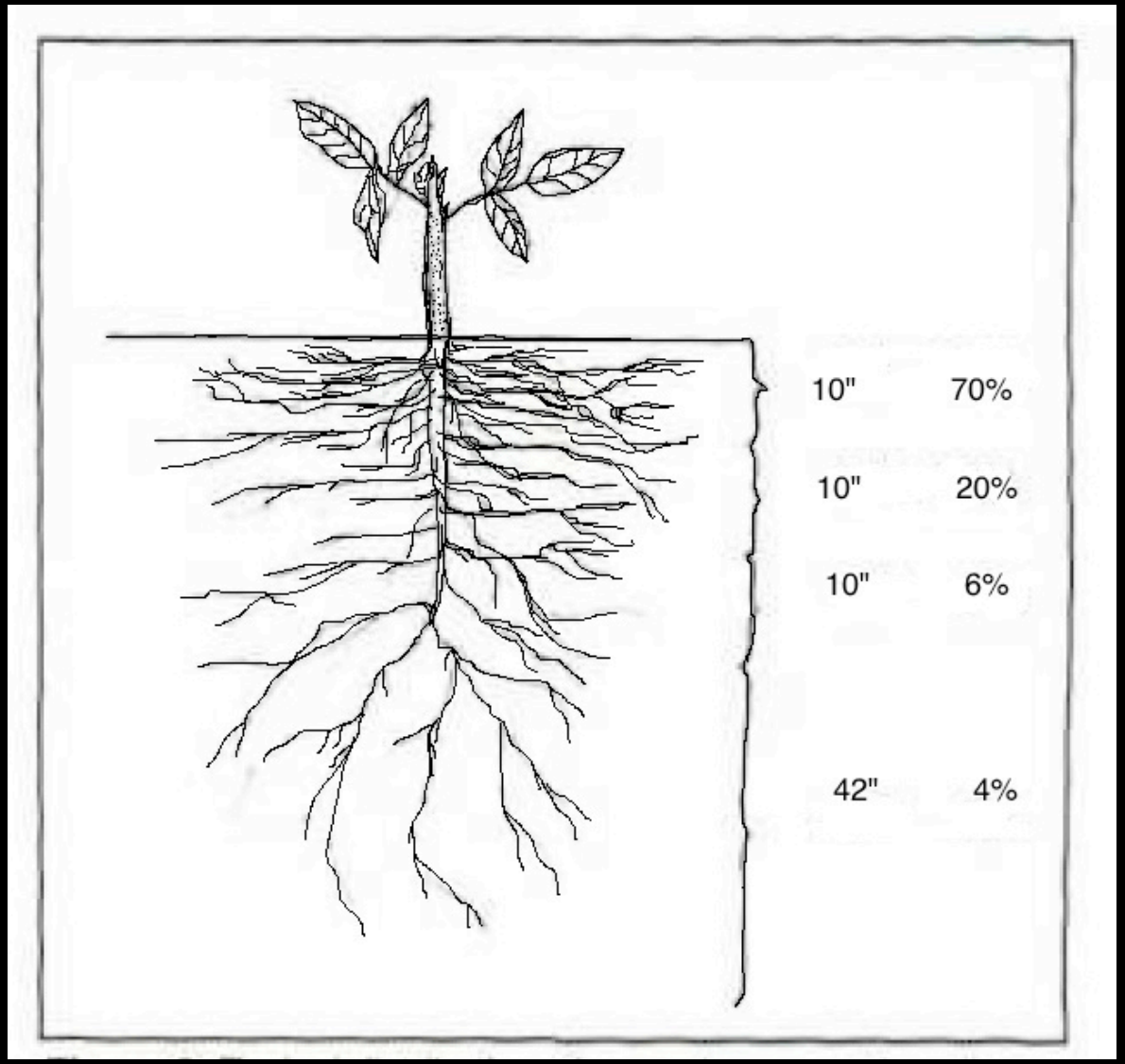
- *Design system for hot, dry, windy day in August*
- *Drip irrigation is important – not impossible without drip but why?*
- *Inject end near end of set, wet soil but no need to leach routinely,*
- *Manage EC with leaching irrigations – tunnels?*
- *Use filter system or plan to replace tape annually*
- *Weed control costs?*

Caneberry roots are concentrated in the top 10-20”

N uptake with shallow irrigation

keep surface soil relatively moist (NOT WET!) to avoid stress

Frequent relatively short irrigations to avoid leaching



Plant establishment - Raspberry

Cultural Practices – pruning

- *manage vegetative growth*
  - *- structure for hanging fruit*
  - *- field work*
- *control of fruit size and quality*
- *control and assist harvest*
- *eliminate damage and disease*

Cultural practices - Trellising

- *manage vegetative growth*
  - allow entry of light and improve air circulation
- *manage disease*
- *easier harvest, thinning and pruning*
- *protect canes*

Plant development - Raspberry

Eventually forms a solid hedge from suckers

Primocane fruiting raspberry can be selectively pruned down cane by cane or mowed down to the soil surface following harvest

Trellising and pruning - raspberries

- *prune raspberries at ground level following harvest*
- *often can prune raspberries at 4-5 ft for extending the picking.*

Pruning and trellising - raspberries

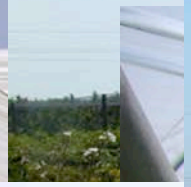
raspberries form continuous rows with double wires

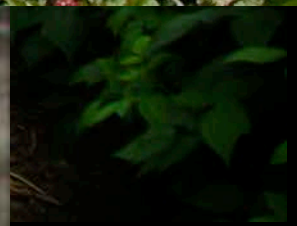
Plant development - blackberry

Blackberry plan

b

single ro
wires
branche
to wires





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Caneberry N needs

- *Mid April – July enter in period of high N demand*
  - *tunnels? -could be Dec or Sept?*
  - *primocanes ankle to knee high*
  - *floricane branches 6-12”*
- *New developing canes and leaves need high N*
- *Thick canes and large leaves >>>*
  large fruit, more fruit

Red spider mite (Tetranychus sp.)

Pest mite

Phytoselius persimilis

- Predator mite

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- Acknowledgments

Caneberries

More crops

UC IPM Pest Management Guidelines—University of California's official guidelines for pest monitoring techniques, pesticides, and nonpesticide alternatives for managing pests in agriculture, floriculture, and commercial turf. More

| Authors/credits | Index to crops | PDFs to print | Recent updates |

General Information

- Relative Toxicities of Insecticides and Miticides Used in Caneberries to Natural Enemies and Honey Bees (1/10)
- General Properties of Fungicides Used in Caneberries (12/09)
- Growth and Development (12/09)
- Tunnel Culture (12/09)

Diseases

- Armillaria Root Rot (12/09)
- Botrytis Fruit Rot (12/09)
- Cane and Leaf Rust (12/09)
- Cladosporium Fruit Rot (12/09)
- Downy Mildew (12/09)
- Late Leaf Rust (12/09)
- Leaf Spot (12/09)
- Orange Rust (12/09)
- Phytophthora Root Rot (12/09)
- Powdery Mildew (12/09)
- Verticillium Wilt (12/09)
- Yellow Rust (12/09)

Insects and Mites

- Greenhouse Whitefly (1/10)
- Leafhoppers (12/09)
- Leafrollers (1/10)
- Raspberry Crown Borer (12/09)
- Raspberry Horntail (12/09)
- Redberry Mite (1/10)
- Root Weevils (12/09)
- Sap Beetles (12/09)
- Spotted Wing Drosophila (12/09)
- Twospotted Spider Mite (1/10)

Abiotic Disorders

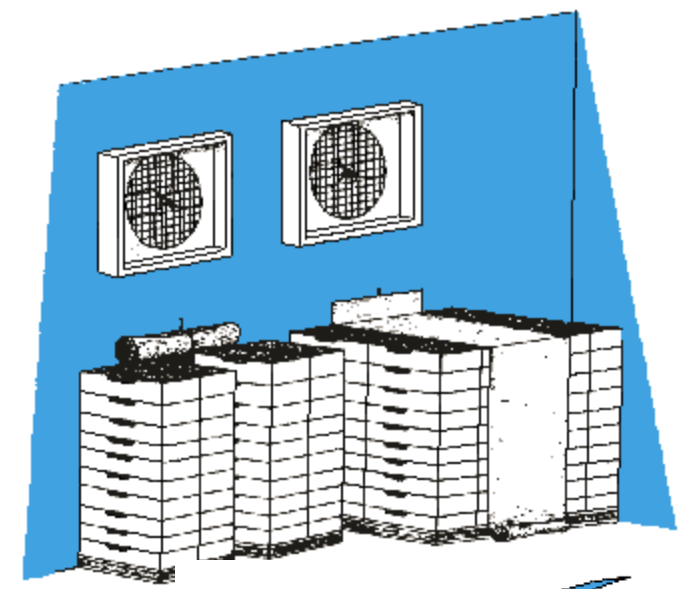
- White Druplet (12/09)
- Crumbly Fruit (12/09)
- Glyphosate Injury (12/09)

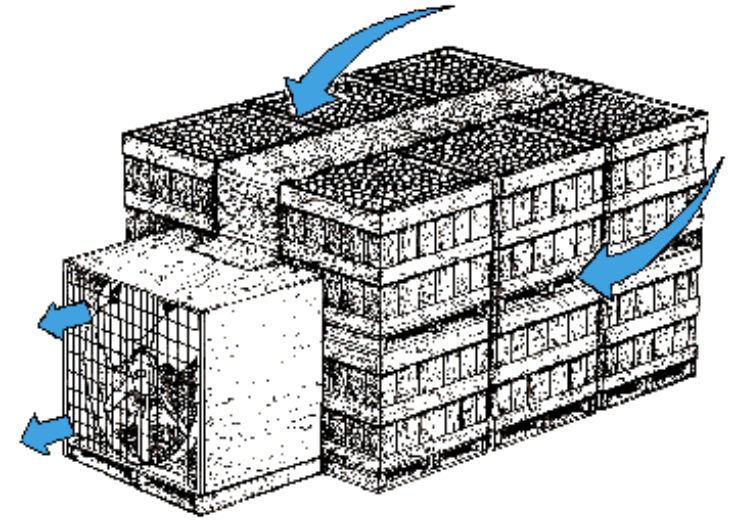
Weeds

- Integrated Weed Management (12/09)
- Special Weed Problems (12/09)
- Common and Scientific Names of Weeds (12/09)
- Susceptibility of Winter Weeds to Herbicide Control (12/09)
- Susceptibility of Spring/Summer Weeds to Herbicide Control (12/09)

Forced air pre-cooling

Forced air removes field heat more quickly and extends shelf life





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