

UCCE Peach Webinar

Peach Management & Care

Raymond Mireles M.S.
UCCE Fruit and Almond Area Advisor
Fresno and Tulare Counties

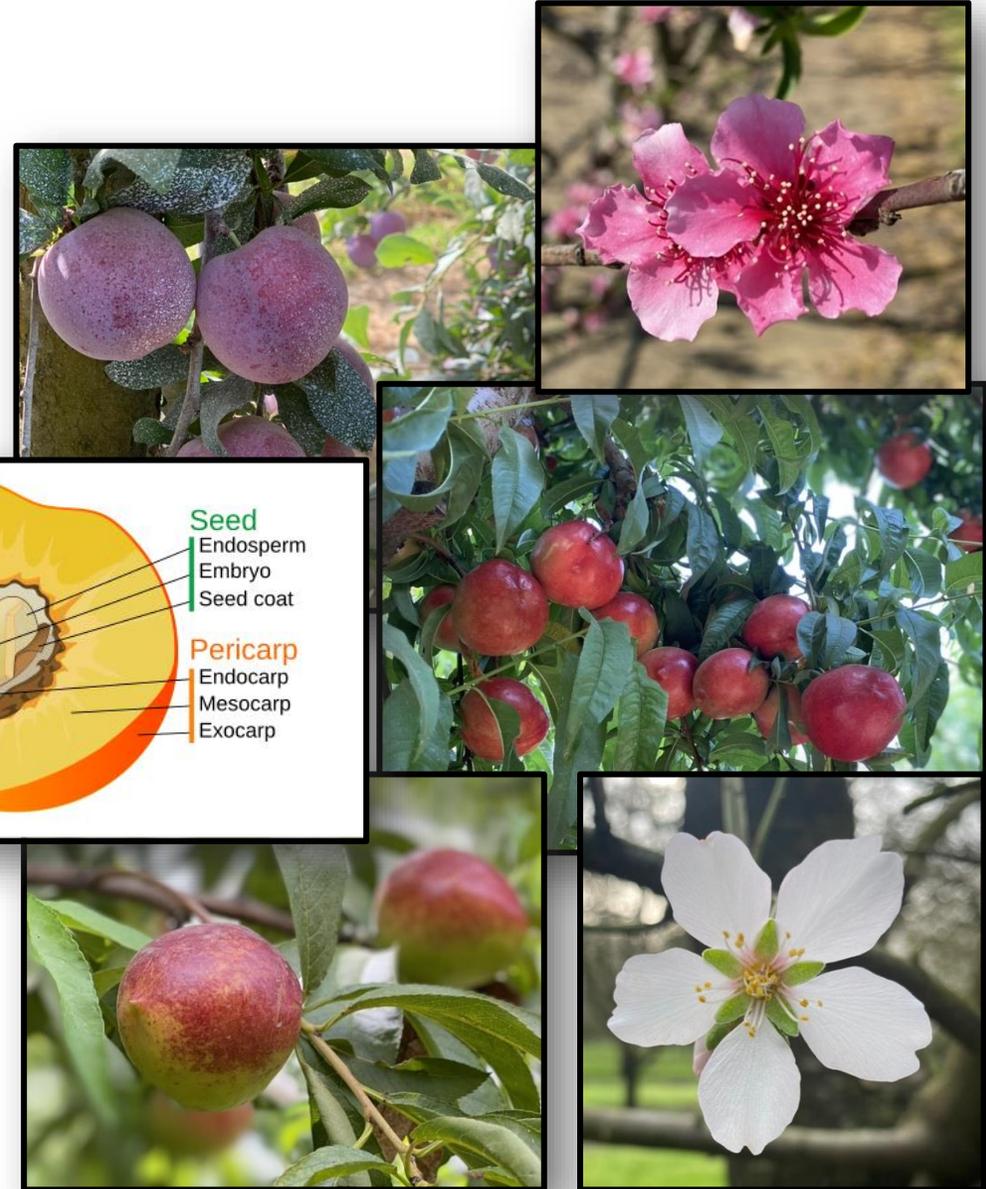
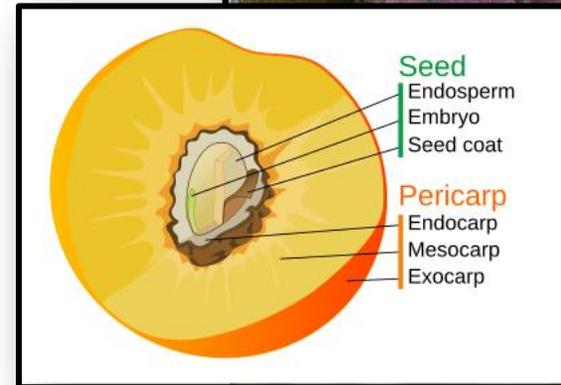


UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

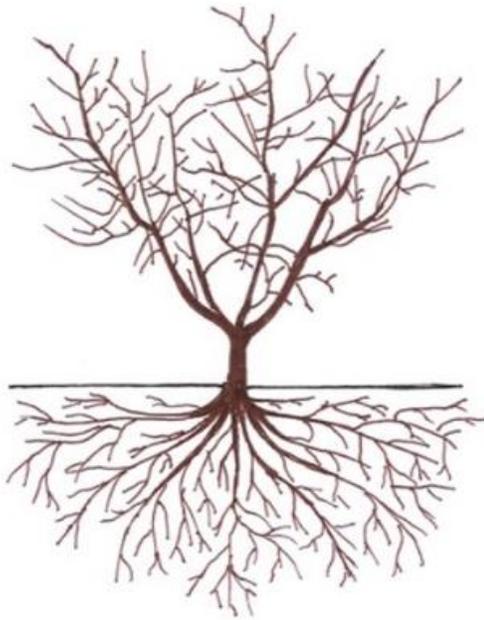
■ Cooperative Extension

Prunus

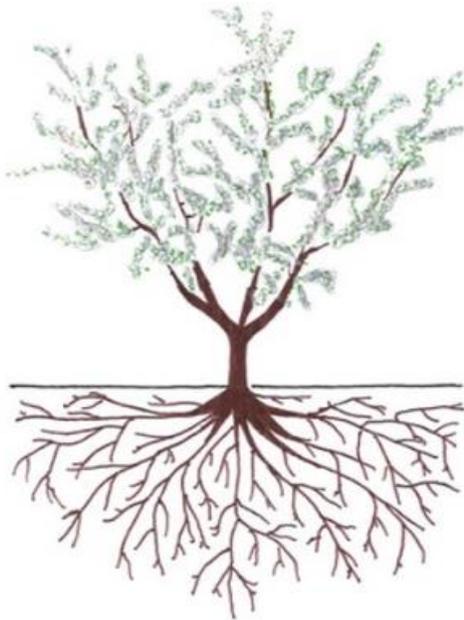
- Family: *Rosaceae*
- Scientific name: *Prunus*
- Genus: *Prunus*; *L.*
 - **Peach and Nectarine** (*Prunus persica*)
 - **Plum** (*Prunus domestica*)
 - **Cherry** (*Prunus avium*)
 - **Apricot** (*Prunus armeniaca*)
 - **Almond** (*Prunus dulcis*)



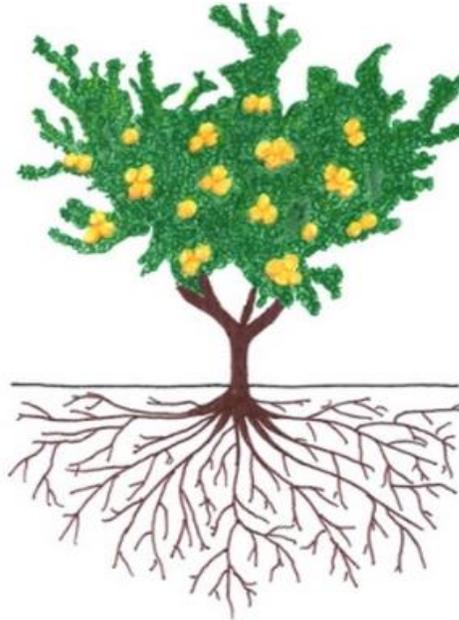
Peach tree growth & development



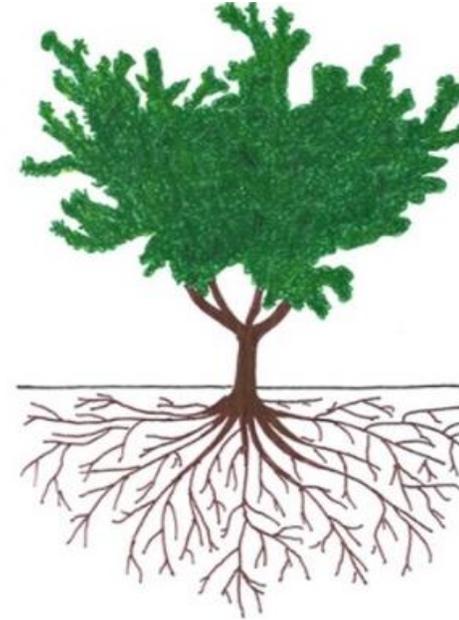
Dormancy
Winter



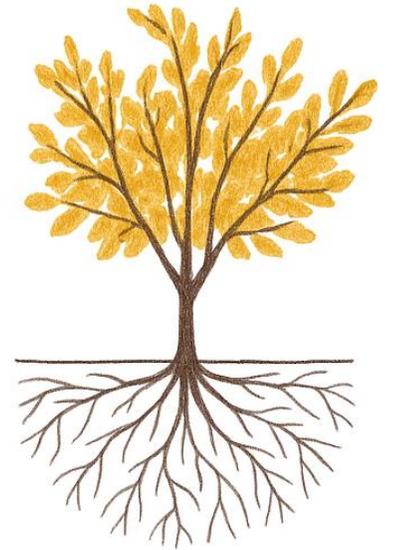
Bloom
Spring



Fruit Development
Summer



Post-Harvest
Fall



Storage
Fall

Peach tree fruit & flower growth & development

Each cultivar requires a specific number of **chill hours**

Adequate chill results in:

- Uniform bud break
- Synchronized bloom

Inadequate chill can cause:

- Weak or abnormal flowers
- Delayed or prolonged bloom
- Reduced fruit set

Bloom timing varies by:
Cultivar, Winter temperatures, Orchard location, and microclimate

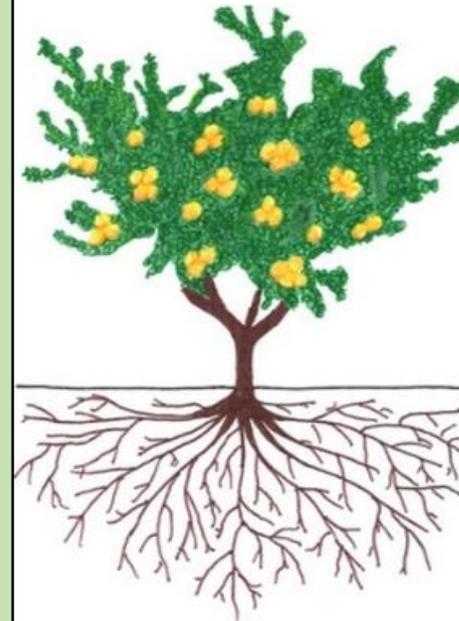
Environmental Sensitivity

Frost (most damaging at full bloom)

Rain (reduces pollen viability and transfer)

High winds (desiccation, physical damage)

Heat spikes (reduced pollen viability)



Fruit Development
Summer

Flower Bud Formation (Year Before Bloom)

Bud initiation and differentiation occur **late spring through fall**

Flower number and quality depend on:

- Carbohydrate reserves
- Leaf health and photosynthesis
- Light penetration in the canopy
- Tree water and nutrient status

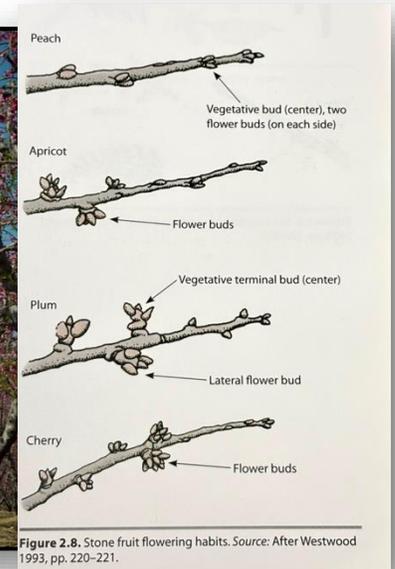
Flower buds enter **endodormancy** in fall

Peach tree flower growth & development

Peach Flower Bud Stage	
Calyx - Green	
Calyx - Red	
First Pink	
First bloom	
Full bloom	
Petal fall	

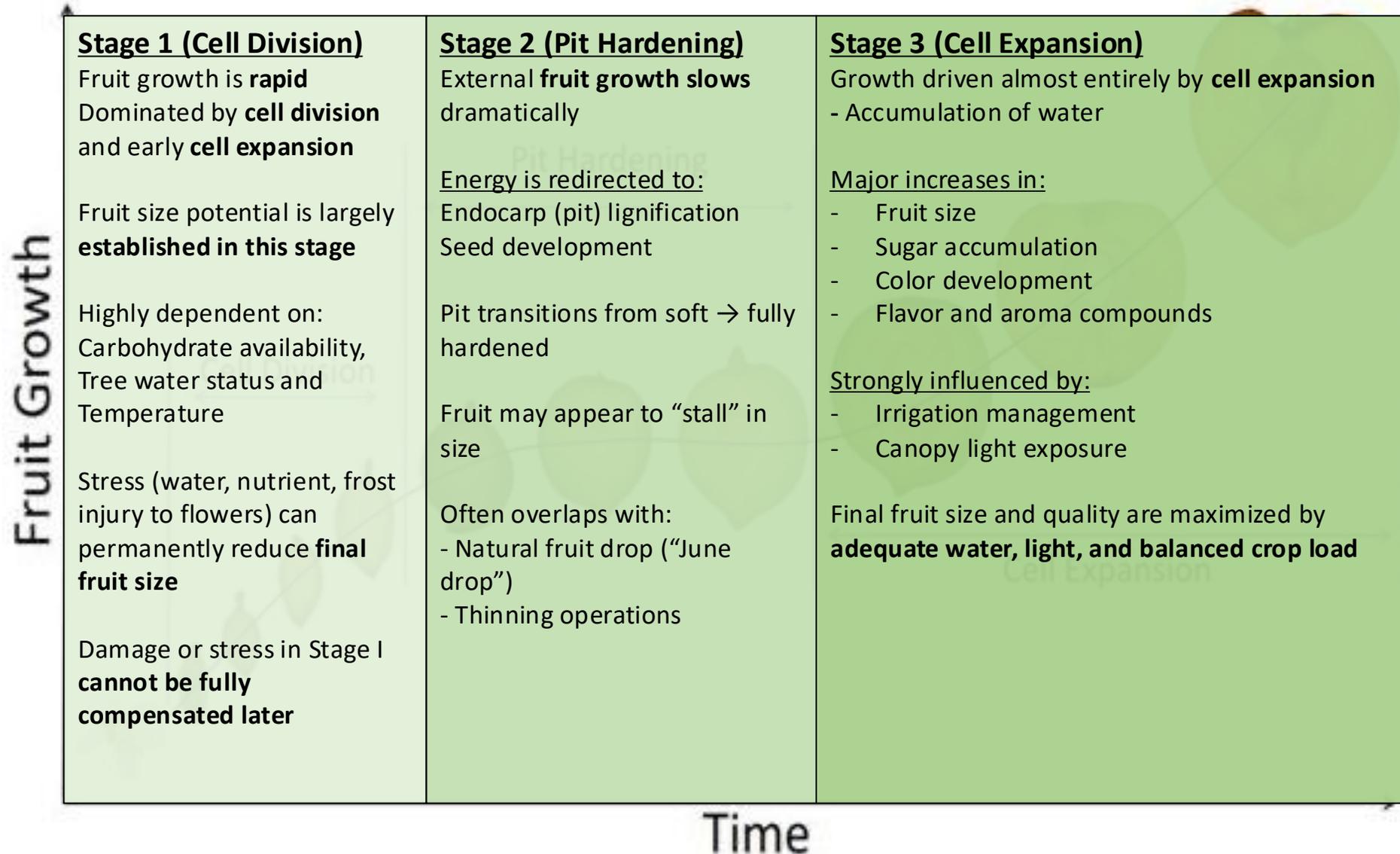
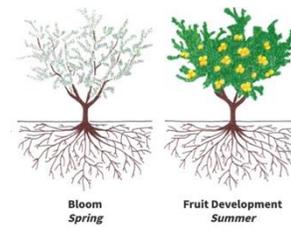
Flower Type & Fertility

- Peaches produce **perfect flowers** (both male and female organs in the same flower)
- **Self-fertile:** do not require cross-pollination
- Pollinators are **not required**, but may slightly improve pollination efficiency



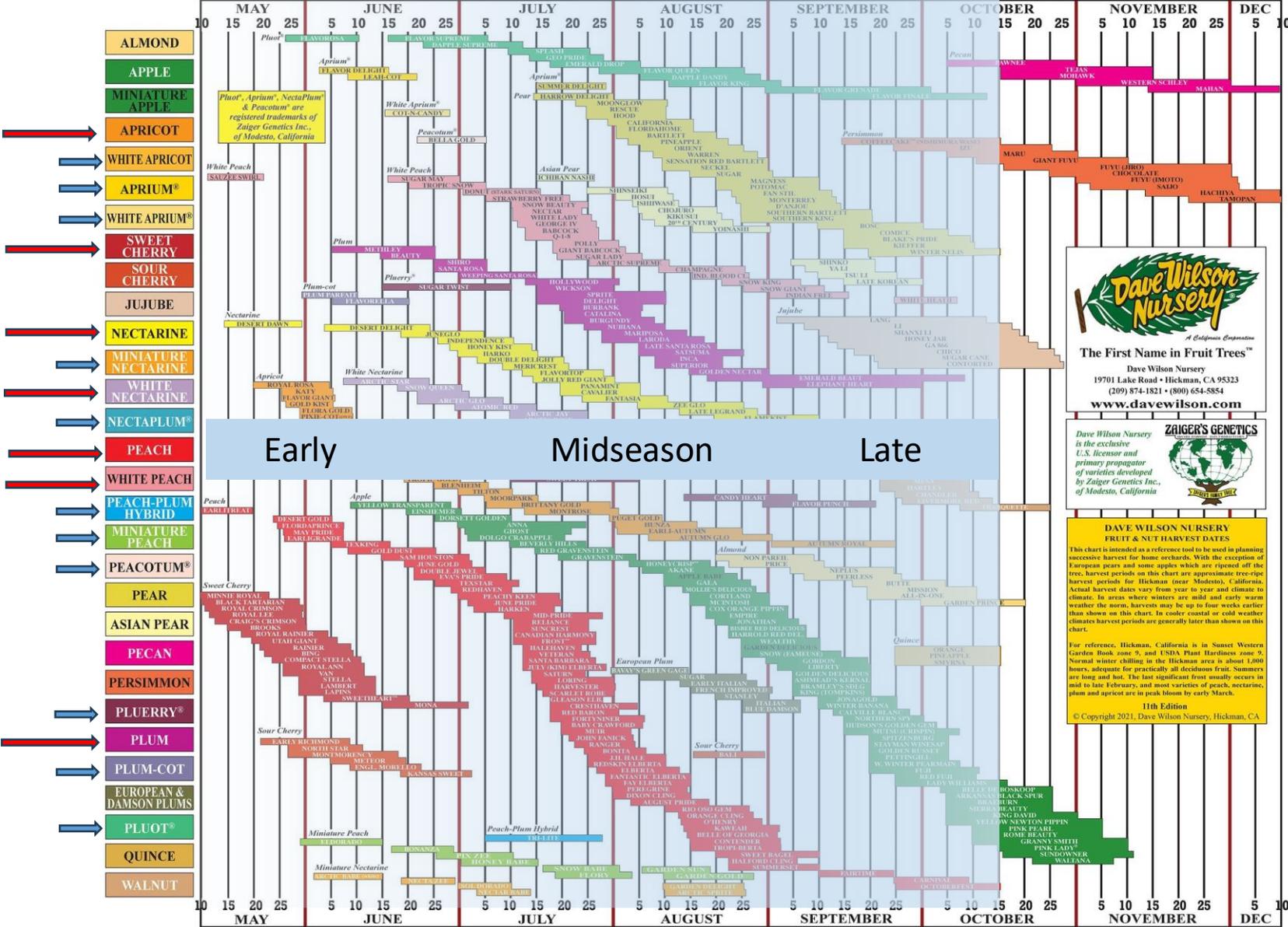
Peach tree fruit growth & development

Stone Fruit Double-Sigmoid Curve



FRUIT & NUT HARVEST DATES

COLOR BARS CORRESPOND TO APPROXIMATE HARVEST PERIODS FOR HICKMAN (NEAR MODESTO) CALIFORNIA.



The First Name in Fruit Trees™
 Dave Wilson Nursery
 19701 Lake Road • Hickman, CA 95323
 (209) 874-1821 • (800) 654-5854
www.davewilson.com

ZAIGER'S GENETICS
 Dave Wilson Nursery is the exclusive U.S. licensor and primary propagator of varieties developed by Zaiger Genetics Inc., of Modesto, California.

DAVE WILSON NURSERY
 FRUIT & NUT HARVEST DATES
 This chart is intended as a reference tool to be used in planning successive harvest for home orchards. With the exception of European pears and some apples which are ripened off the tree, harvest periods on this chart are approximate tree-ripe harvest periods for Hickman (near Modesto), California. Actual harvest dates vary from year to year and climate to climate. In areas where winters are mild and early warm weather the norm, harvests may be up to four weeks earlier than shown on this chart. In cooler coastal or cold weather climates harvest periods are generally later than shown on this chart.

11th Edition
 © Copyright 2021, Dave Wilson Nursery, Hickman, CA

- Growers Desire:
- Good Yielding
 - Easy Care
- Fruit Qualities
- Flavorful
 - Large Size
 - Bright Color
 - Unique



Rootstock options

• Primary Rootstock Goals

- Tolerance to **heavier soils**
- Resistance to **soilborne diseases**
- Controlled vigor for **smaller orchards**
- Adaptation to **cooler spring soils**



120–110%	110–100%	100–80%	80–60%	60–40%	<40%
Very vigorous	Standard vigour	Semi-vigorous	Medium vigour	Semi-dwarf	Dwarf
INRA® 'GF-677' 'Garnen®' ('GN-15') 'Guardian®' 'Nemaguard' 'Atlas®' 'Viking®'	'Montclar®' INRA® 'GF-305' 'Cadaman®' (Avimag) 'Lovell' 'Krymsk® 86' (Kuban-86)	'Rootpac®' R 'Tetra' 'Penta'	'Adesoto® 101' 'Ishtara®' 'Controller™ 6' 'Rootpac® 20**'	'Rootpac® 40**' 'MP-29' 'Controller™ 5' 'Intensia®'	'Rootpac® 20**' 'Rootpac® 40**' 'Pillowred®'

Rootstock	Genetic Background	Compatibility with Peach Cultivars	Vigor	Soil & Site Fit	Key Strengths	Key Limitations	Best Use
Lovell	Peach seedling (Prunus persica)	Excellent	Moderate	Tolerates heavier soils better than Nemaguard	Strong graft unions; adaptable; widely proven	Susceptible to root-knot nematodes	North Bay sites; heavier or variable soils
Nemaguard	Peach seedling (P. persica)	Excellent	High	Well-drained, lighter soils	Nematode resistance; strong growth	Excessive vigor on rich soils; poor in wet soils	San Joaquin Valley; sandy soils
Guardian®	Peach seedling selection	Excellent	Moderate	Performs well on replant sites	Tolerant to peach replant disorder; good anchorage	Limited availability in CA	Replant orchards; mixed orchard history
Citation®	Peach × Plum hybrid	Generally good	Low–moderate	Light to medium soils; avoid drought	Size control; early bearing	Shallow roots; drought sensitivity; variable longevity	Small orchards; high-density plantings
Peach × Almond Hybrids	Peach × Almond	Good	Very high	Deep, well-drained soils	Strong vigor; drought tolerance	Poor fit for cool or wet sites	Warm inland sites; deep soils
Plum Rootstocks (general)	Prunus spp.	Variable / risky	Variable	Often better in wet soils	Some tolerance to wet conditions	Delayed incompatibility risk	Use only if locally proven

Rootstock options (for the North Bay Area)

Rootstock	Genetic Background	Compatibility with Peach Cultivars	Vigor	Soil & Site Fit	Key Strengths	Key Limitations	Best Use
Lovell	Peach seedling (Prunus persica)	Excellent	Moderate	Tolerates heavier soils better than Nemaguard	Strong graft unions; adaptable; widely proven	Susceptible to root-knot nematodes	North Bay sites; heavier or variable soils
Nemaguard	Peach seedling (P. persica)	Excellent	High	Well-drained, lighter soils	Nematode resistance; strong growth	Excessive vigor on rich soils; poor in wet soils	San Joaquin Valley; sandy soils
Guardian®	Peach seedling selection	Excellent	Moderate	Performs well on replant sites	Tolerant to peach replant disorder; good anchorage	Limited availability in CA	Replant orchards; mixed orchard history
Citation®	Peach × Plum hybrid	Generally good	Low–moderate	Light to medium soils; avoid drought	Size control; early bearing	Shallow roots; drought sensitivity; variable longevity	Small orchards; high-density plantings
Peach × Almond Hybrids	Peach × Almond	Good	Very high	Deep, well-drained soils	Strong vigor; drought tolerance	Poor fit for cool or wet sites	Warm inland sites; deep soils
Plum Rootstocks (general)	Prunus spp.	Variable / risky	Variable	Often better in wet soils	Some tolerance to wet conditions	Delayed incompatibility risk	Use only if locally proven

Site selection & planning

1. Climate & Chill Accumulation

Match cultivar **chill requirement** to long-term site averages



2. Frost Risk & Cold Air Drainage

Select sites with:

- Good **cold air drainage**
- Gentle slopes (1–5%)

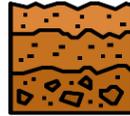


3. Soil Drainage & Rooting Depth

- Peaches are **very sensitive to waterlogged soils**

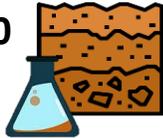
Ideal soils:

- Well-drained loams or sandy loams
- Minimum **4–6 ft effective rooting depth**



4. Soil Chemistry

- Ideal pH: **6.0–7.0**
- Salinity (EC)
- Soil Fertility



5. Orchard History & Replant Risk

Avoid planting peaches after peaches if possible

Test soil for:

- Nematodes
- Replant disease risk



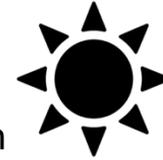
6. Water Availability & Quality

- Reliable irrigation is essential crop stages
- Water Testing
- Ensure irrigation system allows **uniform application**



7. Sunlight & Exposure

- Good sunlight improves:
 - Flower bud formation
 - Fruit size
 - Color and sugar accumulation



8. Wind & Air Movement

- Frost severity
- Disease pressure



Avoid excessive wind that causes:

- Fruit rubbing
- Shoot breakage

9. Topography & Orchard Layout

Row orientation should:

- Maximize light interception
- Allow cold air movement



Avoid tall windbreaks that trap cold air

10. Pest & Disease Environment

- Consider regional pressure for pests and diseases
- Sites with persistent moisture increase disease risk



Season Long Stone Fruit Management



Fig. 2.19. The annual peach production timeline integrating different cultural orchard operations from pruning and thinning to harvest, fertigation and crop protection in the Ebro Valley (north-east Spain). Adapted from Iglesias and Echeverría (2022).

Pruning

Primary Objectives

- Maintain an open center (open vase) canopy
- Maximize light penetration to fruiting wood
- Balance vegetative growth and fruiting
- Reduce disease pressure by improving air movement
- Support uniform fruit size and quality
- Annual renewal pruning is essential, not optional

Why Peaches Require Annual Pruning

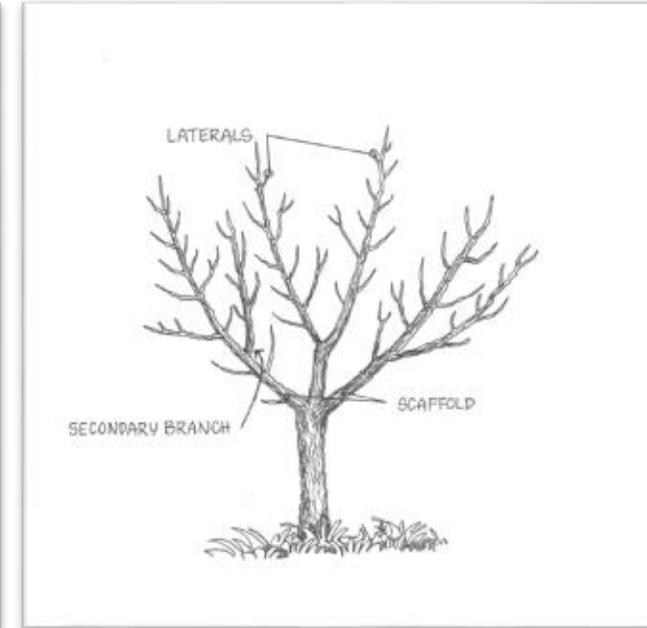
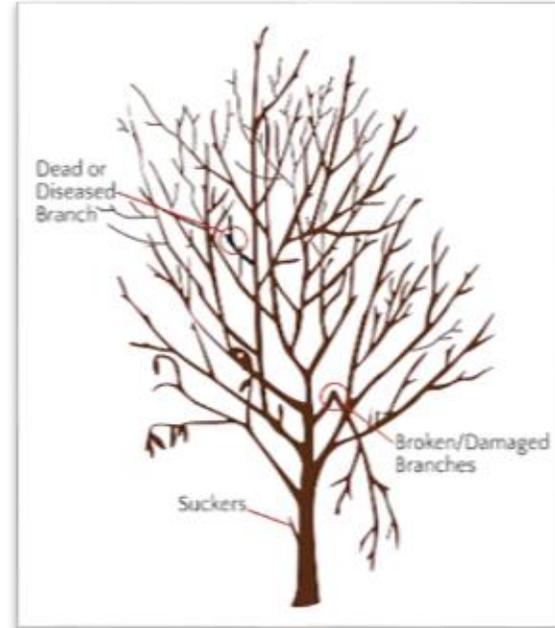
- Peaches fruit on 1-year-old wood

Unpruned trees:

- Become shaded
- Shift fruiting to the canopy exterior
- Produce smaller, poorer-quality fruit

Pruning System

- Open center (3–4 main scaffolds)



Remove:

- Upright, vigorous shoots in the center
- Shaded, weak wood
- Old, non-productive wood

Retain:

- Well-positioned, outward-growing 1-year-old shoots

Pruning

Dormant pruning (late winter) is standard

- Improves light structure
- Sets crop framework

Delay pruning on frost-prone sites to reduce early bloom risk

Summer pruning (limited):

- Improves light and air flow
- Helps manage excessive vigor
- Use cautiously to avoid sunburn

Disease Considerations (North Bay)

Open canopies:

- Dry faster after rain
- Reduce brown rot and canker pressure

Avoid pruning during:

- Wet conditions
- Active rainfall events
- Sanitize tools when disease pressure is high

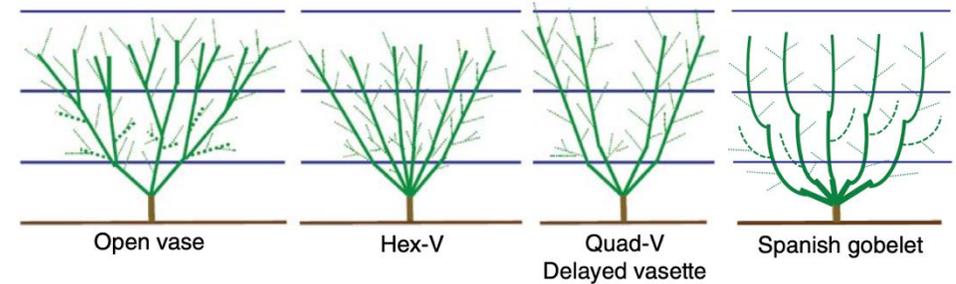
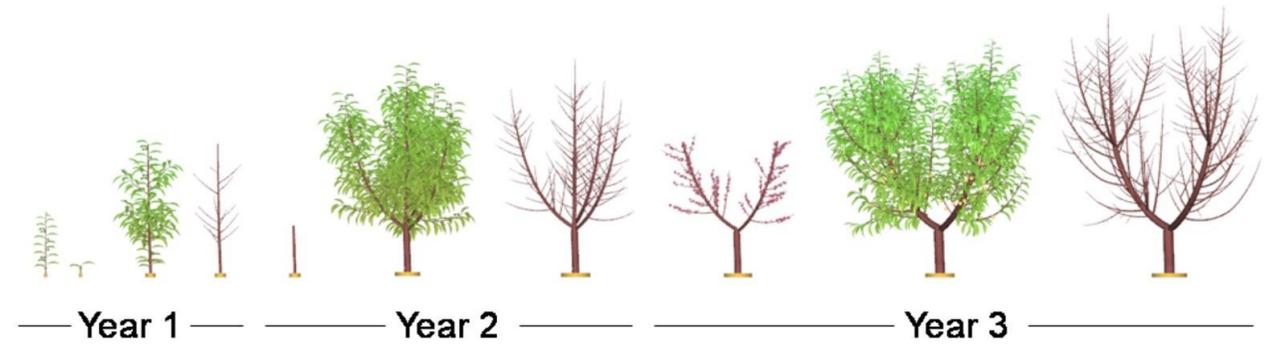


Fig. 2.4. Different options for three-dimensional gobelet-type training and variations based on tree canopy architecture. Adapted from Anthony and Minas (2021).

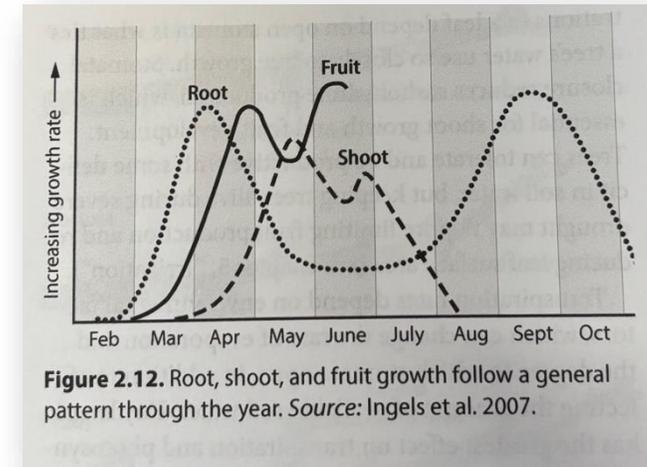


Figure 2.12. Root, shoot, and fruit growth follow a general pattern through the year. Source: Ingels et al. 2007.

Peach Thinning



Unthinned

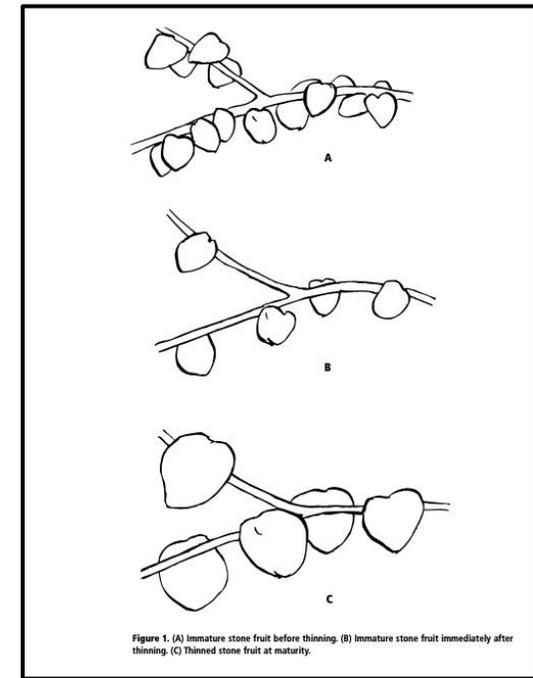
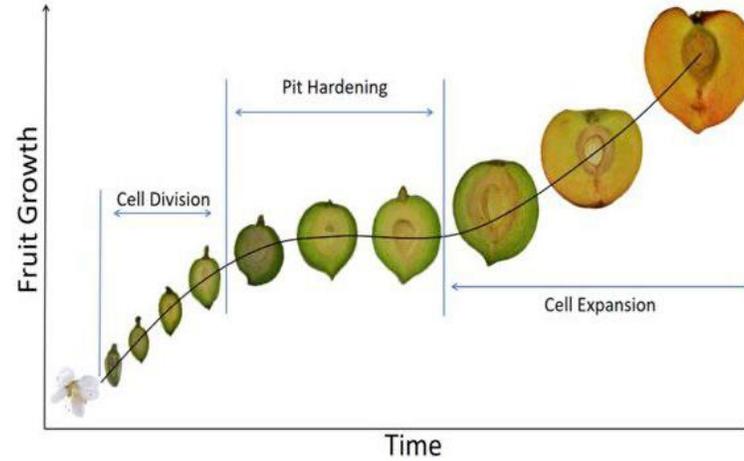


Thinned

- Thinning reduces crop load affects the competition for assimilates among the fruit
- Higher photosynthate availability induced by thinning leads to:
 - metabolome changes in young developing fruit that can prime further developmental processes leading to better fruit
- Fruit weight is highly variable depending on the genetic background and the agronomic practices (e.g. thinning)
 - ranges from 80g to more than 500g.
- Fruit from thinned trees being larger and of better quality than those from unthinned ones.

Peach Thinning

- Balance among different competing fruit is usually obtained by fruit or flower thinning
 - Earlier the better
- Thinning activities should be undertaken sooner with higher GDH30 accumulation
 - 30 days after bloom for early-maturing
 - 60 days for late-maturing



Sunburn & Frost protection

Sun Burn

Most Common Practices

- **Canopy management**
 - Avoid over-pruning
 - Maintain leaf cover to shade fruit
- **Irrigation management**
 - Prevent water stress during heat waves
 - Keep trees transpiring at peak temperatures
- **Particle films (kaolin clay)**
 - Reflect sunlight
 - Reduce fruit surface temperature
 - Applied ahead of forecast heat events



Supplemental Tools (Selective Use)

- Reflective ground covers (high-value blocks)
- Limited evaporative cooling (careful disease management)
- Cultivar and site matching to avoid peak-heat harvest windows

Frost

Frost Protection (Primary Risk in North Bay)

When it occurs

- Late winter–early spring
- Highest risk at:
 - **Full bloom**
 - **Petal fall**
- Damage worsened by **cold + wet conditions**



North Bay risk profile

- Frost risk driven by:
 - Poor cold air drainage
 - Slow bloom progression in cool, wet springs
- Radiation frosts common in:
 - Valley bottoms
 - Sheltered sites

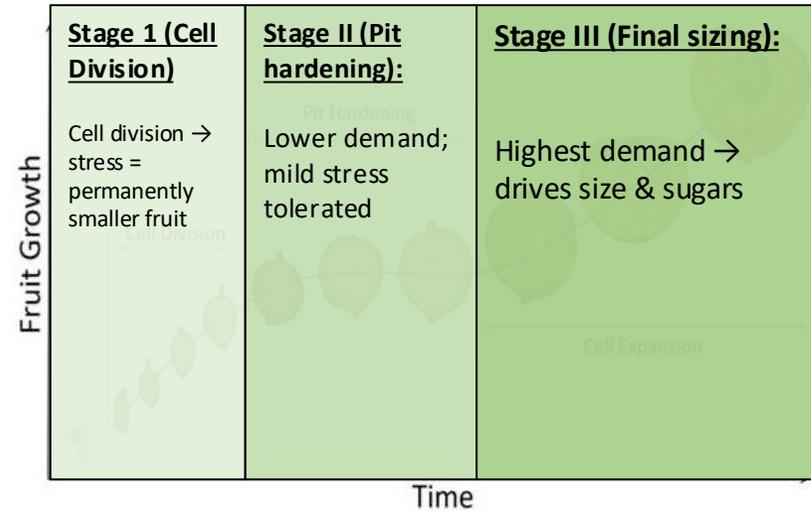
Irrigation Management in Peaches

Why It Matters

Directly affects **fruit size, quality, tree health**

Stress impacts **this year's crop and next year's buds**

Critical Timing



Postharvest

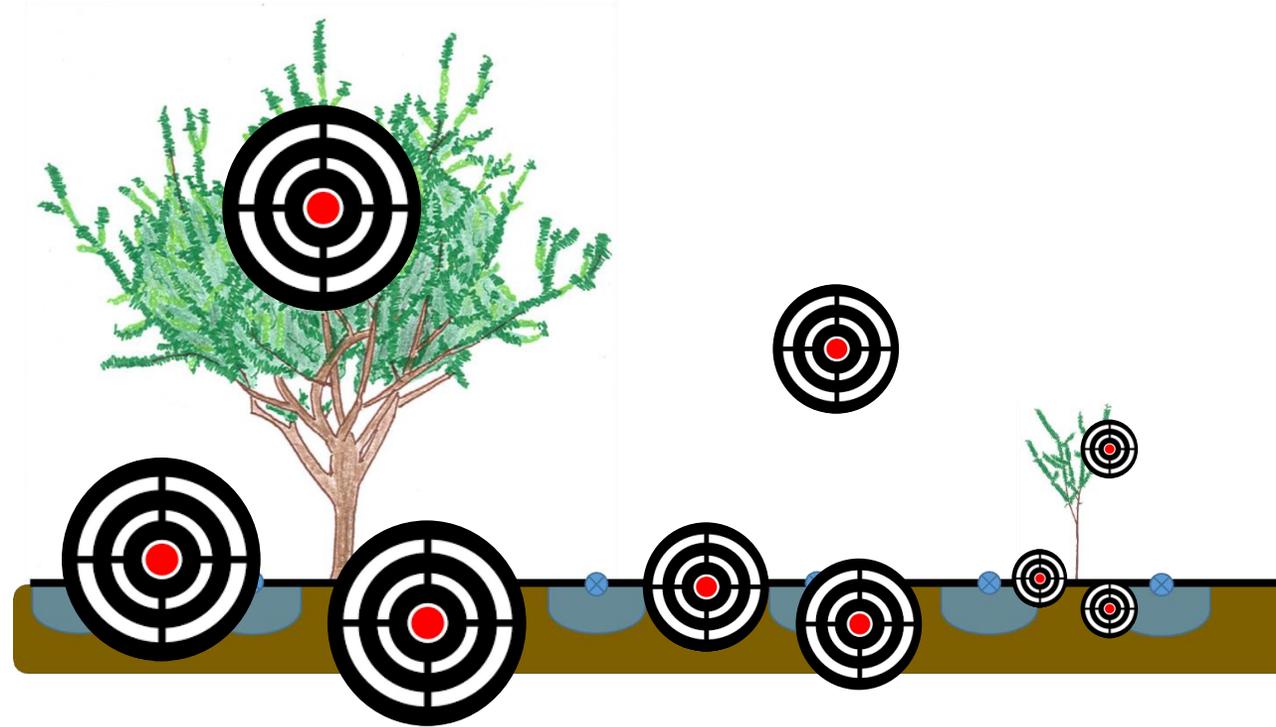
Continue irrigation to support **carbohydrate reserves** and next year's bloom

Key Practices

- Maintain **consistent soil moisture**
- Match irrigation to **ET, soil type, crop load**
- Avoid both **water stress** and **waterlogging**

System Efficiency

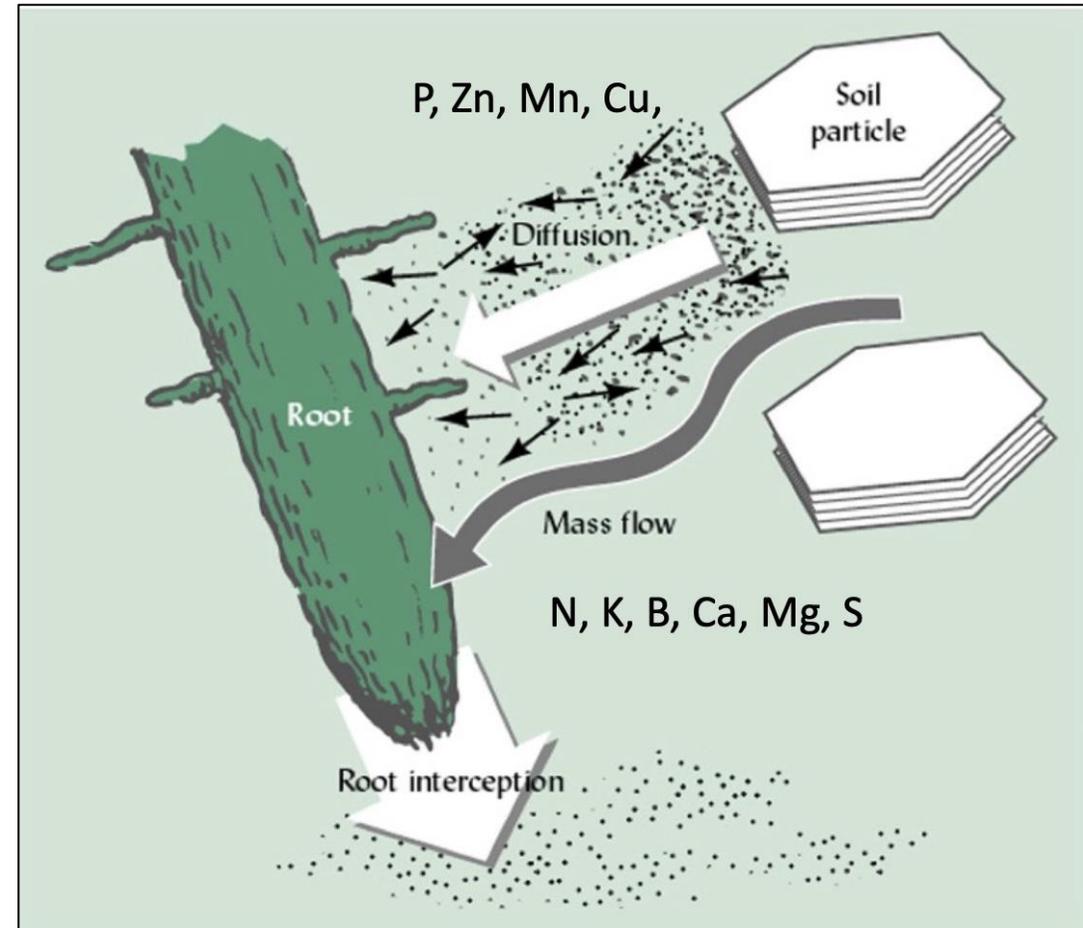
- Varies with system, soil type, length of run etc.
- Furrow/flood systems 60-80%
- Drip/microsprinkler systems >85%



Importance of Water

Water is the vehicle that delivers nutrients to roots and ultimately the plant.

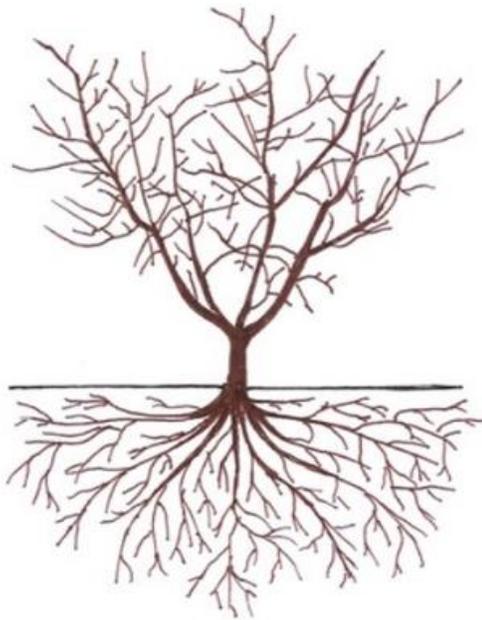
- **Diffusion:** Very slow and very short distance (mm/week)
 - Proximity to root surface
 - P, Zn, Mn, Cu, Fe, Ni
- **Mass Flow:** Very quick and long distance (ft/week)
 - Moves with water
 - Nitrate, Ammonium, S, K, B, Cl, Ca, Mg, Mo



Stone Fruit Nutrition

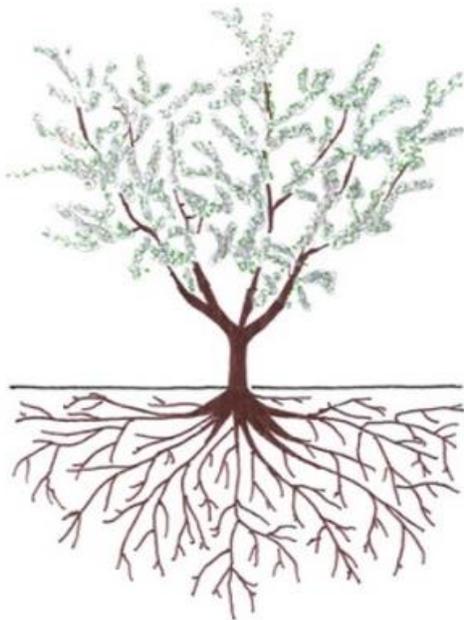
Keep in mind...

- Perennial system that stores nutrients



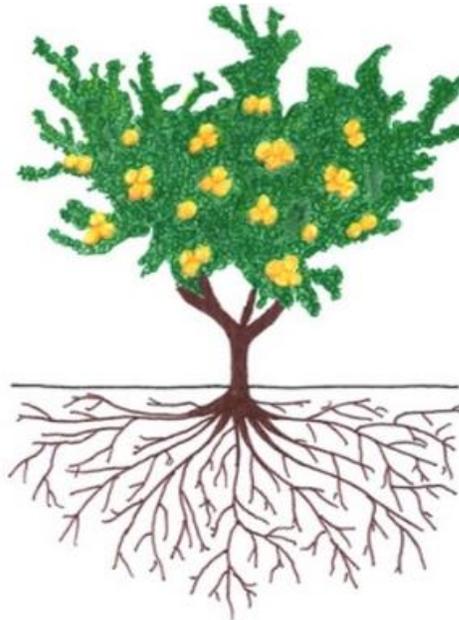
Dormancy
Winter

Reserves stored in roots and woods



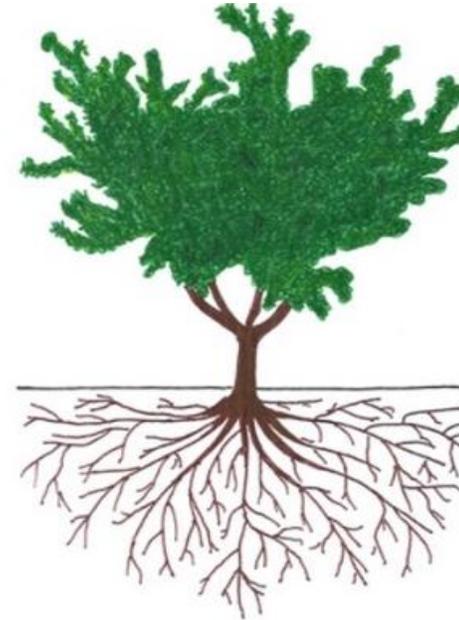
Bloom
Spring

Reserves supply buds & bloom



Fruit Development
Summer

Soil nutrient uptake and photosynthesis



Post-Harvest
Fall



Storage
Fall

Leaves drop → nutrients recycled

Stone Fruit Nutrition

Keep in mind...

- Perennial system that stores
- Targeting fruit quality, not biomass
- Avoiding shade is key

Shaded leaves get less light → lower photosynthesis → fewer sugars produced.



Essential Nutrients

(Lifecycle cannot be completed in their absence)

Photosynthesis

Carbon

Oxygen

Hydrogen

Macronutrients

- Nitrogen
- Phosphorus
- Potassium
- Calcium
- Magnesium
- Sulfur

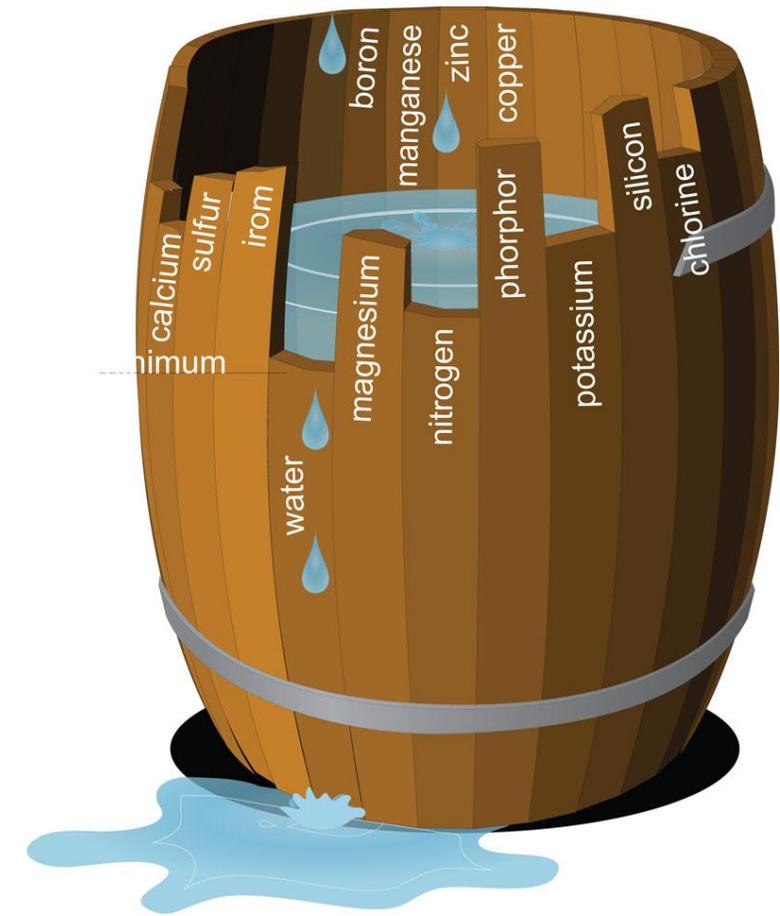
Micronutrients

- Zinc
- Iron
- Boron
- Manganese
- Copper
- Chlorine
- Nickel
- Molybdenum

- Always Manage
- Monitor and Manage, Prevent/React
- Isolated occurrence (Monitor)
- Unknown

What is an essential plant nutrient?

- An element, that when missing or in low quantities:
 - Impairs cellular functions
 - Reduces or prevents yields
 - Causes cell death
- Liebig's law of the minimum:
most limiting input limits plant growth
 - Can be a nutrient
 - Can be water/sunlight/soil quality

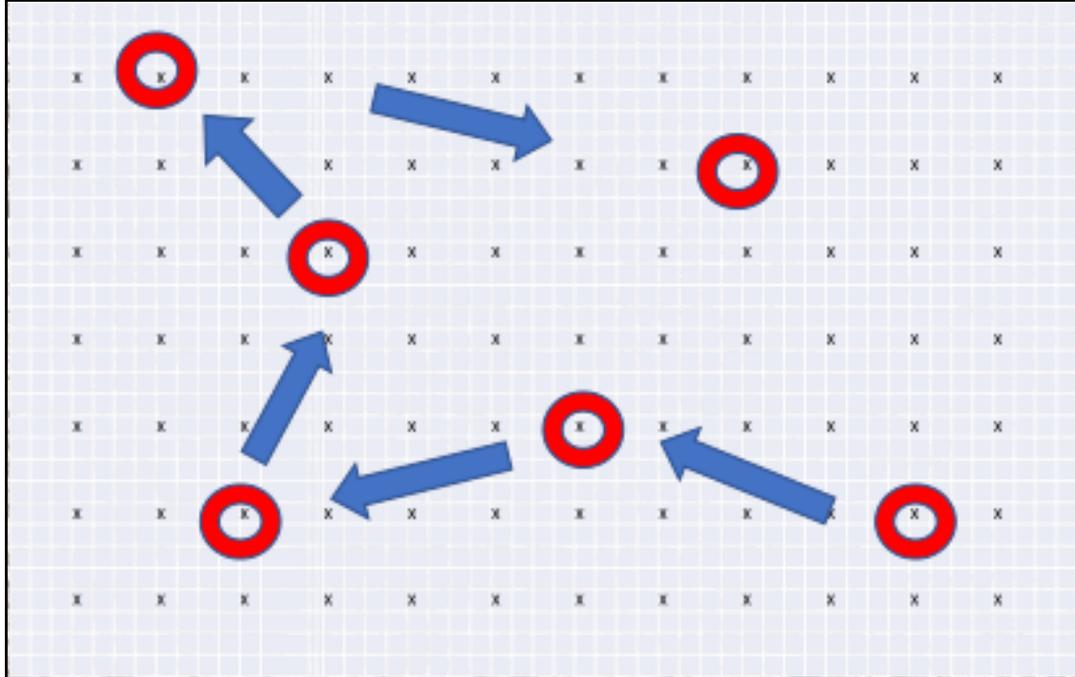


Essential Nutrients Roles

Nutrient	Where in Plant	Main Roles	Challenges in Stone Fruit
Nitrogen (N)	Proteins in leaves, shoots, roots; stored in woody tissue	Vigor, leaf area, fruit set, yield; stored for next year	Easily leached; excess = soft fruit, poor color
Phosphorus (P)	ATP/energy compounds; membranes	Root growth, flowering, energy transfer	Rare in CA, but can be low in cold soils; excess P ties up Zn/Fe
Potassium (K)	Fruit flesh, phloem sap, vacuoles	Sugar transport, fruit size, color, firmness	Deficiency common in heavy fruit loads; competition with Ca/Mg
Calcium (Ca)	Cell walls, membranes, old leaves	Firmness, reduces cracking	Only moves with transpiration; fruit poorly supplied if shaded/low water flow
Magnesium (Mg)	Chlorophyll in leaves	Photosynthesis, sugar formation	Deficiency on sandy or K-rich soils (competition)
Zinc (Zn)	Young leaves, shoots (semi-mobile)	Auxin synthesis, leaf expansion, bud formation	Deficiency very common in alkaline soils; limited mobility; worsened by high P
Boron (B)	Flowers, fruit, young tissues	Pollen tube growth, fruit set, cell wall structure	Narrow margin between deficiency/toxicity; deficiency common in sandy soils
Iron (Fe)	Chloroplasts in young leaves	Chlorophyll synthesis, respiration	Immobile; deficiency common on high pH/calcareous soils with bicarbonates
Manganese (Mn)	Leaves, chloroplasts	photosystem II cofactor	Tied up at high pH; deficiency looks like Fe chlorosis but more speckled

Tissue Sampling

- Plant tissue tests are best used as feedback for your nutrition program
- Select leaves from all four quadrants of a tree
 - Make sure trees are 40+ feet apart
 - Don't combine good and bad
 - Don't combine irrigation blocks
 - Split up blocks larger than 40 acres



Plant Tissue Sampling in Orchards and Vineyards

Orchard Leaf Sampling

Patricia Lazicki and Daniel Geisseler

Table 1: Sampling procedure for California orchard and vineyard crops

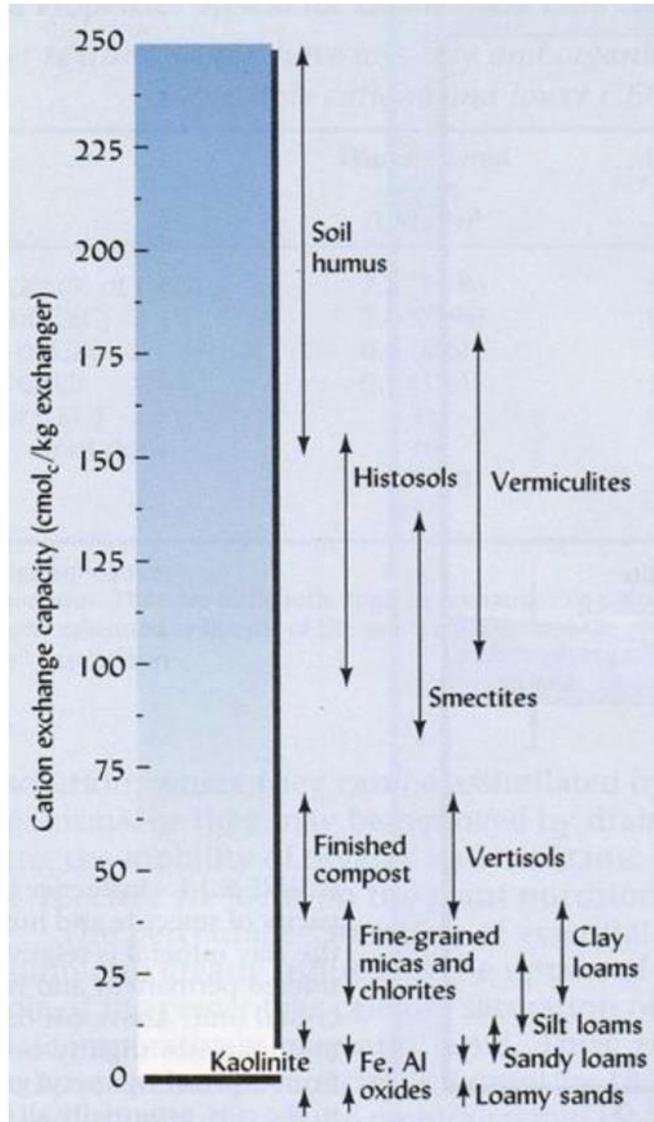
Plant	Sampling date	Plant part	Plants to sample	Total parts needed	Notes
Almond (spring)	36-48 days after full bloom	Leaves from non-fruiting, well-exposed spurs 5-7 feet above the ground	18-28 trees (>30 yards apart)	Leaves from 5-8 spurs per tree	Tested with Nonpareil almonds. Predicts all nutrients in July leaves (traditional method uses the same sampling protocol). Boron status better correlated with hulls of mature almonds at harvest.
Avocado	Aug-Oct	Terminal leaves from non-flushing, non-fruiting spring flush shoots (5-7 months old), 3-5 feet above the ground	>10 trees per block	4 leaves per tree (one from each quadrant)	Avocado leaf testing methods adapted from citrus. Currently not very reliable. Combine with tree vigor observations.
Citrus	Sept-Oct	Terminal leaves from non-flushing, non-fruiting spring flush shoots (5-7 months old), 3-5 feet above the ground	>10 trees per block	4 leaves per tree (one from each quadrant)	Recommended block size 5-10 acres
Grapevine	Full bloom	Petioles of leaves opposite flower clusters	25-50 vines	One or two petioles per vine	Petiole nitrate varies widely between rootstocks and varieties. Analyses are best used in combination with observations of tree vigor.
Olive	July	Mature mid-shoot leaves from non-fruiting, current-season shoots	30-40 trees	80-100 leaves	Deficiencies uncommon; N may not need to be tested annually if normally sufficient
Peach and Nectarine	Jun-Jul	Mid-shoot leaves from moderately vigorous current-season shoots	30-50 trees	60-100 leaves	
Pistachio (spring)	30-45 days after full bloom	Leaves from non-fruiting, exposed branches 6-7 feet from the ground	At least 18 trees, (>25 yards apart)	10 leaves per tree	Used to predict summer N and K levels. Pistachios are susceptible to K deficiency; samples may need to be taken every year.
Pistachio (summer)	Jul-Aug	Fully expanded sub-terminal leaflets from non-fruiting branches, ~6 feet from the ground	10- 20 trees	4-10 leaves per tree	Traditional sampling time for all nutrients. Spring analyses can predict summer N and K.
Prune and plum	July	Fully expanded leaves from non-fruiting spurs 5-7 feet above the ground	>25 trees per block	One or two leaves per tree	Recommended maximum block size 40 acres. Prunes are susceptible to K deficiency; samples may need to be taken every year.
Walnut	Jun-Jul	Terminal leaflets from fully expanded spur leaves, 5-8 feet above the ground, from around the tree	5-10 trees	50 leaves	

- Crop
- Sampling date
- Plant part to sample
- Quantity needed

https://www.cdfa.ca.gov/is/fldrs/frep/FertilizationGuidelines/pdf/Orchard_Tissue_Sampling.pdf

Sources: Almond ^[7,13], avocado ^[3,8], citrus ^[8], grapevine ^[8], olive ^[9], peach and nectarine ^[9], pistachio ^[2], prune and plum ^[11], walnut ^[1].

Soil Texture

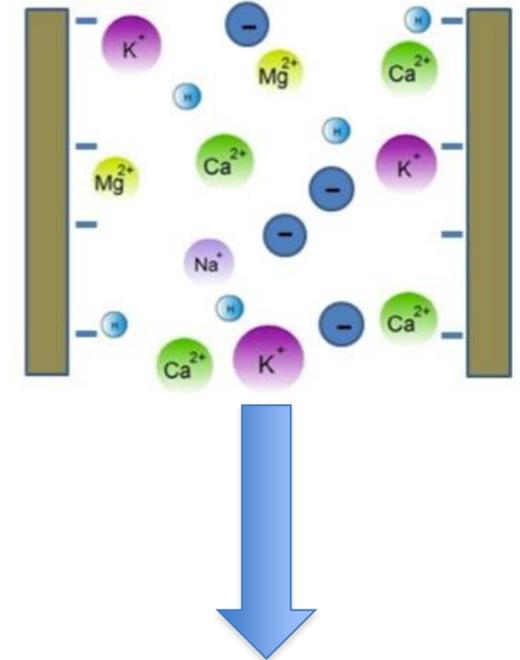
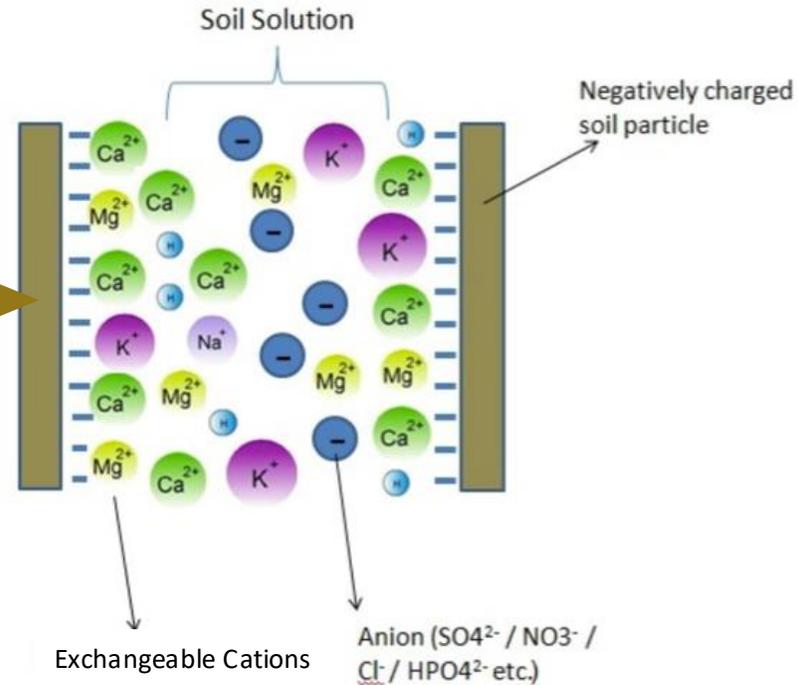
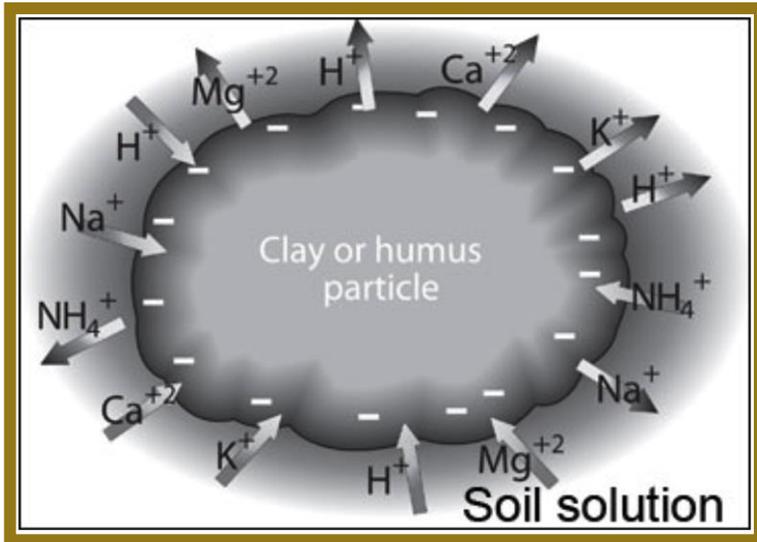


Material	CEC (meq/100g)
Clays	
Kaolinite	3-15
Illite	15-40
Montmorillonite	80-100
Organic Matter	200-400
Soil Texture	
Sand	1-5
Loamy Sand to Sandy Loam	5-10
Loam	5-15
Clay Loam	15-30
Clay	>30

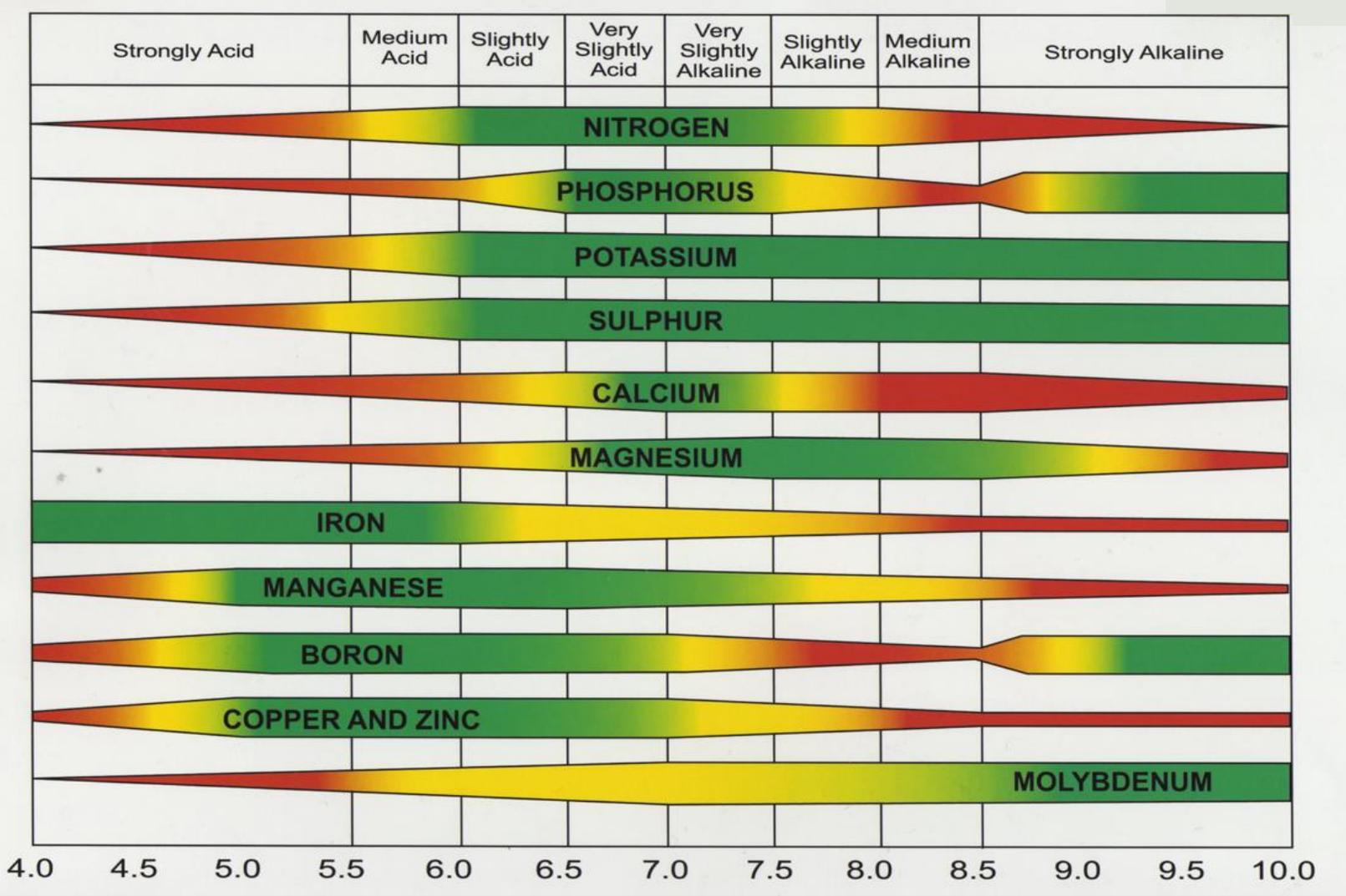
Cation Exchange Capacity

Soil A: High CEC

Soil B: Low CEC



Soil pH and Mineralogy Determines Nutrient Exchange and Solubility



TRAP the nutrients in your fertilization plan

(the 4R's! or R-TAPS Right Timing, Right Amount, Right Place, Right Source)



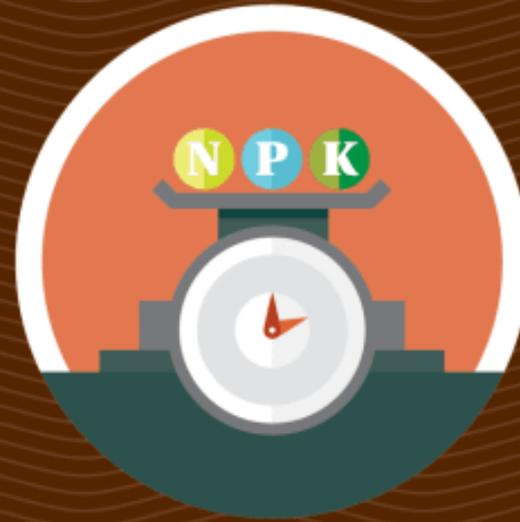
TIME

Makes nutrients available when crops need them.



RESOURCE

Matches fertilizer type to crop needs.



AMOUNT

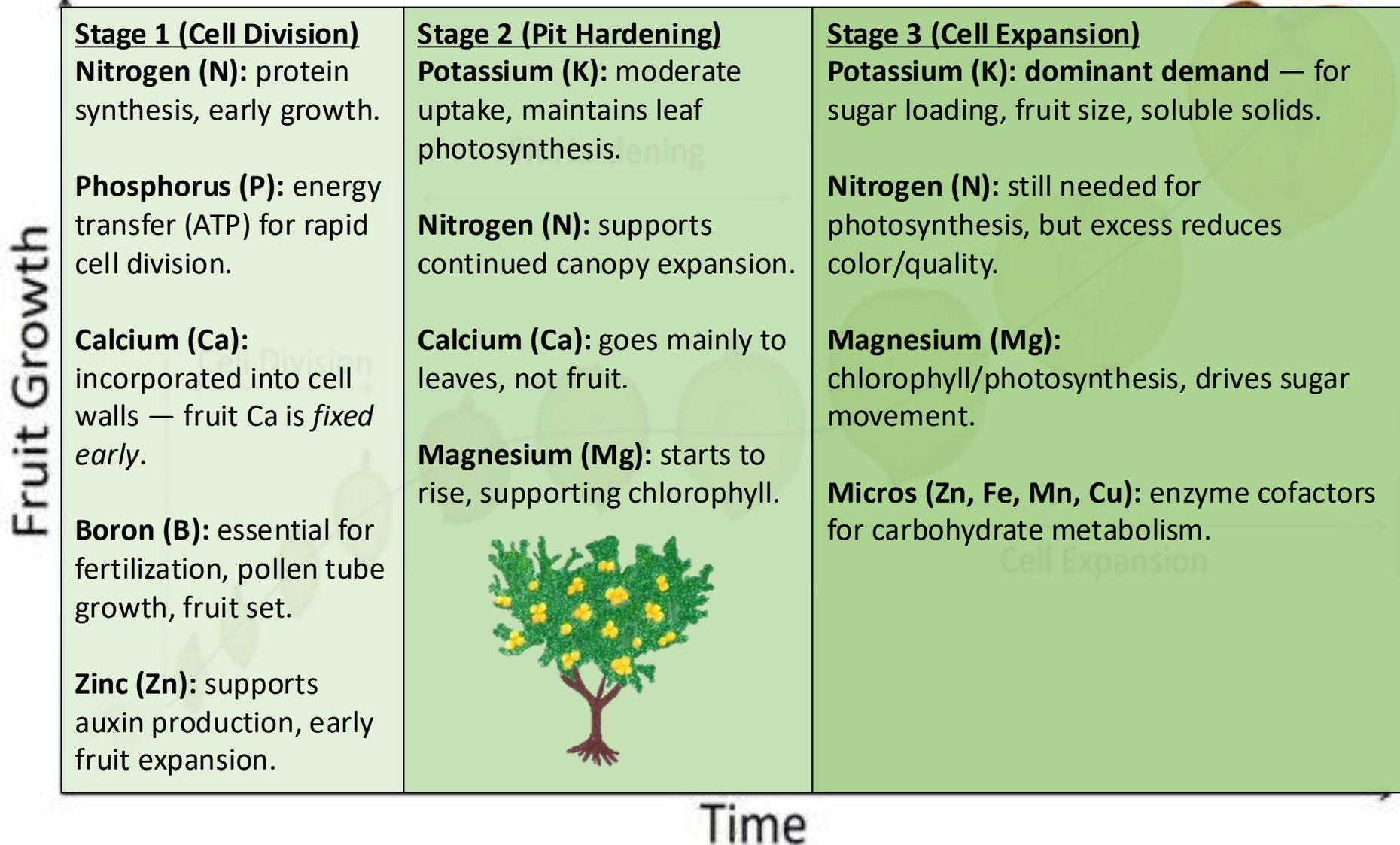
Matches amount of fertilizer to crop needs.



PLACE

Keeps nutrients where crops can use them.

Stone Fruit Double-Sigmoid Curve & Nutrients Needs



RESOURCE



Table 1. Sources and characteristics of nitrogen and Potassium containing fertilizers

Fertilizer	Formulation	Nitrogen (%)	Equivalent acidity or basicity (in 1 lbs of CaCO3)		Leaching Risk*	Volatilization Potential	Comments
			Acid	Base			
Ammonium Nitrate	NH ₄ NO ₃	33.5-34	62	---	medium	low	half immediate available
Ammonium Sulfate	(NH ₄) ₂ SO ₄	21	110	---	low	low	acidic, source of sulfur
Calcium Ammonium Nitrate	Ca(NO ₃) ₂ x NH ₄ NO ₃	17	9	---	medium	low	source of calcium, suitable for fertigation
Calcium Nitrate	Ca(NO ₃) ₂	15.5	---	20	high	low	immediately available, source of calcium
Urea	CO(NH ₂) ₂	45-46	71	---	low	medium	Can be fertigated
UAN-32	NH ₄ NO ₃ x CO(NH ₂) ₂	32	57	---	medium	low	some immediately available some delayed, suitable for fertigation
Potassium Sulfate	K ₂ SO ₄	50	---	---			Source of sulfur
Potassium Nitrate	KNO ₃	44	---	---			Contains 13% Nitrogen
Potassium Chloride	KCl	60-62	---	---			Contains Chlorine
Potassium Thiosulfate	K ₂ S ₂ O ₃	25	---	---			Source of sulfur

Source: Adapted from California Fertilizer Association (1985) and C. Cramer et al (1986).

RESOURCE- Soil Interaction

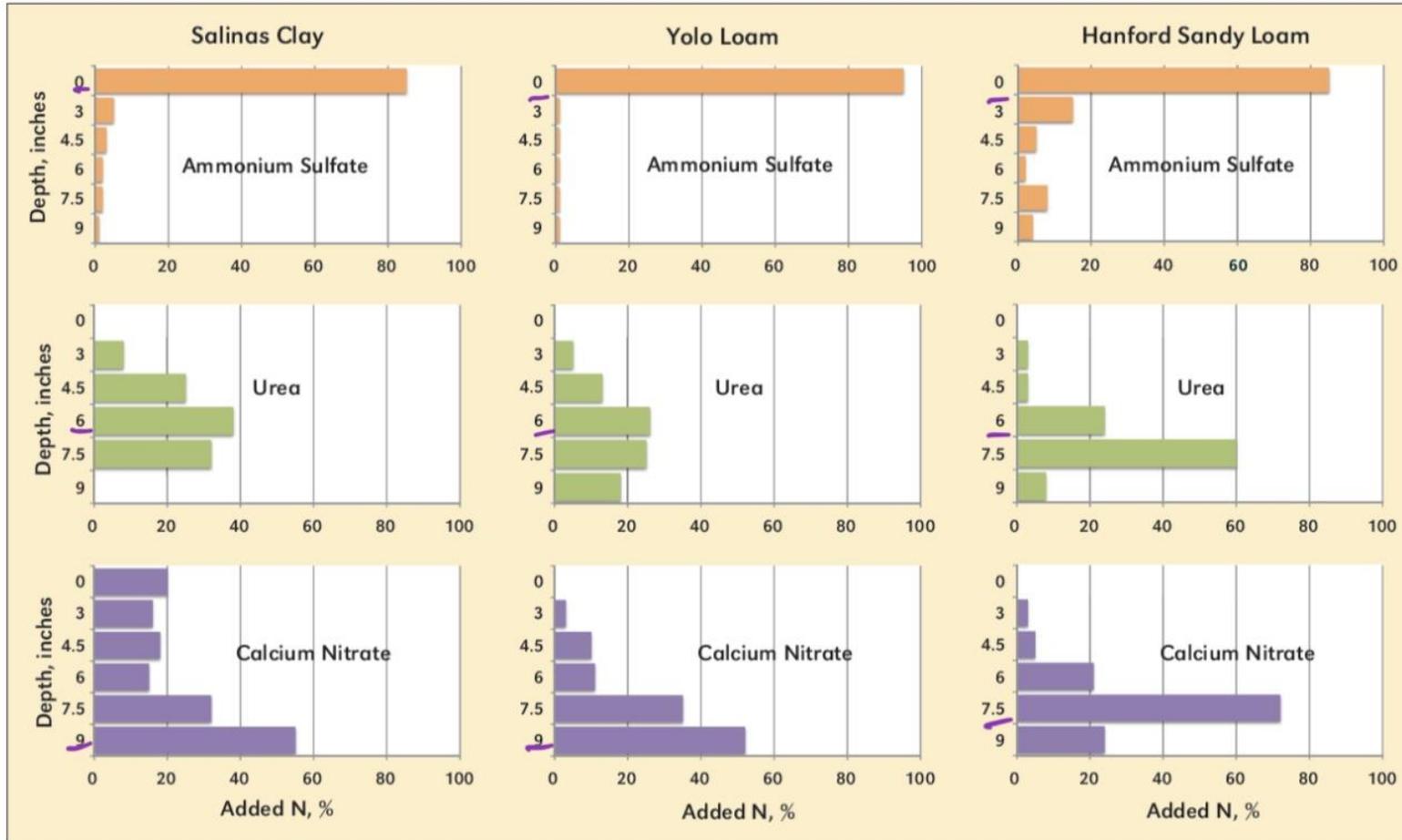


Figure 2. The movement of ammonium, urea, or nitrate in the surface 9 in. of three soils. The urea and calcium nitrate were applied to the soil surface and irrigated with a uniform amount of water. The ammonium sulfate was added as a solution. The soils were sampled 90 minutes after fertilizer and water application. (Broadbent et al., 1958).

Place



1. Soil Application

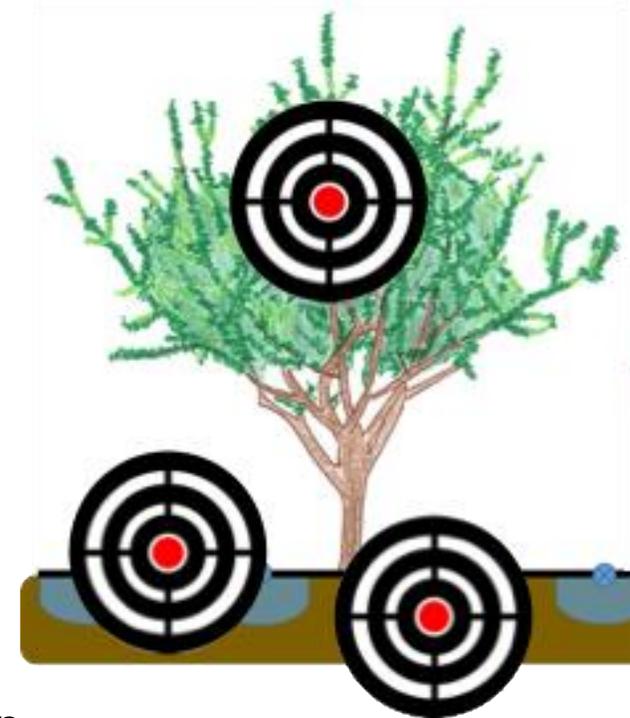
- Broadcasting
- Banded: localized placement improves efficiency for P, K, Zn.
- Dry granular amendments

2. Fertigation (through irrigation)

- Most common in California stone fruit under drip/micro-sprinklers.
- Best for: N, K, B, some Mg and Zn.
- Split applications, high efficiency, matches uptake curve, less leaching.

3. Foliar Sprays

- Nutrients applied directly to leaves.
- Best for: Zn, B, Fe (limited), Mn, Cu; also, sometimes N and K for quick correction.
- Advantages: Rapid uptake, bypasses soil problems (high pH, low availability).
- Limitations: Limited quantity (absorb small amounts), need good coverage, potential for leaf burn



Insect Pest Management

Key Pests

- Peach twig borer (PTB)
- Oriental fruit moth (OFM)
- Aphids
- Scale insects
- Occasional: stink bugs, earwigs

IPM Basics

- Dormant pruning & sanitation
- Monitor shoots, fruit, and pheromone traps
- Time controls to pest life cycle

Organic & Cultural Tools

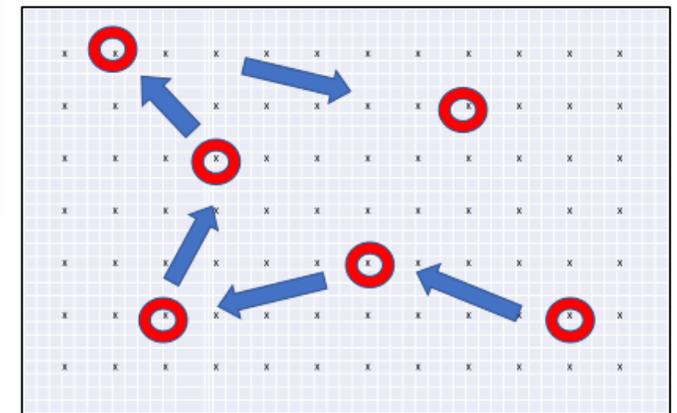
- Dormant oils (scale, overwintering PTB)
- Bt or spinosad (PTB, OFM – early larvae)
- Insecticidal soaps/oils (aphids)
- **Encourage beneficial insects**
- **Avoid excess nitrogen**

Conventional Use

- Apply only when thresholds are exceeded
- Rotate modes of action



Beneficials



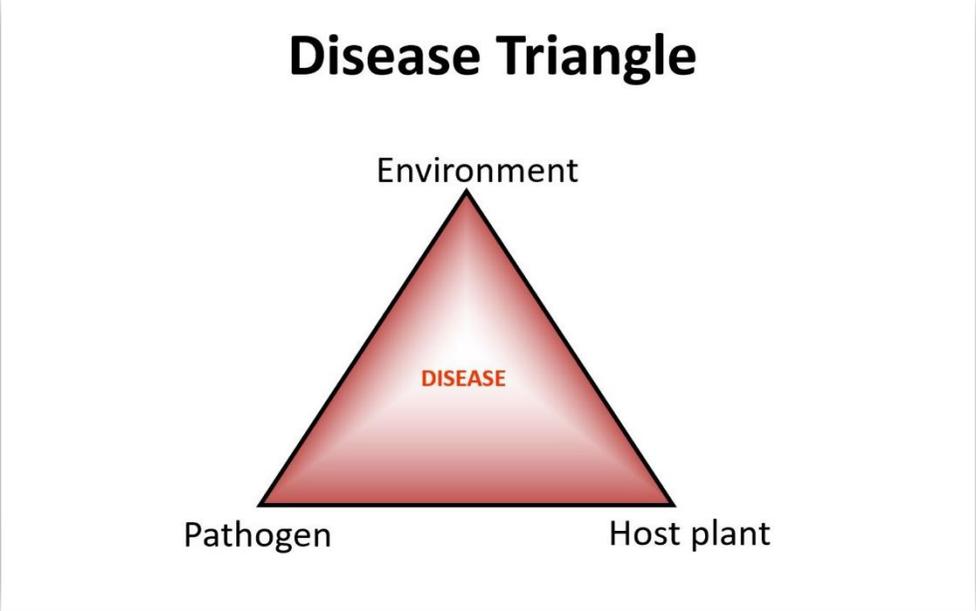
Insect Pest Management

Category	Organic Tactic / Product	Target / Notes
Biological	Beneficial insects (e.g., green lacewings, parasitoid wasps)	Natural predators of aphids and soft-bodied pests; support conservation biological control
Pheromone-based	Mating disruption (e.g., PTB pheromone dispensers)	Reduces mating of peach twig borer and eastern/Oriental fruit moth; best in low-pressure blocks
Microbial insecticide	Bacillus thuringiensis (Bt; e.g., DiPel®, Thuricide)	Effective against early larval stages of caterpillars like PTB/OFM; OMRI-approved
Botanical insecticides	Spinosad (Entrust®)	OMRI-approved spinosyn that controls larvae of PTB/OFM and some other pests; timing critical
Oils – dormant or summer	Horticultural / white oils	Suppress scale, aphids, mites; suffocates soft-bodied pests; low toxicity; approved for organic use
Insecticidal soaps	Potassium fatty acid soaps	Contact control for aphids, soft-bodied pests; low residual; safe for many beneficials
Reflective particle film	Kaolin clay (e.g., Surround®)	Helps deter egg-laying/feeding by some pests; also reduces heat/sunburn risk
Cultural sanitation	Orchard cleanup, pruning	Reduces overwintering sites for pests and improves natural enemy access
Habitat manipulation	Trap crops / companion plants	Attract pests away or bolster beneficial insects (marigolds, herbs)
Mechanical removal	Physical removal or water blasting	Useful on small blocks for aphid colonies or egg masses
Organic oils	Neem oil (cautious use)	Broad activity against some sap-suckers; use carefully (pollinator timing)

Disease Management



Fruit Brown Rot



Blossom Blast



Peach Leaf Curl



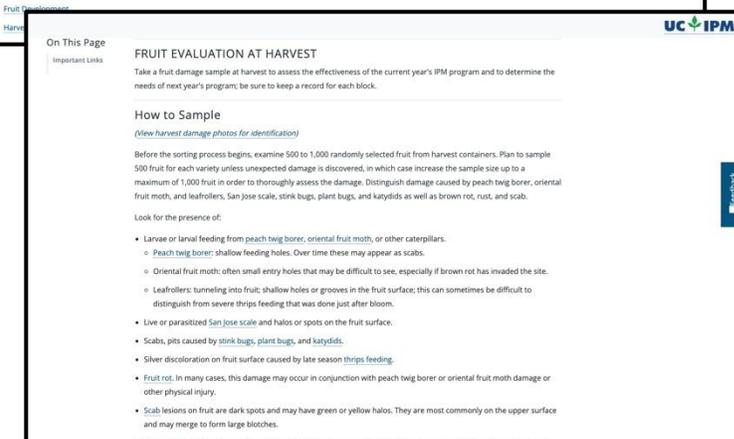
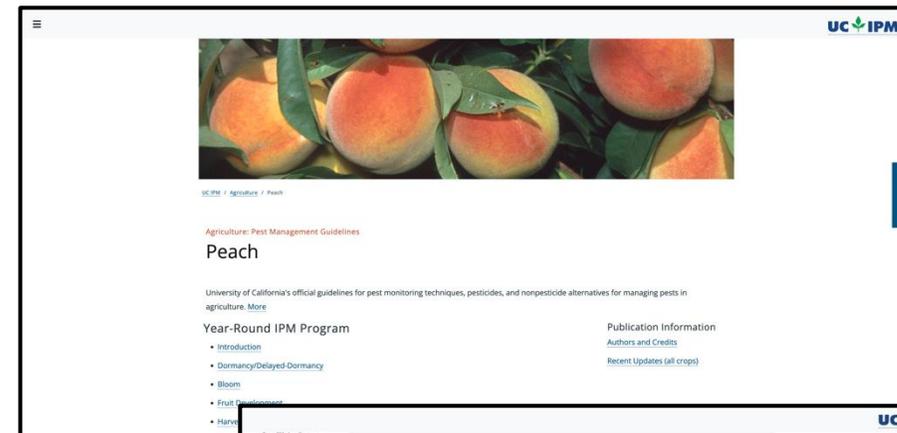
Bacterial Canker

Disease Management

Category	Organic Tactic / Product	Target Disease(s)	Notes
Sanitation & Cultural	Remove mummified fruit & diseased wood	Brown rot, others	Reduces overwintering inoculum; essential every season (remove fruit mummies/rot)
Pruning / Canopy	Prune for airflow & sunlight	All foliar diseases	Improves drying and spray coverage; reduces infection risk
Copper fungicides*	Copper (various OMRI formulations)	Brown rot, leaf curl, shot hole	Preventative protectant; avoid overuse due to phytotoxicity; timing critical around bud stages
Sulfur fungicides*	Sulfur (OMRI applications)	Brown rot, scab, shot hole	Must be applied before infection; timing and sensitive to heat
Biological fungicides*	Bacillus subtilis (e.g., Serenade® ASO, Double Nickel)	Brown rot & other fungal diseases	OMRI-listed biologicals; best used preventatively
Particle films	Kaolin clay (Surround®)	Suppression of diseases + insect pests	Physical barrier; also reduces heat/sunburn; not a primary fungicide
Irrigation & soil management	Avoid overhead irrigation; improve drainage	Foliar diseases (brown rot, shot hole)	Keeps canopy drier, reduces infection periods

Resources

UC IPM (<https://ipm.ucanr.edu/agriculture/peach/#gsc.tab=00>)



The Home Orchard, 2nd Edition

Author: KARLIK, NORTON, INGELS, ET AL

<https://anrcatalog.ucanr.edu/Details.aspx?itemNo=3485-2#FullDescription>

HOME > LAWN & GARDEN > GARDENING & PESTS > GROWING FRUITS & NUTS > THE HOME ORCHARD, 2ND EDITION

The Home Orchard, 2nd Edition



Publication Number: 3485-2

Copyright Date: 2025

Length: 240 pp.

Language: English

ISBN-13: 978-1-62711-220-8

Author: KARLIK, NORTON, INGELS, ET AL

Inventory Type: Trade Paperback

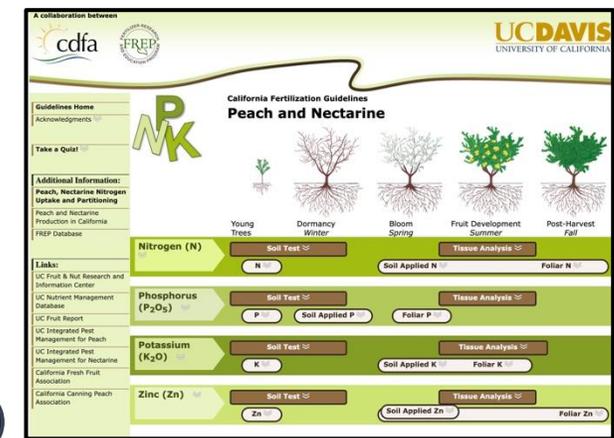


UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Cooperative Extension

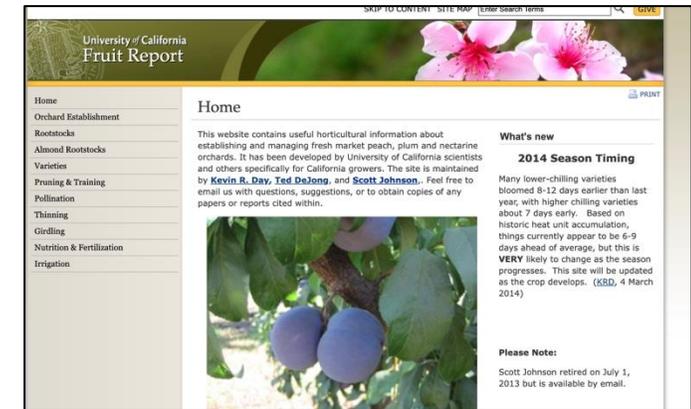
Resources

California Fertilization Guidelines: Peach and Nectarine
(http://geisseler.ucdavis.edu/Guidelines/Peach_Nectarine.html#Nitrogen)



Fruit Report (<https://ucanr.edu/sites/fruitreport/>)

Contains useful horticultural information about establishing and managing fresh market peach, plum and nectarine orchards.



Fruit & Nut Research & information Center
(<https://fruitsandnuts.ucdavis.edu/>)

Focuses on updating content, improving accessibility and support to California's fruit and nut industries, and increasing public awareness of UC accomplishments.



Thank you.

Raymond Mireles, M.S.

**UCCE Fruit and Almond Area Advisor
Fresno and Tulare Counties**

Email: jrmireles@ucanr.edu

Phone: (559)-684-3311

4437-B S. Laspina St. Tulare, Ca, 93292