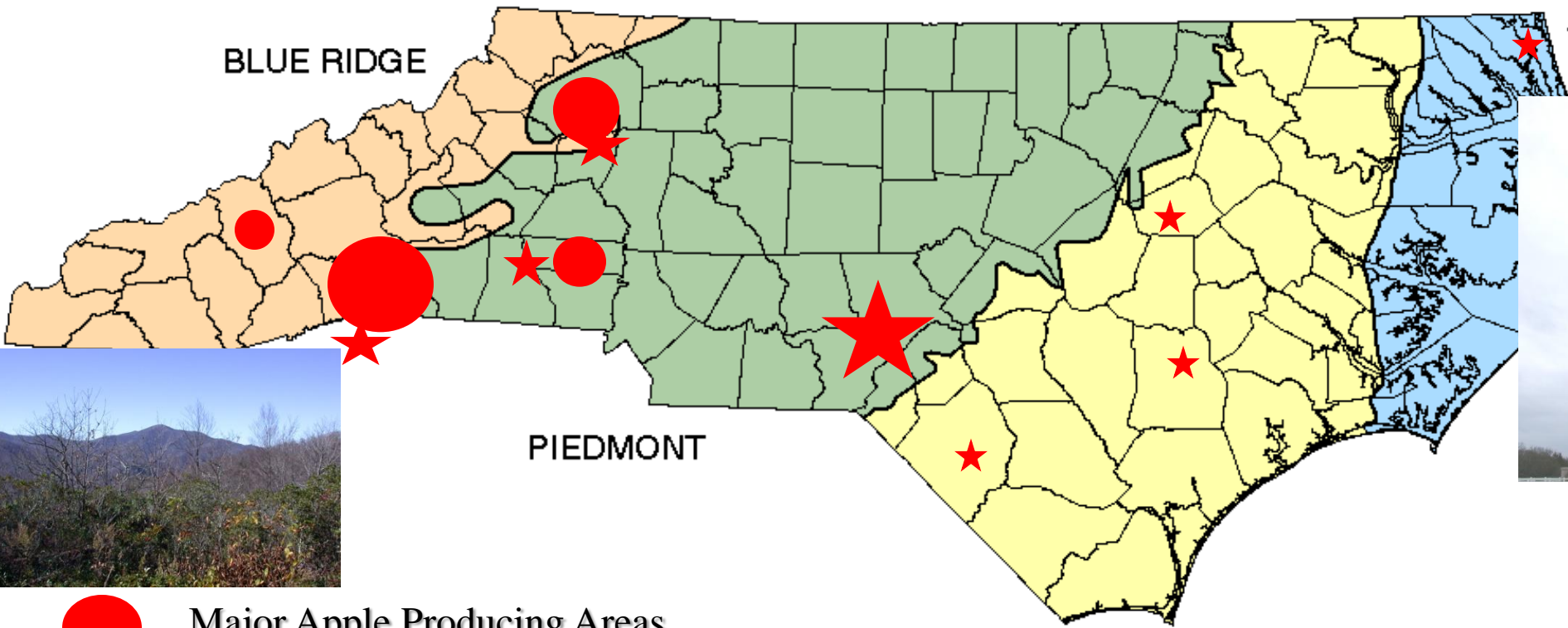




# The North Carolina Peach Industry

Dr. Michael L. Parker  
Department of Horticultural Science  
North Carolina State University







BLUE RIDGE

TIDEWATER

PIEDMONT

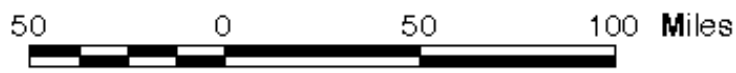
MIDDLE AND UPPER  
COASTAL PLAIN



-  Major Apple Producing Areas
-  Major Peach Producing Areas

NORTH CAROLINA CENTER FOR  
GEOGRAPHIC INFORMATION & ANALYSIS

August 1997



# The North Carolina Peach Industry

- Approximately 4,000 bearing acres
- Historically, much larger area – 1946 – 37,500 acres
- Approximate market value of \$12-15 million
- All marketed through retail, local wholesale markets, and Farmer's Markets
- Major Varieties:
  - ❖ Contender
  - ❖ Winblo
  - ❖ Cresthaven
  - ❖ Rehhaven
  - ❖ Big Red
  - ❖ Norman
  - ❖ Georgia Belle
  - ❖ Loring
  - ❖ Carolina Belle
  - ❖ Derby
  - ❖ Biscoe



# PEACH CULTIVARS



Introduced by the  
North Carolina Agricultural Research Service  
1965 to 1981

1965-1981

Whynot

Hamlet

Derby

Correll

Candor

Rubired

Pekin

Clayton

Norman

Troy

Winblo

Ellerbe

Biscoe

Emery

1979-Present

Carolina Red (n)

Galactica (p)

Carolina Belle

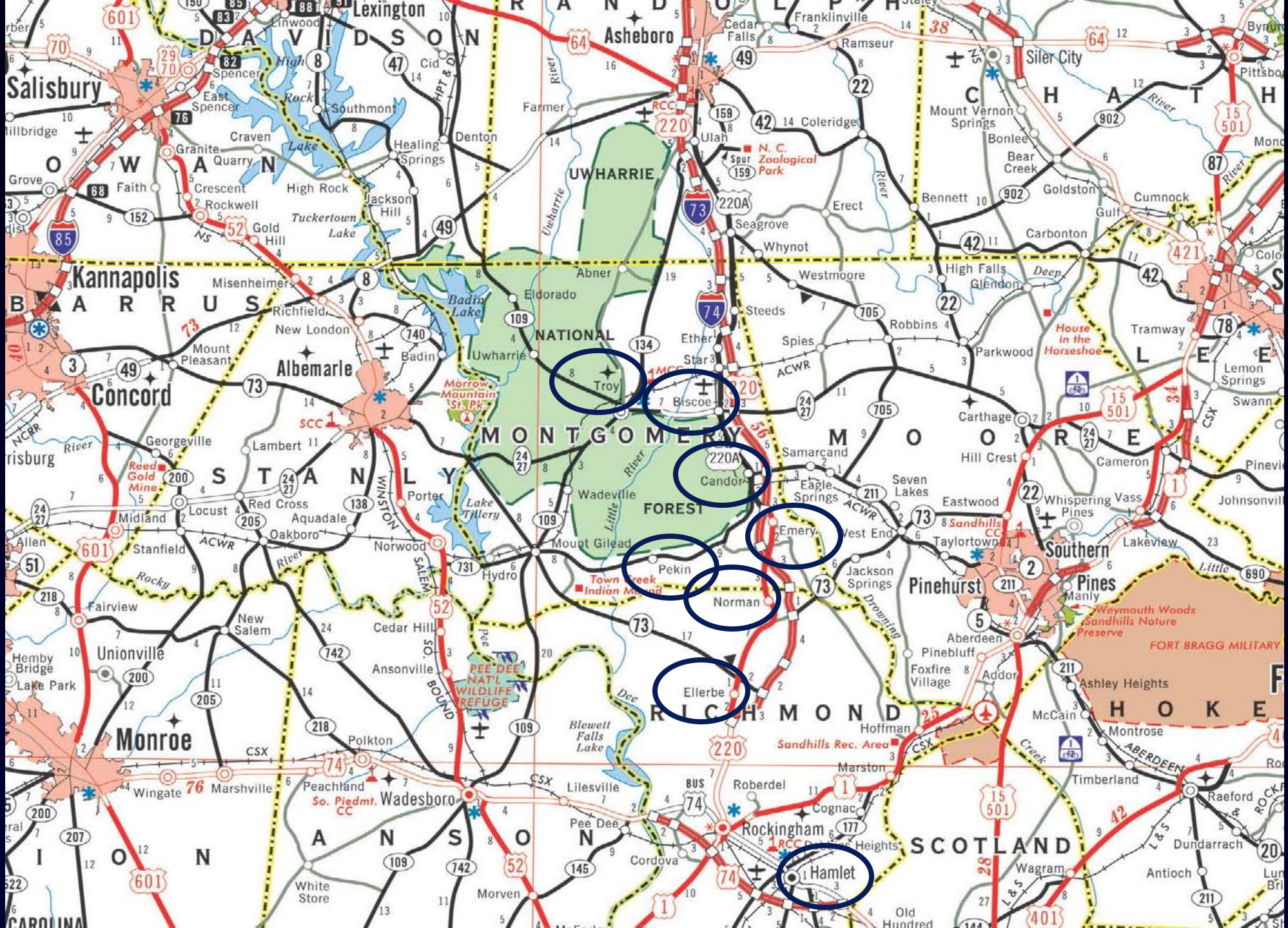
Challenger

Intrepid

Contender

China Pearl

Carolina Gold



Troy

Biscoe

Candor

Emery

Norman

Ellerbe

Hamlet

Salisbury

Asheboro

Siler City

Kannapolis

Albemarle

Concord

MONTGOMERY

RICHMOND

Monroe

Pinehurst

Southern Pines

HOKEL

SCOTLAND

Rockingham

CAROLINA







# Peach Production in North Carolina – Striving For Profitability



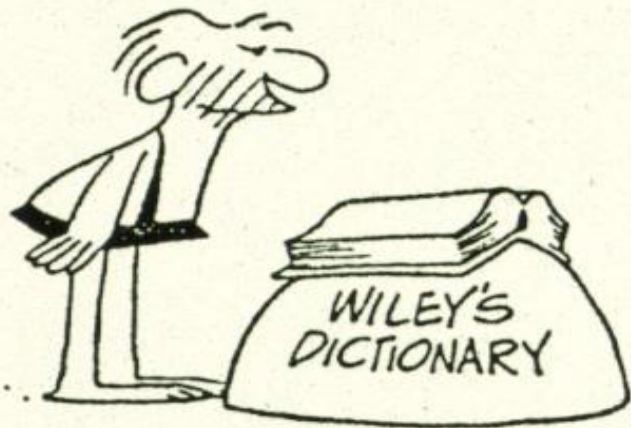
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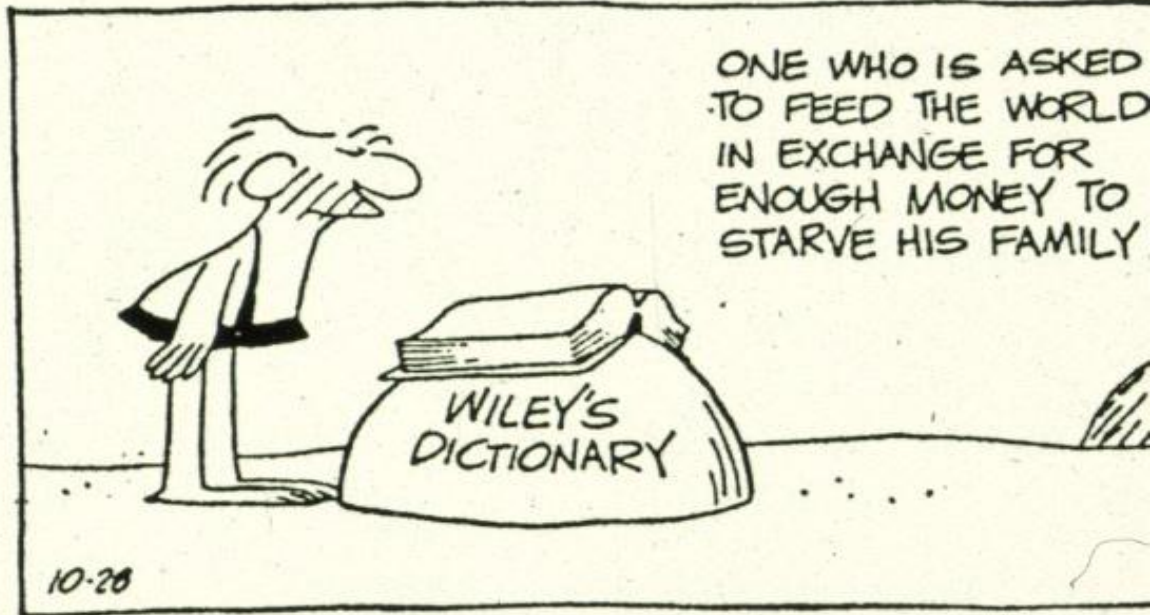


B. C.

farmer n.



© News America Syndicate, 1988



ONE WHO IS ASKED  
TO FEED THE WORLD  
IN EXCHANGE FOR  
ENOUGH MONEY TO  
STARVE HIS FAMILY

10-28

*Historically, when farmers were faced with low prices and economic hardships, they increased their planted acreage – only reducing fixed costs*

**DIVERSIFICATION**- Modifying a farming operation by increasing the number of higher value crops produced and/or markets utilized by the grower

**GOAL OF DIVERSIFICATION** – To minimize the economic risk to the grower and **INCREASE** farm **PROFITS**

*Fruit growers must spend as much time marketing their crop as they do in producing their crop in order to maximize returns*

# Market Diversification

- Direct to consumer
  - ❖ Retail Markets
    - Roadside
    - Pick-your-own
- Wholesale distributors
- Farmers markets
- Niche markets

# Orchard Economics

## Down and Dirty

### Expenses

Orchard Establishment through the third year -	\$ 1,836
Annual Expenses during production	- \$ 1,862

### Potential Annual Gross Returns\*

Sales price of 15.00/bu	\$ 4,500-6,000/acre
Sales price of 20.00/bu	\$ 6,000-8,000/acre
Sales price of 25.00/bu	\$ 7,500-10,000/acre

\*Assume early season cultivars yield 300 bu/acre and mid-late season cultivars yield 400 bu/acre





**HOME MADE**

CAKE CONE ...2.00	PEACH DUMPLING ...2.50	MELON BALLS ...3.00	
CUP ...2.00	with ice cream ...3.00	WATER ...1.00	
WAFFLE CONE ...2.75	SLICED PEACHES ...2.00	COKE ...1.00	
PINT ...3.00	with ice cream ...3.00		

*Enjoy Peaches All Year, Try Our New...*

**Peach Butter**  
**Peach Preserves**  
**peach Jelly**  
**peach Salsa**

16oz. \$4.50

PICK-UP

OPEN

ORDER HERE



JOHNSON'S  
**PEACHES**  
SINCE 1934  
A family tradition of quality year after year!  
**PICKLE PEACHES**  
NET. 32 FL. OZ. (946ml)

JOHNSON'S  
**PEACHES**  
SINCE 1934  
A family tradition of quality year after year!  
**PEACH JELLY**  
NET. WT. 16 OZ. (453g)  
REFRIGERATE AFTER OPENING

JOHNSON'S  
**PEACHES**  
SINCE 1934  
A family tradition of quality year after year!  
**PEACH SALSA**  
NET. 15 FL. OZ. (443ml)

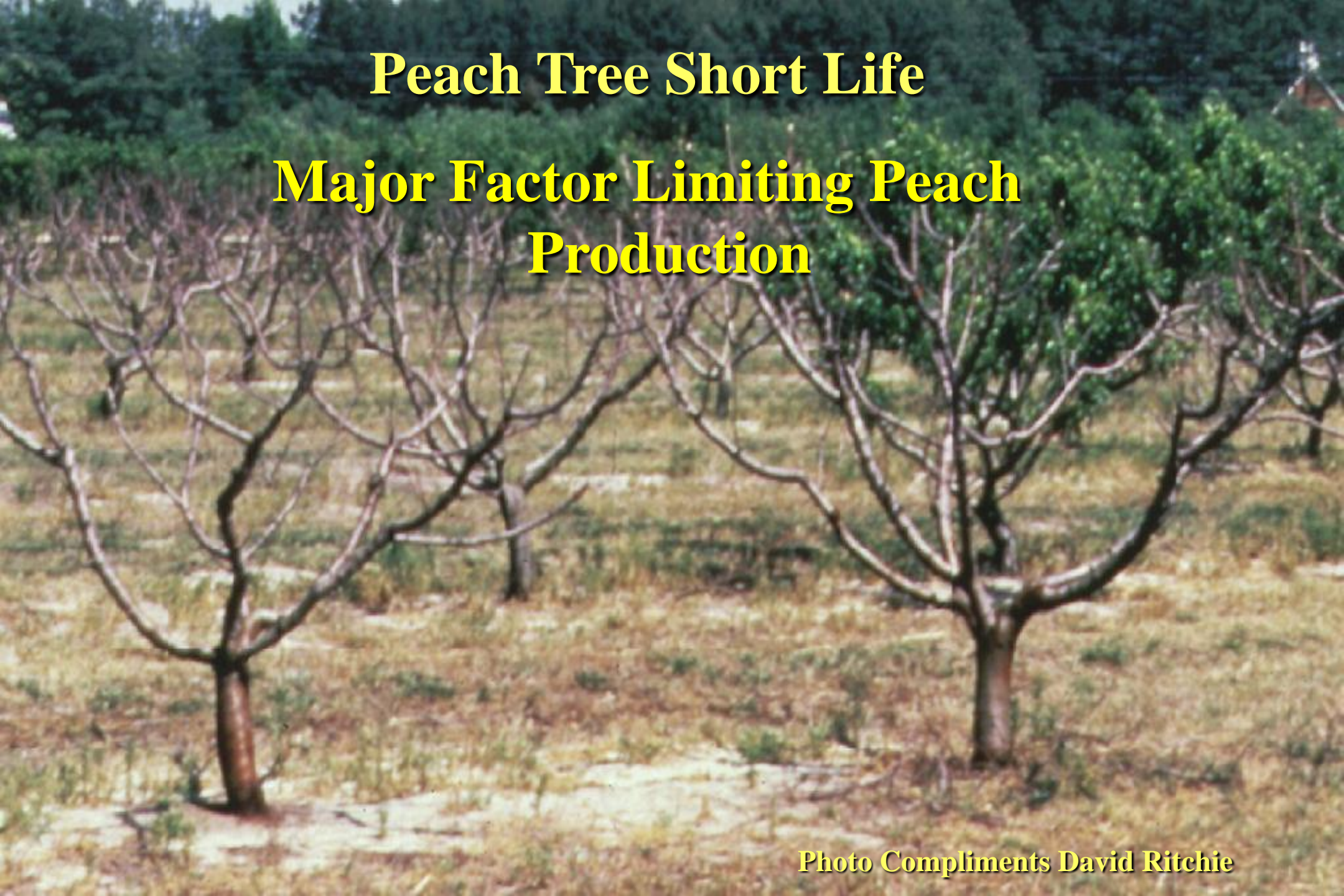
JOHNSON'S  
**PEACHES**  
SINCE 1934  
**PEACH SYRUP**  
NET. WT. 16 FL. OZ. (473ml)

 **North Carolina  
Farm Fresh**  
[www.ncfarmfresh.com](http://www.ncfarmfresh.com)



# **Peach Tree Short Life**

## **Major Factor Limiting Peach Production**



**Photo Compliments David Ritchie**

# Peach Tree Short Life (PTSL)



**Ring nematodes are  
a predisposing  
factor!**





# 10-Point Management Program

- Apply lime before planting to adjust pH to 6.5 in top 16” of soil
- Subsoil before planting to break up hardpans and improve root development
- In sandy soils and where nematodes are a problem, preplant fumigate
- Plant trees which have been grown in fumigated soil or certified to be free of nematodes
- Plant trees on Lovell, Halford or Guardian rootstock, depending on previous history and nematode pressure
- Apply nutrients and lime as needed based on soil and foliar analysis
- Prune as late as possible, never before January 1 and preferably after February 15.
- Use recommended herbicides for weed control
- In sites where preplant fumigated, postplant fumigate at 2 year intervals
- Remove and destroy promptly all dead or dying trees, including as much of the root system as practical



Which rows were preplant fumigated?






**MUST Have  
Consistent Cropping to  
Ensure Profitability**



# Critical Temperatures For Peach Blossoms

## Developmental

<u>Stage</u>	<u>10% Kill C (F)</u>	<u>90% Kill C (F)</u>
First Swell	-7.8 (18)	-17.2 (1)
Calyx Green	-6.1 (21)	-15.0 (5)
Calyx Red	-5.0 (23)	-12.8 (9)
First Pink 	-3.9 (25)	-9.4 (15)
First Bloom	-3.3 (26)	-6.1 (21)
Full Bloom 	-2.8 (27)	-4.4 (24)
Petal Fall	-2.2 (28)	-3.9 (25)

Ballard, Proebsting, Tukey, 1984, WSU

# Frost Protection Options

Not All Are Created Equal!

- Cultivar Selection
- Site Selection
- Orchard Floor Management
- Wind Machines
  - ❖ With or Without Heat
- Overhead Irrigation
- Preventive Sprays
- Frost Dragon

# Peach Cultivar Selection Considerations

- Peach cultivars should be selected that mature during the entire market season
- Selected cultivars should have at least a 750 hr chilling requirement
- Cultivars should have some degree of resistance to Bacterial Spot

# Peach Varieties

Use Varieties to Space Out Harvest Season

- Candor
- Clayton
- Redhaven
- Derby
- Norman
- Intrepid
- Challenger
- Contender
- Winblo
- China Pearl
- Others

# Contender





# Challenger and Intrepid

- ❖ Redhaven x (Reliance x Biscoe)
- ❖ Cold hardy
- ❖ Ripe late June (Challenger) to early July (Intrepid)
- ❖ Below average firmness

Challenger



Intrepid



# China Pearl

- ❖ Contender x PI134401
- ❖ White fleshed, low acid
- ❖ Ripe early August
- ❖ Cold hardy
- ❖ High chilling rqt.
- ❖ Spot susceptible

# China Pearl



# Carolina Gold (NC98-83)

- ❖ Biscoe x (Encore x San Miquel)
- ❖ Ripe - 2 weeks after 'Contender'
- ❖ Spot resistant
- ❖ Fruit size = 3.0 inches
- ❖ Excellent flavor and texture



NC 98-83

Slides Compliments of Dr. Dennis Werner

# Galactica - (NC98-42)

- ❖ Peento (donut)
- ❖ NCN4 x 'Hangchow'
- ❖ White flesh - semi-acid
- ❖ Spot susceptible
- ❖ Excellent flavor and texture
- ❖ 750-800 hr chilling requirement



NC 98-42

Slides Compliments of Dr. Dennis Werner



# Peach Tree Cropping in Western North Carolina

Trees in 10<sup>th</sup> leaf, 7 cropping seasons with crop loss in 2007

<u>Cultivar</u>	<u>Cumulative Crop (lbs/tree)</u>
Candor	600
Challenger	747*
Carolina Belle	606
Intrepid	795*
Winblo	539
Contender	769*
China Pearl	888*



**Orchard Floor  
Management  
Can Affect Many  
Aspects of a  
Peach Orchard**



# Why Use a Vegetative Cover?

- Erosion control
  - Wind and water
- Support equipment movement under wet conditions
- Moderate Spring temperature fluctuations
- Maintain soil structure
- Increase moisture infiltration
- Encourage nutrient recycling

# Qualities of an Acceptable Ground Cover?

- Minimizes Erosion
- Minimal competition with tree
- Supports equipment movement
- Does not interfere with labor
- Does not interfere with pollination
- Does not harbor pests
  - Insect, disease, vertebrate

# Peach Trunk Cross-Sectional Area 'Biscoe'/'Lovell' (Prunus persica L. Batsch.)

<u>Ground Cover</u>	<u>TCSA (cm<sup>2</sup>)</u>
Clean	73 a
Nimblewill	72 a
Centipede	31 b
Brome	41 b
Bahia Grass	7 c
Weedy Check	32 b





# Peach Rooting

'Biscoe'/'Lovell' (Prunus persica L. Batsch.)

## Ground Cover

## Total Root #

Clean	745 a
Nimblewill	725 a
Centipede	516 b
Brome	495 b
Bahia Grass	276 c
Weedy Check	298 c



# Bare Soil



# Peach Rooting 'Biscoe'/'Lovell'

TREE

BARE

Root Density  
per 100 sq cm

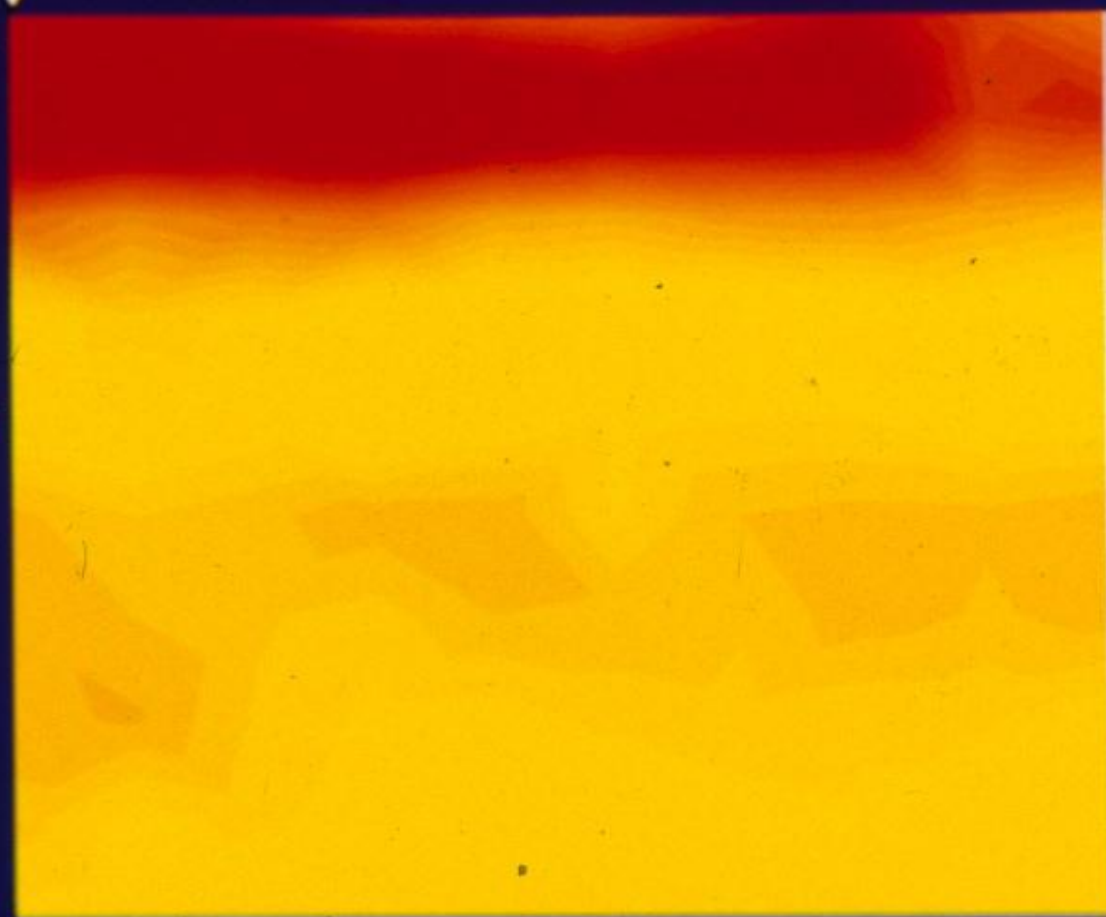
DEPTH (cm)

50

100

50

DISTANCE FROM TREE (cm)



5

4.5

4

3.5

3

2.5

2

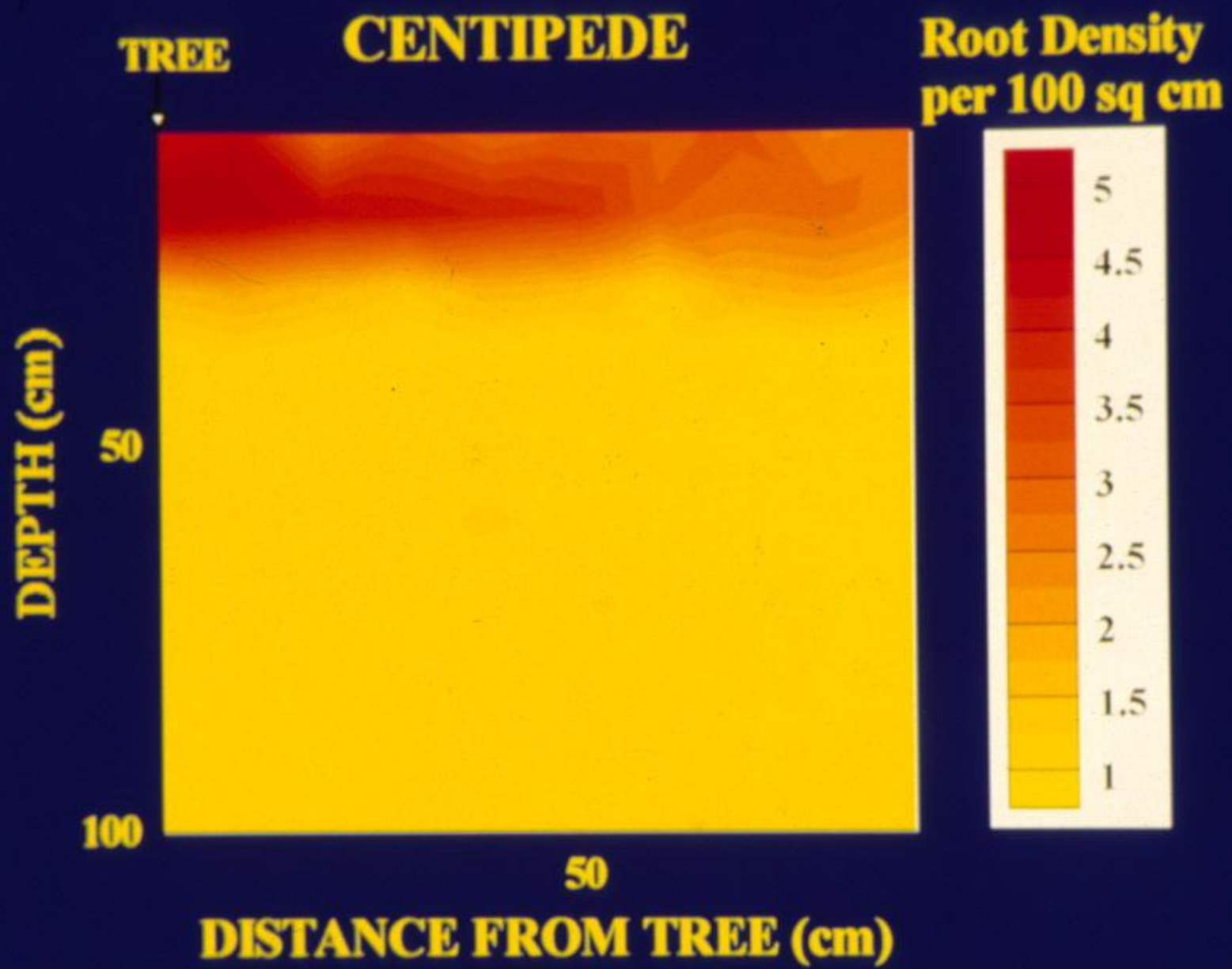
1.5

1

# Centipede



# Peach Rooting 'Biscoe'/'Lovell'



# Bahia Grass



# Peach Rooting 'Biscoe'/'Lovell'

TREE

BAHIA

Root Density  
per 100 sq cm

DEPTH (cm)

50

100

50

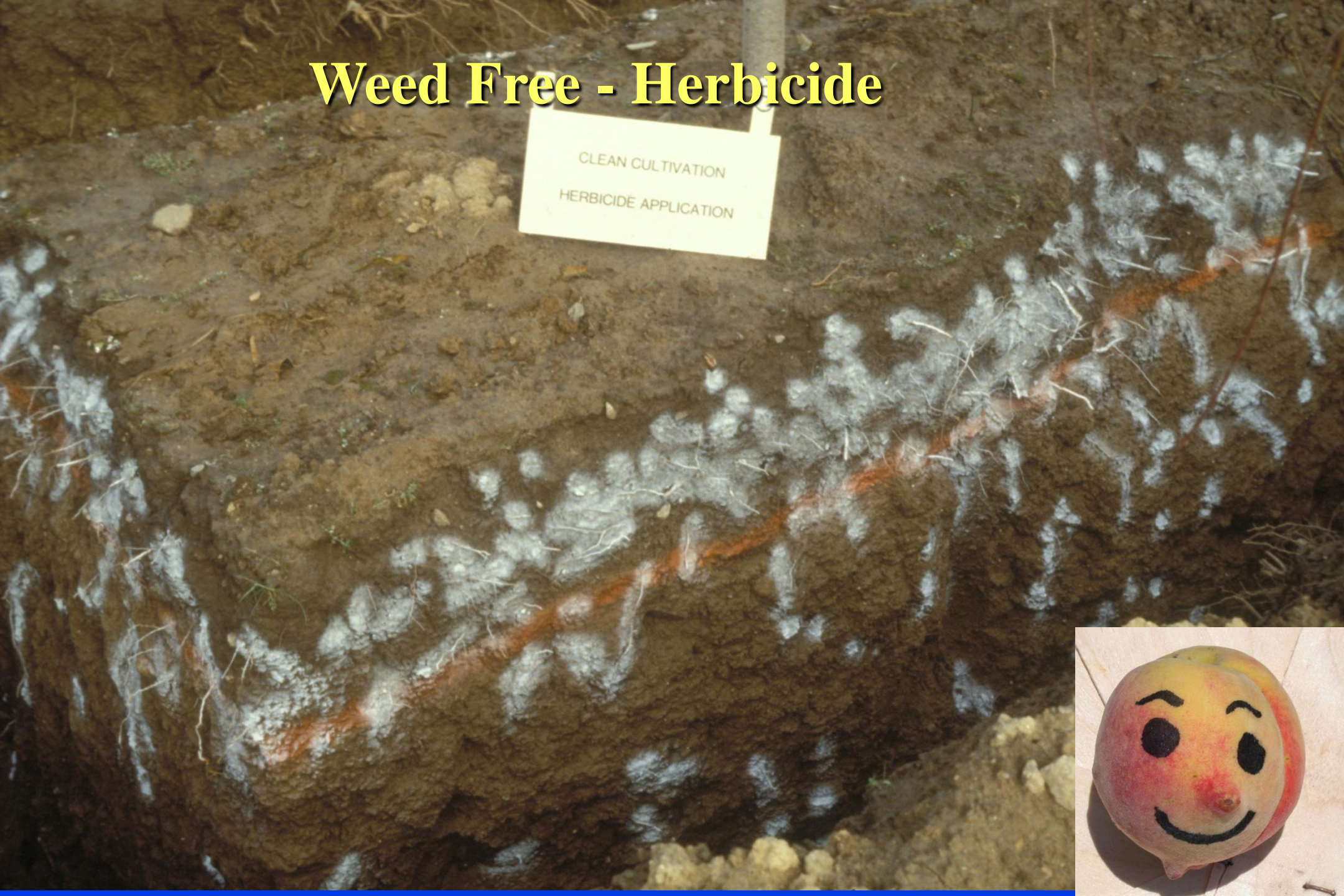
DISTANCE FROM TREE (cm)





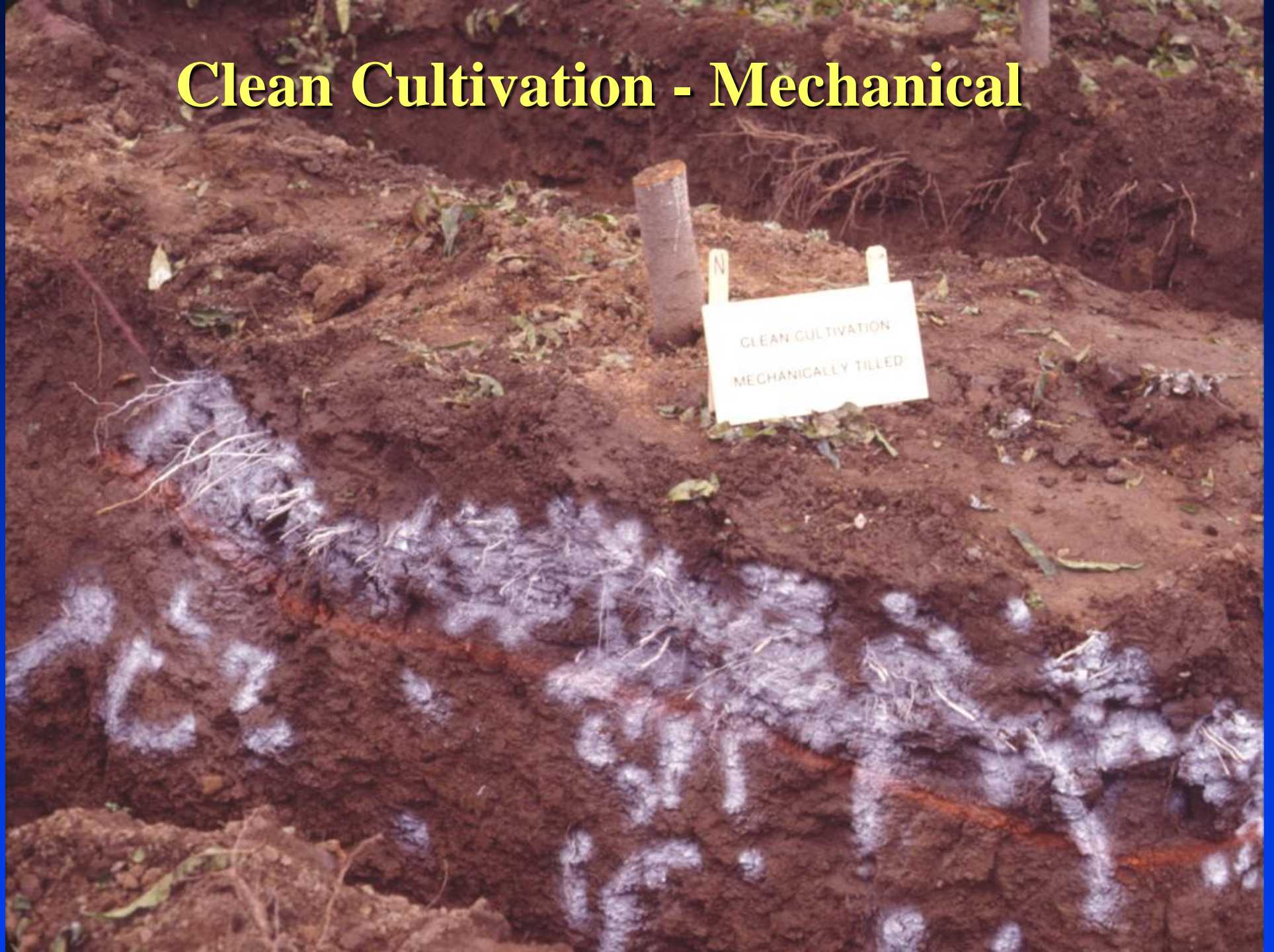
# Weed Free - Herbicide

CLEAN CULTIVATION  
HERBICIDE APPLICATION





# Clean Cultivation - Mechanical





# Wintergreen Fine Fescue



# K-31 Tall Fescue

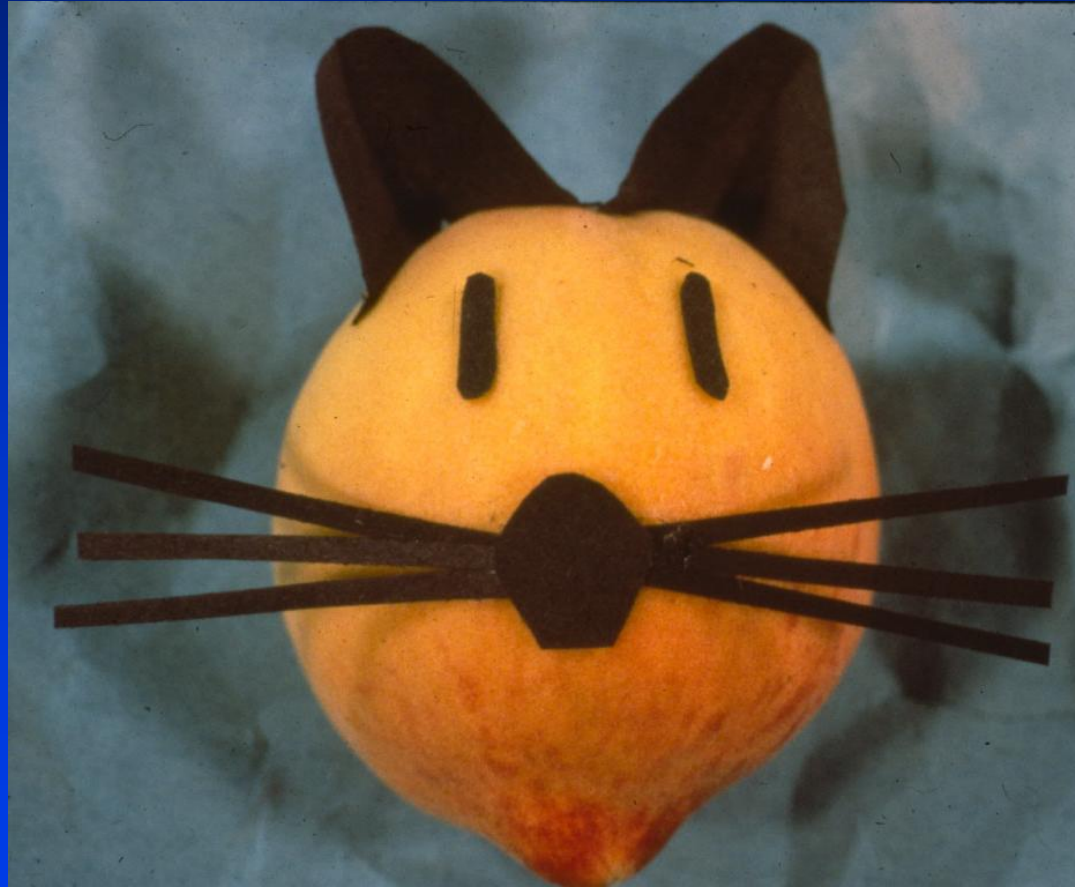


# Peach Relative Moisture Levels Under Sod (June)

	<b>Depth (in)</b>		
<b><u>Ground Cover</u></b>	<b><u>6</u></b>	<b><u>12</u></b>	<b><u>18</u></b>
Clean-Herbicide	73	77	84
Clean Cultivation	74	88	89
Park Ken. Blue	24	41	37
Wintergreen F.F.	31	45	58
Peak Alfalfa	23	26	26
W. Dutch Clover	17	16	11



# Insect Management









# Prunus Stem Pitting



Pits and grooves  
in wood surface

Premature fall color

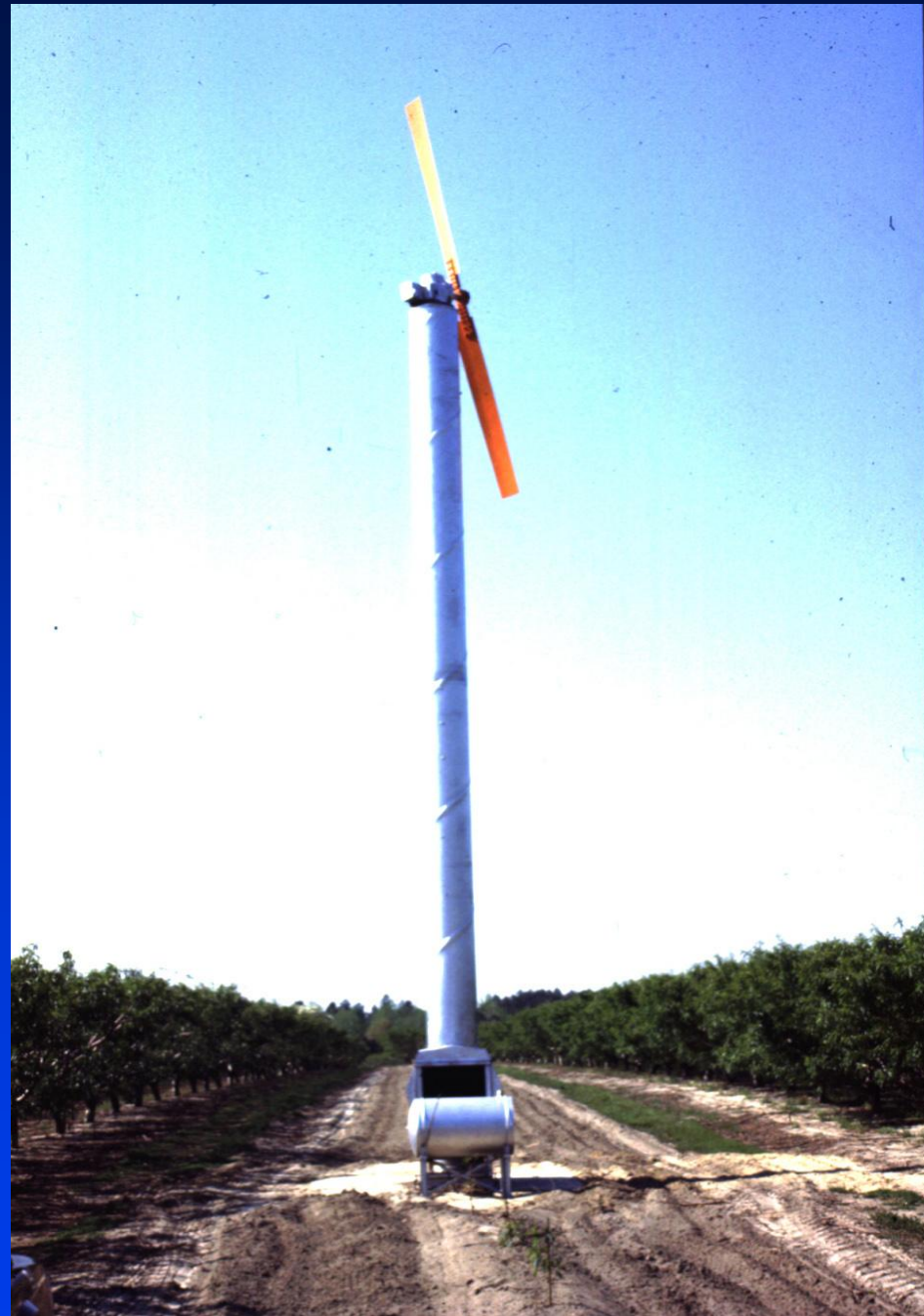


Thick, spongy bark

# Ground Cover Management

- Annual maintenance of herbicide strip
  - Drip line minimum
- Vegetative grass cover in drive alley
- Eliminate winter annuals in cover
- Suppress height of grass cover
  - Mow or chemically suppress

# Frost/Freeze Protection Wind Machines





It's a  
snap



Agricultural Frost Control

# FROSTgard



CROP PROTECTION

FROSTGARD is a spray concentrate of anti frost materials which can be applied by air or ground prior to anticipated frost conditions.

FROSTGARD has been shown to afford some protection within several hours after application, however best results require application 24 to 48 hours before frost conditions occur.

**IMPORTANT** ... FROSTGARD is a leaf to help reduce damage from frost. Its use is recommended in conjunction with sound cultural and management practices. The use of FROSTGARD on unhealthy plants and/or the misuse of FROSTGARD may produce undesirable results. FROSTGARD should not be applied to runoff as phytotoxicity may occur.



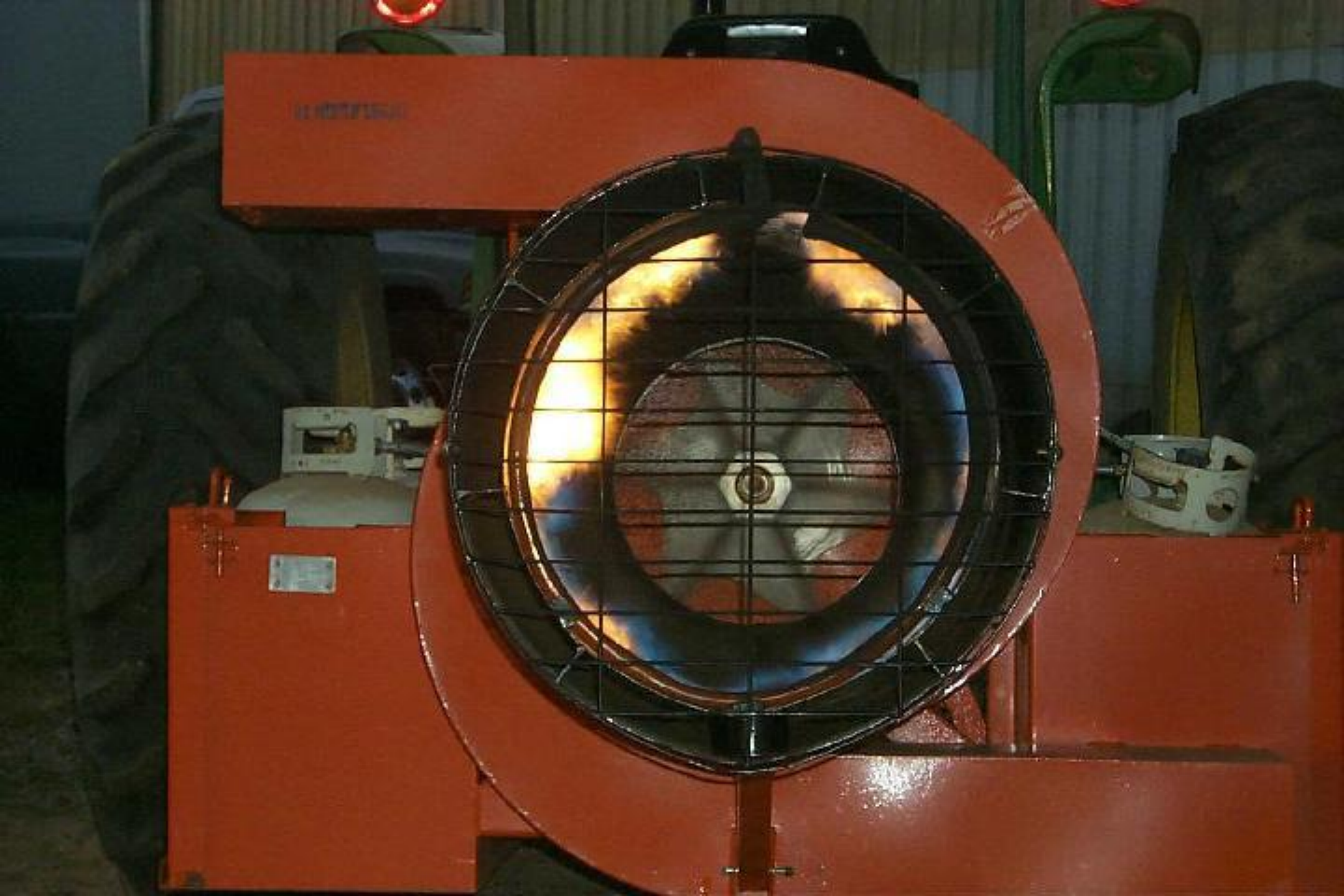
Manufactured by  
**CUSTOM  
CHEMICIDES**



P.O. BOX 11216 - FRESNO, CA 93772  
MADE IN U.S.A.

See directions on back.









**Thank You!**