

FRUIT AND ROSE RESEARCH - OVERTON, 1983

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by

Lynn Brandenburger.....County Extension Agent, Smith Co.
Donald L. Cawthon.....Assistant Professor, Fruits
D. R. Earhart.....Research Associate, Vegetables
John Lipe.....Area Extension Horticulturist,
Fredericksburg
D. R. Paterson.....Professor, Vegetables, Roses
H. Brent Pemberton.....Assistant Professor, Roses
Stan Peters.....Technician I, Fruits
George Philley.....Extension Plant Pathologist
W. E. Roberson.....Technician I, Roses
James V. Robinson.....Extension Entomologist
G. A. Rowland.....Technician I, Vegetables
Ruth A. Taber.....Research Scientist, Plant Sciences
Liz Wellborn.....Research Assistant, Fruits

Texas A&M University Agricultural Research
and Extension Center at Overton

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THE FRUIT RESEARCH PROGRAM AT OVERTON (AN OVERVIEW)

Donald L. Cawthon

Dr. John Lipe has recently left the position of project leader for fruit research at Overton. During his 10 years at Overton, Dr. Lipe introduced new fruit species to the area and identified some of the best adapted fruit crops and the most promising varieties available.

As a new research program is developed, three major areas of research will be addressed to provide pertinent information to the fruit industry in Texas. These research areas include:

- 1) Preharvest physiology - Because of the potential for major fruit production in East Texas, a need exists to optimize cultural production systems for efficient and competitive fruit production. Plans for preharvest research include plant nutrition, irrigation rates and timing of applications, irrigation water quality, plant densities, canopy management, trellising and training and plant growth regulants.
2. Postharvest handling - Marketing problems are currently being encountered, both from the standpoint of developing new marketing outlets and from inadequate handling techniques. Loss of both nutritional and sensory quality through the distribution and marketing channels is a problem. Plans for work in the area of postharvest physiology include utilization of modified and controlled atmosphere storage, packaging, anti-respirants, fruit firming agents and decay control.

- 3) Fruit ripening physiology - Uniformity of fruit ripening is of universal concern with many fruit species and can cause extreme harvest related problems. Because of the general trend towards a reduction in availability of the labor force for hand harvesting fruit crops, harvest mechanization is receiving much attention. However, due to uneven fruit ripening, many crops are not adapted to a once-over machine harvest because of the wide range of fruit maturities present at a given time. Research in the area of ripening physiology will deal with the hormonal control of ripening phenomena.

New research projects are currently being initiated to answer problems in these three general areas. Specific fruit research projects currently being initiated or in progress are listed below.

A. Peaches

1. Variety trials - initiated in 1973 as an open-ended planting with additional varieties periodically added.
2. Dwarfing rootstocks and tree training - initiated in 1983 to evaluate high density plantings of standard varieties on dwarfing and standard rootstocks. Trees to be trained to "Open-center" and "Y" systems, with and without summer pruning.
3. Irrigation water placement and fertilization - to be initiated in 1984 to evaluate the effects of irrigation method, placement of irrigation water and fertilization through the irrigation systems.
4. Tree mulch and irrigation rate - to be initiated in 1984 to evaluate the effects of under-tree mulching and

5. Irrigation water placement and soil management

Initiated in 1983 to compare effects of dip emitters and under plant low volume spray emitters, plant mulching, and soil sods on water use efficiency, soil temperatures, root distribution and production.

6. Irrigation water quality

Initiated in 1983 to evaluate high sodium and high pH water for blueberry irrigation and means of correction for poor water quality.

7. Postharvest dips

Initiated in 1982 to compare effects of hand and machine harvesting, and postharvest dips (hot water, fungicide, fruit waxes) on postharvest behavior of blueberries.

8. Postharvest packaging

Planned for 1983 to evaluate packaging films which differ in permeability to CO_2 and O_2 , and to evaluate use of in-package SO_2 emitters.

C. Grapes

1. Muscadine and bunch grape variety trials

2. Absciscic acid and fruit ripening

Initiated in 1982 to determine relationship of endogenous changes of absciscic acid to uneven ripening of muscadine grapes and to monitor movement of ^{14}C -ABA into fruit at different maturity stages.

3. Factors affecting sink strength

Initiated in 1982 to monitor movement of ^{14}C -photosynthate from leaves into fruit at different

cluster positions, with different seed contents, and at different endogenous hormonal levels.

4. Muscadine pruning

To be initiated in 1984 to determine optimum pruning severity, spur length and canopy management system for muscadines in East Texas.

5. Seedless table grapes - Pruning and trellising

Experiments are to be initiated in 1984 on disease resistant labrusca types.