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FRUIT AND NUT CROPS RESEARCH IN TEXAS, 1987

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SUBJECT TOPIC: Viticulture
INVESTIGATOR(S): William N. Lipe - TAES, Lubbock
CROP(S): Grapes
ABSTRACT:

Objectives:

1. Evaluate cultivars and rootstocks for adaptability to extreme winter conditions, juice quality (especially pH), and yield.
2. Evaluate cultural management practices including irrigation, fertilization, growth regulation and training to maximize wine quality and winter hardiness.
3. Evaluate weed control systems and vineyard ground cover systems to maximize maintenance efficiency and quality.
4. Investigate the life cycle, economic injury threshold and control measures of Amphicerus bicaudatus Say, (Apple Twig Borer) in grapes.

General Approach:

1. Cultivars made available through breeding programs are evaluated for cold tolerance, fruit quality and yield under Lubbock, Halfway and Pecos environmental conditions. Available rootstocks possessing desirable traits are also being tested at each site for vine vigor. Priority is given to rootstocks that impart low vigor and early maturity to the scion cultivar. The three sites differ in regards to risk management. Lubbock has sandy loam soils with risk from early or late extreme temperatures. Halfway has clay loam soils, is colder than Lubbock by 9-18° (5-10°F) but has 2 week later budbreak so spring frost not as much a risk. Pecos has poor soil and water quality (2200-2500 ppm salt) and high probabilities of spring frost.
2. Encourage the use of petiole analysis to monitor nitrate levels as they relate to excess vigor, winter injury and juice quality.
3. Monitor soil water extraction rates with neutron probe and moisture blocks to determine the extent of available moisture in the soil.
4. Evaluate Pix and Paclobutrazol for regulation of vine growth and winter survival.

5. Evaluate GA for bunch loosening and Botrytis control in Chenin Blanc and its effect on ultimate wine quality.
6. Evaluate cane positioning and tying systems on ultimate wine quality and production economics.
7. Develop a vineyard floor maintenance system to include mechanically tilled, chemically bare and cover crop maintained systems. Chemicals are being evaluated to aid in weed control in each system.
8. Determine emergence and infestation patterns and economic thresholds of Apple twig borer through use of cages in vineyard sites throughout the area, and develop economic control methods.

Findings:

1. Several recommended cultivars are being grown successfully in the Lubbock area but are not adapted to the heavier soils and colder conditions northwest of Lubbock. For Lubbock, 'Chenin Blanc', 'Cabernet Sauvignon', 'Chardonnay', 'Reisling' and 'Sauvignon Blanc' are the primary cultivars with 'Simillon', 'Merlot', 'Cabernet Franc' and 'Muscat Canelli' as blenders. At Halfway, 'Sauvignon Blanc', 'Cabernet Sauvignon' and 'Chenin Blanc' have proven to be too winter injury susceptible. Rootstock work is preliminary, but past evidence with Dogridge and Courderc 1613 indicates that the vigorous Dogridge may contribute to scion winter injury and lower juice quality.
2. Petiole analysis of vines expressing excess vigor and freeze injury indicate nitrate levels as great as 5 times normal. Excess nitrate in the soil profile 0-3 m is the rule rather than the exception.
3. Soil water extraction rates at TAES Lubbock indicated approximately 25 cm of available water in the root zone 3-3.7 m. Coupled with a very favorable rainfall distribution, very limited irrigation is required most years to produce a quality crop.
4. No progress has been made to date on growth regulation to alleviate freeze injury.
5. Work on G.A. is just getting underway with the assistance of a Tech graduate student.
6. Cane position work was initiated in 1986 and preliminary results indicated the severe upright cane tying recommended by California consultants was not beneficial to juice quality parameters measured and may have increased bunch rot losses in Chenin Blanc.

7. Herbicide trials have been conducted for several years and an economical weed control program consists of Treflan incorporated in the middle and Surflan under the trellis. Plots using Buffalograss (Buchloe dactyloides) ground cover have been established but as yet weed control method in the grass has not been determined.
8. The life cycle and emergence patterns of the Apple Twig borer have been determined and indications are that insecticide control will not be difficult once an efficient system of determination of economic threshold is developed.

New Initiatives:

A major new thrust initiated at Lubbock to complement and extend the process of evaluation of viticultural practices has become a reality. This action will greatly enhance current research efforts.

Another area of research to be initiated in 1988 is that of high density planting to reduce vine size and enhance the potential for winter survival.