

PEST AIDS

FS

FOR INSECT MANAGEMENT

Entomology Notes from the San Joaquin Valley Agricultural Research and Extension Center, 9240 S. Riverbend Ave., Parlier, California 93648

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Chemical insect control is based simply on getting the insecticide to the insect, which essentially means uniform coverage throughout the tree or plant. Too often in the past the chemical and insect resistance were blamed, when actually improper equipment calibration, resulting in poor spray coverage was at fault.

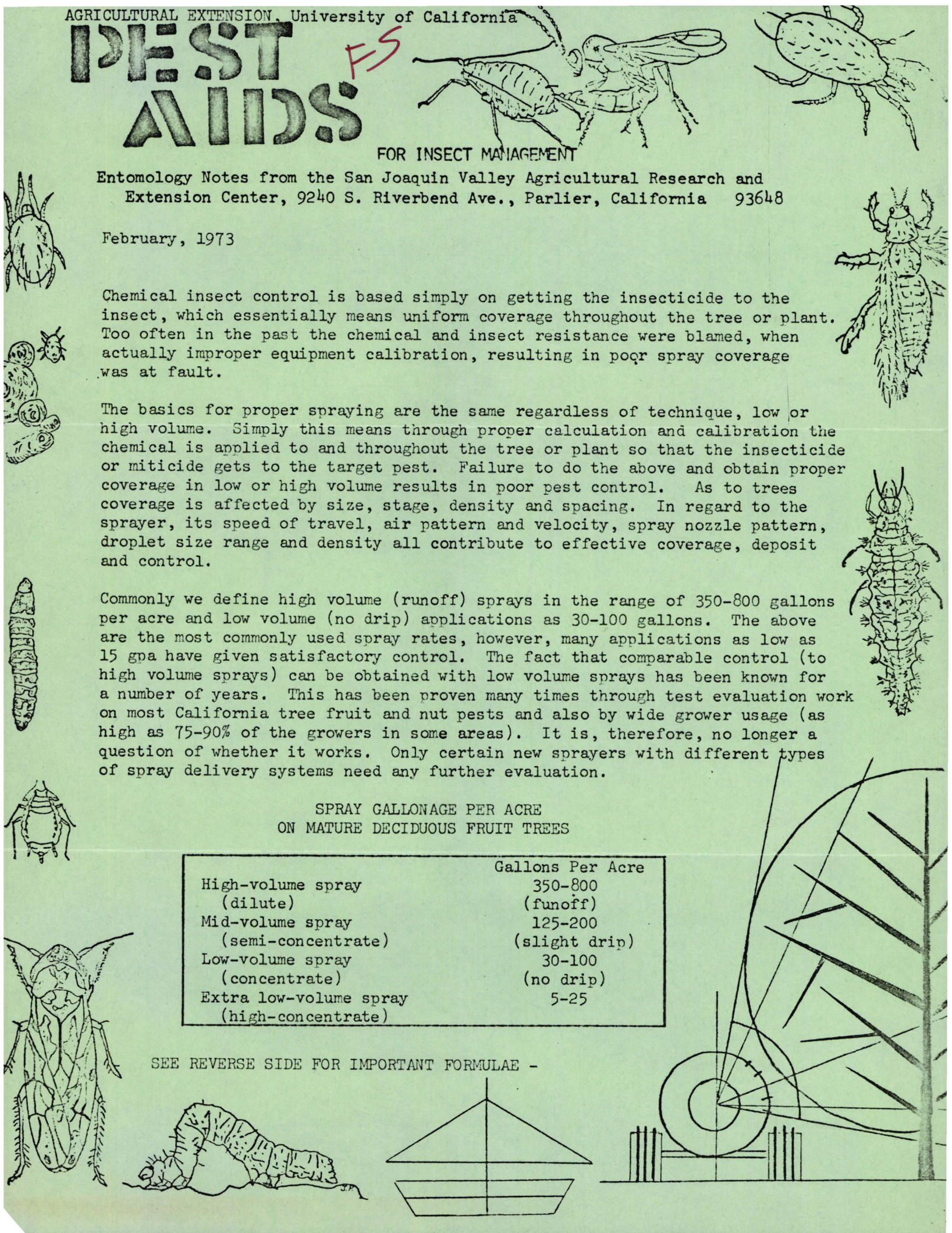
The basics for proper spraying are the same regardless of technique, low or high volume. Simply this means through proper calculation and calibration the chemical is applied to and throughout the tree or plant so that the insecticide or miticide gets to the target pest. Failure to do the above and obtain proper coverage in low or high volume results in poor pest control. As to trees coverage is affected by size, stage, density and spacing. In regard to the sprayer, its speed of travel, air pattern and velocity, spray nozzle pattern, droplet size range and density all contribute to effective coverage, deposit and control.

Commonly we define high volume (runoff) sprays in the range of 350-800 gallons per acre and low volume (no drip) applications as 30-100 gallons. The above are the most commonly used spray rates, however, many applications as low as 15 gpa have given satisfactory control. The fact that comparable control (to high volume sprays) can be obtained with low volume sprays has been known for a number of years. This has been proven many times through test evaluation work on most California tree fruit and nut pests and also by wide grower usage (as high as 75-90% of the growers in some areas). It is, therefore, no longer a question of whether it works. Only certain new sprayers with different types of spray delivery systems need any further evaluation.

SPRAY GALLONAGE PER ACRE ON MATURE DECIDUOUS FRUIT TREES

	Gallons Per Acre
High-volume spray (dilute)	350-800 (runoff)
Mid-volume spray (semi-concentrate)	125-200 (slight drip)
Low-volume spray (concentrate)	30-100 (no drip)
Extra low-volume spray (high-concentrate)	5-25

SEE REVERSE SIDE FOR IMPORTANT FORMULAE -



Formulae useful for calibrating spray applications in orchards:

1. GALLONS PER MINUTE (per 1 side) =

$$\frac{\text{gallons per acre} \times \text{miles per hour} \times \text{tree row spacing (ft.)}}{1,000}$$

2. GALLONS PER ACRE = $\frac{\text{gallons per minute (per 1 side)} \times 1,000}{\text{tree row spacing (feet)} \times \text{miles per hour}}$

3. MILES PER HOUR = $\frac{\text{gallons per minute (per 1 side)} \times 1,000}{\text{gallons per acre} \times \text{tree row spacing (ft.)}}$

4. ACRES PER HOUR = $\frac{12 \times \text{miles per hour} \times \text{tree row spacing (ft.)}}{100}$

5. SPEED OF TRAVEL (expressed as tree spaces passed per minute) =

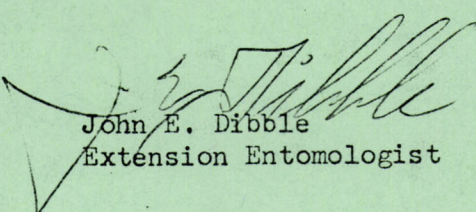
$$\frac{\text{miles/hour desired} \times 88}{\text{tree spacing (ft.)}}$$

6. NUMBER OF TREES PER ACRE = $\frac{43,560 \text{ (square feet per acre)}}{\text{tree row spacing} \times \text{tree spacing}}$

For example: $\frac{43,560}{22 \times 22} = 90 \text{ trees per acre}$

NOTE: Above formulae can also be used- (a) in vines by substituting vine row spacing for tree row spacing; (b) in field or row crops substituting swath width for tree row spacing; (c) or in 5 & 6 by substituting plant spacing for tree spacing.

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John E. Dibble
Extension Entomologist

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