

over the unpruned trees. Adjacent trees that were pruned but had no NAA applied required sprouting by hand 6 times in this period.

NAA could be a valuable tool in maintaining this type of tree training.

*The use of NAA in citrus nurseries.* In nursery trials at Desoto City 3/8% NAA has been highly successful on budded trees. A herbicide applicator used in the nursery was modified to spray NAA on the lower 18 inches of the trees. Several varieties growing on sour orange, Cleopatra mandarin, macrophylla and Rangpur lime rootstocks were treated. In all cases the NAA performed well and could eliminate considerable hand labor.

Training trees to head out higher could be an advantage in mechanical harvesting.

Residue data are being obtained and registration will be sought for NAA use on citrus. It is illegal to apply NAA until it clears the proper channels.

#### Literature Cited

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## CHEMICAL ABSCISSION OF 'VALENCIA' ORANGES BY GLYOXIME (CGA-22911)<sup>1</sup>

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**Abstract.** Rates of 200-400 PPM of glyoxime were shown during 1972 and 1973 to be an effective and selective abscission agent for 'Valencia' oranges, with no adverse effects to bloom, immature fruit or foliage. Completion of the abscission response varied from 4 to 7 days depending on the weather.

#### Introduction

During a program of design and synthesis of new chemical compounds for use as abscission

agents, significant activity was discovered by the senior author in certain oximes (5, 8, 9), amine oxides (7, 9) and related compounds of simple structure (6, 9). These observations suggested the testing of a known compound, glyoxime<sup>2</sup> (5) which has alternating double bonds enclosing two singly-bonded carbon atoms. This structure indicates a high probability of degradation to ethylene or similar two-carbon fragments. Also glyoxime appeared promising as a compound that might degrade rapidly to natural products.

Various compounds have been reported which show significant orange abscission activity. Hendershott (3) discovered the abscission activity of iodoacetic acid and later (4) postulated that compounds with a two-carbon chain were particularly promising. Cooper reported that ascorbic acid (1) and cycloheximide (2) produced loosening of oranges. Wilson (10) reported that hexamic acid (CZ 150) was a promising candidate for use on early and mid-season oranges. He also reported that cycloheximide might be used on 'Valencia' oranges, but no sooner than 8 weeks after bloom. More recent studies, however, suggest cycloheximide produces acceptable abscission for 'Valencia' oranges only under very limited circumstances (11). Wilson (11) also reported significant activity

<sup>2</sup>Glyoxime may also be named glyoxal dioxime or ethanedial dioxime. It was originally designated 881 by the University of Florida and subsequently CGA-22911 by Ciba-Geigy.

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