

for large scale evaluation during the 1975-1976 season. Further testing under varied environmental conditions with all varieties will be needed to determine the full commercial potential of DS-27914 as a chemical harvest aid for processed oranges.

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## A COMPARISON OF FOUR ABSCISSION COMPOUNDS FOR USE ON 'HAMLIN,' 'PINEAPPLE' AND 'VALENCIA' ORANGES

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**Abstract.** Under similar conditions, four abscission-inducing materials, 5-chloro-3-methyl-4-nitro-1H-pyrazole (Release<sup>2</sup>), glyoxal dioxime (Pik-off<sup>2</sup>), cycloheximide (Acti-Aid<sup>2</sup>), and cycloheximide in combination with chlorothalonil (DS-27914<sup>2,3</sup>), were compared to determine effectiveness in removal of mature fruit while retaining immature fruit and leaves on *Citrus sinensis* (L.) Osbeck cvs. 'Hamlin,' 'Pineapple,' and 'Valencia.' Release was the most consistent and effective material at 75 to 150 ppm on 'Hamlin' and 'Pineapple' cultivars and at 250 ppm on 'Valencia' oranges harvested during early April. But, when the 'Valencia' oranges showed regreening during late April and May, higher concentrations of abscission chemicals were required for loosening.

Pik-off at 300 ppm was less effective on 'Hamlin' and 'Valencia' oranges, but did remove mature fruit without adverse leaf or immature-fruit effects. Acti-Aid at 5 to 20 ppm was highly effective for fruit removal of early and midseason varieties but caused more leaf damage than Pik-off or Release. The DS-27914 was more potent than Acti Aid for mature fruit removal and was less damaging to leaves and immature fruit. The importance of cultural practices, rootstock selection, and environmental conditions to the effectiveness of these materials is emphasized.

Four compounds have shown effectiveness in loosening mature oranges as an aid to mechanical harvesting in Florida (1, 2, 3, 4, 5, 6, 7). These compounds are cycloheximide (Acti-Aid), glyoxal dioxime (Pik-off), 5-chloro-3-methyl-4-nitro-1H-pyrazole (Release), and cycloheximide in combination with chlorothalonil (DS-27914). Previously, comparisons had not been made with all of these materials under similar conditions and at recommended rates.

This is an in-depth comparison of the effectiveness of all four chemicals, throughout the harvesting season of 1974-75, to induce mature fruit abscission and prevent leaf drop of 'Hamlin,' 'Pineapple,' and 'Valencia' oranges. On 'Valencia' oranges, we also considered the chemical effects on immature fruit drop.

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<sup>2</sup>Mention of a trademark name or a proprietary product does not constitute a guarantee or warranty of the product by the USDA, and does not imply its approval to the exclusion of other products that may also be suitable.

<sup>3</sup>In this paper, DS-27914 indicates the combination of cycloheximide with chlorothalonil. No name has yet been given to this combination of cycloheximide and chlorothalonil. Level of cycloheximide used, unless otherwise noted, was usually the same as the Acti-Aid treatment in the same test. Since the proportion of cycloheximide to chlorothalonil was changed from test to test, the proportion of each is shown in each test.

