

# Screening and Testing Potential Abscission Compounds

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## ABSTRACT

The abscission trials demonstrated ethephon and a numbered compound, # 901, had the best potential for decreasing fruit detachment force. However, ethephon was erratic in performance and had leaf loss. Developing an abscission agent remains a long term goal.

## INTRODUCTION

Developing an abscission compound, which would decrease the amount of force required to detach olives from the olive tree could also increase harvester efficiency and decrease fruit damage. However, registering growth regulators for any crop, particularly a small specialty crop, is a long term process requiring 10 years or more. The first step is identifying potential abscission compounds.

## OBJECTIVES

Our objectives for this section were:

- Evaluate the ERC (Ethylene Releasing Compounds) that demonstrated potential in 2006
- Screen new compounds for fruit detachment force reduction

## PROCEDURES

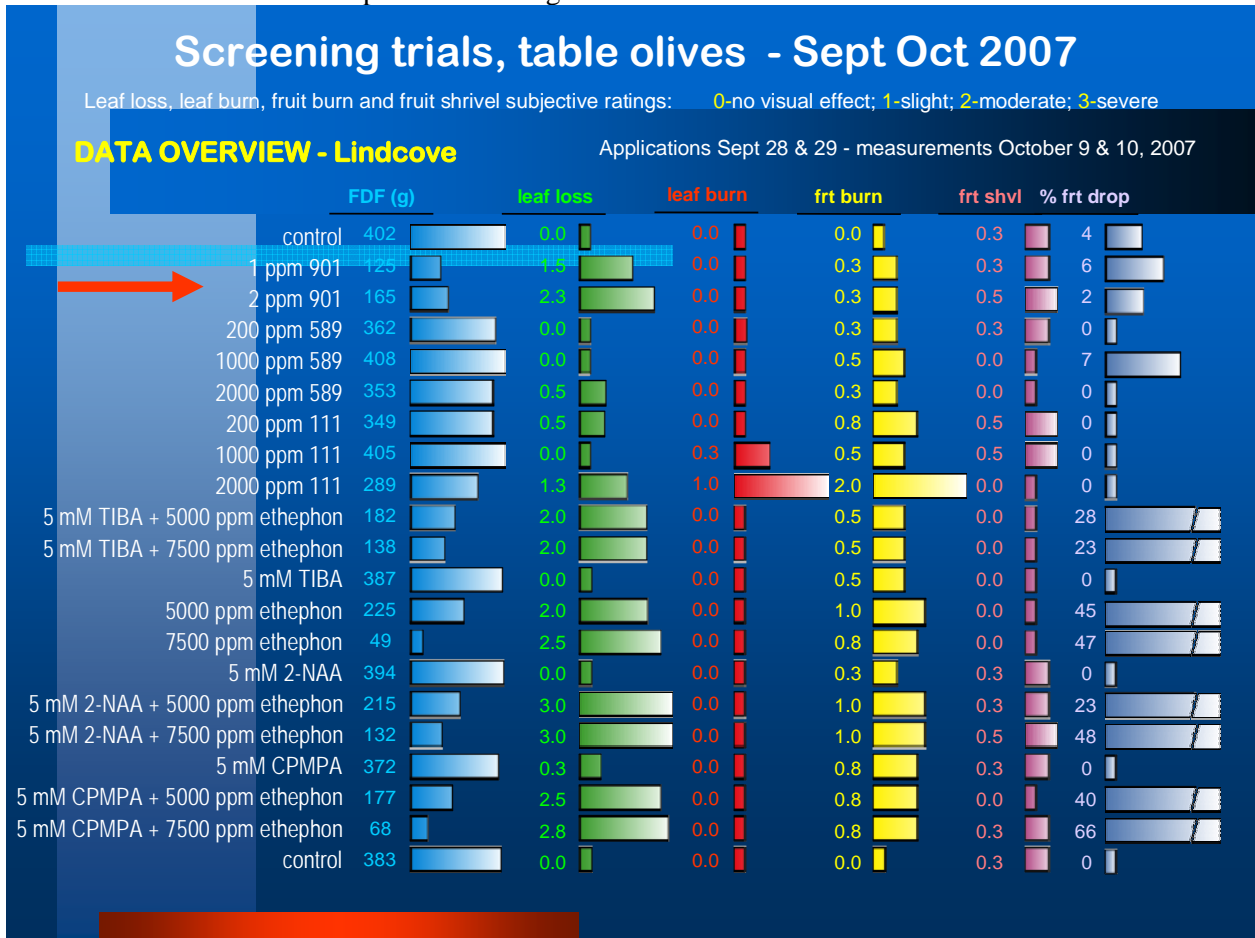
All screening trials were done on replications of individually tagged branches. Individual branches were tagged, initial fruit number counted, and sprays applied with hand held spray bottles. Within 10 days to 2 weeks fruit number were counted and fruit detachment force was measured using an Imada pull force tester. Leaf loss, fruit and leaf burn, and fruit shrivel and drop were evaluated visually using a 4 point scale; 0 equaled no visible effect, 1 = mild, 2 = moderate 3 = severe.

## RESULTS

In 2006 screening trials identified the ethylene releasing compound (ERC), (2-chloroethyl phosphonic acid) ethephon, and HarvestVant, an Israeli product containing MPK and ethephon, as potential abscission agents. These and other compounds were tested in 2007. The results of two screening trials are given in Tables 5 and 6 below.

The screening results in Table 5 reinforce the data obtained in 2006. Only ethephon at higher concentrations, 5000 ppm and above, continued to reduce fruit detachment force but leaf loss remained a problem. A new numbered compound, # 901, reduced fruit detachment with only moderate leaf loss.

**Table 5.** Abscission Compound Screening Trials at Lindcove Field Station.



The results in Table 6 are similar. Ethephon at higher concentrations, 2500 ppm and above reduced fruit detachment force with moderate to severe leaf loss. However, results were erratic as one 2500 ppm application failed to decrease fruit removal force. Numbered compound # 901 again reduced fruit detachment force with a low leaf loss.

Given the potential value of an abscission compound for mechanical-harvesting, attempts to further define ethephon performance, and screening for new compounds should continue. However, it should be recognized this is a long term objective, and development of mechanical harvesting should proceed as if we will not obtain an abscission agent in the near future.

**Table 6.** Abscission Compound Screening at Nichols Estate.

