

Field Research With the Abscission Agent CMNP as an Aid to Mechanical Harvesting of Sweet Orange

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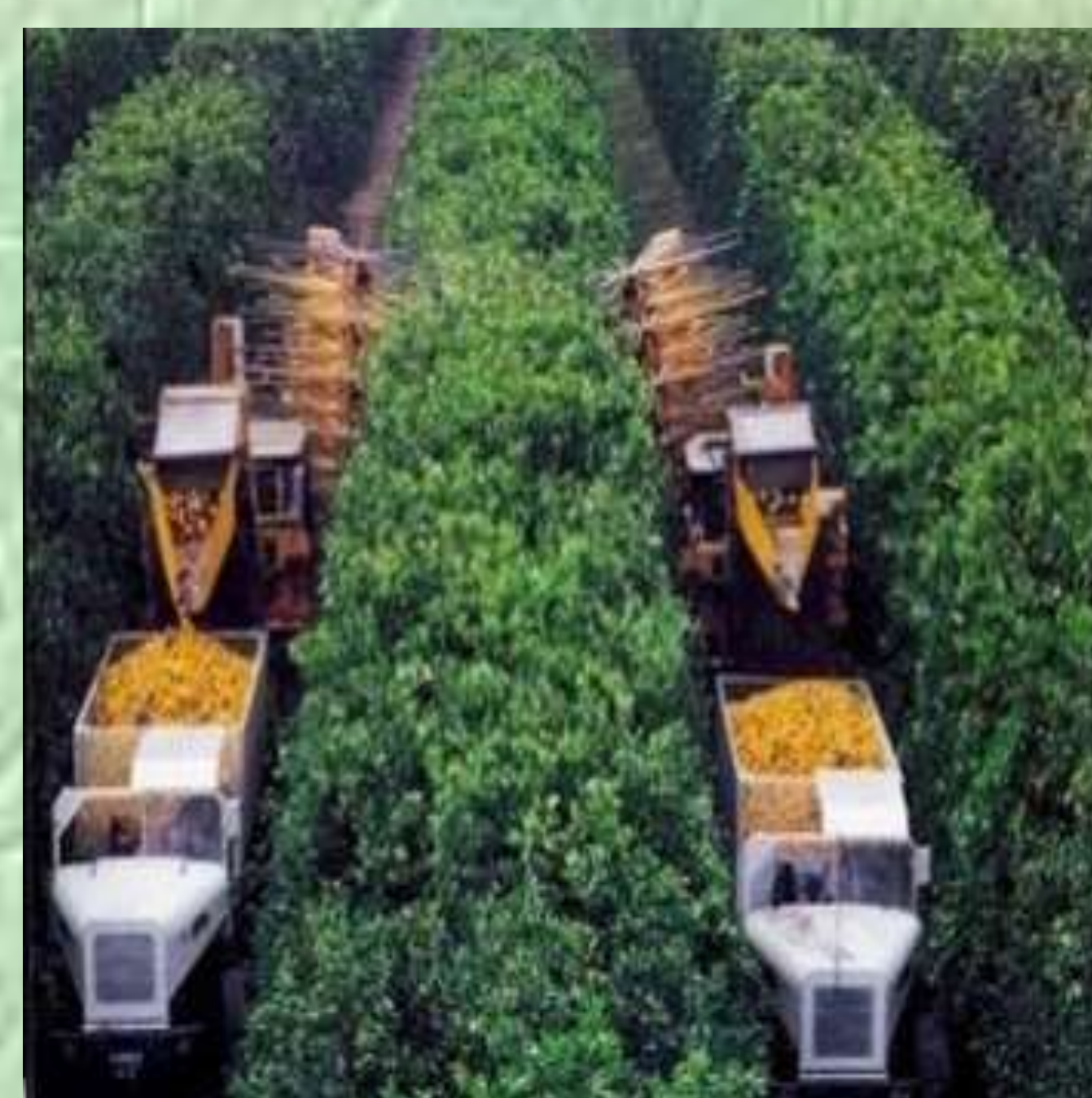
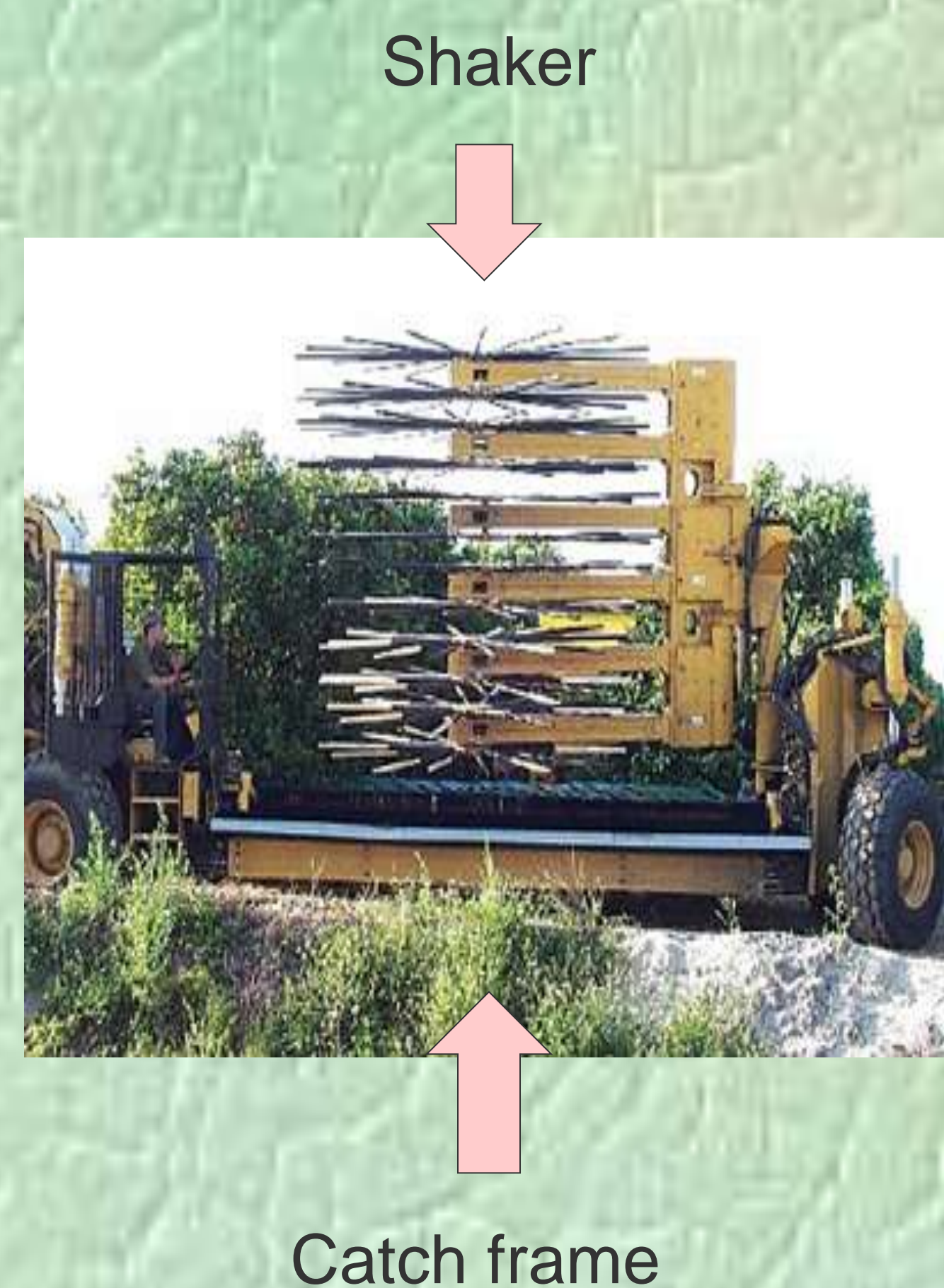
ABSTRACT

Field research over the last several years has demonstrated that CMNP will provide significant loosening of sweet oranges and serve as an excellent aid for harvesting with canopy and trunk shakers. CMNP has been shown to provide consistent loosening throughout the entire harvesting period without causing phytotoxicity, defoliation, or loosening of the newly developing crop of late season Valencia. CMNP is a contact loosening agent that requires complete mature fruit coverage. Loosening by CMNP is temperature responsive but can be managed to schedule CMNP applications and harvest for maximum recovery. Canopy architecture will need to be managed to maximize removal and minimize the requirement for labor to glean remaining fruit from the tree. The technical issues that remain with adopting CMNP by the commercial sweet orange industry in Florida are considered manageable and it is anticipated that it will be readily adopted by the industry once available.

INTRODUCTION

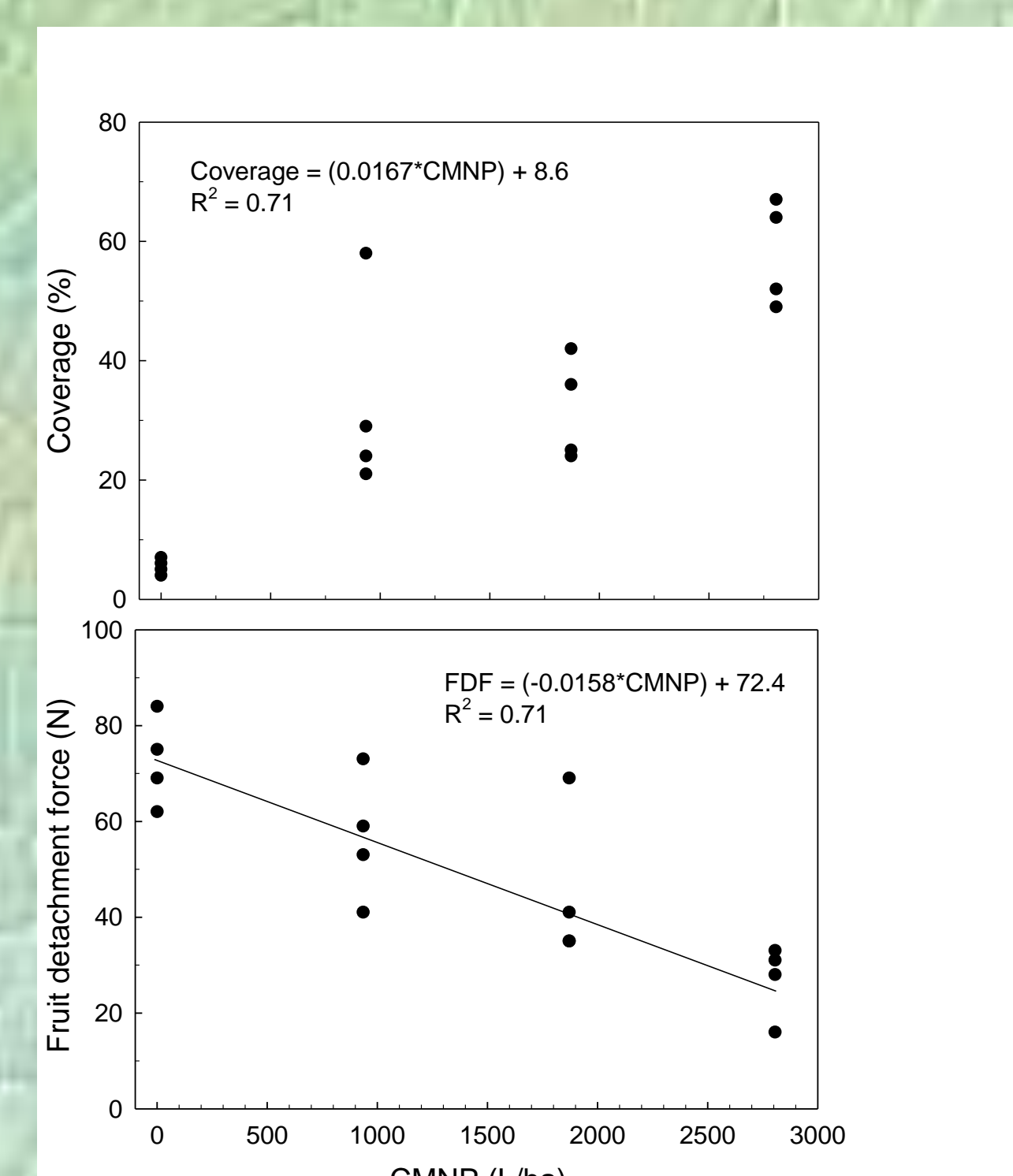
- Strong interest in mechanical harvesting of sweet oranges in Florida has spurred research to find an abscission agent to improve removal rates, which currently range from 70% -90% of the crop.
- Abscission agents have been studied as a means of increasing removal rates. Of those tested, 5-Chloro-3-Methyl-4-Nitro-1H-Pyrazole (CMNP), has been shown to be most effective.
- An application for full registration has been submitted to the Environmental Protection Agency.
- Field studies have been conducted to determine best management practices.

Self-propelled canopy shaker

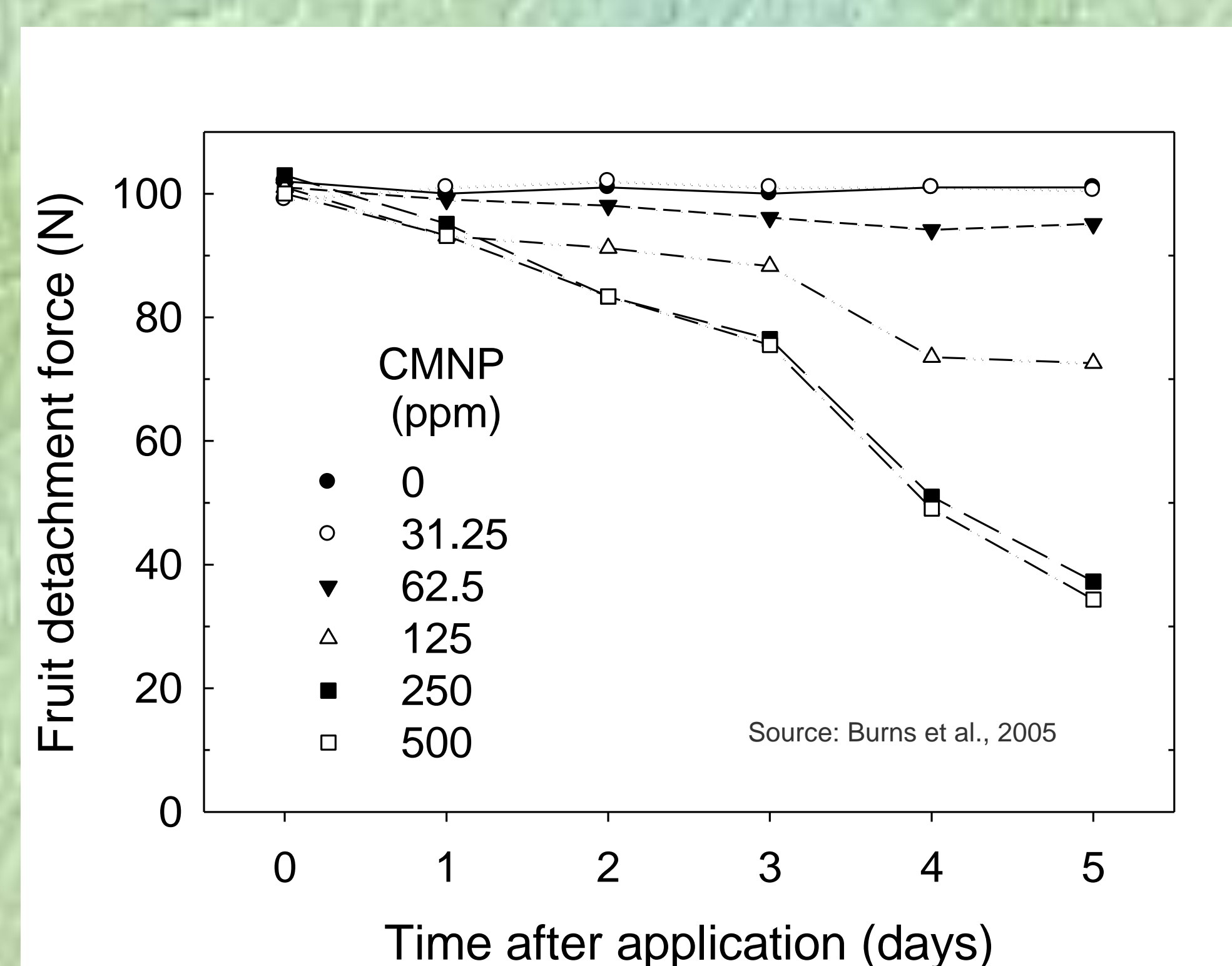


CMNP EFFICACY AND SPRAY CONSIDERATIONS

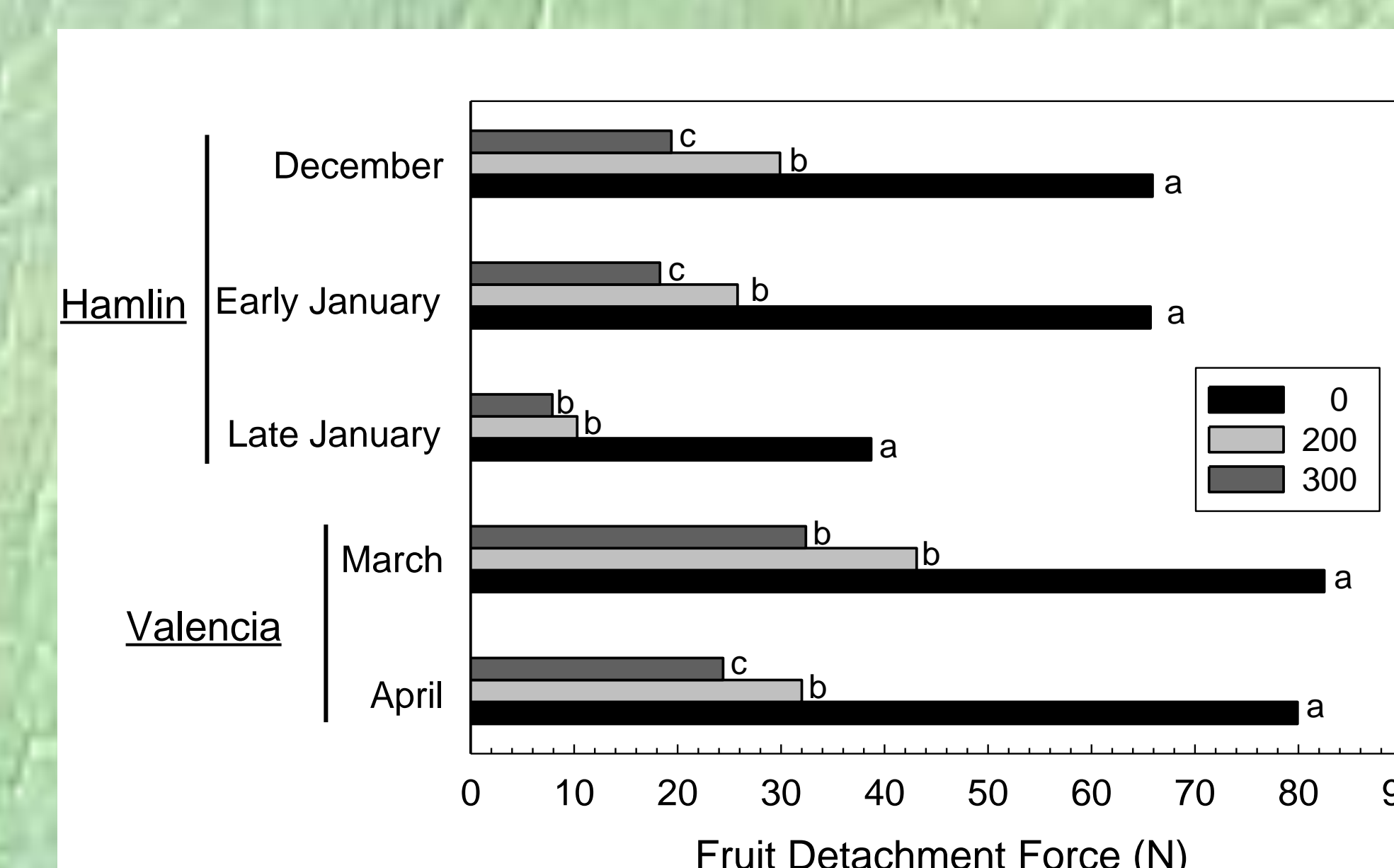
- Loosening requires direct fruit peel contact with CMNP, so proper coverage is essential.



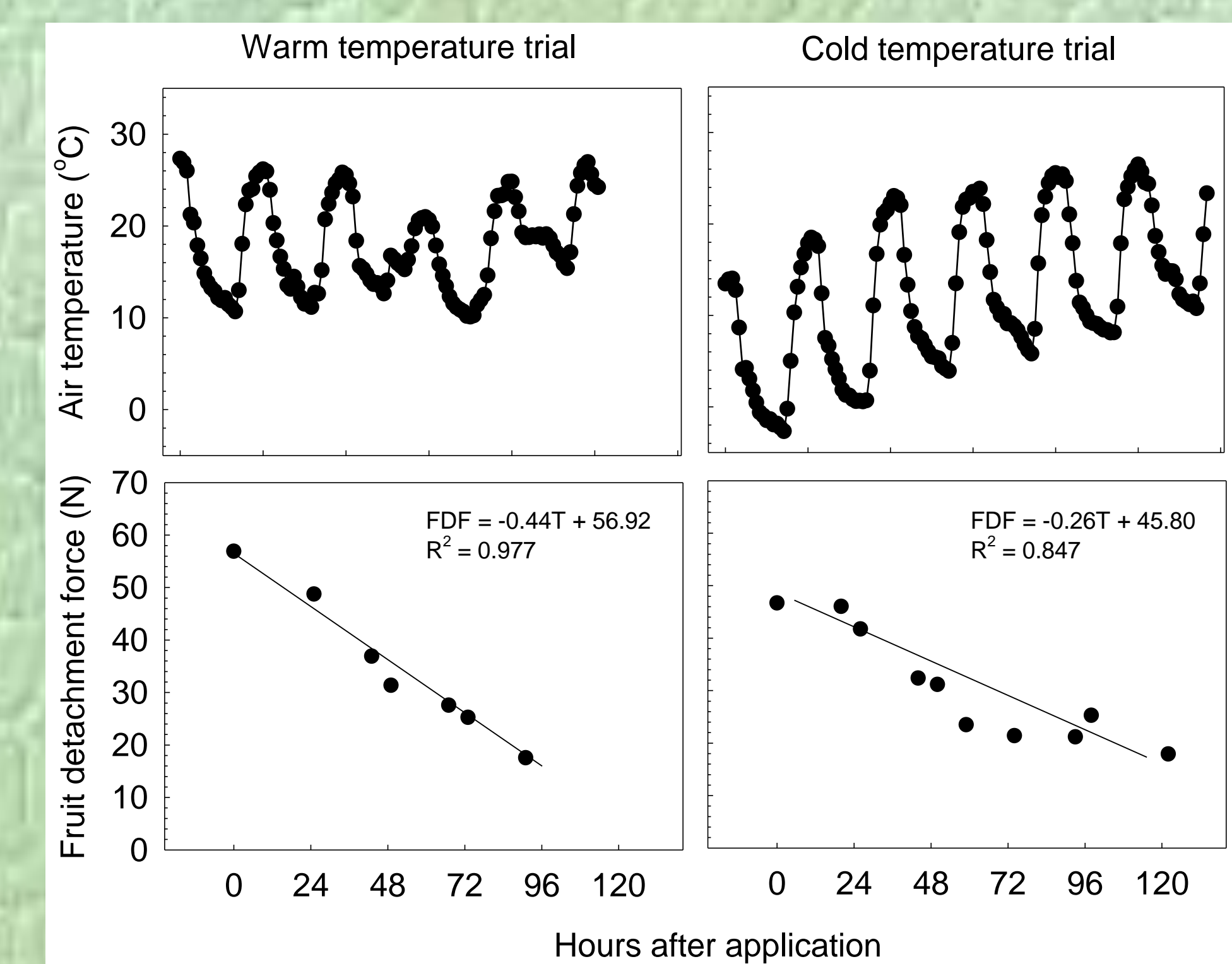
- Loosening occurs up to 5 days after application.



- Application rates of 200 – 300 ppm at up to 300 gal/acre provide excellent and consistent loosening throughout the harvest season

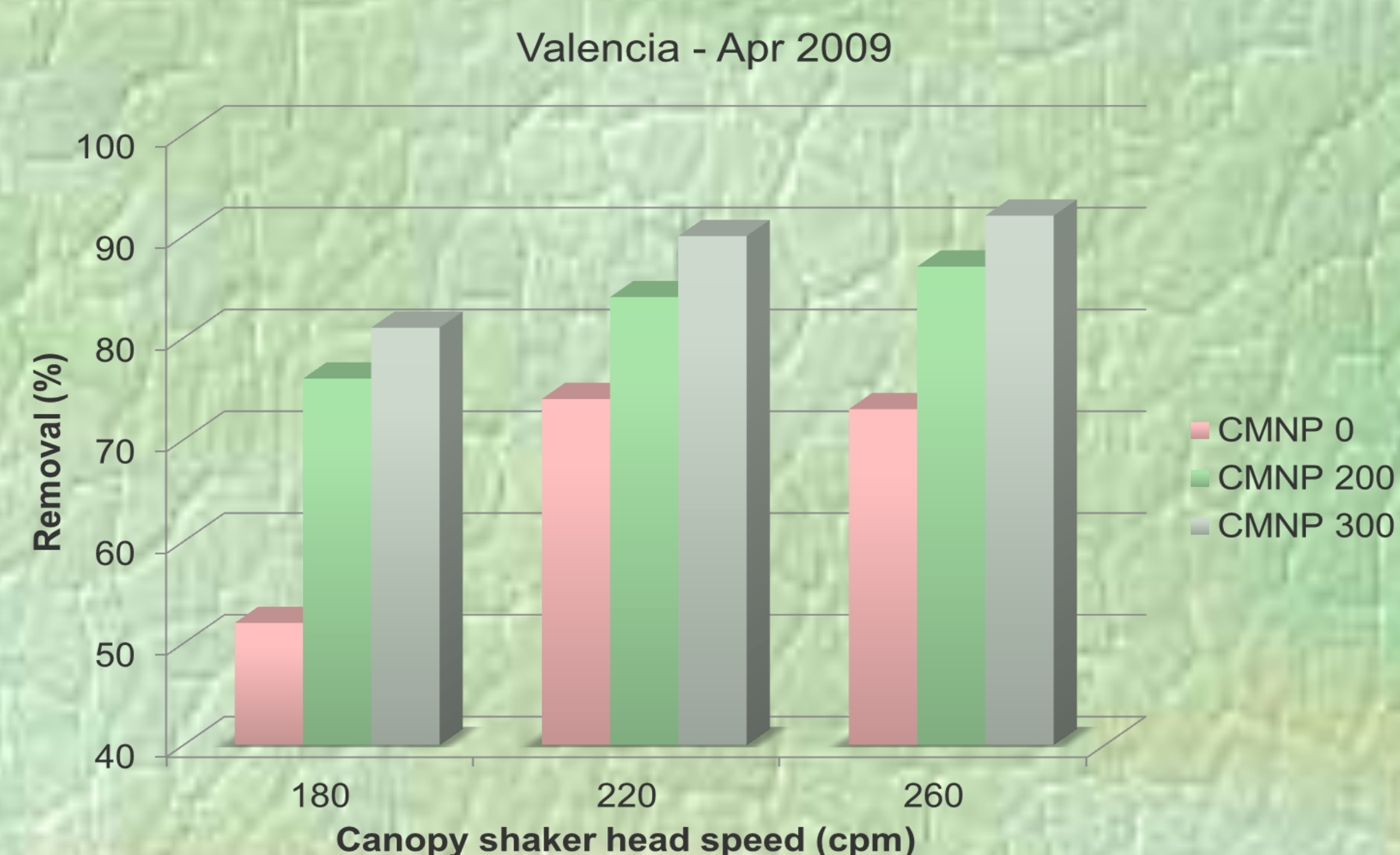


- Temperatures < 20°C slows the rate of loosening, which increases again as air temperature rises



HARVEST EFFICIENCY AND ADVANTAGES

- Higher fruit removal at lower canopy shaker head speeds with CMNP reduces tree injury



- CMNP reduces trash (leaves and limbs) during the harvesting process and does not adversely affect fruit quality.

