

CMNP Field Trials

Bob Ebel

UF/IFAS/SWREC



Research Objectives

Determine CMNP application and mechanical harvester settings on harvest efficiency

- a. Methods of CMNP application
 - coverage
 - concentration up to maximum label rate 300 ppm and 300 gal/acre
- b. Mechanical harvester setting
 - canopy shaker frequency (180-260 cpm)
 - tractor speed (0.5-1.0 mph)
- c. Other factors
 - Time of year
 - Late season Valencia
 - Early season Hamlin
 - Days after spray application

Methods of CMNP application: requires complete coverage



requires
direct peel
contact

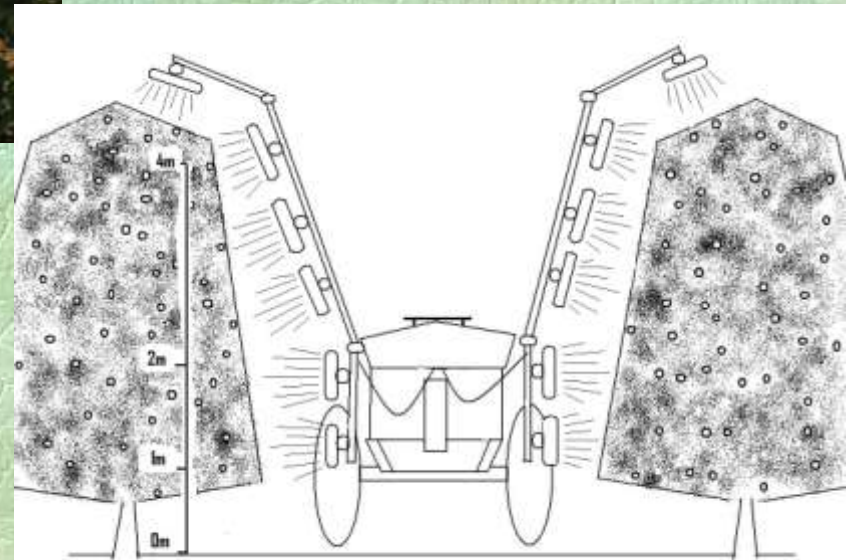


Vertical, multi-fan sprayer

Height: no effect on FDF

Depth:

- inside: 13.6 lbs
- outside: 12.4 lbs



CMNP concentration and mechanical harvester setting: Time of year

5 trials conducted in 2008/2009
2 Hamlin, 3 Valencia
Dec. through April

Treatments:

CMNP: 0, 200, 300 ppm at 300 gal/acre (no rain 24 hrs, Tair > 60F)

Canopy shaker setting: 180, 220, 260 cpm

(Harvested fruit 4 days after CMNP application, tractor speed 1.0 mph)



CMNP concentration and mechanical harvester setting: Time of year

Data collected:

1. Fruit detachment force (FDF)



2. Fruit drop weight



3. Fruit harvested weight



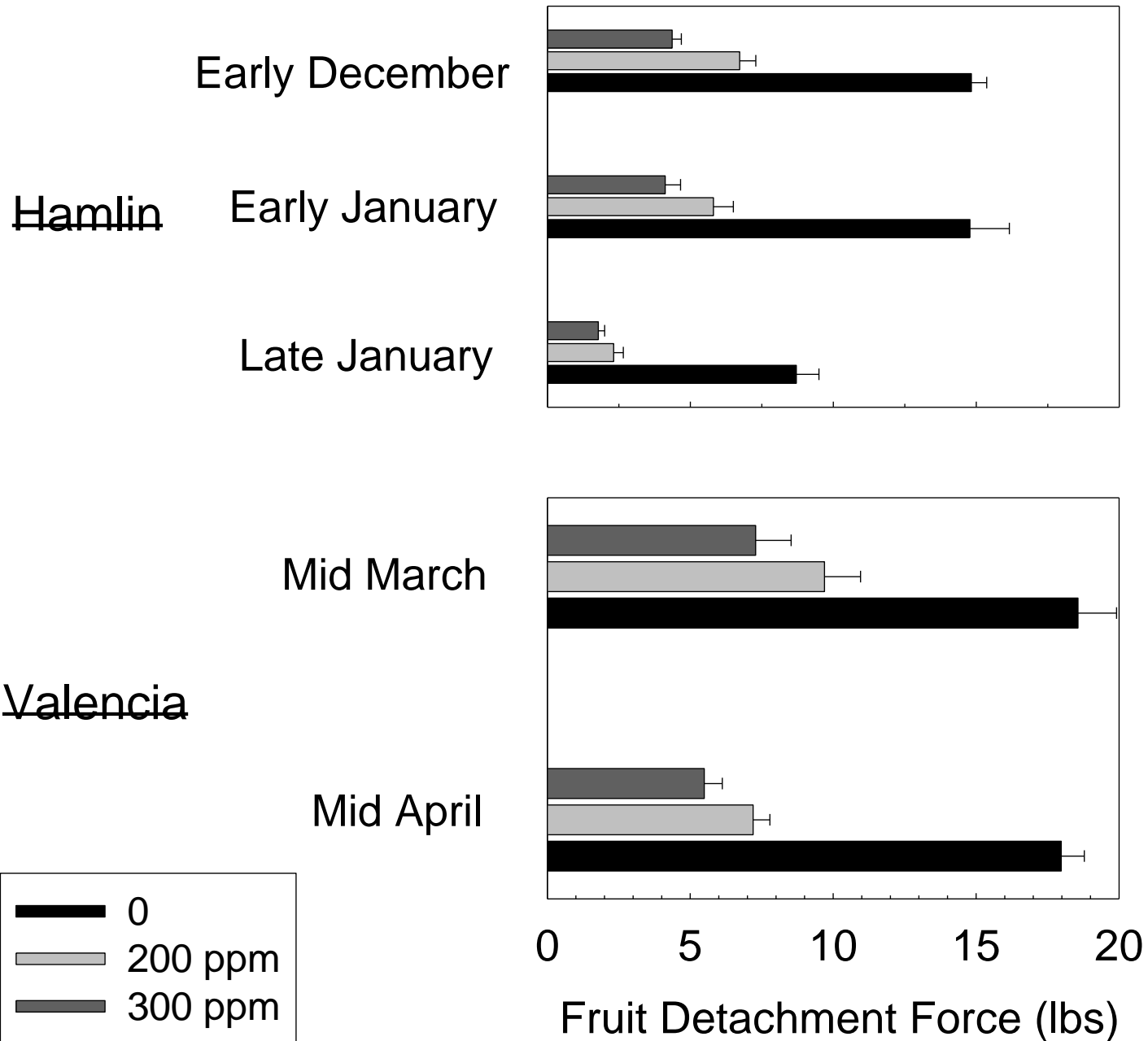
3. Fruit gleaned weight



Fruit Detachment Force

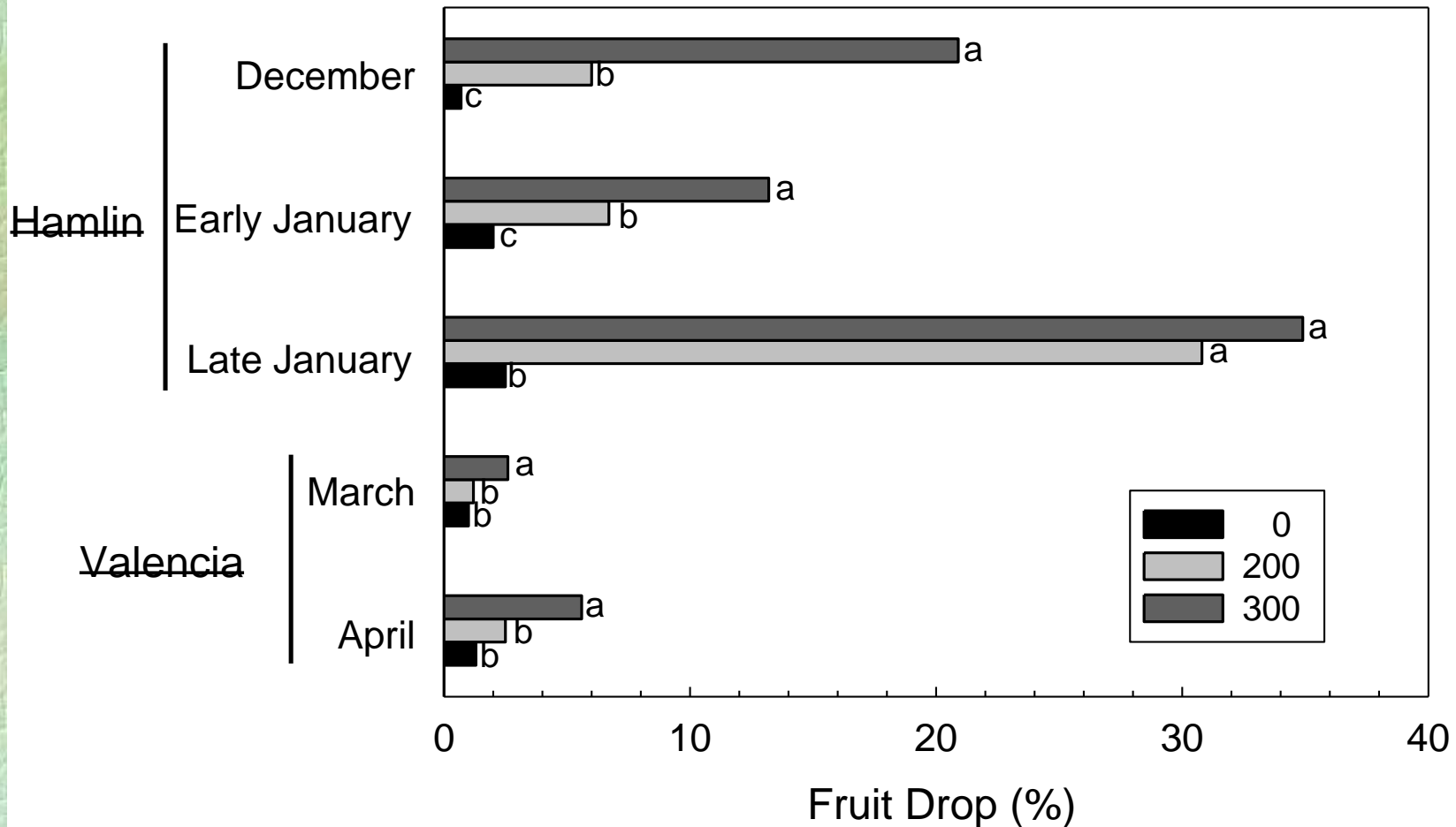
Results:

CMNP reduced FDF by 50% or more



Results:

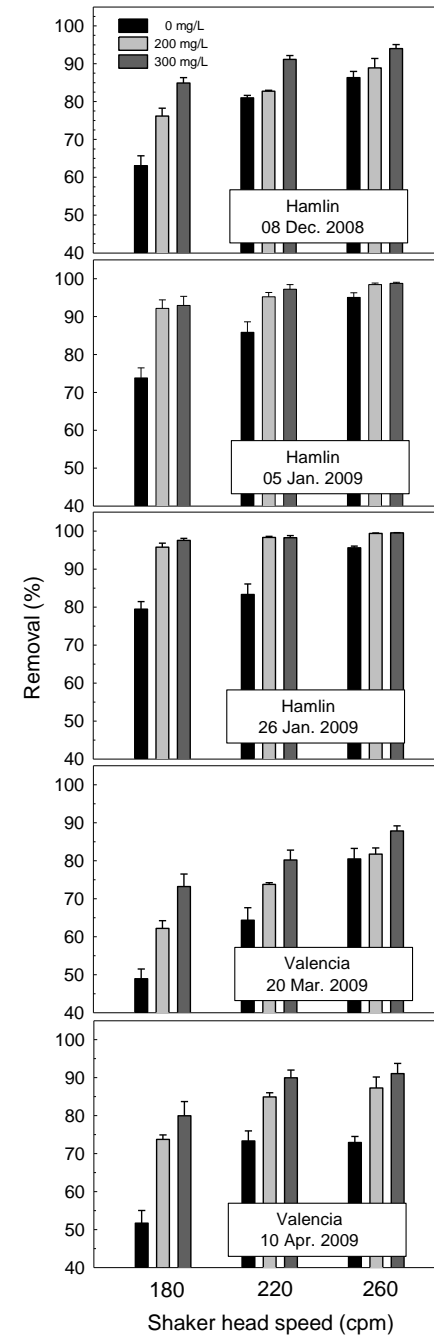
Preharvest fruit drop low in some treatments



Results:

Interaction of CMNP
treatment and canopy shaker
frequency on fruit removal

Greater fruit removal with
slower canopy shaker



CMNP concentration and mechanical harvester setting: Late Season Valencia

Trials conducted 3 consecutive years

Trial dates: Early May, Late May, Early June (2008)

Treatments:

Trial dates: Early May, Late May, Early June (2008)

CMNP: 0, 200 or 300 ppm

Canopy shaker settings:

145 (1st year) - 210 cpm (last two years)

185 cpm

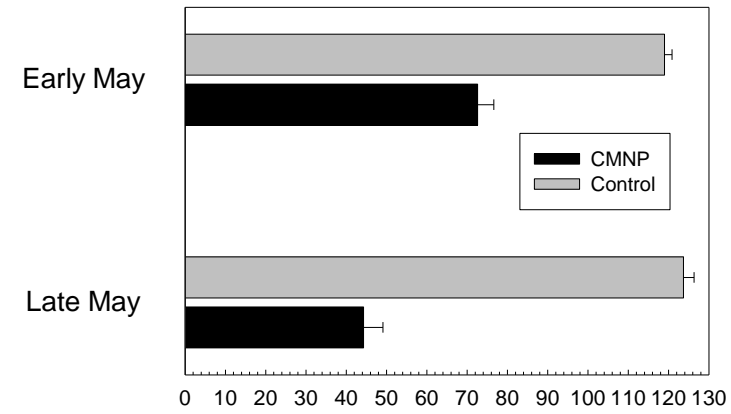
Tractor speeds: 0.5 and 1.0 mph

Data collected: as described before

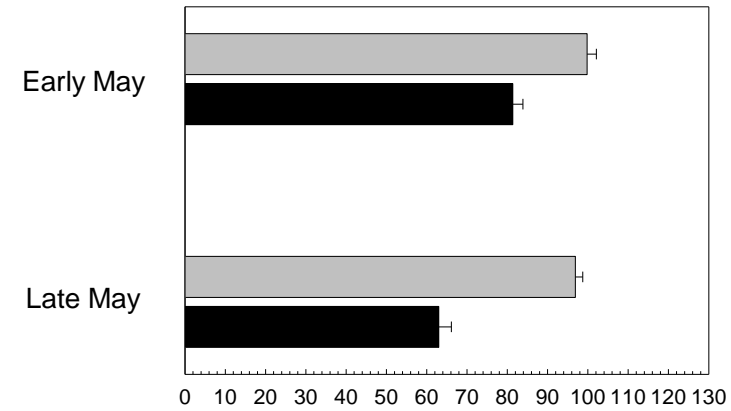
Results: Fruit detachment force

2006

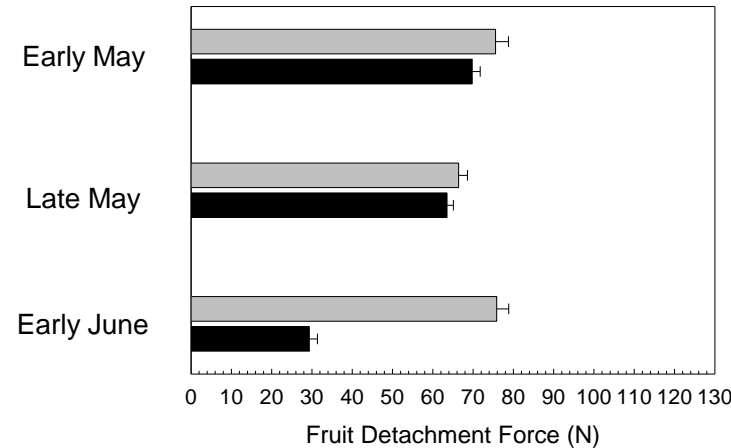
Fruit Detachment Force (N)



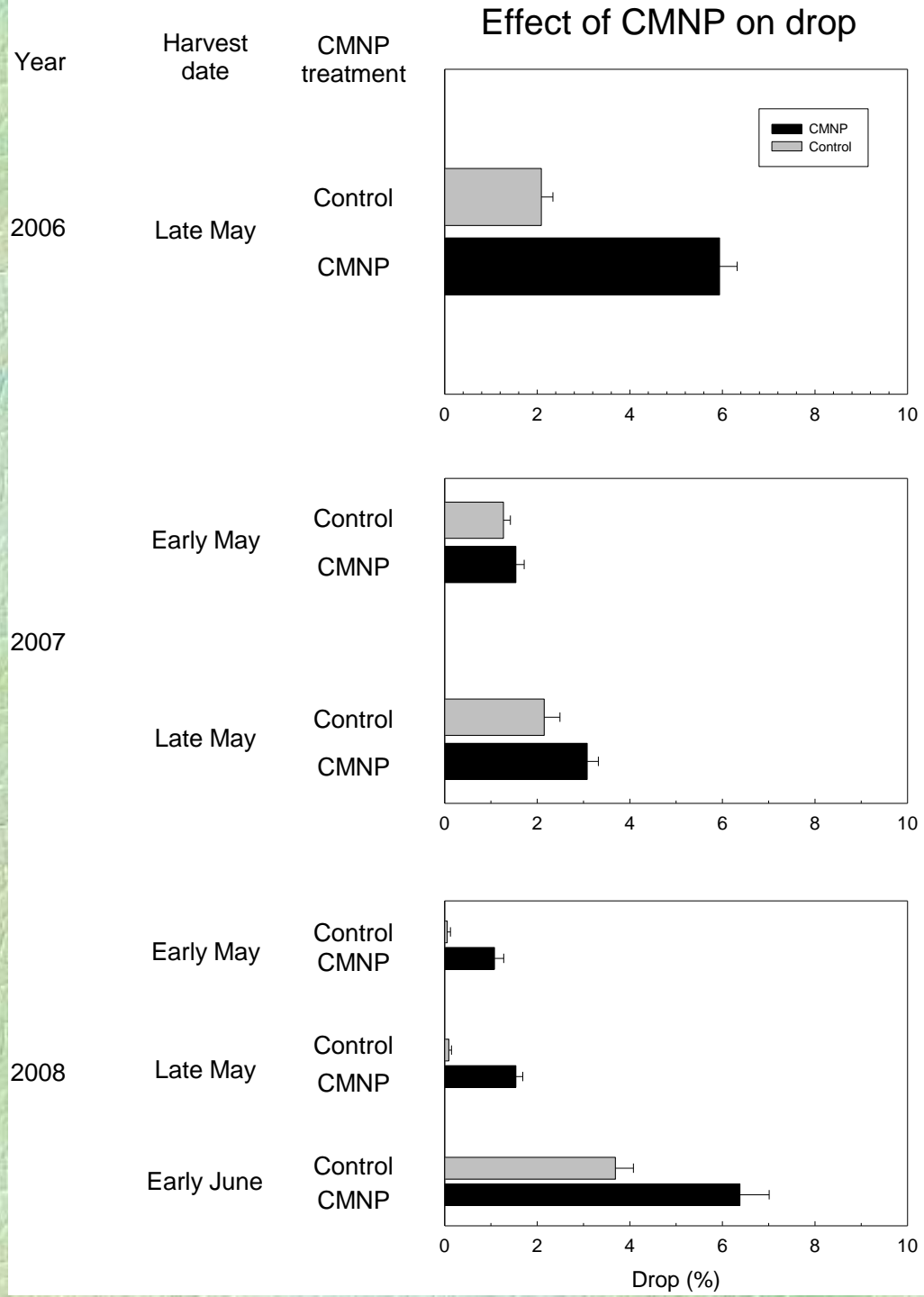
2007



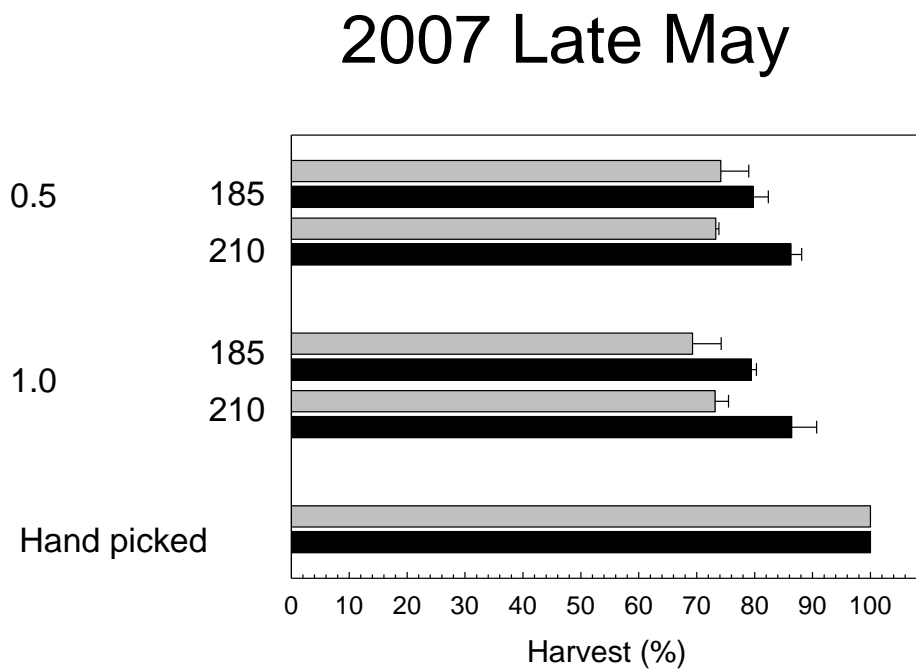
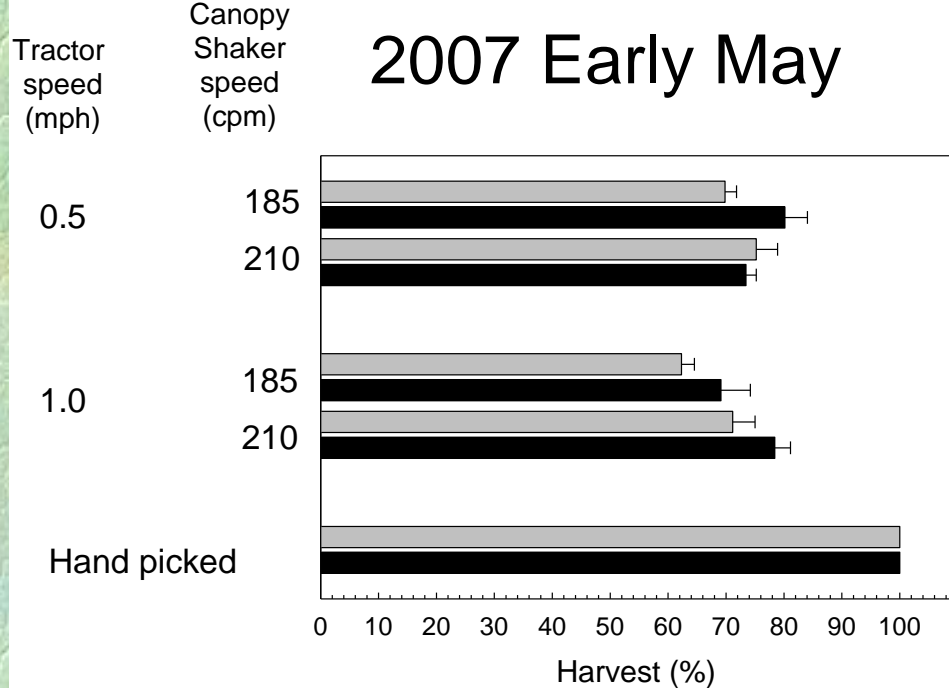
2008



Results: Fruit drop



Results: Fruit removed



CMNP concentration and mechanical harvester setting: Harvest date

Treatments:

Trial dates: December, Early May, Late May (2009/2010)

CMNP: 0 or 300 ppm at 300 gal/acre

Harvest dates: 2, 3, 4, 5 days after CMNP application

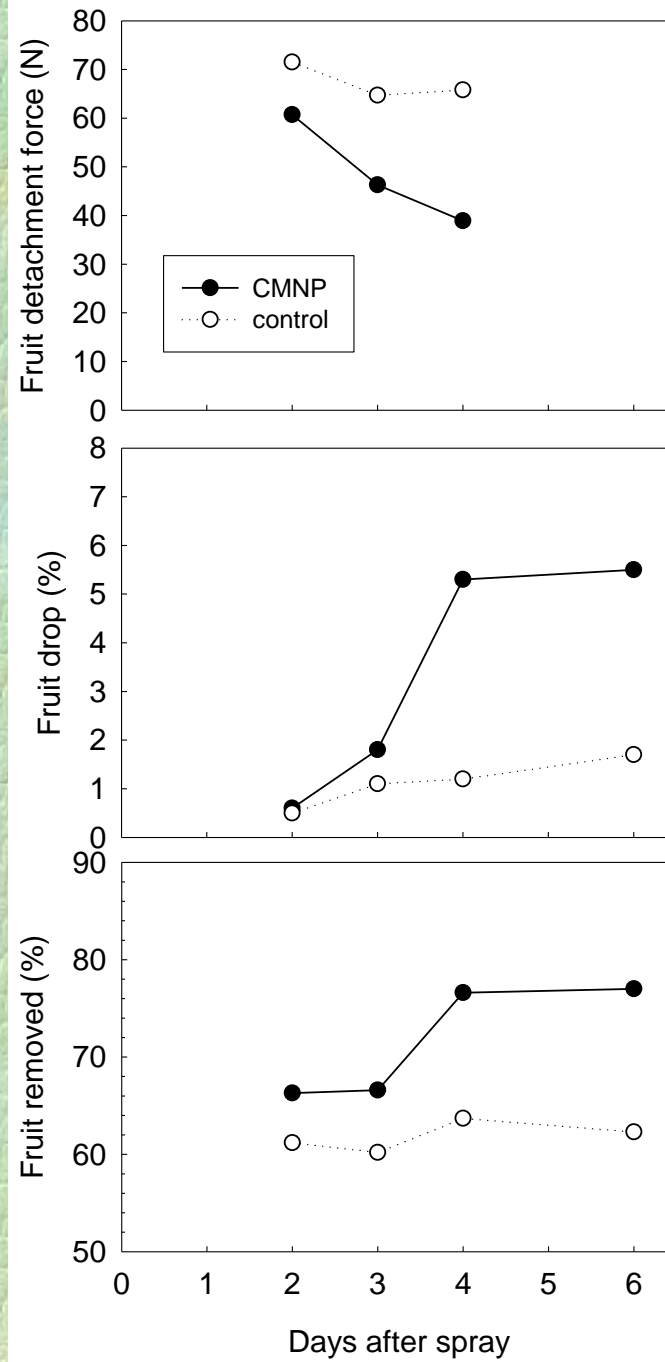
Canopy shaker settings: 200 cpm at 1.0 mph

Data collected: as described before

Results:
Mid December

Harvest components

Get about 5 days of
CMNP activity



Acknowledgements

- Harvest Council

COMMERCIAL COMPANIES

- OXBO International
- AgroSource
- Barron-Collier Partnership
- Mutual Harvesting
- Barben Fruit
- Everglades Harvesting
- Silverstrand
- Gulf Harvest
- Valencia Harvesting

IFAS/SWFREC

- Mr. Peter Newman
- Dr. Kelly Morgan
- Dr. Fritz Roka

IFAS/CREC

- Dr. Jackie Burns
- Dr. Tim Spann
- Dr. Jim Syvertsen
- Dr. Michelle Danyluk

Thank you

