

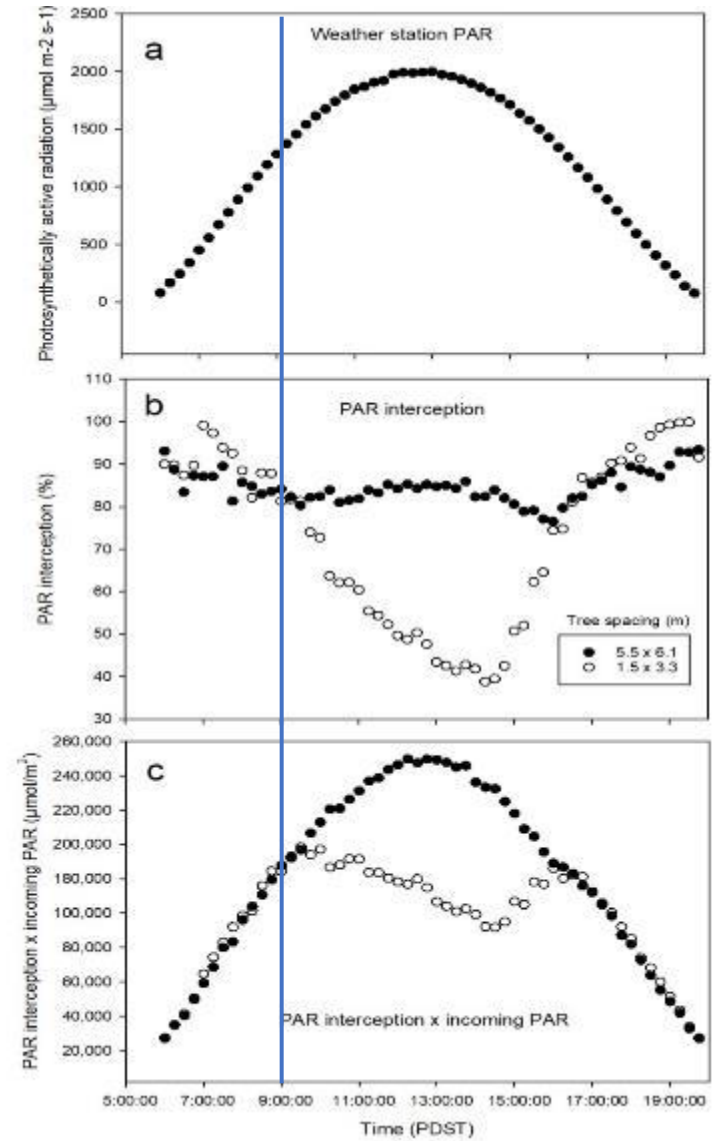
Trial comparing 298 versus 2020 tree per hectare



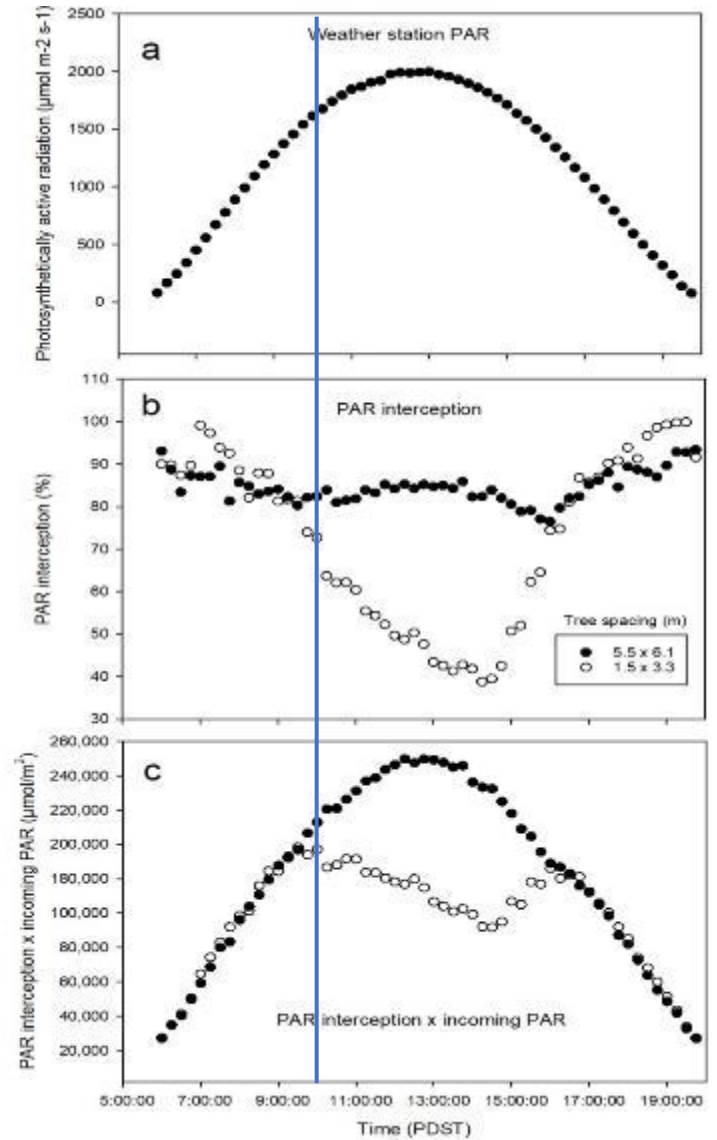
WINGSCAPES 58°F BILL NP KEST 12 JUN 2017 09:00 am



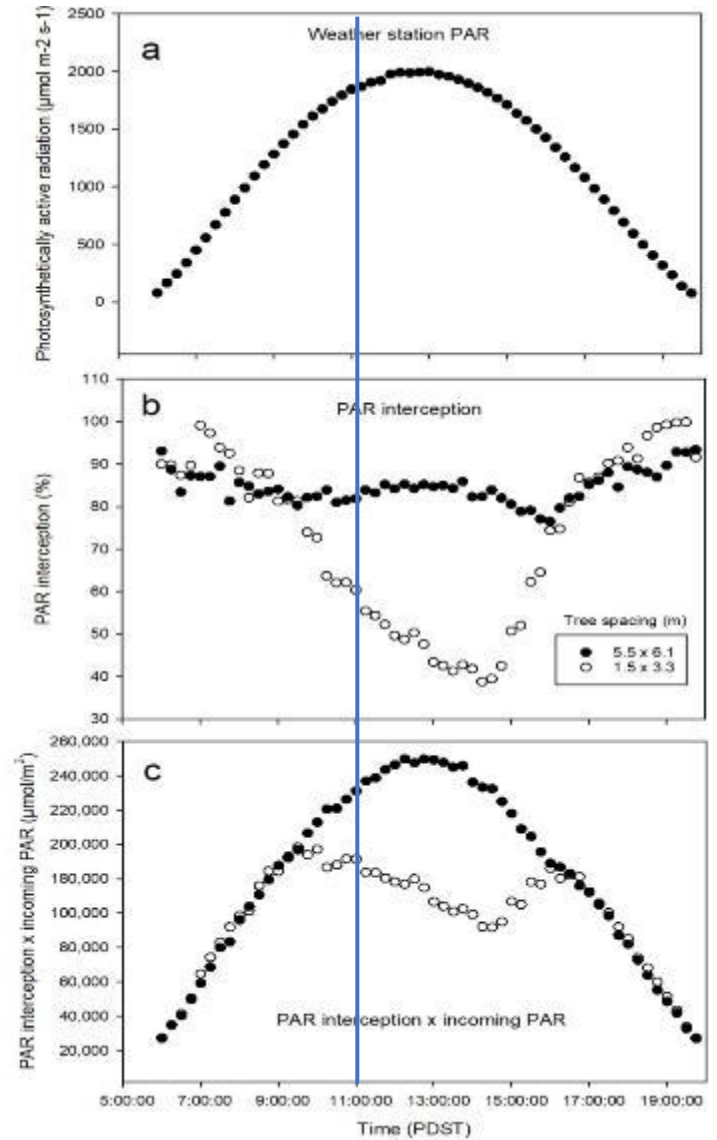
WINGSCAPES 65°F HIGHDENS ALM 12 JUN 2017 09:00 am



Trial comparing 298 versus 2020 tree per hectare



Trial comparing 298 versus 2020 tree per hectare



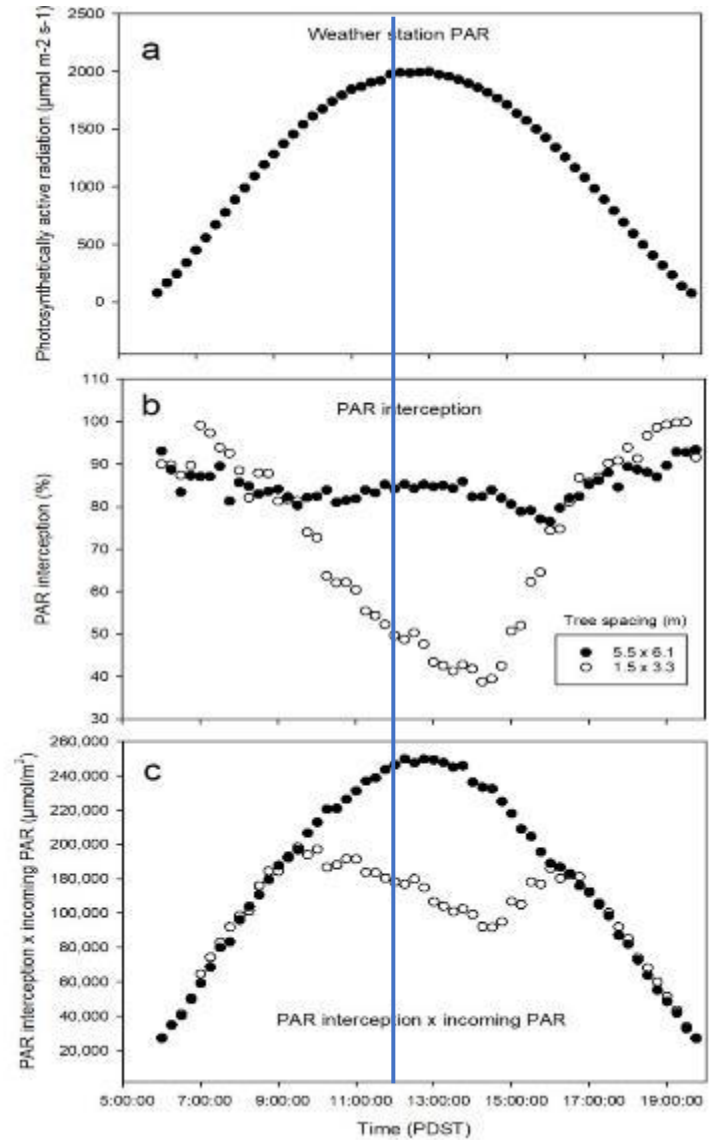
Trial comparing 298 versus 2020 tree per hectare



WINGSCAPES 69°F BILL NP KEST 12 JUN 2017 12:00 pm



WINGSCAPES 89°F HIGHDENS ALM 12 JUN 2017 12:00 pm



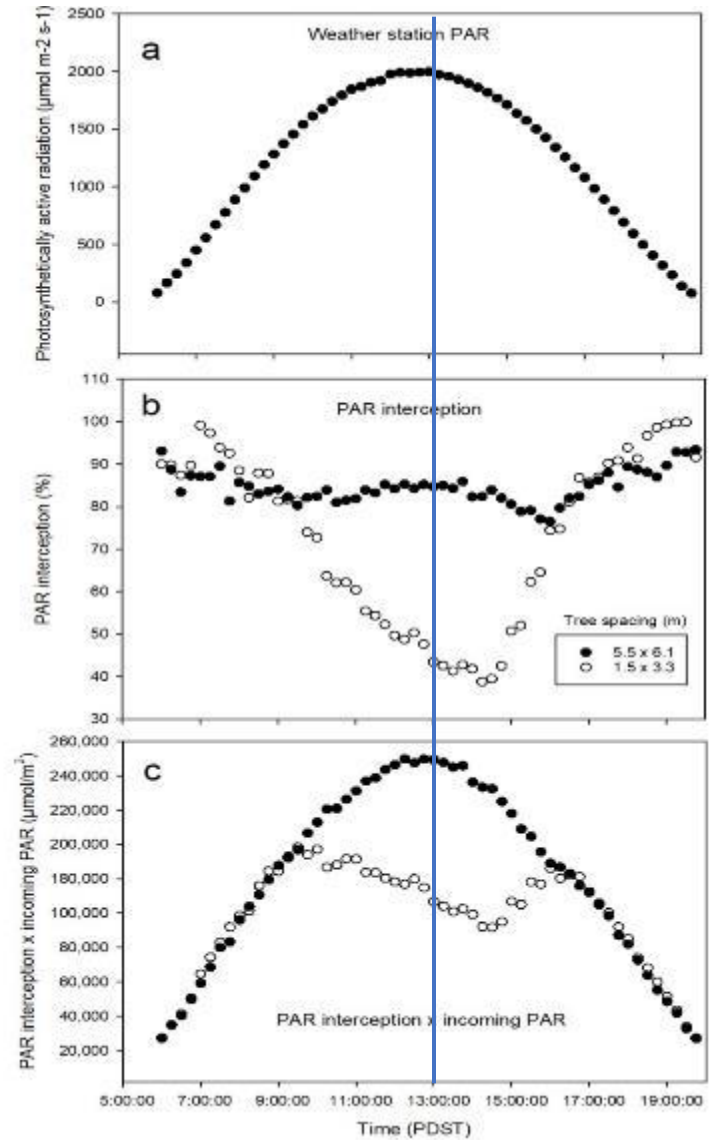
Trial comparing 298 versus 2020 tree per hectare



WINGSCAPES 72°F BILL NP KEST 12 JUN 2017 01:00 pm



WINGSCAPES 93°F HIGHDENS ALM 12 JUN 2017 01:00 pm



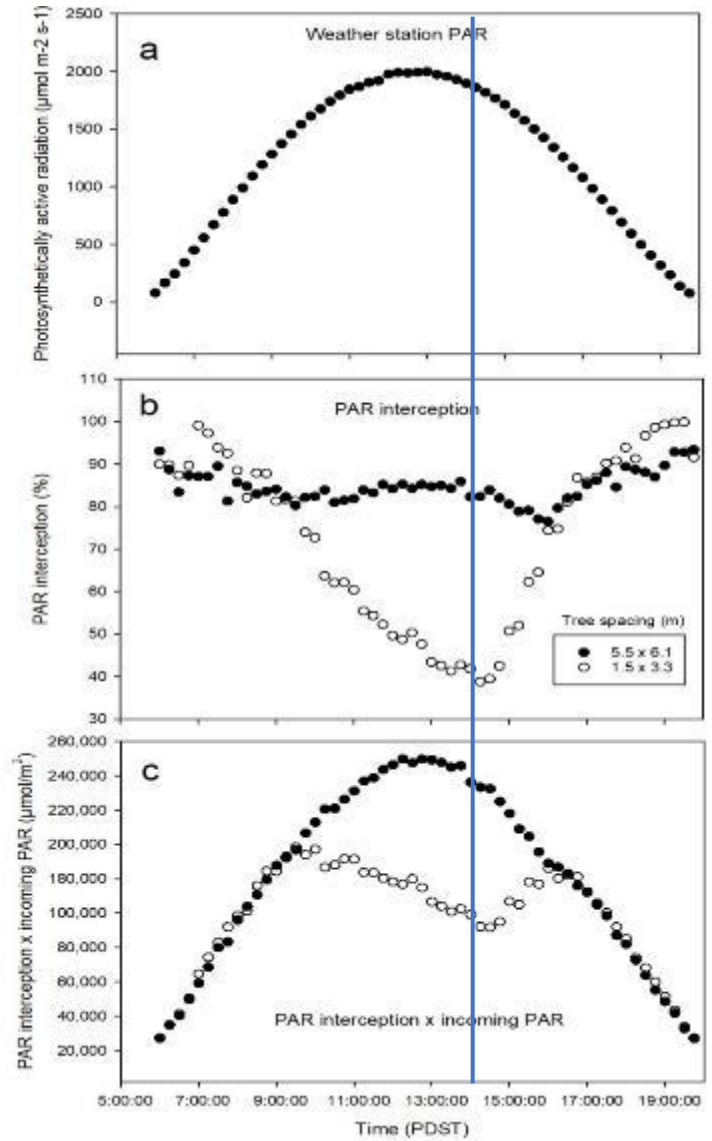
Trial comparing 298 versus 2020 tree per hectare



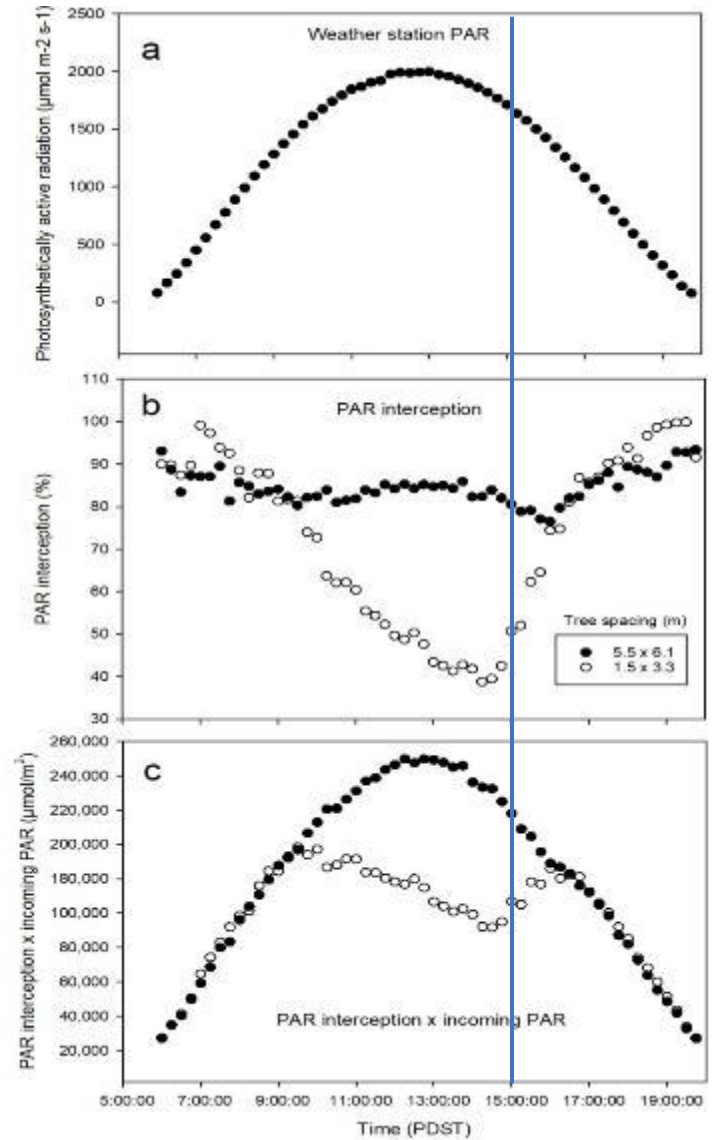
WINGSCAPES 74°F BILL NP KEST 12 JUN 2017 02:00 pm



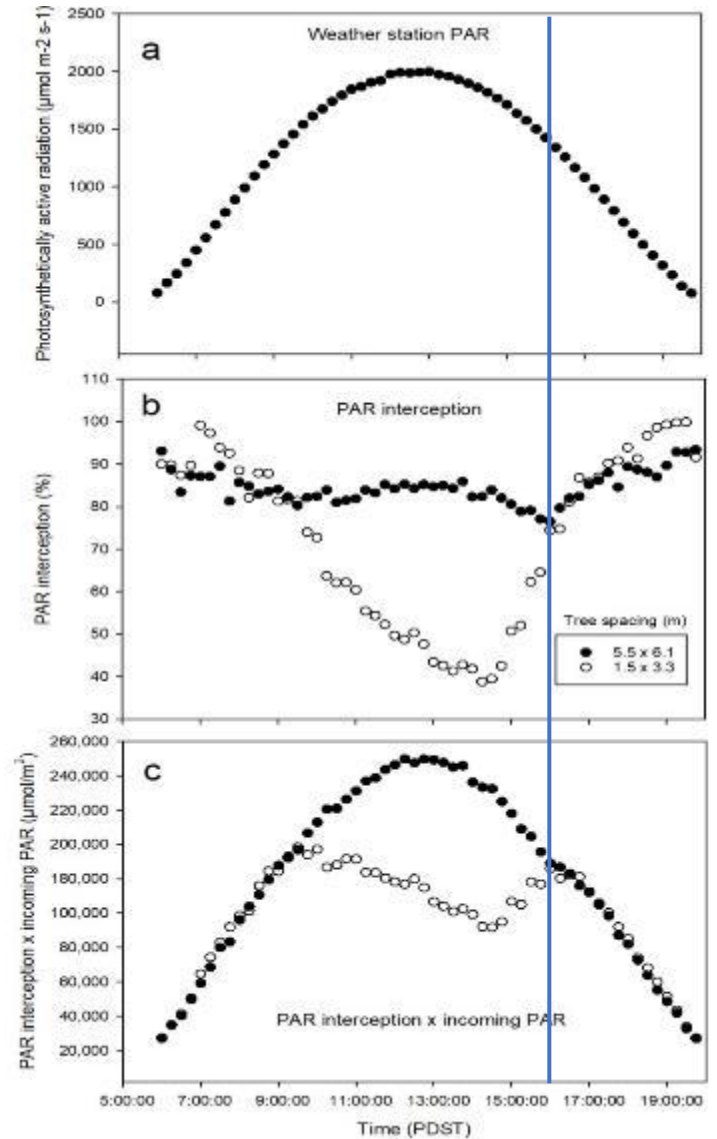
WINGSCAPES 96°F HIGHDENS ALM 12 JUN 2017 02:00 pm



Trial comparing 298 versus 2020 tree per hectare



Trial comparing 298 versus 2020 tree per hectare



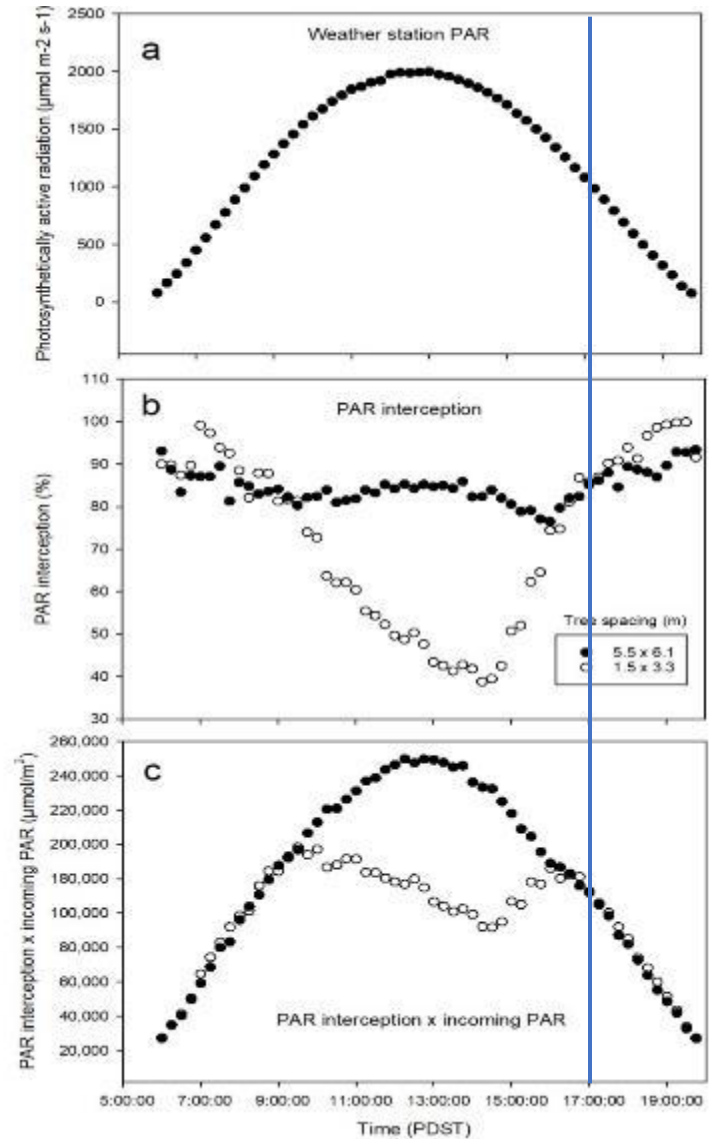
Trial comparing 298 versus 2020 tree per hectare



WINGSCAPES 74°F BILL NP KEST 12 JUN 2017 05:00 pm



WINGSCAPES 86°F HIGHDENS ALM 12 JUN 2017 05:00 pm



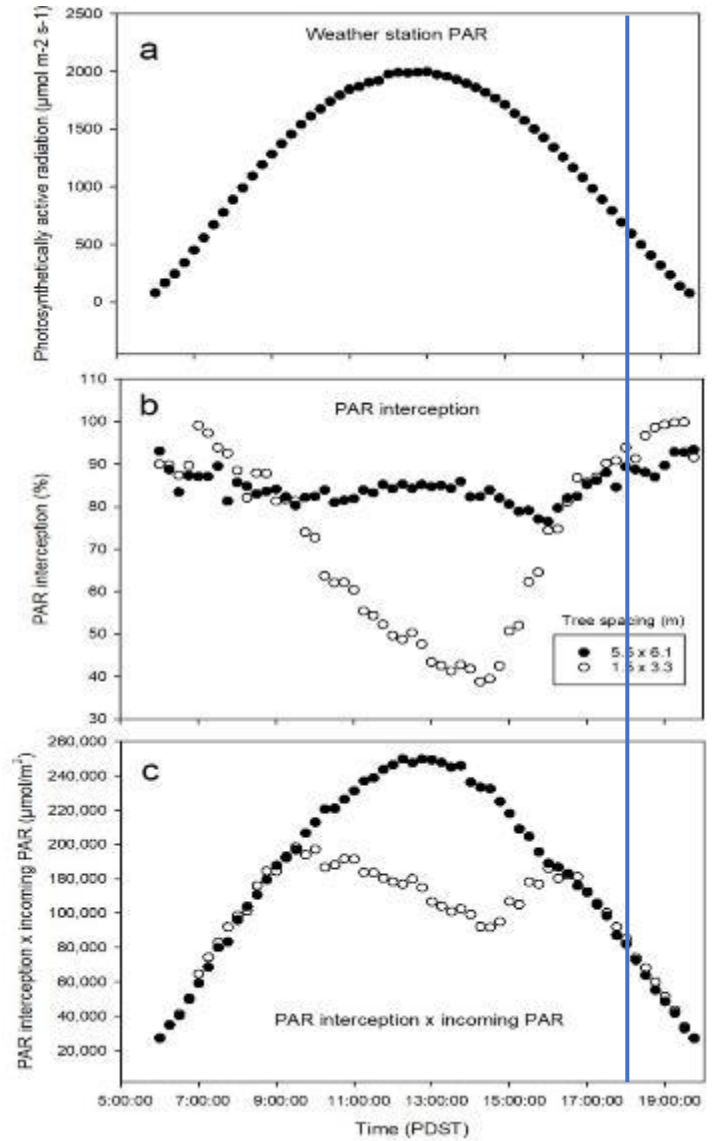
Trial comparing 298 versus 2020 tree per hectare



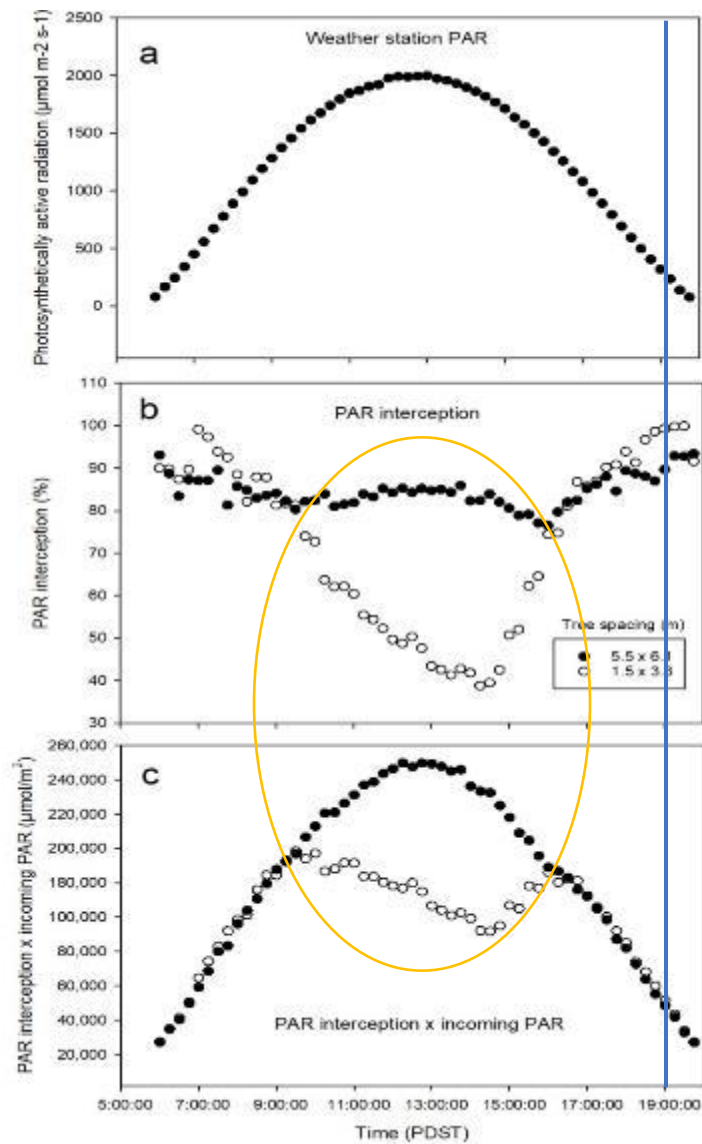
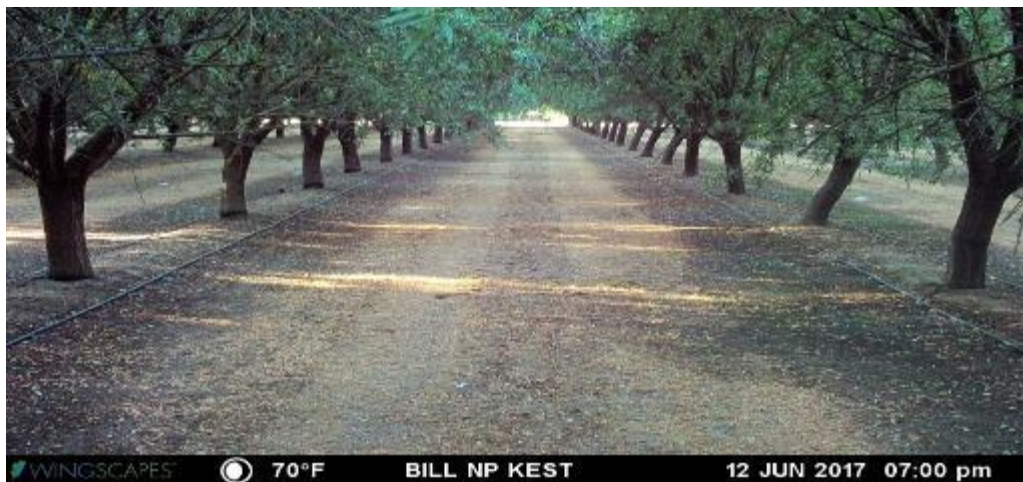
WINGSCAPES 72°F BILL NP KEST 12 JUN 2017 06:00 pm



WINGSCAPES 83°F HIGHDENS ALM 12 JUN 2017 06:00 pm

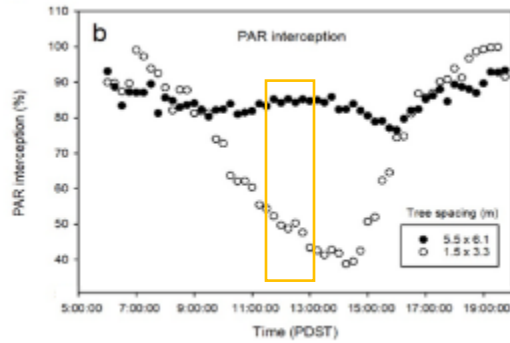


Trial comparing 298 versus 2020 tree per hectare



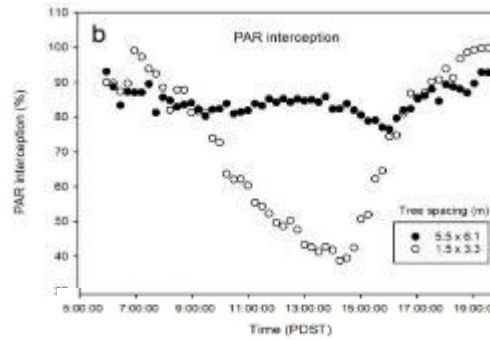
Trial comparing 298 versus 2020 tree per hectare

Midday



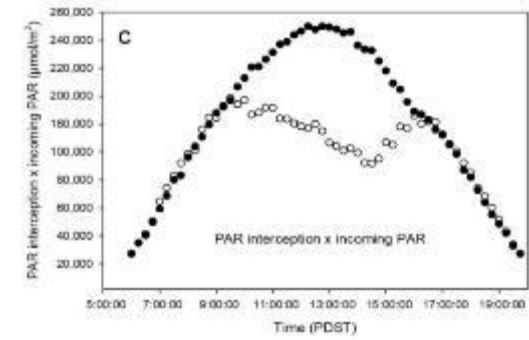
45%

Diurnal PAR



86%

Diurnal summed



76%

Yield potential based on midday PAR interception

Planting	PAR int. (%)	Yield potential (kernel mt/ha)	Actual yield (kernel mt/ha)
1.5 x 3.3 m	44	3.8	1.3
5.5 x 6.1 m	83	5.8	~3.6

Trial comparing 298 versus 2020 tree per hectare

Actual yield- number is parenthesis is percent PAR (or estimate)

Orchard	3 rd leaf (kernel mt/ha)	4 th leaf (kernel mt/ha)	5 th leaf (kernel mt/ha)
1.5 x 3.3 m	0.58 (24?)	1.48 (34?)	? (44)
5.5 x 6.1 m	1.38 (38.8)	2.55 (48.4)	4.54 (83)

midday



1.5 x 3.3 m



Too much space is devoted to the drive row in super high density plantings

midday



5.5 x 6.1 m

The logo for 'tenias harvester' features a stylized green tree icon above the word 'tenias' in a white, sans-serif font, with the word 'harvester' in a smaller, green, sans-serif font below it.

Over the row harvesters may allow higher density plantings with less space devoted to drive rows



Potential Impacts of Orchard Management on Food Safety Risk in Almond

Bruce Lampinen

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Dept. of Plant Sciences, UC Davis



Salmonella outbreaks tied to raw almonds from California

- 2000-2001
 - 168 cases Canada and the U.S.
- 2003-2004
 - 47 cases in the U.S. and Canada
 - Handler (processor) unrelated to previous outbreak
 - 18 million pounds of raw almonds were recalled- no positives were found in any recalled almonds
- 2005-2006 (raw almond-link suspected)
 - 15 cases in Sweden

- Since 2007, all almonds sold in the U.S. have been required to be pasteurized as outcome of *Salmonella* outbreaks



Pasteurization Options

- Oil Roasting:
 - Minimum of 260°F (127°C) 2 min
- Water Blanching (removes skin):
 - Minimum of 190°F (88°C) 2 min
- Propylene Oxide Gas:
 - Temperature, time, concentration
- Two different Steam Treatments
- One FMC oven with steam



Does the fact that almonds are pasteurized mean that almond growers do not need to concern themselves with food safety?

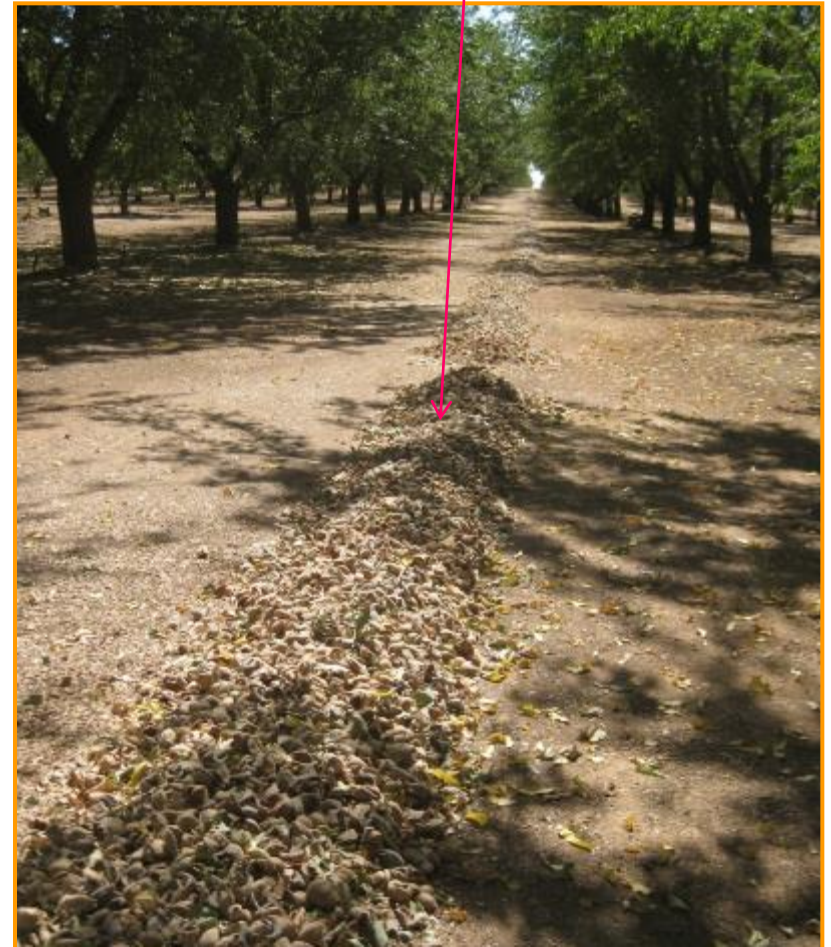
- No- Pasteurization is designed for log 4 reduction which should be adequate based on historic levels of contamination
- If level of contamination is higher, log 4 reduction will not be adequate
- Only nuts sold in North America are required to be pasteurized

Food Safety- Sampling nuts from orchard floor to decide if they are dry enough to harvest.



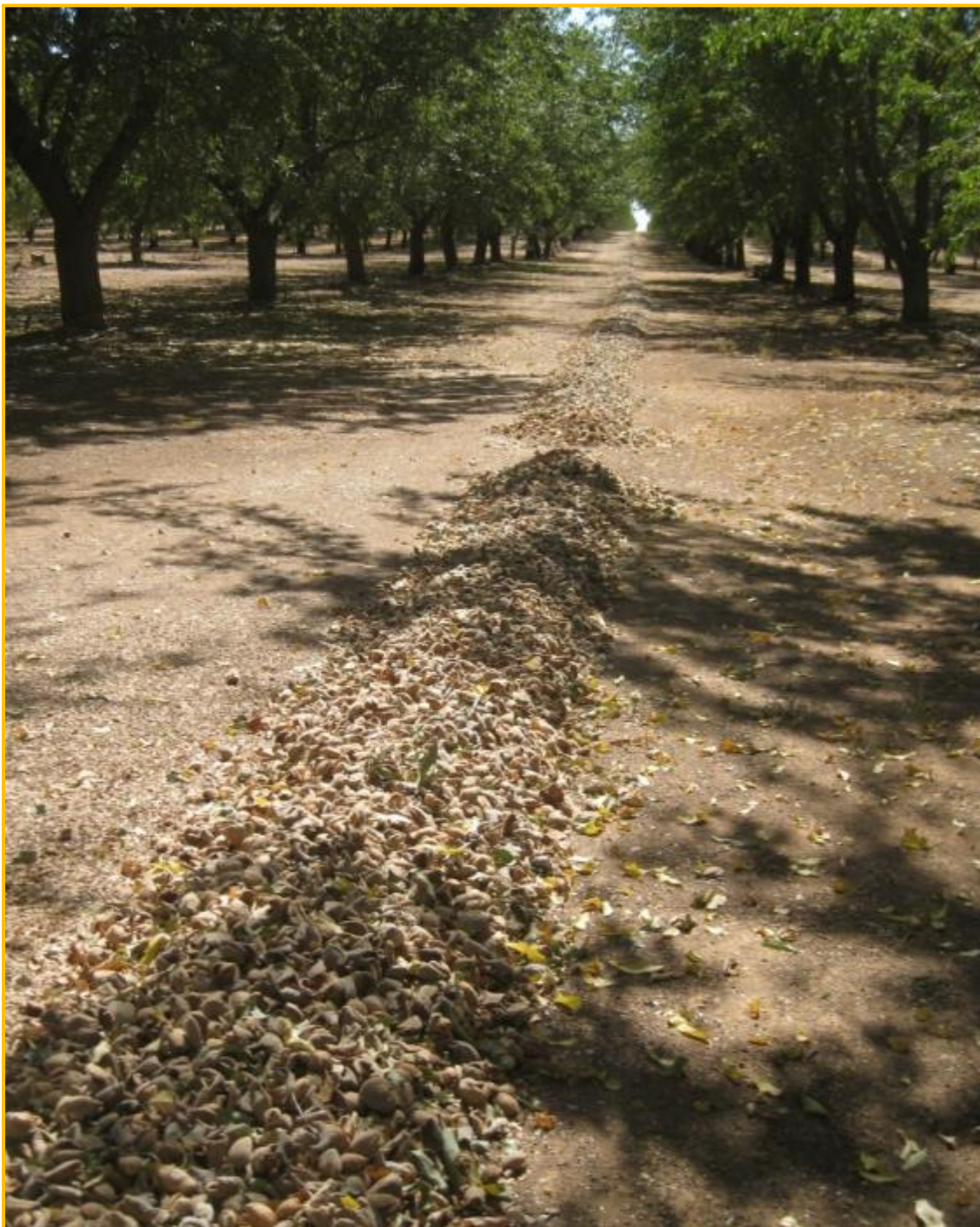
From across orchard floor in orchard where they are left to dry as shaken

From top to bottom of windrow in orchard where nuts are dried in windrow



At end of drying period, ~2% higher moisture content under tree compared to in drive row





For nuts that were dried in windrow, moisture content was approximately 2% higher at bottom of windrow than at top

Nut drying on orchard floor varies depending on canopy size- be sure to sample across canopy size gradients before deciding if it is time to harvest



Shaking, sweeping and pickup



Loading onto truck

