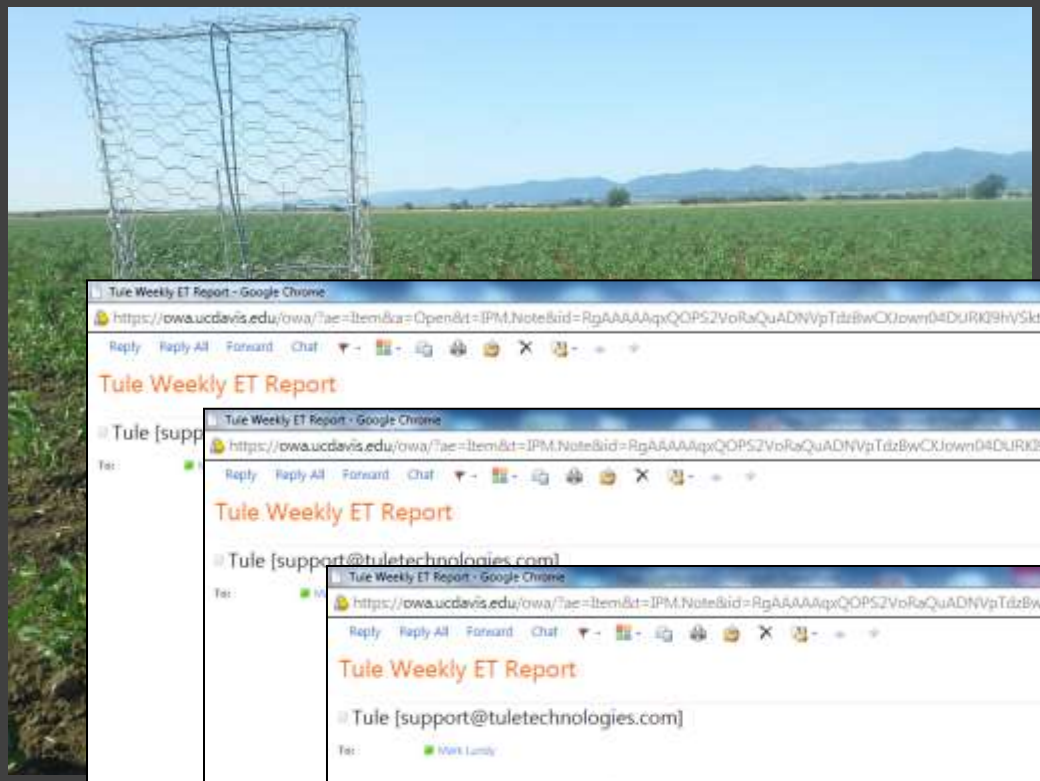
Exploring the potential for sensor-based fertigation scheduling in SDI tomatoes

Mark Lundy, UCCE Agronomy Advisor, Colusa-Sutter-Yuba

University of California
Agriculture and Natural Resources

Normalized difference vegetative index (NDVI)

Trimble Greenseeker handheld NDVI



Field-specific evapotranspiration (ET), irrigation measurements

Tule

Tule Weekly ET Report - Google Chrome

https://owa.ucdavis.edu/owa/?ae=Item&a=Open&t=IPM.Note&id=RgAAAAAqxQOPS2VoRaQuADNVpTdzBwCXJown04DURK09hVSktLHFAAAAmw9%2bAACXJown04DURK09hVSktLHFAAAYXG

Reply Reply All Forward Chat

Tule Weekly ET Report

Tule [supp

Tule Weekly ET Report - Google Chrome

https://owa.ucdavis.edu/owa/?ae=Item&t=IPM.Note&id=RgAAAAAqxQOPS2VoRaQuADNVpTdzBwCXJown04DURK09hVSktLHFAAAAmw9%2bAACXJown04DURK09hVSktLHFAAAYUhKSAAA

Reply Reply All Forward Chat

Tule Weekly ET Report

Tule [support@tuletechnologies.com]

To:

Tule Weekly ET Report - Google Chrome

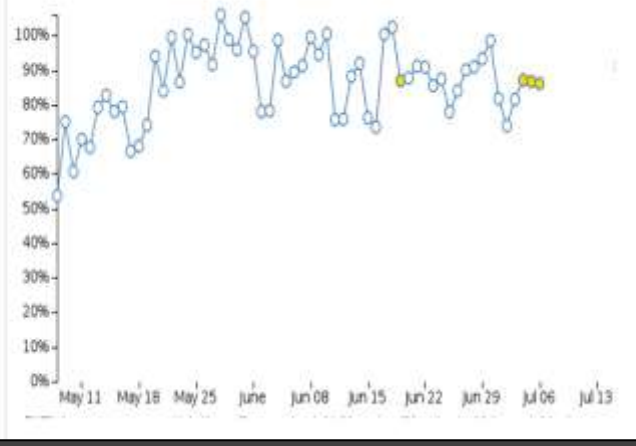
https://owa.ucdavis.edu/owa/?ae=Item&t=IPM.Note&id=RgAAAAAqxQOPS2VoRaQuADNVpTdzBwCXJown04DURK09hVSktLHFAAAAmw9%2bAACXJown04DURK09hVSktLHFAAAYUhKSAAA

Reply Reply All Forward Chat

Tule Weekly ET Report

Tule [support@tuletechnologies.com]

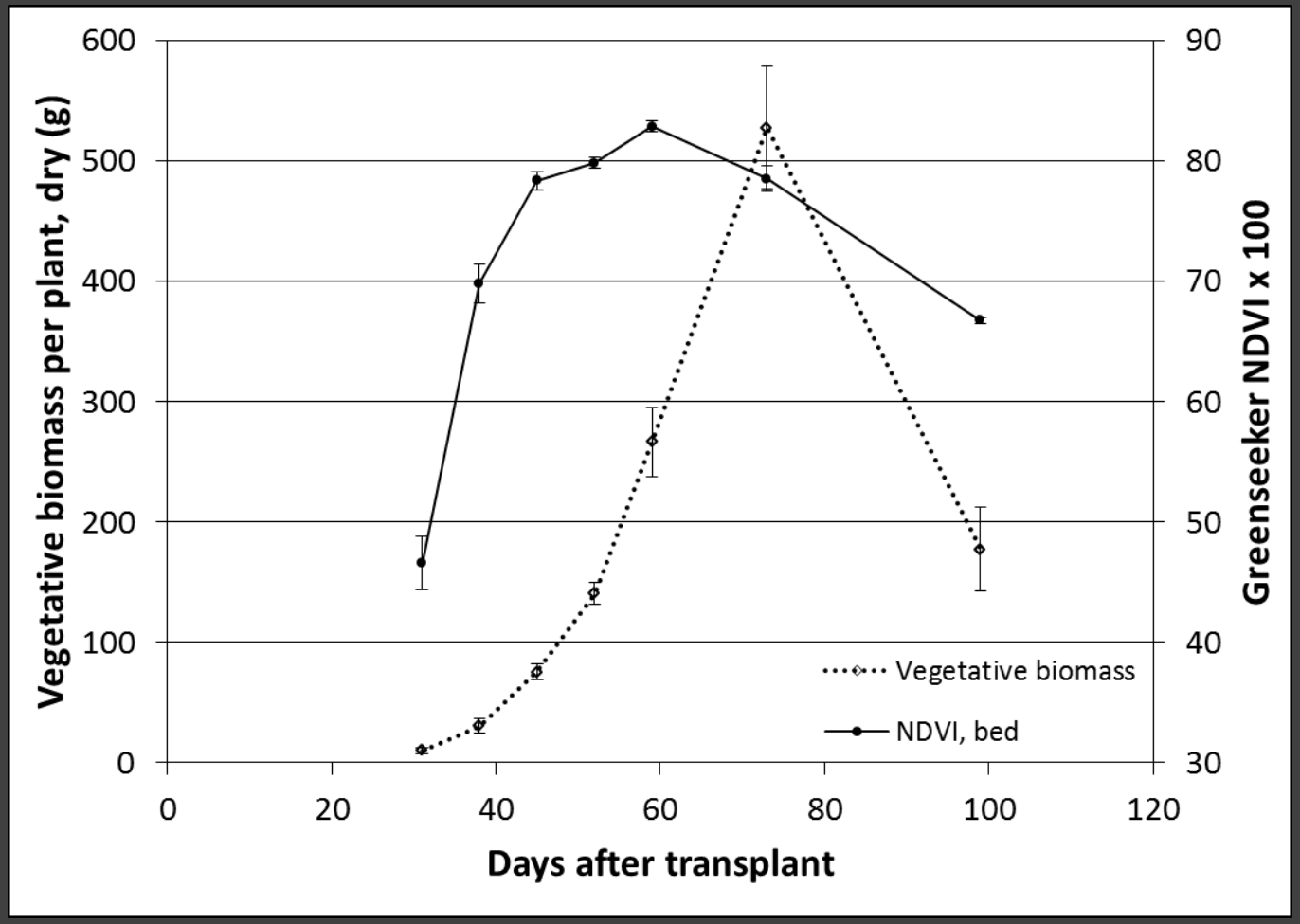
To:



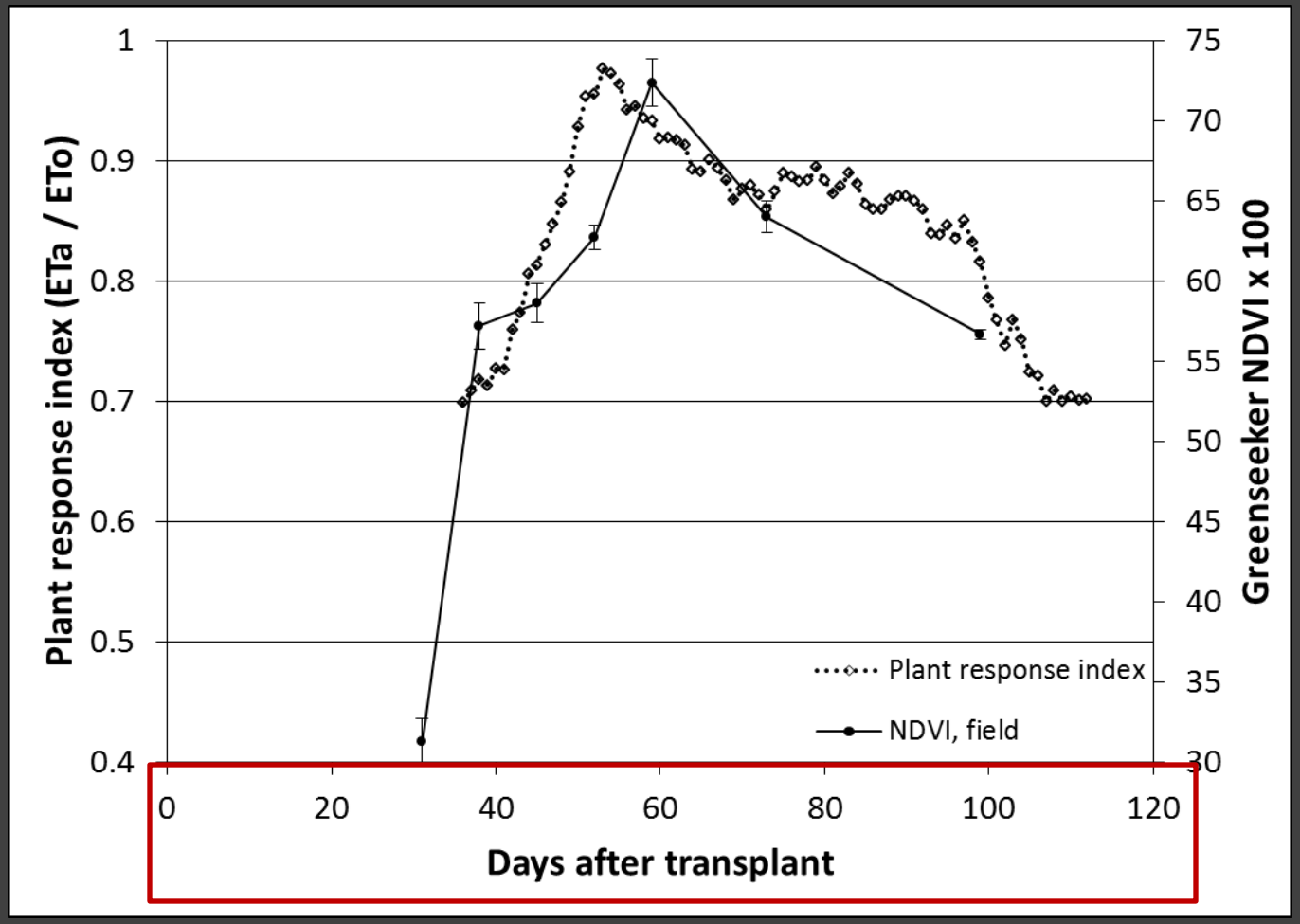
Field 1: Southern Sacramento Valley

- Plant Date: 3/28/2014
- Harvest Date: 7/29/2014
- Yield: 56.04 tons/acre
- Solids: 4.77
- Variety: AB 311
- Total Nitrogen: 190 Units, delivered between 3/25/2014 and 5/8/2014

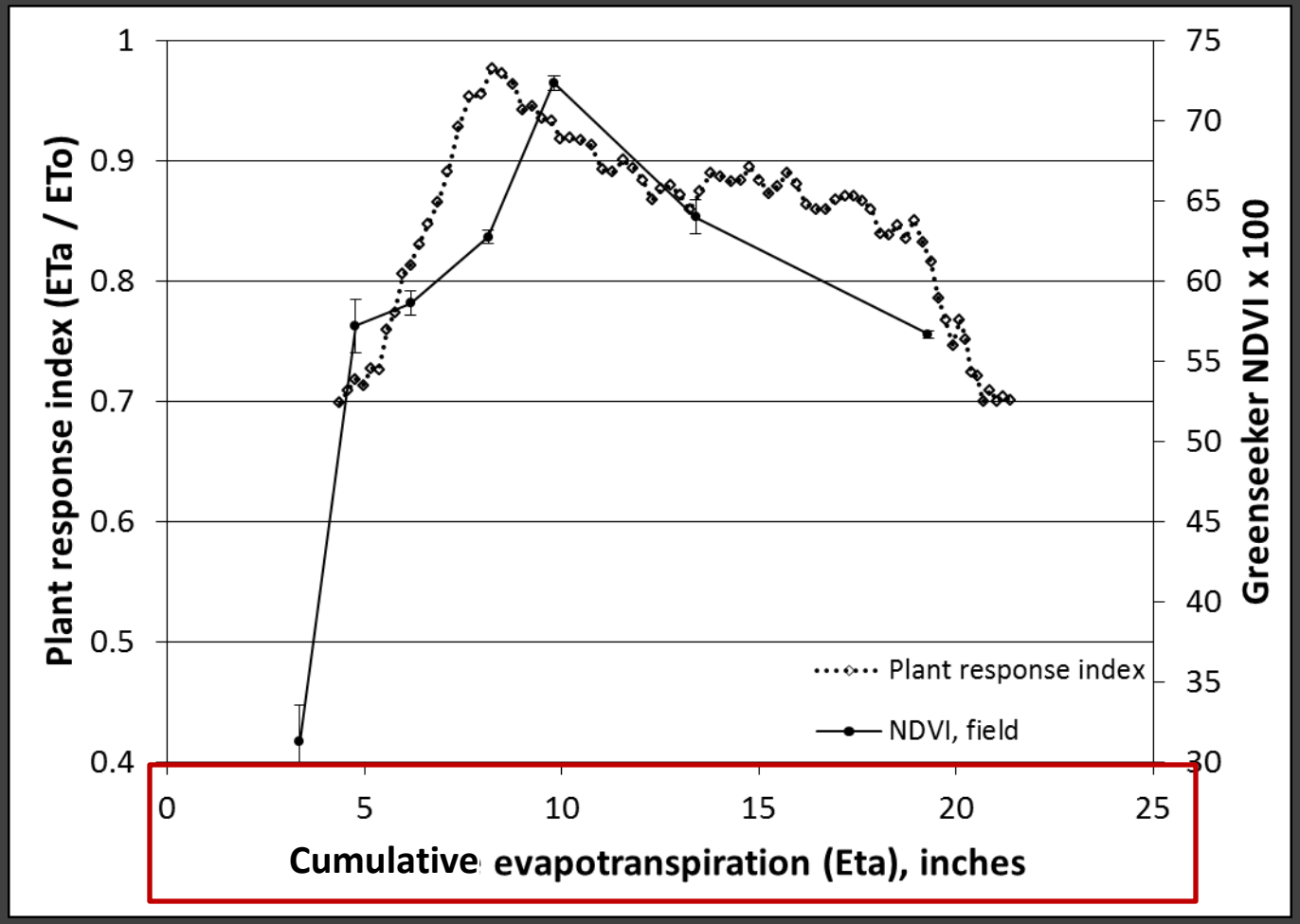
Timing of biomass accumulation and nutrient uptake



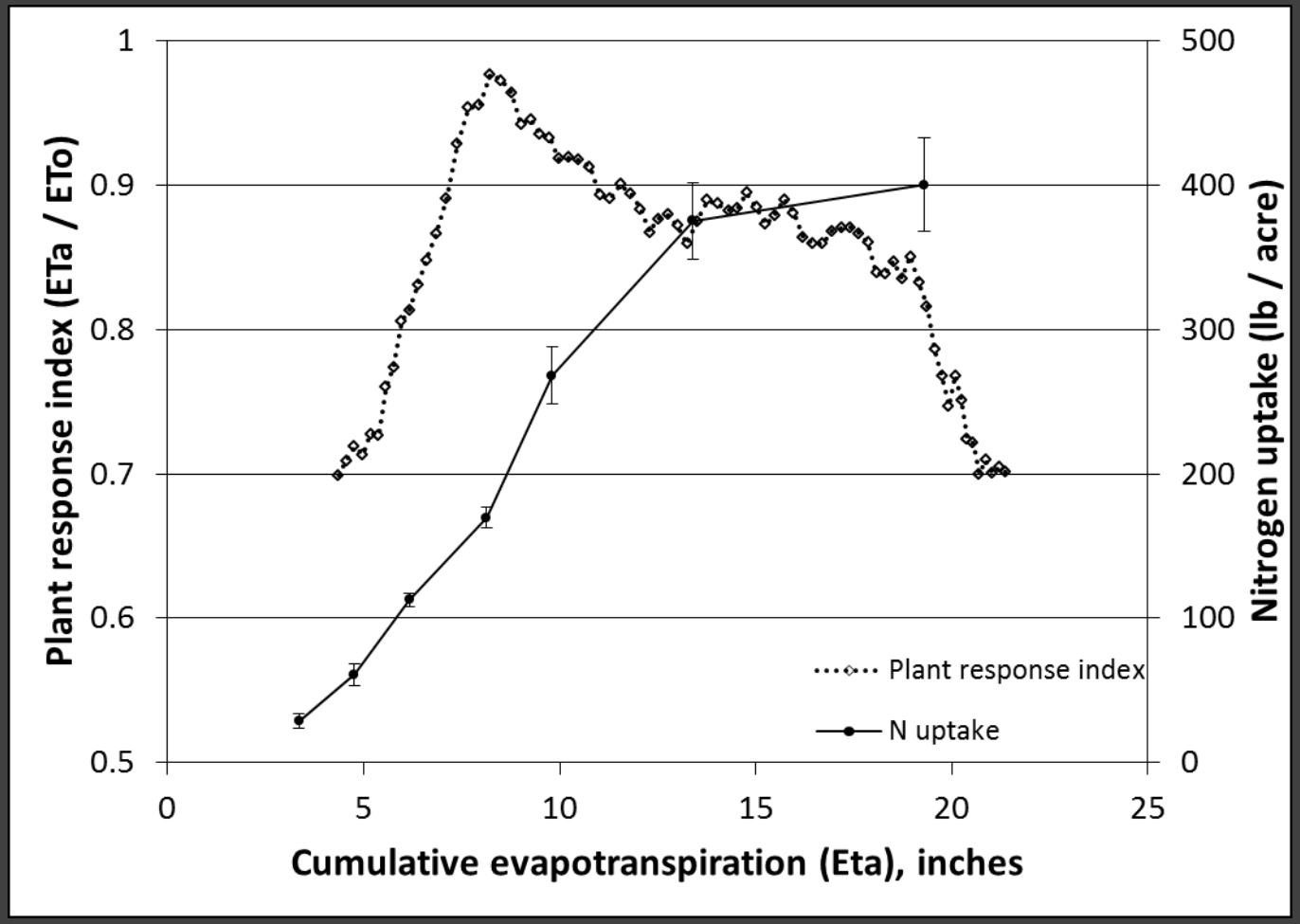
Relationship between biomass accumulation and ETa / ETo



Tracking growth as a function of ETa vs days

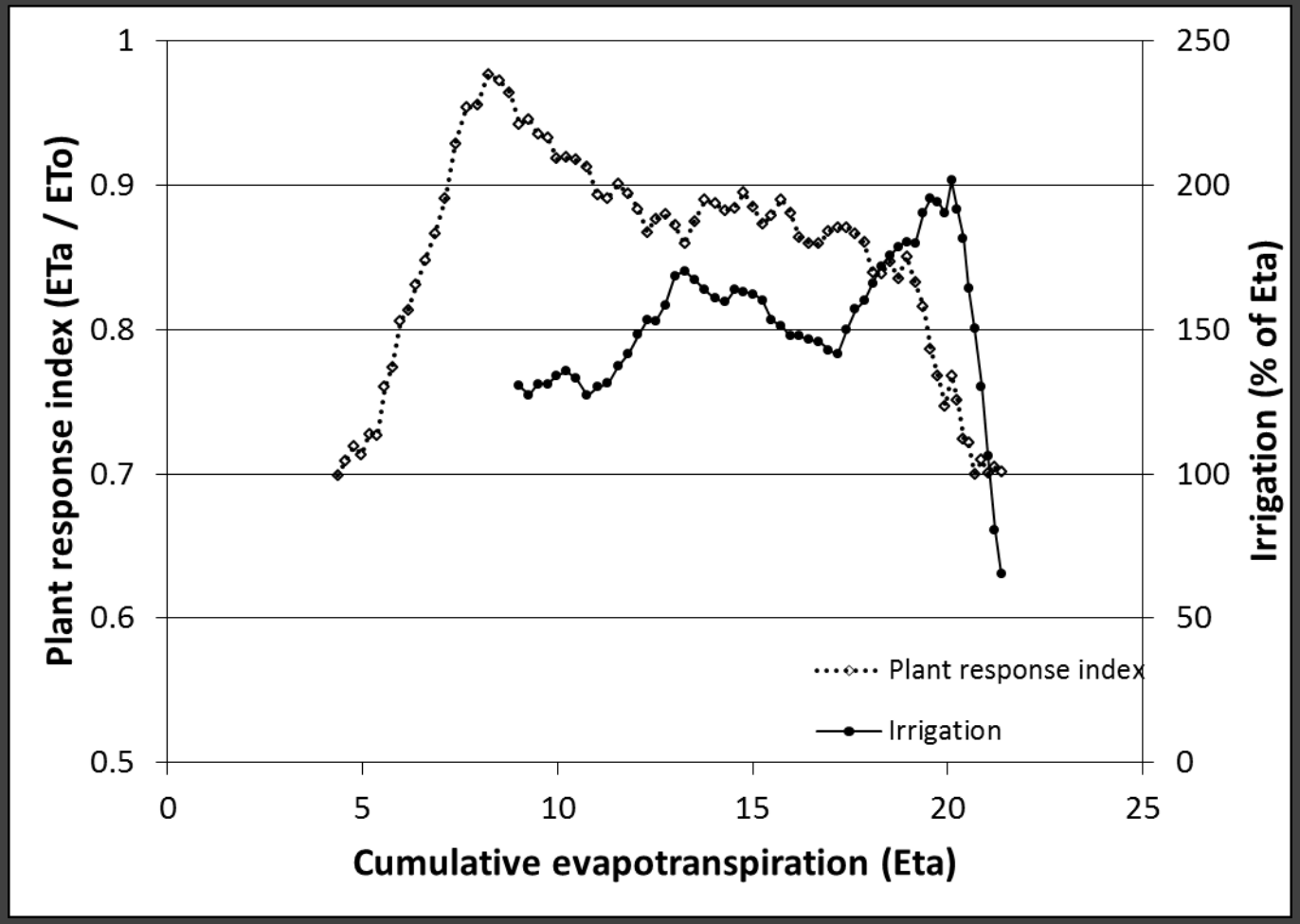


Can we develop robust fertigation recommendations as a function of ETa?

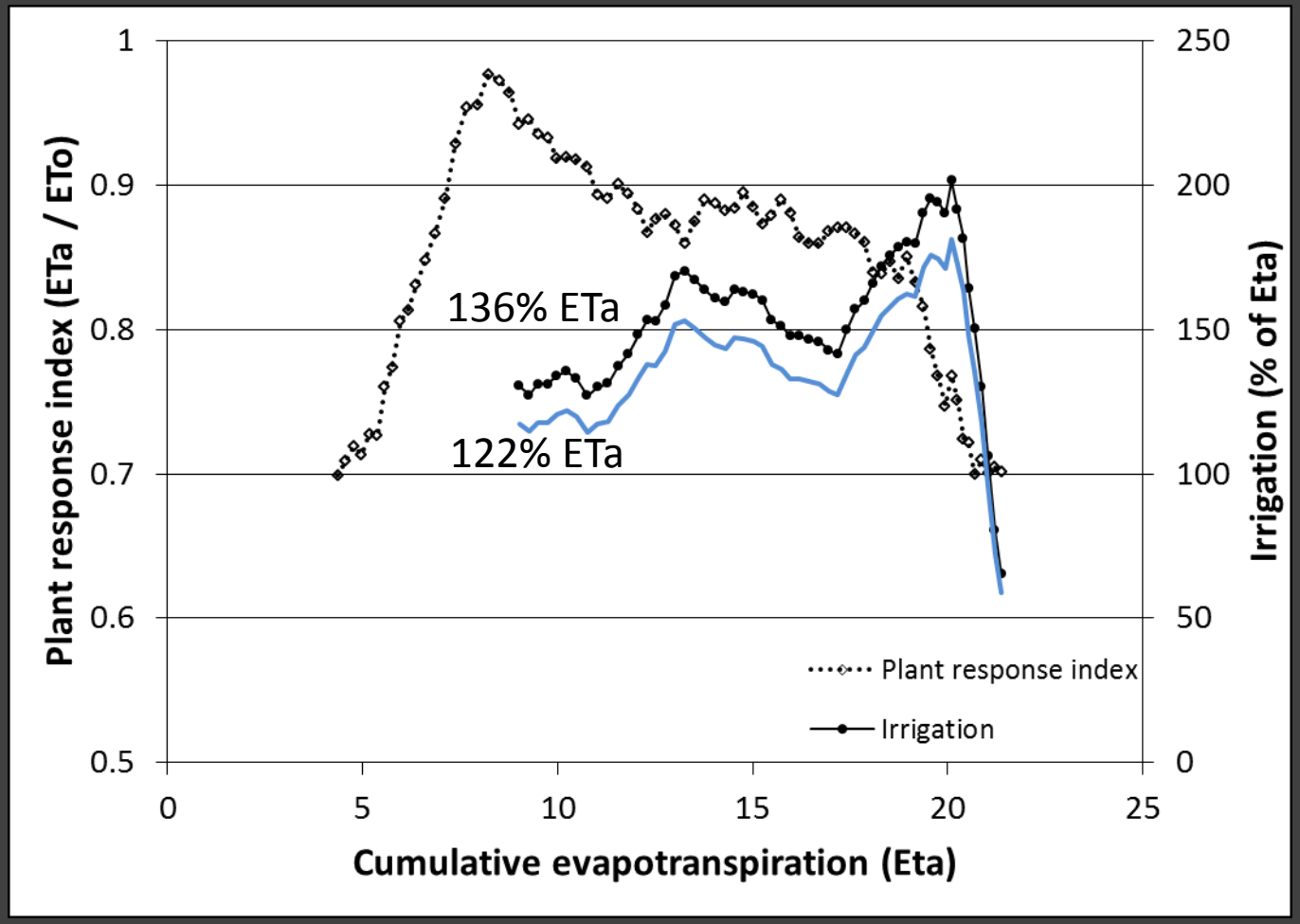


Between 4 – 14 inches of ETa, apply 15 lb N per inch of water?

Water use reduction without productivity reduction by irrigating according to ETa?

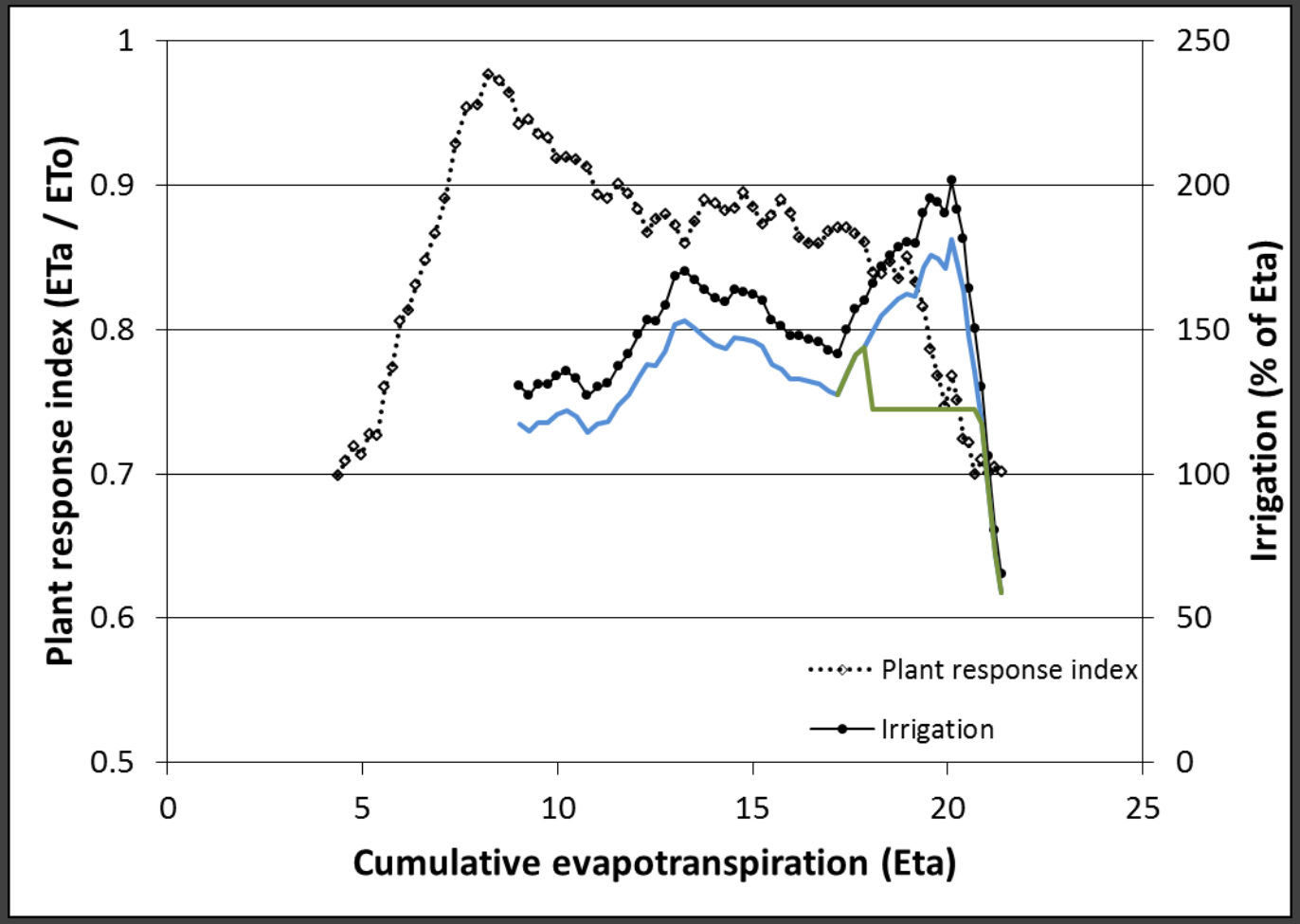


Water use reduction without productivity reduction by irrigating according to ETa?



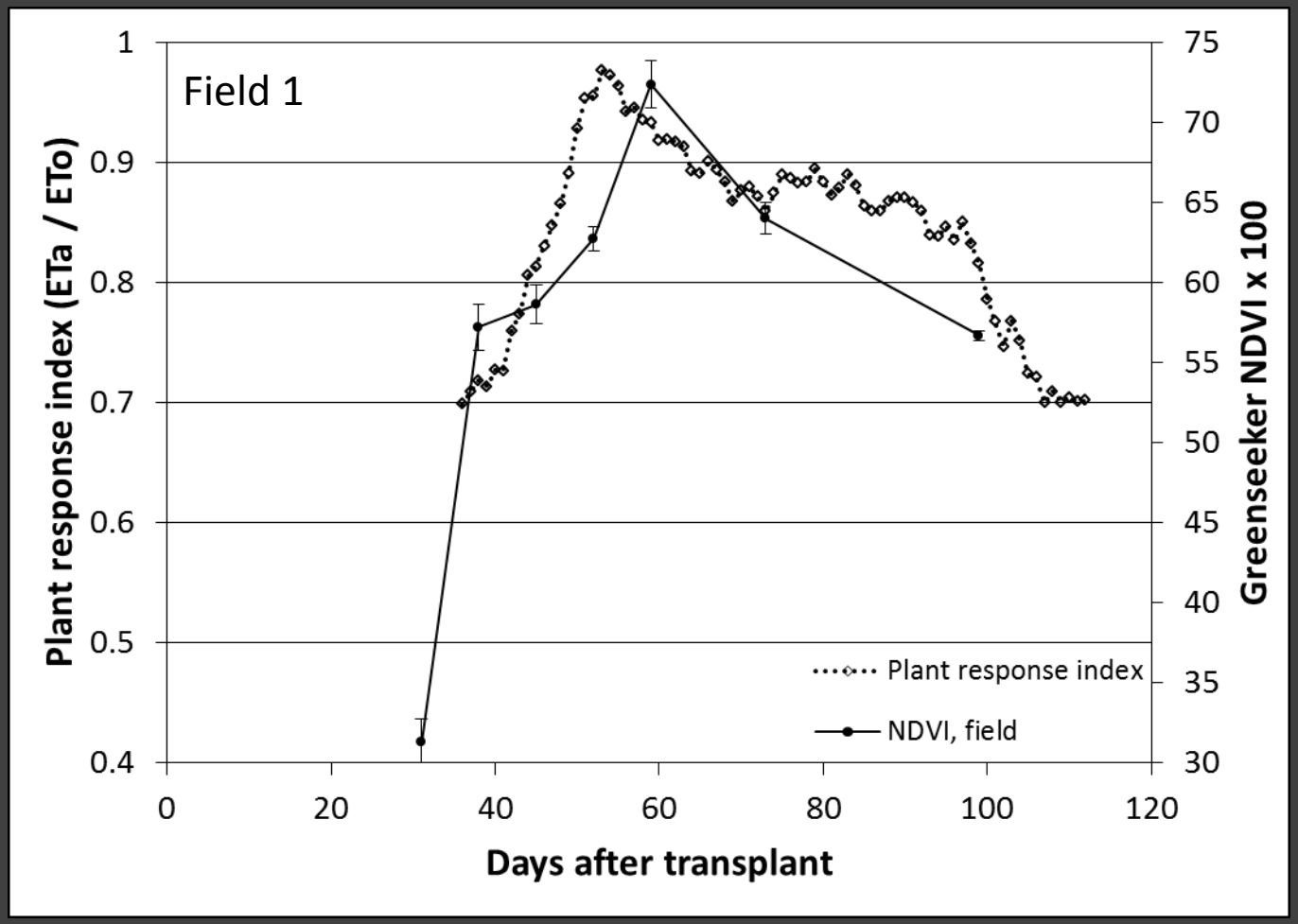
≈ 2 inches of water

Water use reduction without productivity reduction by irrigating according to ETa?

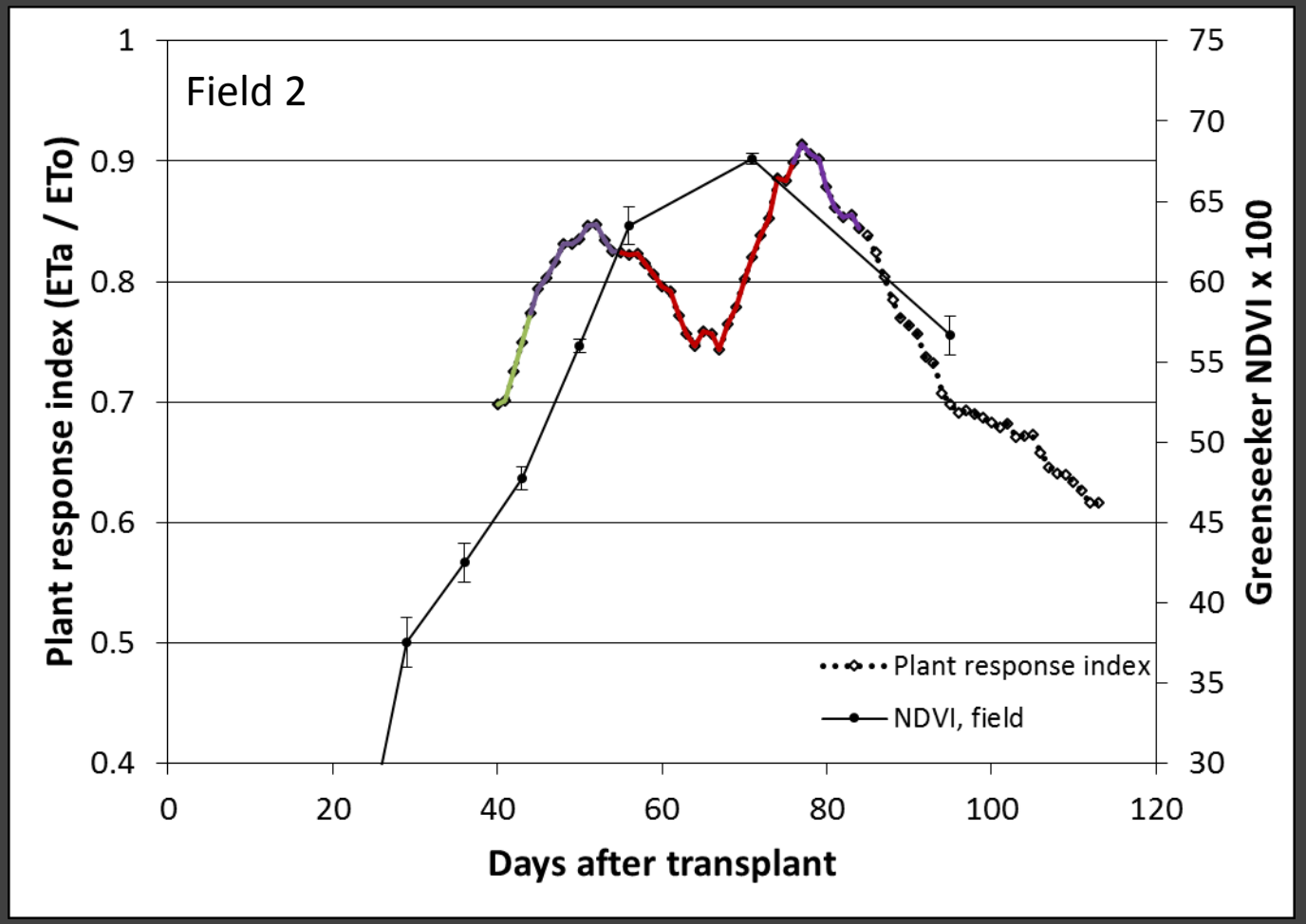


≈ 3 inches of water

Can field-specific Eta act as a diagnostic tool?



Can field-specific Eta/NDVI act as diagnostic tools?



Potassium deficiency

Next steps

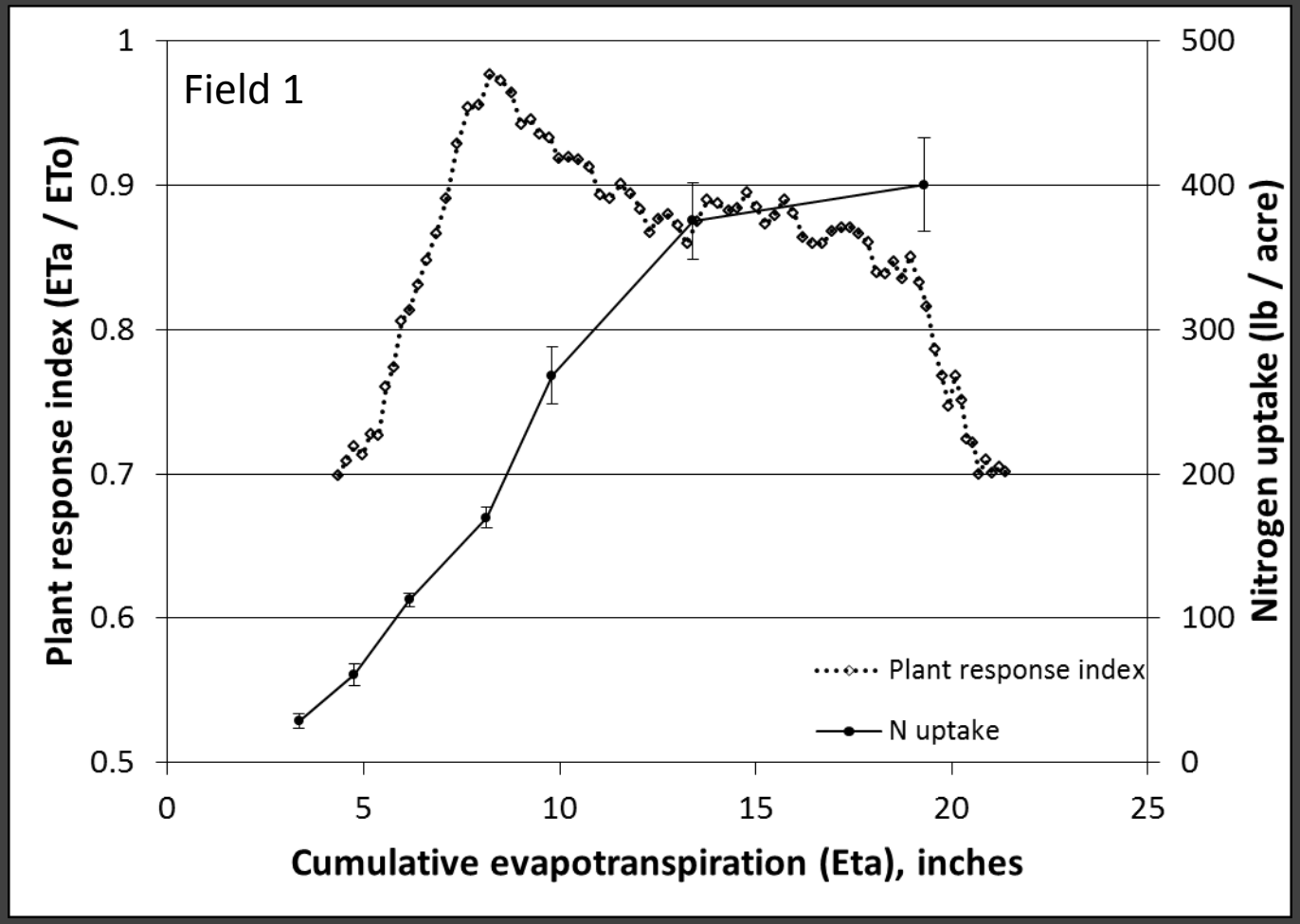
- More sites, planting dates
- Detecting variations in N/water management?
- High resolution spectral data?

Acknowledgments

- Participating grower, crop advisor
- California Tomato Research Institute

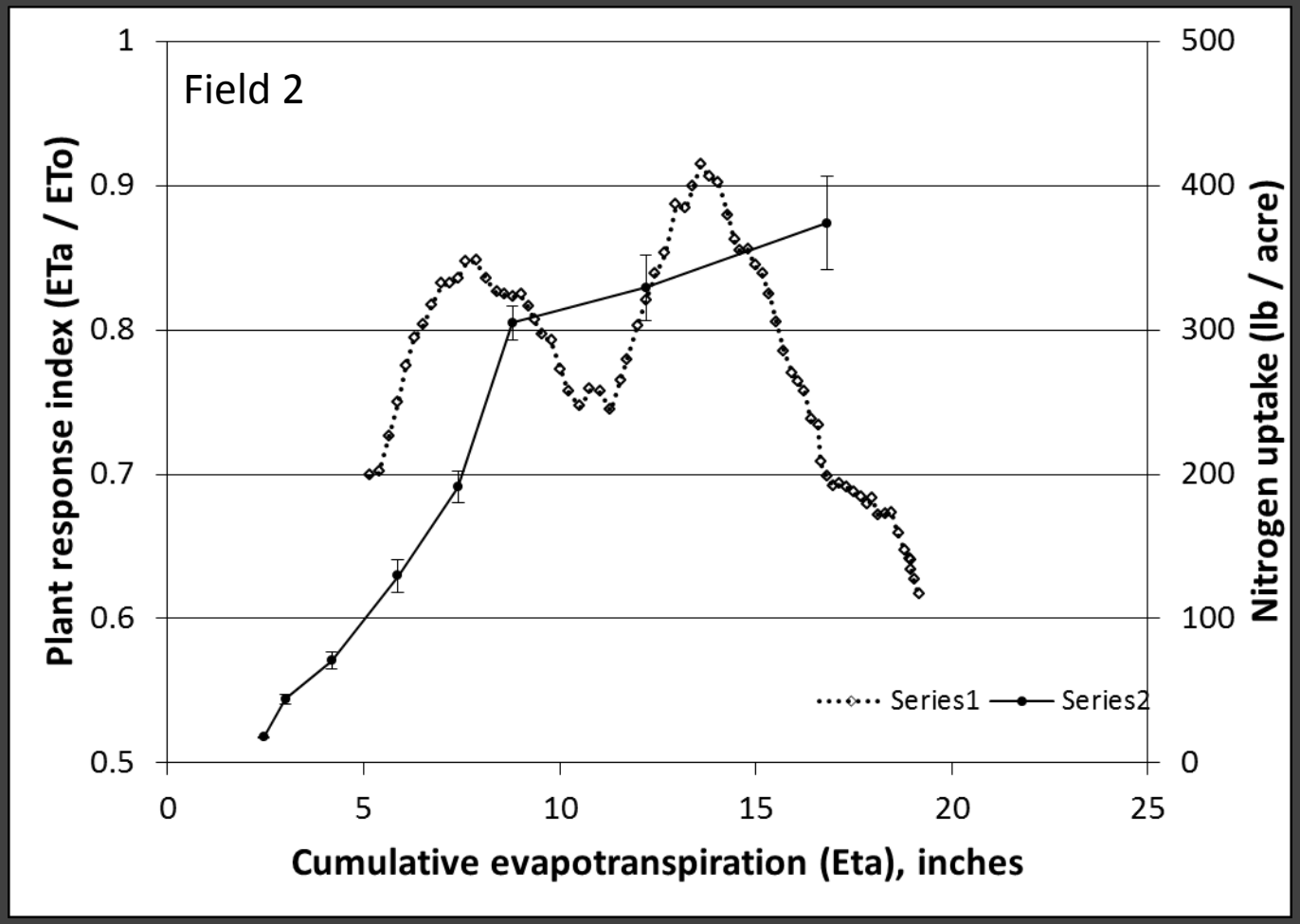
University of California
Agriculture and Natural Resources

Can we develop robust fertigation recommendations as a function of ETa?



Between 4 – 14 inches of ETa, apply 15 lb N per inch of water?

Can we develop robust fertigation recommendations as a function of ETa?



Between 4 – 14 inches of ETa, apply 15 lb N per inch of water?