

Eliminating Herbicides in the Vineyard

Ben Loseke

Special Thanks to:

Dr. Paul Read

Dr. Ellen Papparozzi

Dr. Erin Blankenship

Dr. Chuck Francis

Dr. Brian Wardlow

Steve Gamet

Eric Nelson

Scott Dvorak

Dave Stock

Mike Fritz



AGRONOMY AND HORTICULTURE

Institute of Agriculture and Natural Resources

Maybe....



What if your vineyard looked like this?



What are your concerns with a vineyard that looks like this?



What if we could...

- Eliminate herbicides?
- Virtually eliminate soil erosion?
- Protect ourselves and workers?
- Produce better wines?
- Protect our environment?



Groundcovers

- Sometimes a weed free strip is good...sometimes not

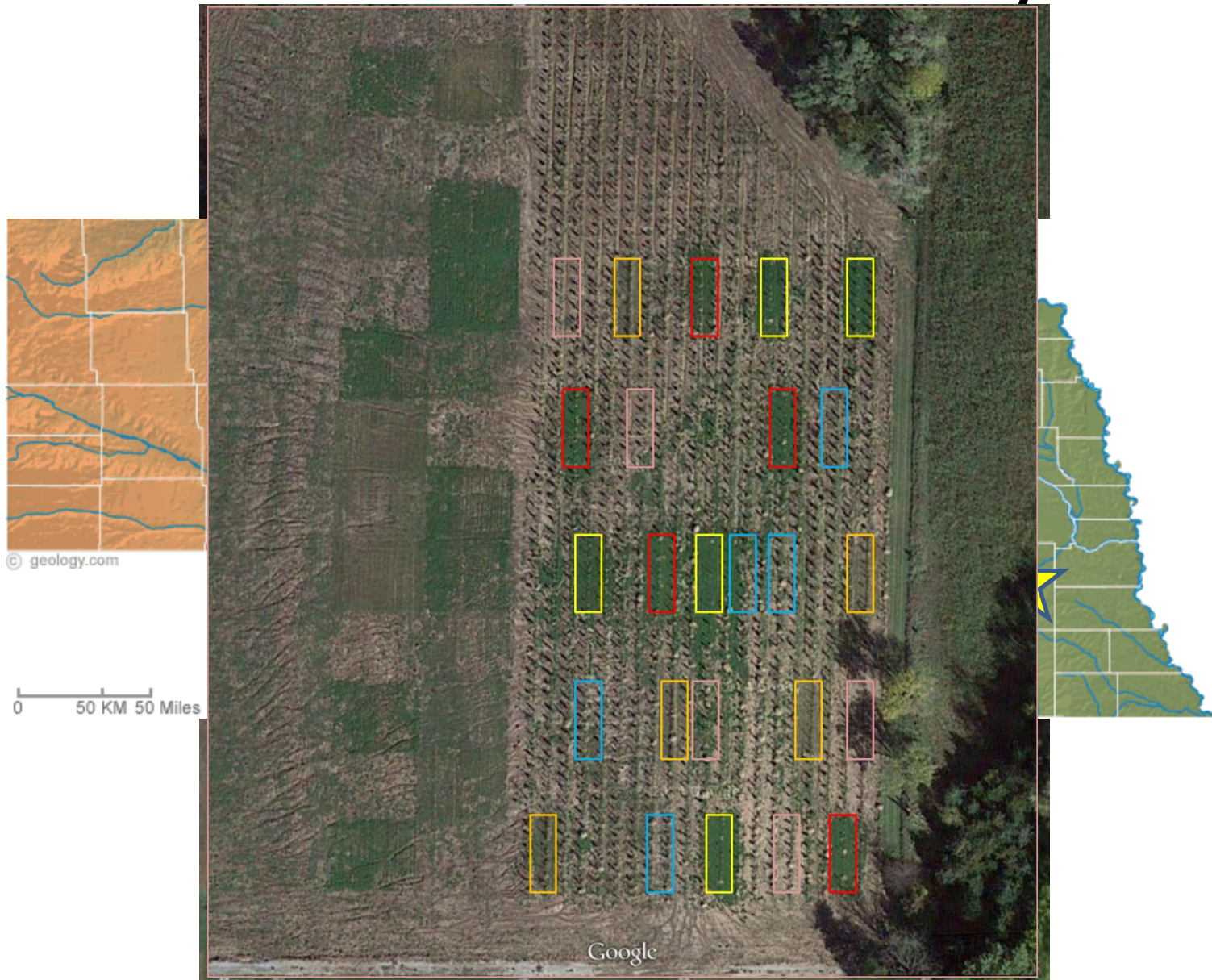


Basic Objectives

- How do 4 different groundcover mixes impact newly planted vines? More precisely- water stress?
- How quickly do the groundcovers establish?
- Can Infrared thermography (IRT) be used to assess grapevine water status?
- Can we use IRT to measure the water stress of the groundcover and correlate that to the water stress of the grapevine?
- Will a thermal camera affordable to a grower be sensitive enough to measure water stress?



Location- Oak Creek Vineyards



Groundcover Mixes

- Mix 1 - Western Yarrow, Birdsfoot Trefoil, Dutch Clover
- Mix 2 - Hard Fescue, Sheep Fescue, Sideoats Grama, Buffalograss, Blue Grama
- Mix 3 - KY Bluegrass, White Clover, Red Fescue, Hard Fescue, Chewing Fescue, P Rye
- Mix 4 - Texoka Buffalograss
- Natural Vegetation



Initial Setup





Irrigation





Planting







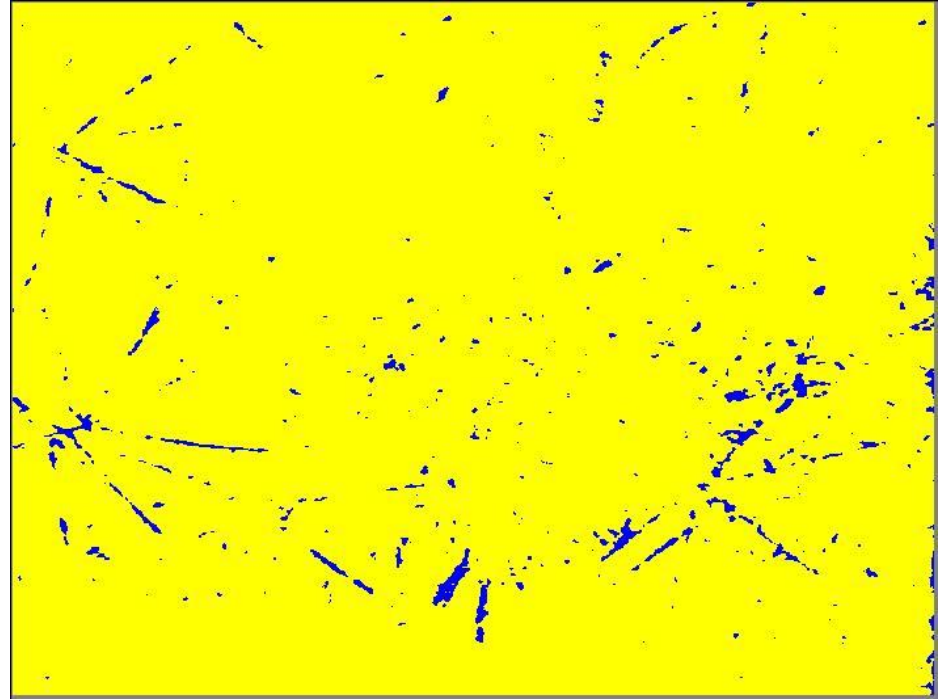
Germination



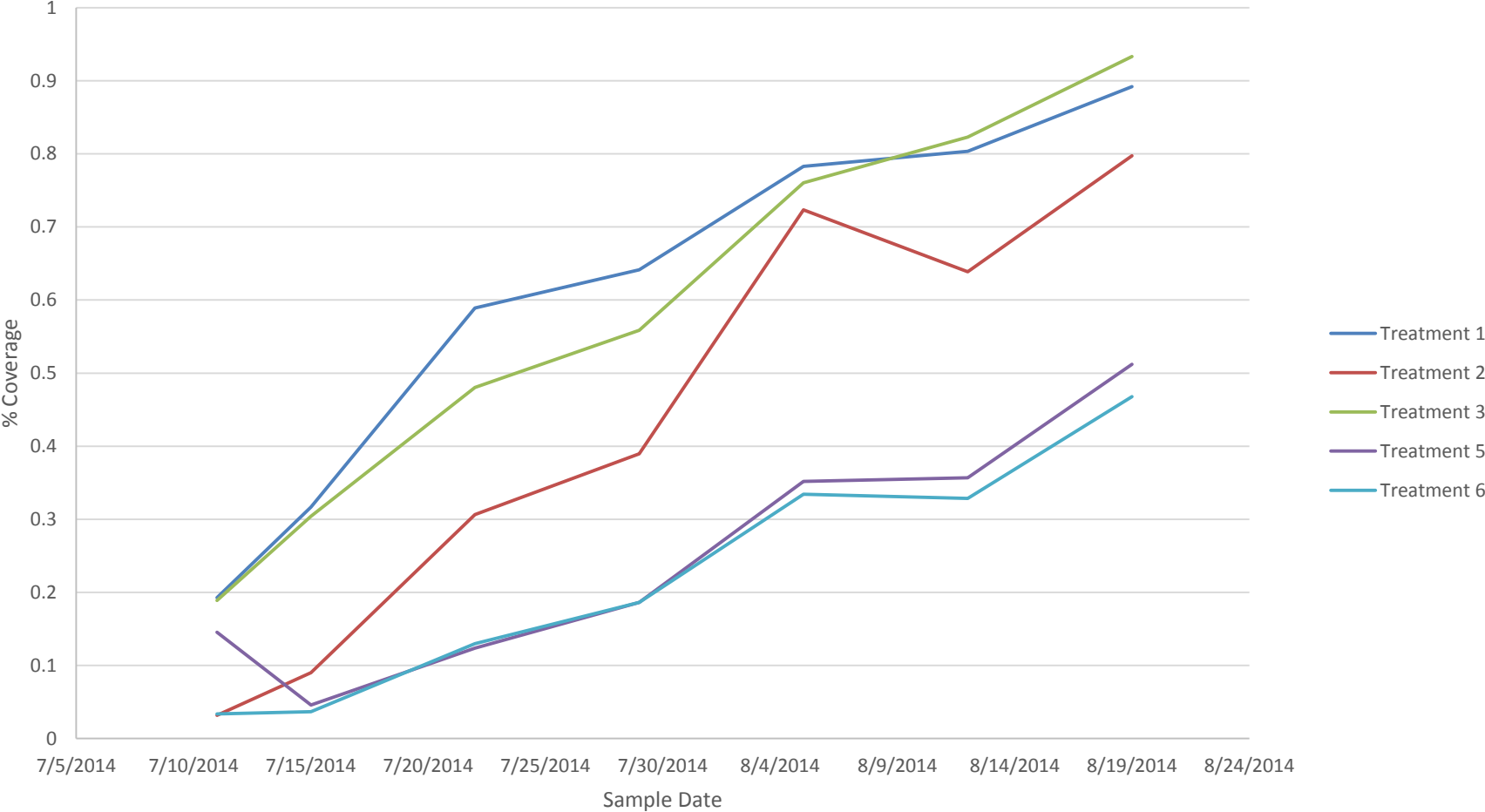
Establishment



Rate of Establishment



Average of all Treatments Over all Dates (Alleyway)



What They Look Like in the Winter



What They Look Like in the Winter



This Year and Following Years

- Replace weed free plots in east vineyard with buffalograss
- Collect vine water status data using infrared thermography and with pressure bomb
- Collect groundcover water status using the same method
- Compare high end thermal camera with low end grower affordable camera

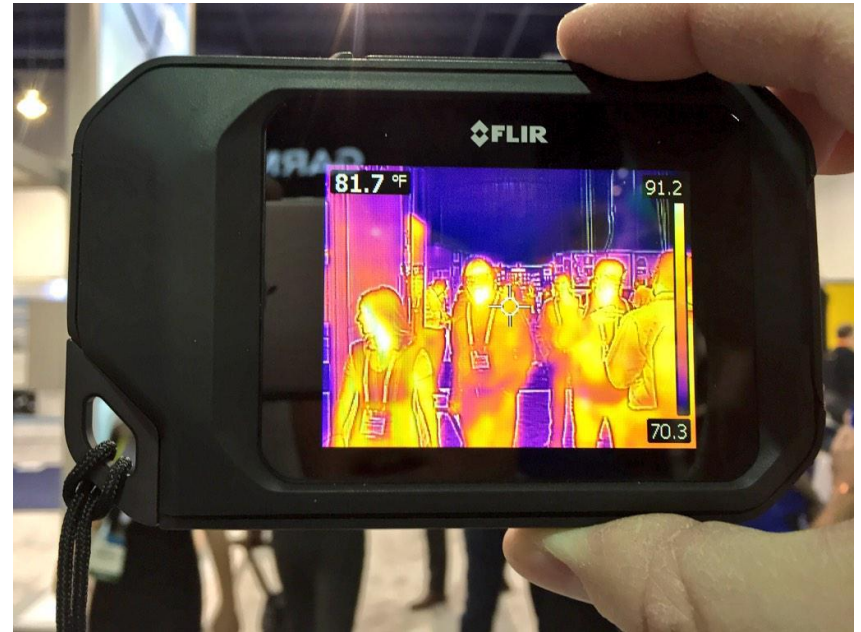


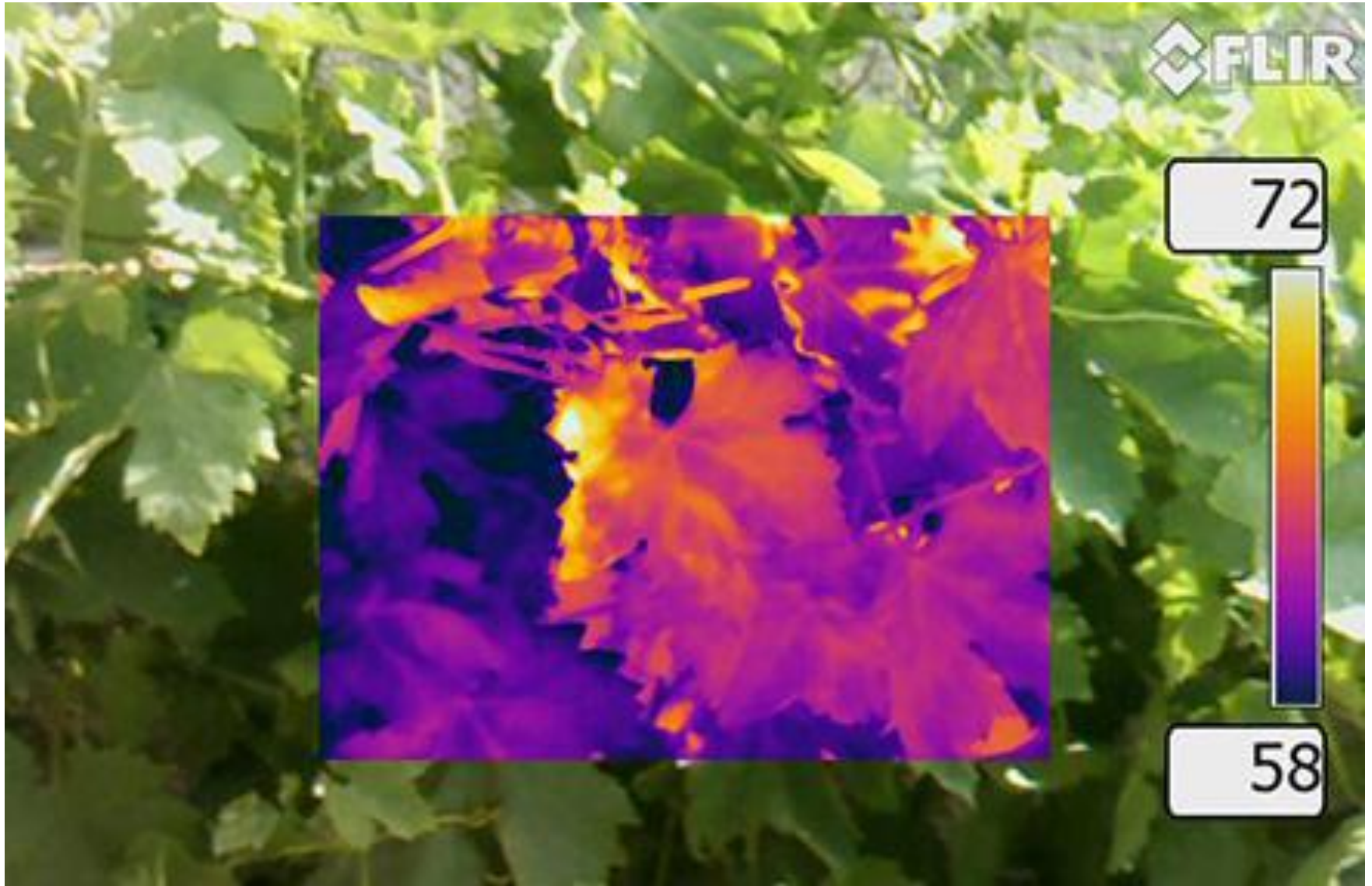
Infrared Thermometry

- Idea: as plants begin to become water stressed their leaf temperature will increase
- Thermal cameras are able to detect this change



Cameras





Questions?

- What are your concerns?
- Would you try this as a grower?
- And ideas to improve the experiment?
- How can we make the results directly applicable to you?

