Tebuconazole (Folicur®) Application Techniques

PI: Dr. Ken Giles

Grad Student: Kevin Moules

UC Davis Biological and Agricultural Engineering Department

Project Goals

- Find innovative ways to apply Folicur® at the time of seed planting without high levels of phytotoxicity, and,
- Determine where Folicur® is actually going when applied.

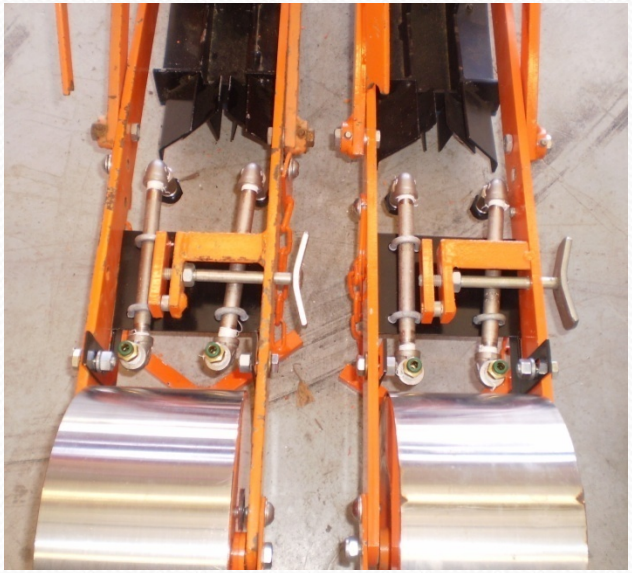
Application Techniques

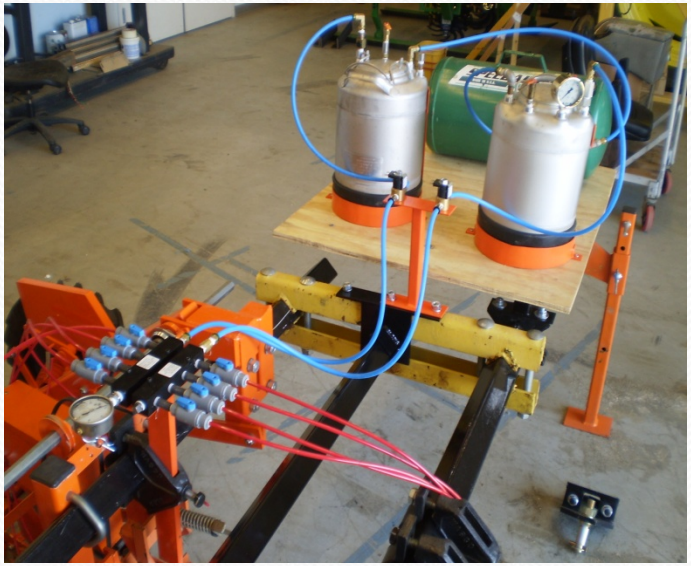
- Apply Folicur® at 20.5 oz/acre as per label,
- Apply Folicur® in a 4”-6” band over the seed row as stated on label,
- Apply Folicur® at a subsurface level beneath the seed row,
- Use each method separately as well as a combination of both, and
- Use different concentrations but no more than 4X the label rate (for testing only, not grower practice).

Modifications Made

- Added chemical handling system – 2 channels.
- 4-80 degree even fan TeeJet® nozzles (over row).
- 4-TurfJet® nozzles (subsurface).
- Subsurface nozzles were mounted behind a modified fertilizer knife.

Planter Modification



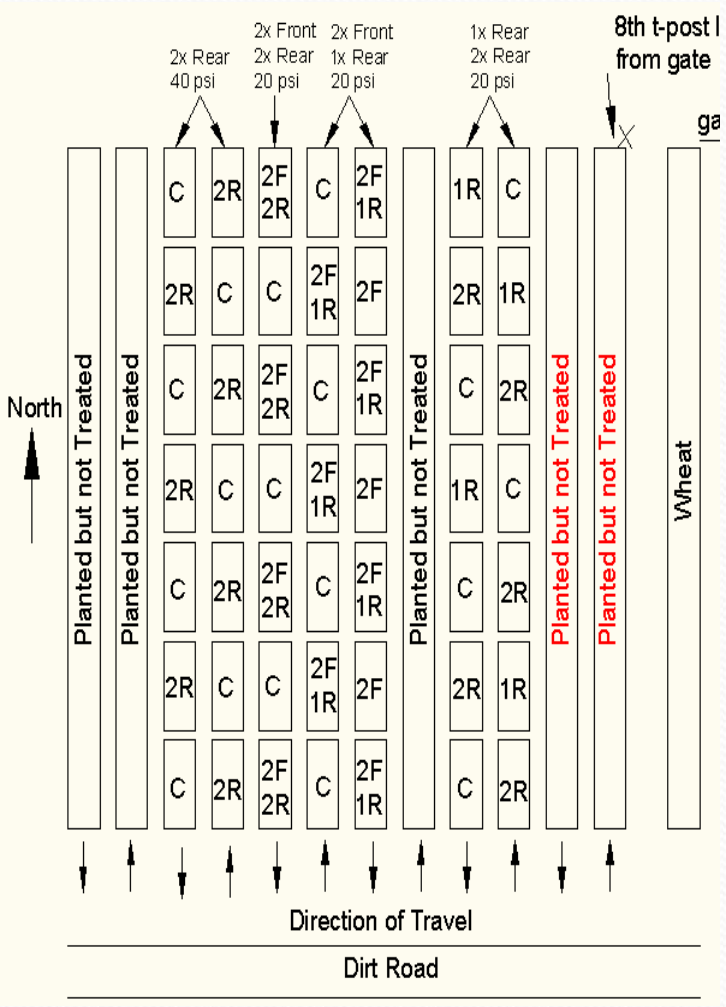


Trial 1: Tulelake, CA

- Planted on May 7th 2010
- Travel Speed 2 mph
- 0.13 gal/min per nozzle

Test Plots

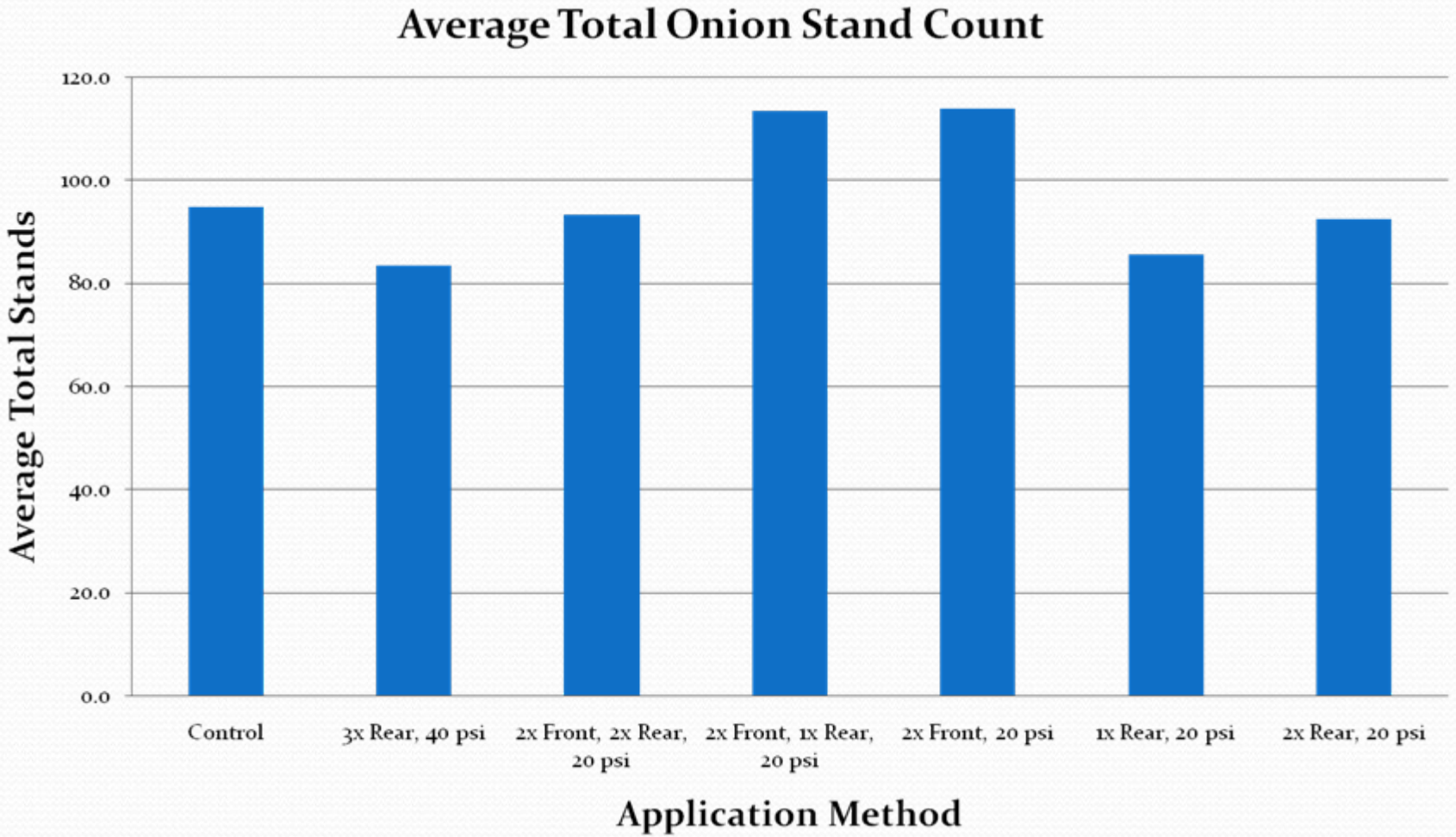
- Control
- 1X rear nozzles
- 2X rear nozzles
- 2X front / 1X rear
- 2X front / 2X rear
- 3X rear



Stand Count

- July 8th 2010

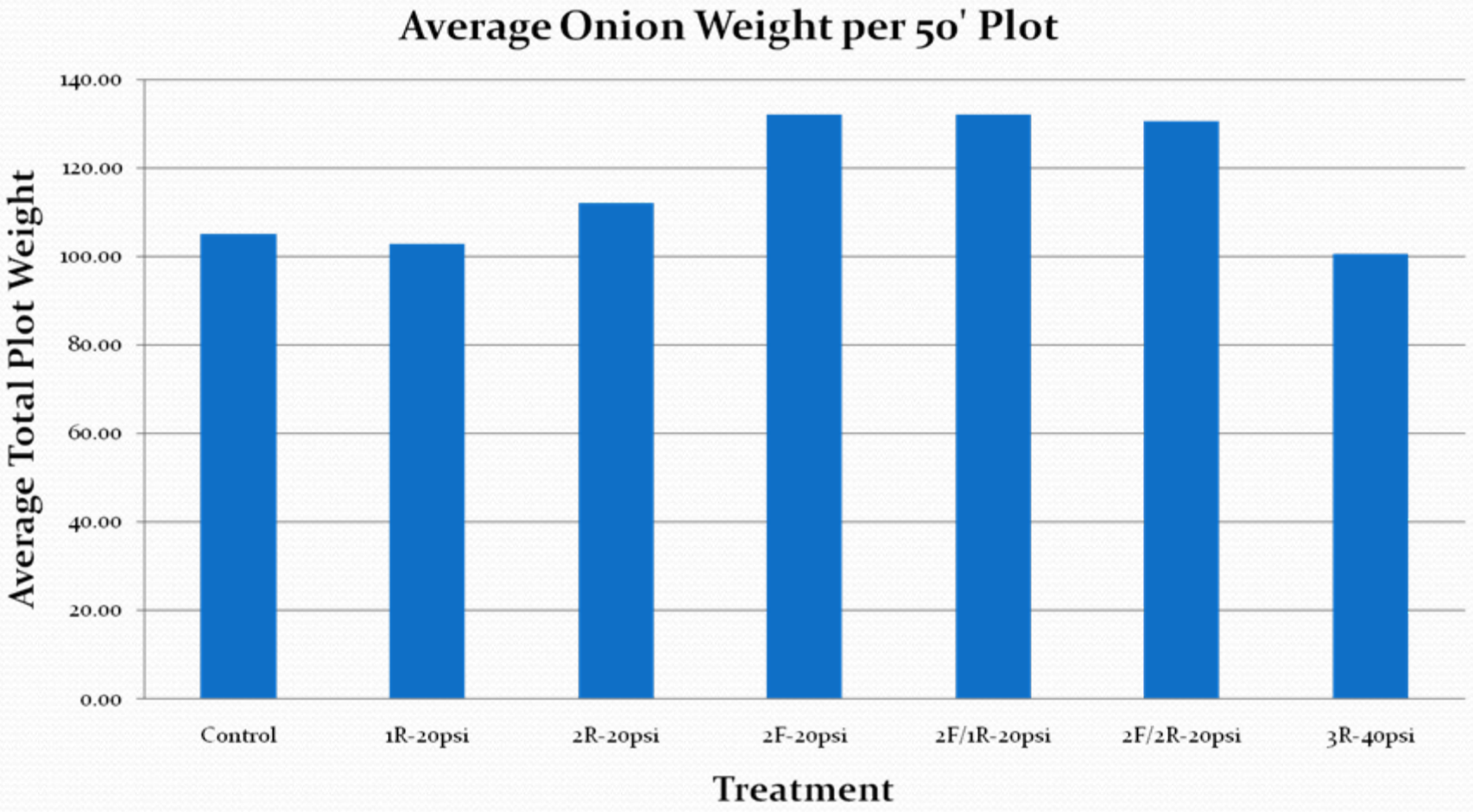
Stand Count


Average Total Onion Stand Count
Average Total Stands
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Control
3x Rear, 40 psi
2x Front, 2x Rear, 20 psi
2x Front, 1x Rear, 20 psi
2x Front, 20 psi
1x Rear, 20 psi
2x Rear, 20 psi
Application Method

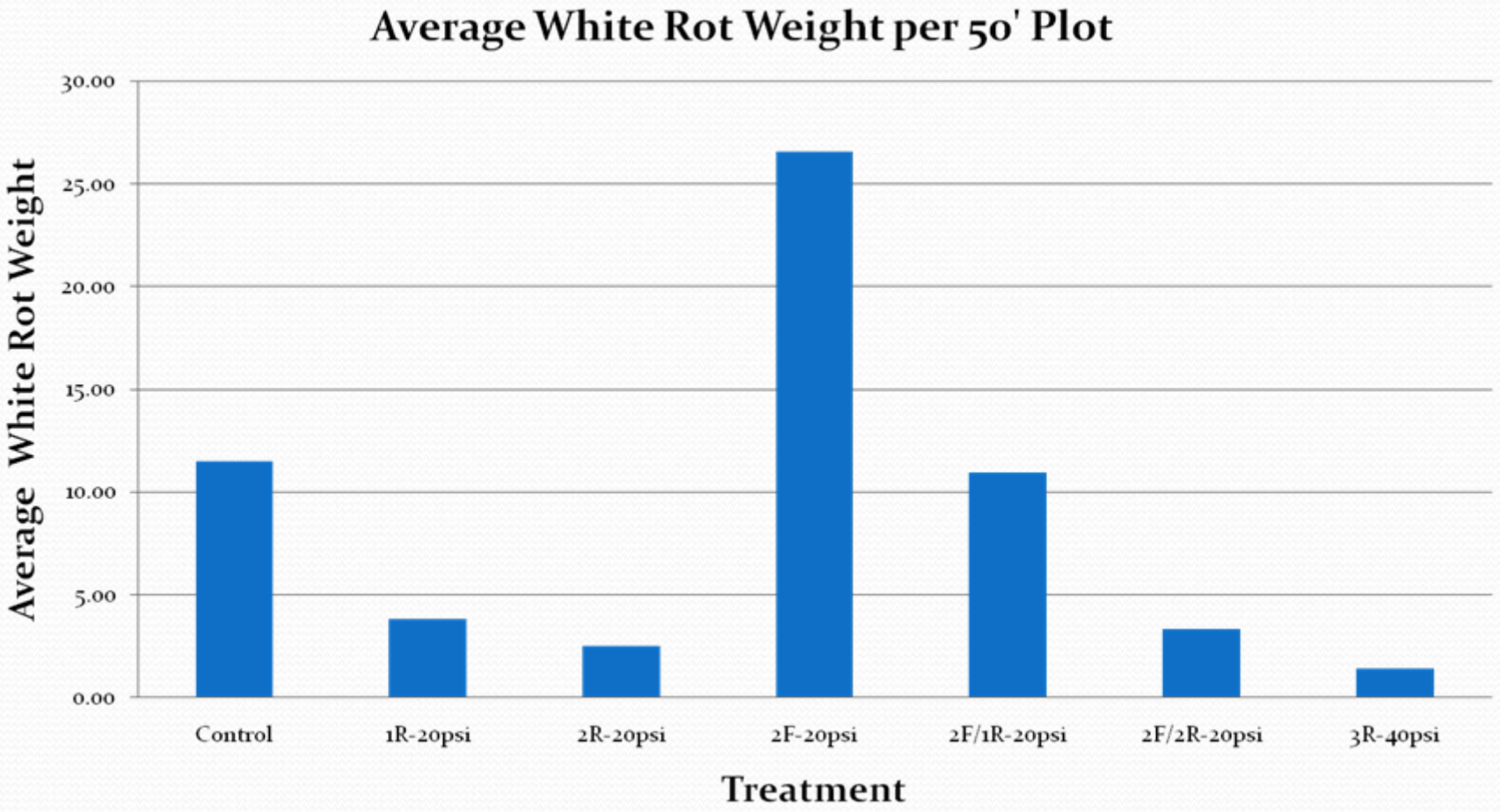
Harvest

- Onions harvested on October 15 2010.
- It had been thought that planted fields were free of white rot.
- During harvest it was apparent that there was white rot throughout the field.

Plot Weights



White Rot Per Application



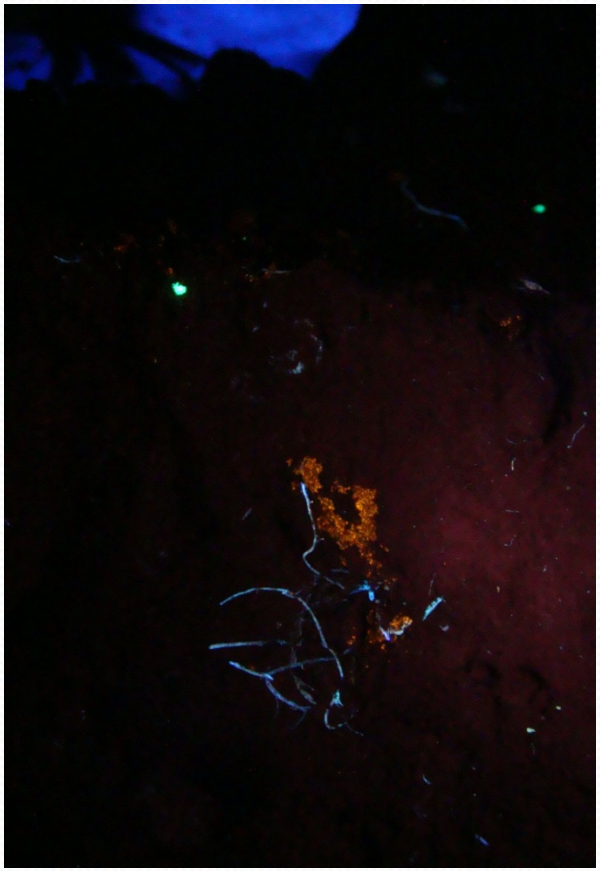
Where is the Folicur® going?

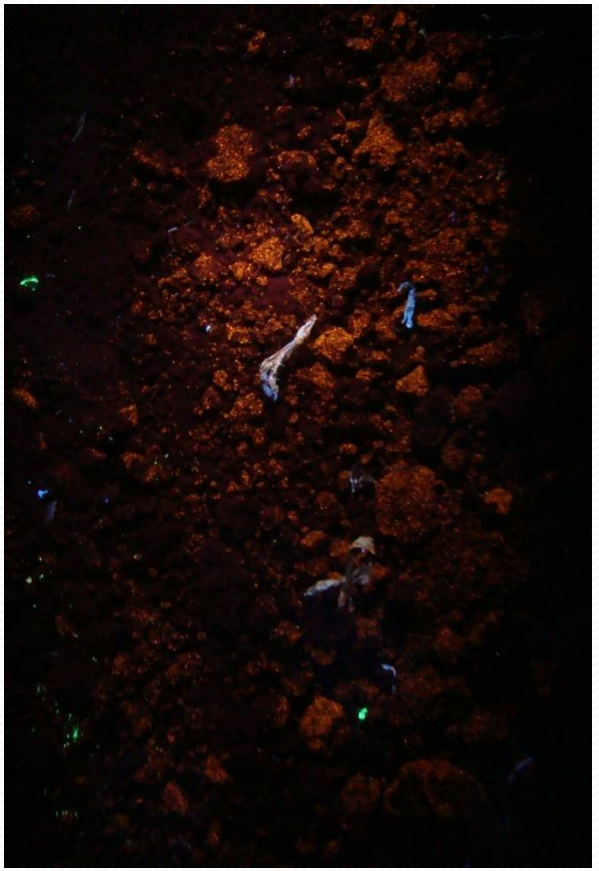
- After running the trial we wanted to see where the Folicur® solution was actually going.
- We coated the seeds in yellow tracer material and added orange tracer to water.
- Under UV light, both should light up in soil easily and provide a contrast we could see and photograph.

First Test

- Run same set up as Tulelake trial
- Take a soil profile of seed bed

First Test Cont.





First Test Conclusion

- The subsurface knifes did not leave a band of Folicur® as expected, instead, a single line was created.
- This did not protect the plant as was reflected in the harvest data.
- Essentially, this would be the same as using a commercial fertilizer knife and “dribbling” a line of liquid beneath the seed row.

Second Test

- Use 11” sweep with flat fan nozzle installed inside, applying label rate
- Idea is that a layer of Folicur® should be left in the soil

Test Conclusion

- It was found that the sweeps were very destructive to seed bed.
- Folicur® is not left in a layer, instead, it was worked into the bed thoroughly.
- Upon applying the UV light no significant amount of tracer could be found.
- It is believed that the efficacy of this method with this large of sweep is very low.

Future Work

- Modify front subsurface knifes.
- Striving to leave a band of Folicur® beneath the top of the bed.
- Try to run a knife across entire bed at a subsurface level and apply Folicur®.
- Continue work with fluorescent tracer
- Plant test plots in Fresno county to compare results with those in Tulelake trial.

Thanks

- To the California Garlic and Onion Research Board for project funding.
- To Bob Ehn for guidance, advice and initiating the project.
- To Don Kirby and the Intermountain Research and Extension Center for machinery and field support along with stand count and harvest data collection.
- To Bio. & Ag. Engineering Department, UC Davis for graduate student support.
- Cooperating growers and applicators.