

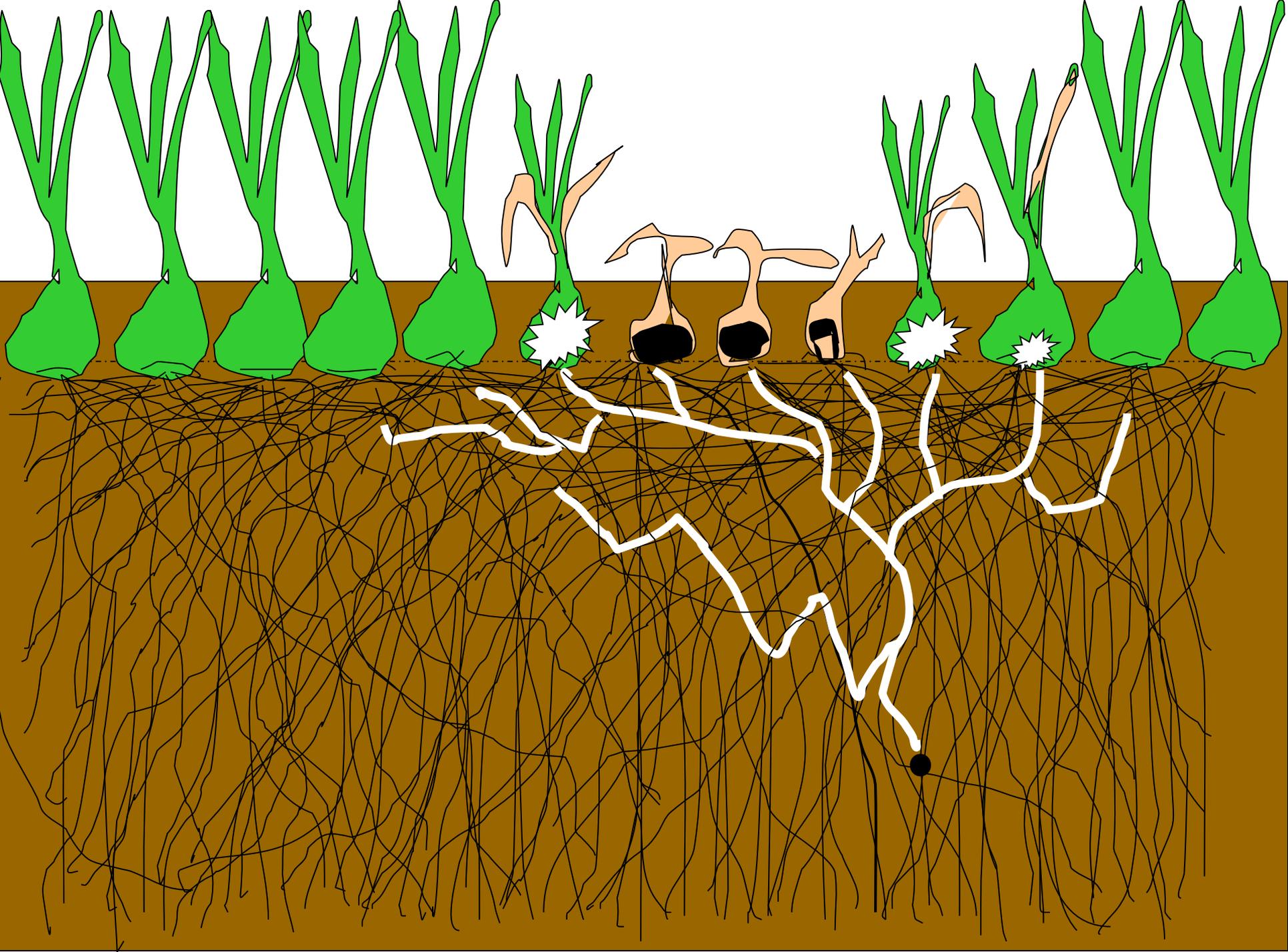
Pull up the Garlic
Light up the Stove
Throw in some Garlic
Heat up some cloves

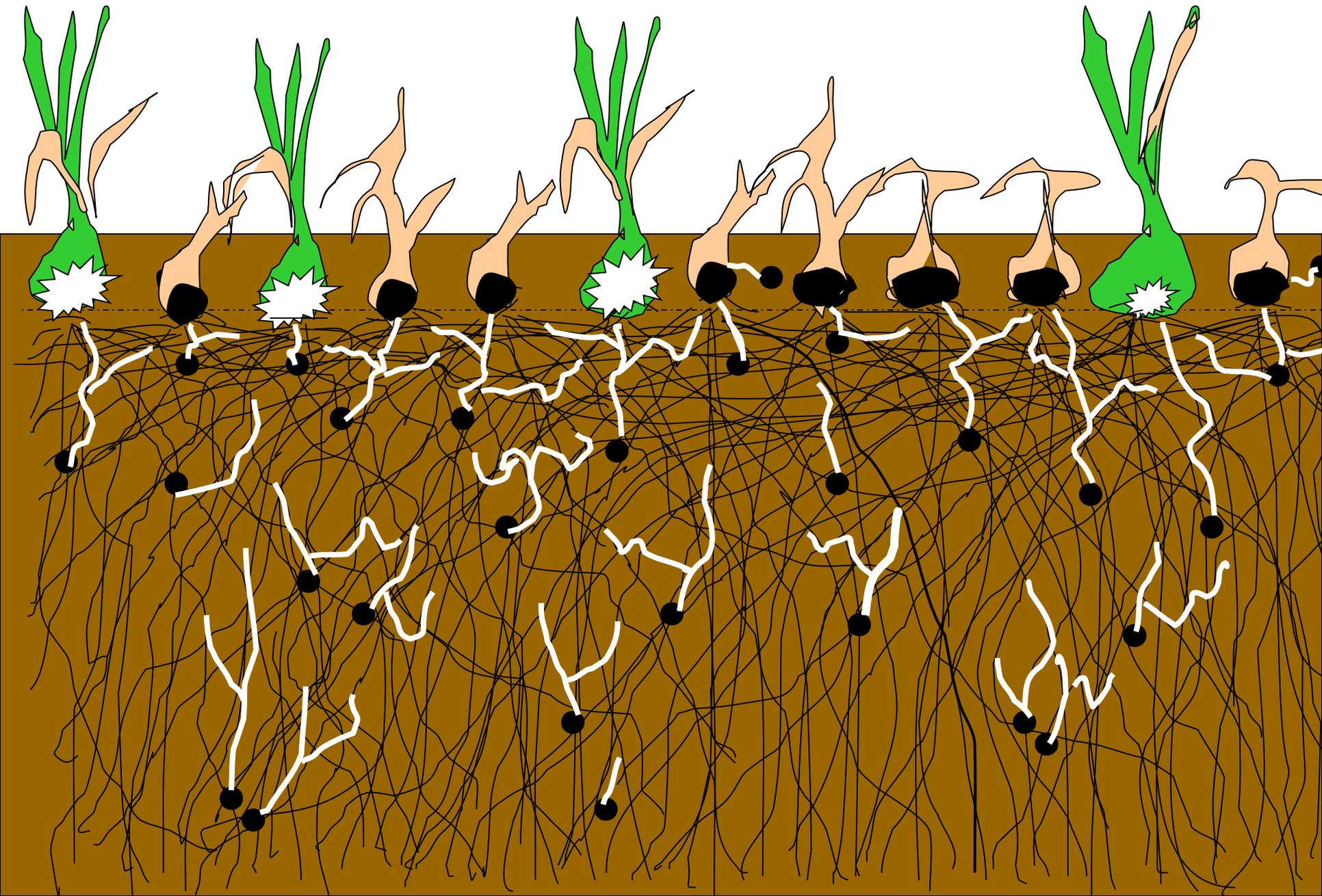
Garlic for Breakfast
Garlic for Lunch
Garlic for Dinner
Give me a Bunch!

Stimulated Germination of Allium White Rot Sclerotia Using Diluted Garlic Juice Applied Through Irrigation Water

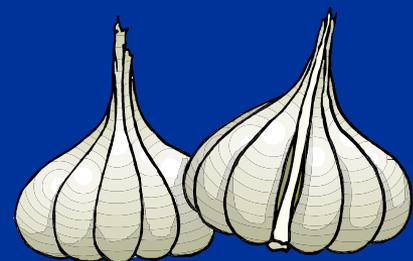
Fred Crowe, Rhonda Simmons, and Bob Crocker
Oregon State University-COARC

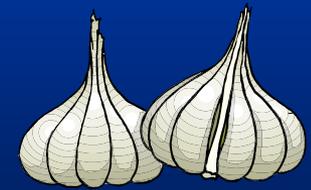






Product Used





- **Product affordable if very low rates are effective, but many uncertainties**
 - **Will product move downward effectively? Soil type variability? How much need for soil wetting agent?**
 - **Rate variations with volatility, method of irrigation and product mixing**
 - **Natural product variability. Could DADS be used similarly?**



Garlic Juice Calculations

2 inches water per irrigation
= 7260 ft³/ac/irrigation = 54,460 gal/ac/irrigation

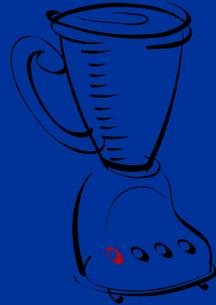
1 PPM = approx. 0.05 gal garlic juice;
garlic juice approx. \$8/gallon

<u>Per Ac per Irrigation</u>			<u>Per Ac per 10 Irrigation</u>	
<u>PPM</u>	<u>Gal</u>	<u>\$\$</u>	<u>Gal</u>	<u>\$\$</u>
0.1*	0.005	0.04	0.05	0.40
1.0*	0.05	0.40	0.5	4.00
10	0.5	4.00	5.0	40.00
100	5.0	40.00	50.0	400.00
1000	50.0	400.00	500.0	4,000.00

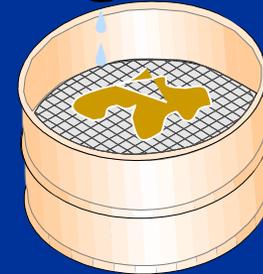
**Soil Wetting agent was used:
Advantage® at 8oz/acre**



Soil Sample



Blend



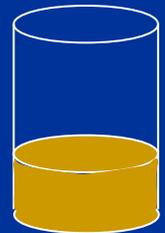
Wet Sieve



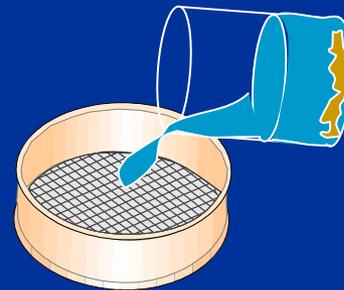
Discard
20 mesh



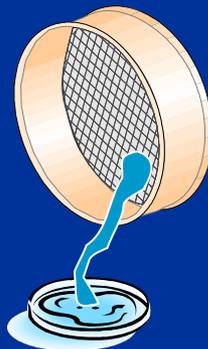
Save
60 mesh



Suspend
Sclerotia



Decant



Wash into Petri Plate



Count



Viability Test

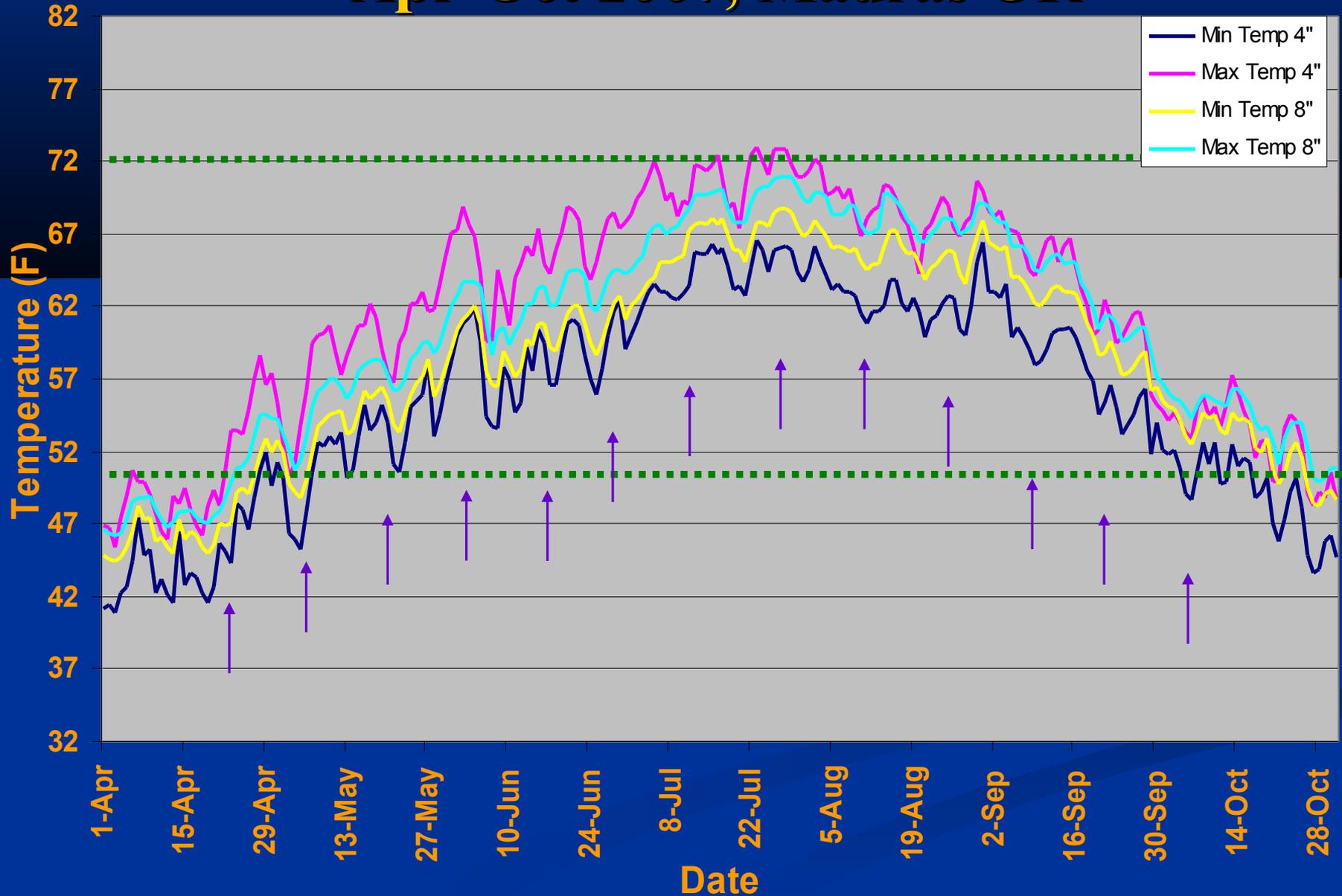
COARC Plot Plan



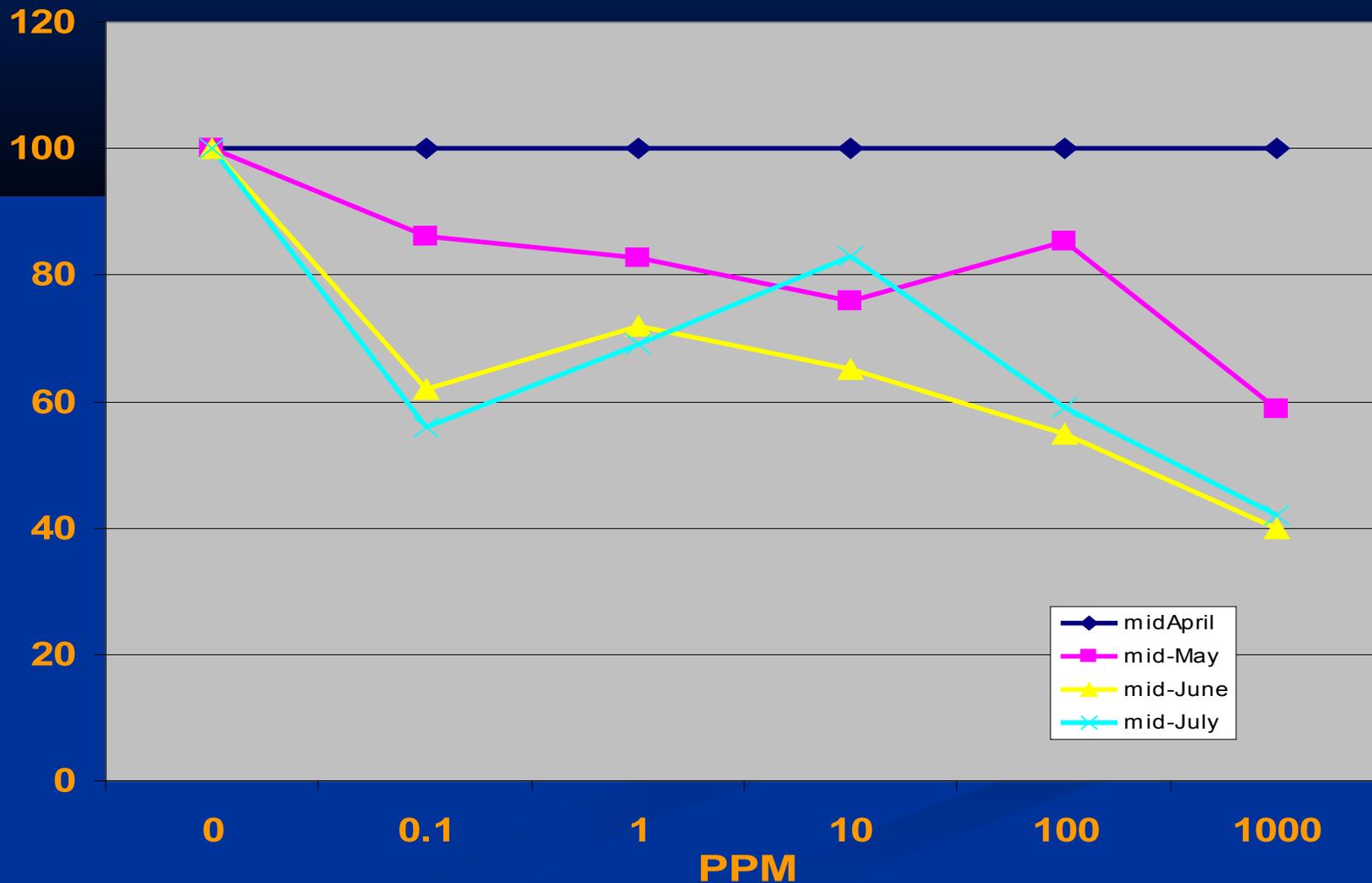
96	60	58	39	56	45	50	76	70	45	45	23
	9	2	5	8	0	0	4	0	5	5	2
32	34	42	37	40	32	34	30	29	32	23	23
	5	3	3	0	8	1	9	6	3	2	2

- Intact viable sclerotia present in each plot pre treatment
- These converted to percentages, with pre-trt = 100%
- Soil Wetting agent was used: Advantage® at 8oz/acre

Soil Temperature Highs and Lows at 4 & 8 Inches Apr-Oct 2007, Madras OR



Mean Percentage of Intact, Viable Sclerotia Recovered in Plots Irrigated 2x-Monthly with Diluted Garlic Juice*



Observations Under the Microscope

- 1. No germination seen from untreated plots**
- 2. Germinating sclerotia observed from all treated plots May into July.**
- 3. More germination was observed at highest rates of application**
- 4. No germination was seen after July**



Conclusions

- **Low rates of garlic juice were effective in eliciting germination responses even when crudely applied as in this experiment**
- **Limited data on depth of recovery indicated no depth-related differences**
- **Germination responses stopped as soil temperatures exceeded 70°F, even at 8 inches depth. Typically we use 72°F as the upper limit but perhaps this should be lowered?**
- **Data very preliminary. Further research on repeated application of low rates of germination stimulants (juice, DADS, etc.) may be justified.**

Reminder

- Authorization is approved for my replacement in central Oregon
- 2 acres of heavily and uniformly infested soil remain available for future research at COARC in Madras



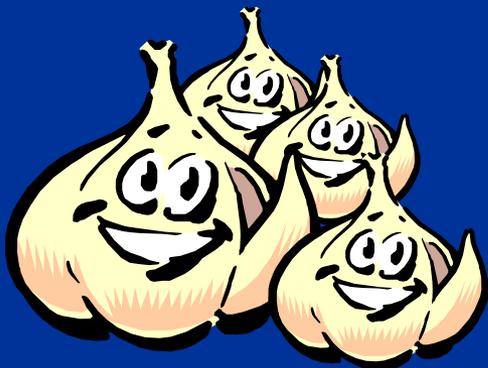
Field Infestation

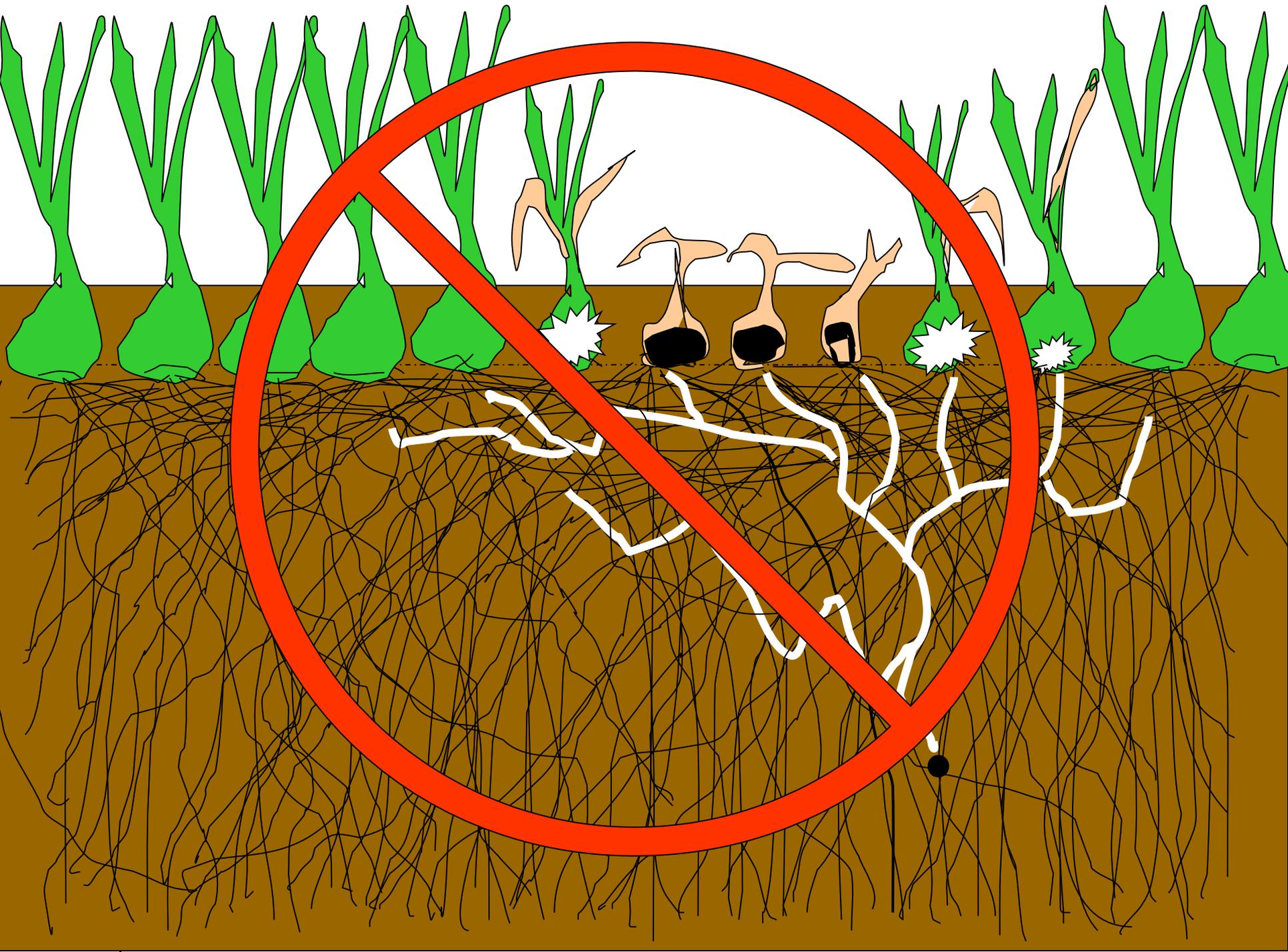


Thank you for many
years of support

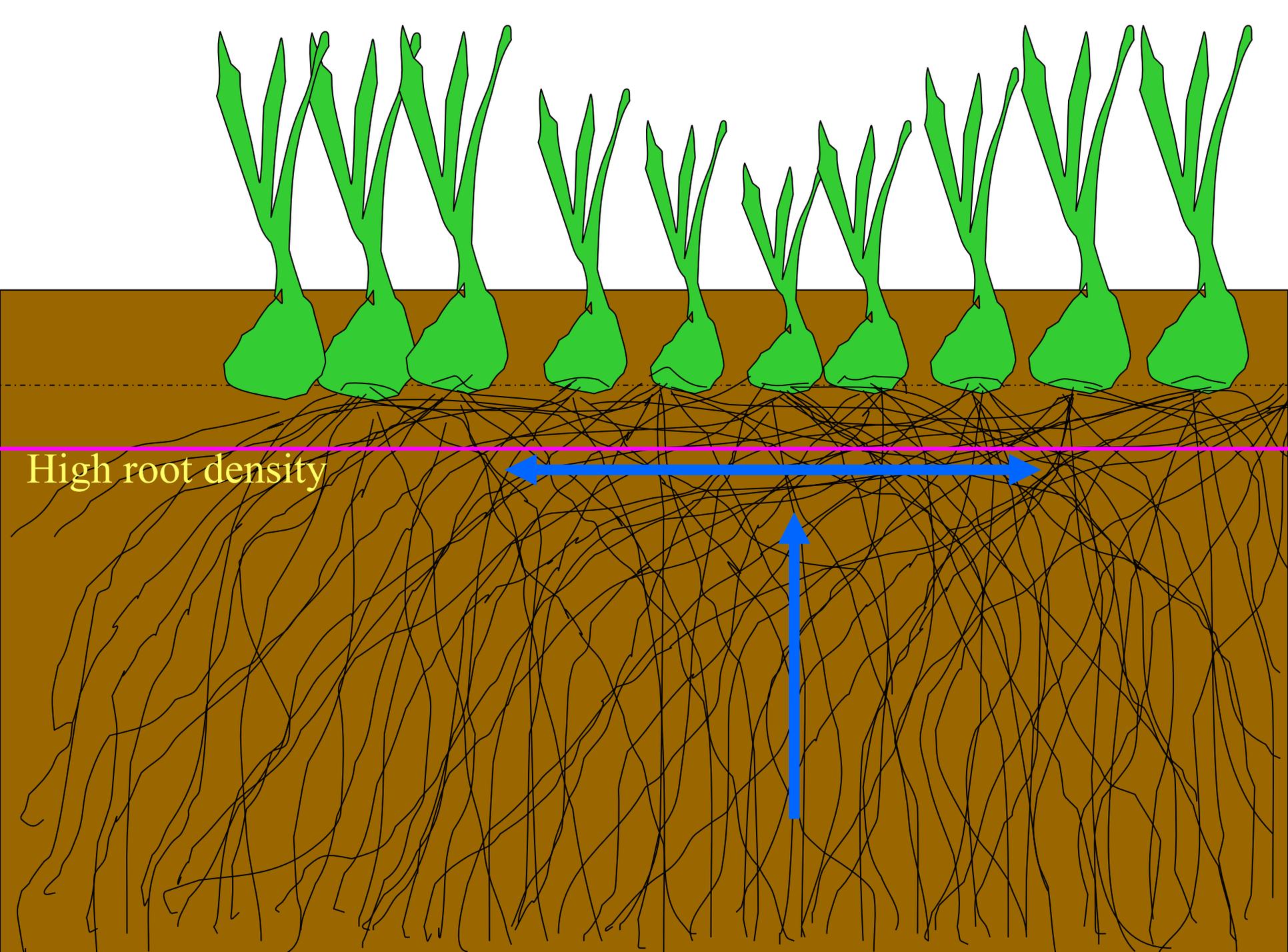
I hope I've helped

It's been a pleasure
working with you



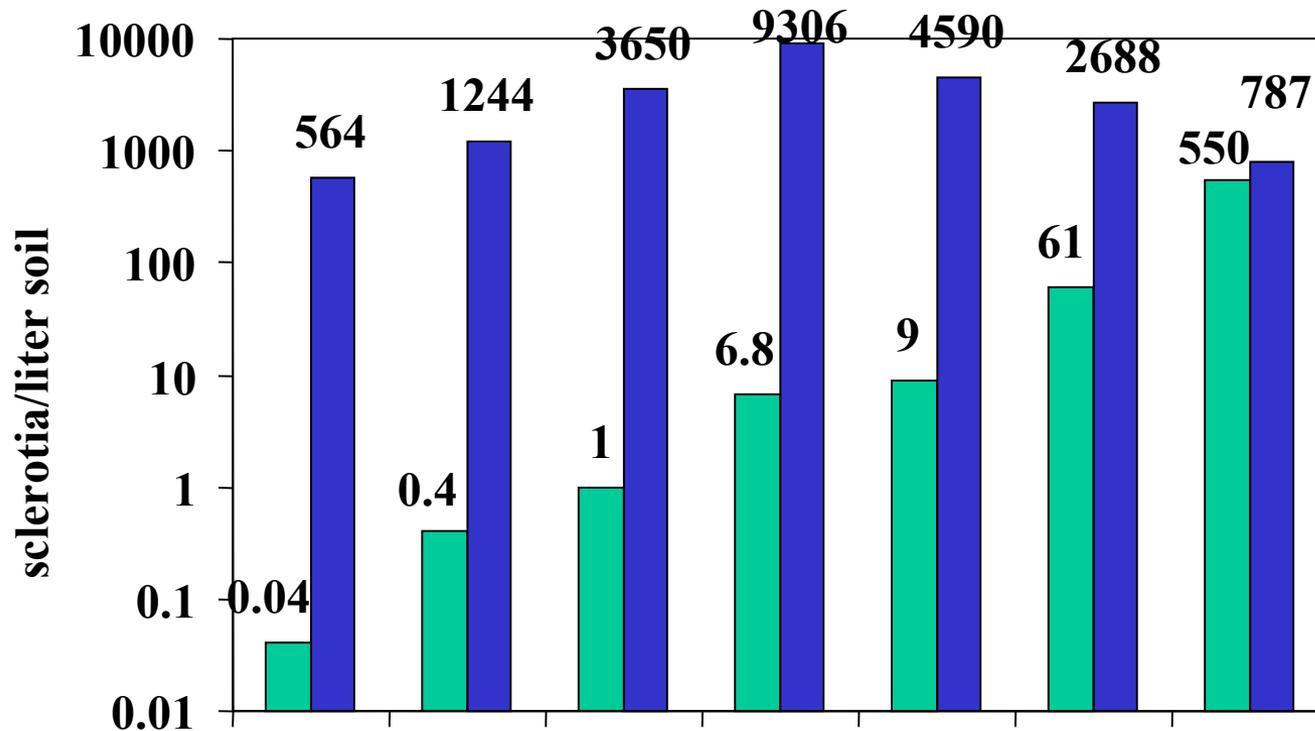


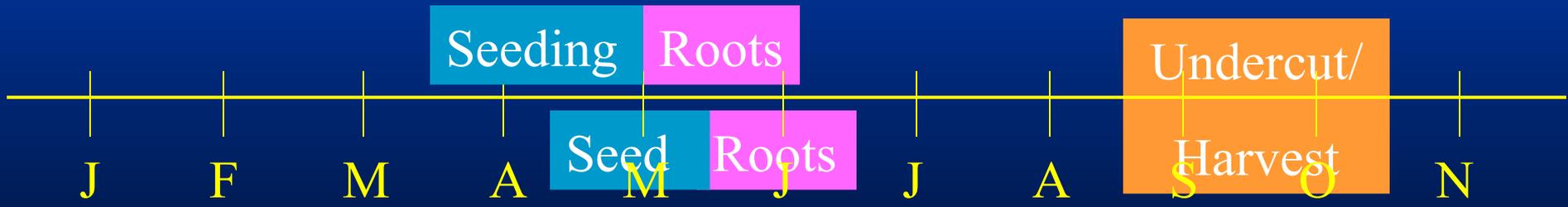




High root density

Garlic White Rot: Pre- and Post-Harvest Inoculum Densities



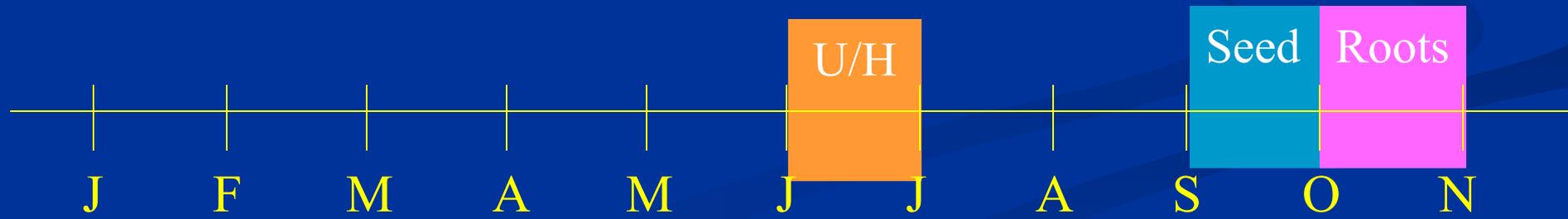


72°F

Daily 2"
Minimum
soil
temperature

Parma
Hermiston

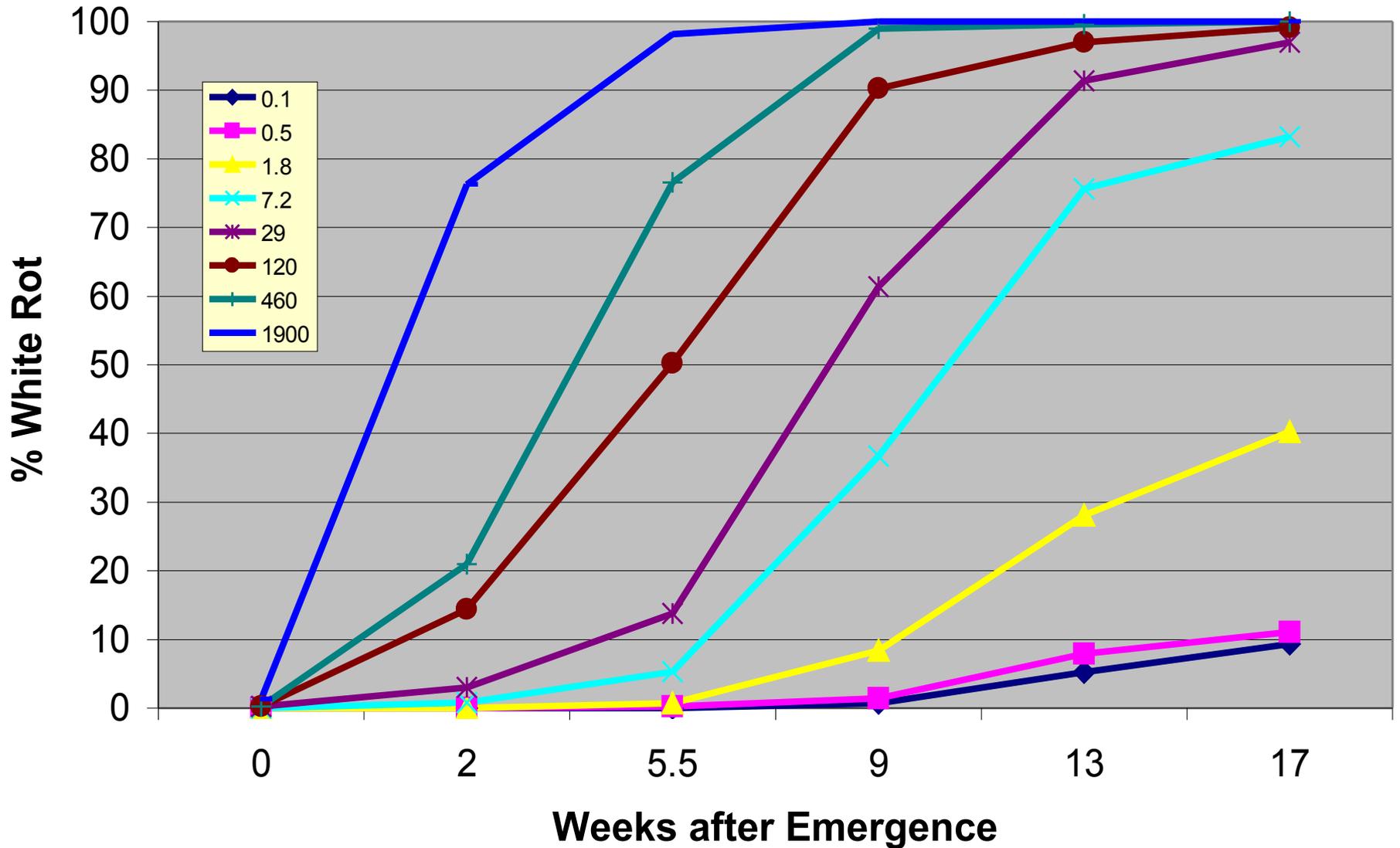
48°F



Walla Walla, Central Calif dehy

Cumulative Percent White Rot

Davis, CA 1976-77



Response of Sclerotia of *Sclerotium cepivorum* to *Allium* Stimulants

[21 days]

Crowe & Hall, 1980
Phytopath 70:74-78

