Imperial County Agricultural Briefs

Features

From your Farm Advisors

November, 2010

Page

Rhizoctonia solani Problems in Transplants and Seedlings

Donna Henderson

This time of year, with the cooler temperatures and the amount of rainfall, transplanted crops encounter a lot of stressors that can often times make them vulnerable to infection by soil-borne diseases such as *Rhizoctonia solani.* The added high amounts of rain can create areas in the field where drainage may be poor, leading to root rot and infection by soil fungi.

R. solani is unevenly distributed throughout the field, and is found throughout the world. There are several isolates of *R. solani* that may have different affinities for crop hosts. Although there have not been any studies on the isolates from the Imperial Valley, past research conducted in the San Joaquin valley have detected *R. solani* isolate AG4 in substantive soil surveys (Weinhold, A.R., 1977).

Disease patterns caused by *R. solani* may be in the form of chlorotic, stunted, or dead patches of plants. There are several factors that affect the disease pattern and spread of *R. solani* disease in a field, including soil texture, host*, R. solani* isolate, and soil moisture. *R. solani* survives in the soil on the organic matter of the previous crop, and also is capable of surviving on dead organic matter present in the soil, readily able to infect the next crop if substantive fungal propagules remain in the plant debris. *R. solani* is found within the top 4 inch layer of soil, usually absent further down in the soil profile., which is one reason why *R. solani* infection decreases after extensive soil tillage. *R. solani* also prefers growth in sandy soil texture over clay, as it relies on porous soil for growth and oxygen.

Infection of the plant can occur in two ways, in a primary infection directly from the soil, or secondarily from nearby plant infections in root-to-root contact. Primary infections occur more often in compact, wet soil, mainly due to the confined space of the soil, yet this same soil compaction can limit the size and spread of the disease patch. Confined space within wet soils limits fungal growth primarily to the vicinity of the host plant, as there are limited other sources for nutrients in the confined soil space. In general, *R. solani* has a wide range of temperature and pH for optimal growth, ranging from 68 to 86°F and pH ranging from 4 to 8 may be considered optimum for growth. However, depending on the AG type, the temperature may affect the disease severity differently. For example, AG 8 can infect plants more readily in lower soil temperatures, while AG 11 relies on higher soil temperatures. However, in general, higher soil temperatures allow other soil fungi to compete more readily with *R. solani*, and out-compete the ability of the fungus to spread in disease patches. Younger roots are more vulnerable to infection, as we have observed lately in our transplants in the Imperial Valley. Older plant roots may be able to resist disease infections better perhaps due to the increased microbial populations in the soil or increased plant defenses that help protect mature roots from infection.

In general, there is very little choice for growers in managing *R. solani* problems in fields. Chemical control has

conflicting reports, and seed treatments are not systemic and therefore unable to protect the later seedling roots from infection. Rotation is usually limited due to the wide overlapping host range of most isolates. There has been some success with microbial biocontrol with *Trichoderma* spp. and *Pseudomonas* spp.. Successive monoculture of a susceptible host has eventually lead to decline in *R. solani* disease, perhaps due to the buildup of antagonist microbes, but this method is not applicable to the Valley where growers often have multiple crops per year, with inconsistent access to the same fields.

INSECTICIDE EFFICACY AGAINST THRIPS IN ROMAINE LETTUCE, 2010

Eric T. Natwick

The objective of the study was to evaluate the efficacy of Abamectin and Intrepid with the industry standard Radiant for control of western flower thrips on romaine lettuce under desert growing conditions. Romaine lettuce (Fresh Heart) was direct seeded on 21 Oct 2009 at the University of California Desert Research and Extension Center, El Centro, CA into double row beds on 40 inch centers. Stand establishment was achieved using overhead sprinkler irrigation, and irrigated with furrow irrigation thereafter. Plots were two beds wide by 20 ft long and bordered by one untreated bed. Four replications of each treatment were arranged in a RCB design. Formulations and rates for each compound are provided in the tables. Foliar sprays were applied on 13 Jan, 29 Jan, 12 Feb, 2 Mar with a CO_2 operated boom sprayer that delivered a broadcast application at 30 psi and 20 gpa through two TJ-8001.5 nozzles per bed. An adjuvant, DyneAmic (Helena Chemical Co.), was applied at 0.625% to all treatments. Numbers of WFT from 5 plants per replicate were recorded on each sample date. Data were analyzed using ANOVA with means compared using a protected LSD *F* test $_{P<0.05)}$.

WFT population levels were moderate during this trial. Following each spray application, all of the insecticide treatments significantly reduced numbers of WFT larvae compared to the water check on all sampling dates except 1 Mar, from 29 Jan through 11 Mar (Table1). When averaged across all sample dates, the Radiant treatment provided efficacy against WFT larvae that was greater than Intrepid applied alone at 8 fl oz/acre and Abamectin applied alone at 4 fl oz/acre. All treatments significantly reduced numbers of WFT adults following each spray from 29 Jan through 11 Mar (Table 2). When averaged across all sample dates, the Radiant treatment had significantly better efficacy against WFT adults compared to all other insecticide treatments except Intrepid applied alone at 8 fl oz/acre. All treatments with the exceptions of Abamectin at 4 fl oz/acre and Intrepid at 8 fl oz/acre had significantly fewer thrips damaged whole romaine heads compared to the water check at harvest (Table 3). The Radiant treatments, Abamectin at 8 fl oz/acre, and Intrepid plus Abamectin each at 8 fl oz/acre were the only insecticide treatments with significantly more whole market romaine lettuce heads, more kg of whole market heads and higher percentages of whole market heads than the water check due to culling based on thrips injury. No phytotoxicity symptoms were observed following any of the insecticide treatments.

Table 1.

Treatment	oz/acre	WFT larvae per five plants						
		1 Jan	29 Jan	2 Feb	12 Feb	1 Mar	11 Mar	Average
Abamectin	4.0	10.25	39.50 bc	36.00 bc	7.75 bc	11.25	5.75 b	18.42 b
Abamectin	8.0	13.50	35.00 bc	31.00 bc	1.50 c	13.00	3.75 b	16.29 bc
Intrepid + Abamectin	8.0 + 4.0	8.25	31.75 bc	28.25 c	3.75 bc	7.75	2.25 b	13.67 c
Intrepid + Abamectin	8.0 + 8.0	9.75	44.00 b	32.50 bc	1.25 c	7.00	5.75 b	16.71 bc
Intrepid	8.0	7.75	42.50 b	39.50 b	9.50 b	10.00	4.75 b	19.00 b
Radiant	6.0	5.50	28.75 c	27.75 c	4.00 bc	9.25	2.75 b	13.00 c
Water Check	--------	12.25	65.50 a	64.75 a	19.00 a	14.00	14.50 a	31.67 a

Means within columns followed by the same letter are not significantly different, ANOVA; LSD ($P<0.05$).

Table 2.

Treatment	oz/acre	WFT adults per five plants						
		1 Jan	29 Jan	2 Feb	12 Feb	1 Mar	11 Mar	Average
Abamectin	4.0	66.50	12.75 b	14.00 b	20.25 b	86.50 b	41.00 d	40.17 b
Abamectin	8.0	64.75	8.75 b	18.25 ab	13.75 bc	76.50 bc	51.50 c	38.92 b
Intrepid + Abamectin	8.0 + 4.0	68.75	10.75 b	18.50 ab	11.00 c	77.50 b	48.25 cd	39.13 b
Intrepid + Abamectin	8.0 + 8.0	71.25	12.25 b	14.25 b	11.50 bc	63.50 d	64.00 b	39.46 b
Intrepid	8.0	52.25	15.75 b	18.00 ab	11.50 bc	62.25 d	54.75 bc	35.83 bc
Radiant	6.0	64.50	8.25 b	11.25 b	11.25 bc	63.75 cd	30.50 e	31.58 c
Water Check	--------	58.75	27.75 a	27.00 a	35.50 a	100.75 a	95.25 a	57.50 a

Means within columns followed by the same letter are not significantly different, ANOVA; LSD ($P<0.05$).

Table 3.

Numbers and kg of Whole Market Heads, and

Numbers and Kg of Romaine Hearts per 0.001 acre

Treatment	Oz/acre	Thrips damage	Market heads	Kg market heads	% Market heads	Hearts
Abamectin	4.0	30.50 abc	3.00 cd	1.83 cd	8.42 cd	33.50
Abamectin	8.0	27.00 c	7.50 bc	4.35 bc	21.69 bc	34.50
Intrepid + Abamectin	8.0 + 4.0	27.75 bc	4.00 cd	2.20 cd	13.07 cd	31.75
Intrepid + Abamectin	8.0 + 8.0	21.00 d	11.00 ab	6.42 ab	34.27 ab	32.00
Intrepid	8.0	33.00 ab	0.50 d	0.34 d	1.47 d	33.50
Radiant	6.0	17.25 d	14.25 a	7.63 a	45.15 a	31.50
Water Check	--------	34.00 a	0.25 d	0.09 d	0.76 d	34.25

Means within columns followed by the same letter are not significantly different, ANOVA; LSD ($P<0.05$).

Part II. Materials Tested for Arthropod Management

Program

2010 California Alfalfa & Forage Symposium

Corn/Cereal Silage Mini-Symposium
Alfalfa IPM Intensive Pre-Symposium Workshop

Description: This is a comprehensive conference which features 42 speakers on important innovations for forages in California, industry meetings, and extensive industry exhibits. The California Alfalfa Symposium, now in its 40th year, will this year focus on innovations in corn and cereal silage which have become very important in the southern San Joaquin Valley. An Integrated Pest Management Workshop will be held at the Kearney Ag. Center (30 miles from Visalia) on November 30, and the full symposium at the Visalia Convention Center December 1-2.

LOCATIONS:
November 30 IPM Workshop: Kearney Ag. Center, 9240 S. Riverbend Ave., Parlier, CA 93648
December 1 & 2 Conference: Visalia Convention Center, 303 East Acequia Avenue, Visalia, CA
Program:

Tuesday, November 30

Alfalfa IPM Intensive Workshop: Managing Pests while Protecting the Environment

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Pete Goodell, UC IPM Program, Workshop Chair
Description: This is an intensive, one-day training in Integrated pest Management for alfalfa, including IPM principles, pest biology, specific strategies and techniques, diagnostic skills, and an emphasis on protection of air and water quality. Come ready to lean and put your thinking caps on.

Instructors: Terry Prichard, Steve Orloff, Kurt Humbree, Mick Canevari, Dan Putnam, Carol Frate, Don Miller, Larry Godfrey, Vonny Barlow

REGISTER EARLY FOR THIS WORKSHOP - Space is very limited!

IPM Workshop Program (Kearney Ag. Center)
8:30 **Registration, Refreshments & Informal Discussion**
9:30 **Introduction, Pretest**
9:45 **Principles, Tools for IPM**
10:00 **Pesticide Properties and Impacts for Protecting Air and Water Quality**
10:20 **Mitigation Measures to Protect Air and Water Quality**
10:40 **Discussion**
10:50 **Strategies for Economically Viable Weed Management**
11:50 **Discussion**
12:00 **Lunch & Field Tour. Weed Plots, Insect Plots, Disease Plots, Alfalfa Varieties**
2:00 **Strategies for Economically Viable Insect Management**

3:00 **Diseases and Nematode Diagnostics and Management**
3:45 **Case Studies – Challenge Yourself to Solve Real Life Problems**
4:45 **Tying it all together – a Year Round IPM approach**
5:15 **Evaluations/Post Test**
5:30 **Adjourn**

6:00-8:00 **Registration Open** (at Visalia Convention Center)

Wednesday, December 1

California Alfalfa Symposium and Corn/Cereal Silage Mini-Symposium

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6:30 a.m. **Registration**
7:00 a.m. **Exhibition Open**
8:00 a.m. **Welcome and Introductions**

Dairy Issues and Trends

8:05 **Alfalfa Market Production and Price Trends** - ***Seth Hoyt***, *The Hoyt Report, Ione, CA*
8:30 **Dairy Conditions and Trends** - ***Eric Erba***, *California Dairies, Inc, Visalia, CA*
8:55 **Global Economic Trends: Forage, Feeds and Milk** - ***Leslie (Bees) Butler***, *Department of Agricultural and Resource Economics, University of California, Davis, CA*
9:20 **Impacts of Dairies and Silages on Air Quality** - ***Frank Mitloehner***, *Department of Animal Science, University of California, Davis, CA*
9:45 **Discussion**
10:00 BREAK

Environmental Issues and Trends

10:30 **Understanding the Biology of Silage Preservation to Maximize Quality and Protect the Environment** – ***Limin Kung, Jr.***, *University of Delaware, Newark, DE*

10:50 **Why We Need to Prevent Off-site Movement of Pesticides in Alfalfa and Corn** - ***Terry Prichard***, *Department of Land, Air, Water Resources, University of California, Davis, CA*
11:10 **Importance of Alfalfa and Forages for Wildlife Habitat** - ***Alex Hartman***, *Audubon California, Sacramento, CA*
11:30 **An Environmental Balance Sheet for the Dairy-Forage System** - ***Dan Putnam***, *Department of Plant Sciences, University of California, Davis, CA*
11:50 **Discussion**
12:00 NOON BANQUET LUNCH

Breakout Session I. Corn and Small Grain Silage and Forage Crops

1:30 **Overview of Corn and Grain Forages in US and California** - J*ennifer Hegui, UC Cooperative Extension, Modesto, CA*

1:50 **Anaerobic Stability of Silage** - ***Limin Kung, Jr.***, *University of Delaware, Neward, DE*
2:10 **Best Management Practices for Corn Silage** - ***Noelia Silva-del Rio*** *, UC Cooperative Extension, Tulare,*

CA

2:30 **Impacts and Prevention of Mycotoxins in Silage** - ***John Doerr***, *Agrarian Marketing, Inc., Middlebury, IN*
2:50 **Discussion**
3:00 BREAK
3:30 **Safety of Silage Operations** - ***Kieth Bolsen***, *Professor Emeritus, Kansas State University, Manhattan, KS*
3:50 **Tips for Growing, Harvesting, and Feeding High Quality Cereal Silage,** ***Gene Aksland*** *, Syngenta Seeds, Visalia, CA*
4:10 **Silage Quality: How is it Defined and Measured?**- ***Karl Nestor***, *Senior Nutritionist, Dow Agrosciences, Wooster, OH*
4:30 **Making Silage in Custom Operations: Trials and Tribulations** - ***Carol Collar***, *UC Cooperative Extension, Hanford, CA*
4:50 **Discussion**
5:00 **Adjourn**

Breakout Session II. Production and Pest Management for Quality Alfalfa

1:30 **Developing an IPM Program for Controlling Gophers in Alfalfa** – ***Roger Baldwin***, *UC IPM Program, Kearney Agricultural Center, Parlier, CA.*
1:50 **Controlling Grasses and other Summer Annual Weeds in Established Alfalfa** - ***Barry Tickes***, *University of Arizona, Yuma, AZ*
2:10 **Stem Nematode Problems – What are the Solutions?** - ***Rachael Long***, *University of California Cooperative Extension, Woodland, CA*
2:30 **Alfalfa Nutrient Requirements, Deficiency Symptoms, and Fertilizer Application** - ***Mike Ottman***, *University of Arizona, Tucson, AZ*
3:00 BREAK
3:30 **Improving Flood Irrigation Management in Alfalfa** - ***Khaled Bali***, *University of California Cooperative Extension, El Centro, CA*
3:50 **Economic Value of Variety Selection** - ***Andre Biscaro***, *University of California Cooperative Extension, Lancaster, CA*
4:10 **Adjusting Cutting Schedules for Economic Conditions** - ***Steve Orloff***, *University of California Cooperative Extension, Yreka, CA*
4:30 **Forage Quality Testing, Past, Present and Future** - ***Dan Putnam***, *Department of Plant Sciences, University of California, Davis, CA*
5:00-6:00 PM EXHIBITORS' RECEPTION

Thursday, December 2

6:15 **California Alfalfa & Forage Association (CAFA) Breakfast** (see CAFA booth for tickets).
7:00 **Registration**

Genetic Innovations in Corn and Alfalfa

8:05 **Current and Future Genetic Innovations for Corn Silage** - ***Dennis Craig***, *Mycogen Seeds Co., Fresno, CA*
8:30 **Adapting Alfalfa Varieties to a Water-challenged Future** - ***Ian Ray***, *New Mexico State University, Las Cruces, NM*

8:55 **Genetic Innovations for Alfalfa in the Near and Long-Term Future** - ***Mark McCaslin****, President, Forage Genetics Int'l., Minneapolis, MN*
9:20 **The Necessity for Respecting Diverse Systems with the Advent of GMOs** - ***Allen Van Deynze****, Seed Biotechnology Center, University of California, Davis, CA*
9:45 **Discussion**
10:00 BREAK

Forage Production, Water, and Economics

10:30 **Optimizing Different Hay Types for Horses: What Have we Learned? - *Anne Rodiek,*** - *California State University, Fresno, CA*
10:55 **Assessing Nitrogen Uptake of Corn, Winter Forages and Alfalfa - *Marsha Campbell Mathews****, UC Cooperative Extension, Modesto, CA*
11:20 **Key Water Issues Affecting Alfalfa, Forage Crops and the Dairy Industry - *Danny Merkely****, California Farm Bureau Federation, Sacramento, CA*
11:45 **'What is the Future of Alfalfa in a World of High Costs, High-value Crops and Globalization?' - *Steve Blank****, Department of Agricultural and Resource Economics, University of California, Davis, CA*
12:05 **Discussion**

12:20 ADJOURN

MANY THANKS to our Sponsors and Exhibitors for generously supporting this educational conference.

U.S. Department of Agriculture (USDA)
USDA #M1911 - Earthquake

Declaration Information

The following table illustrates the declaration information.

Eligible Primary County(s):	Imperial
Eligible Contiguous County(s):	Riverside, San Diego
Event:	May 7, 2010, Major Disaster Declaration (DR-1911-CA) as a result of the earthquake beginning April 4, 2010, and continuing
Assistance made available by designation:	• Emergency farm loans for actual losses as a direct result of the disaster • Up to a maximum of $500,000 • Interest rate 3.75 percent
Application deadline:	**January 7, 2011**
Who may apply:	Farmers and ranchers who conduct family-sized farming operations
How to apply:	• Contact local Farm Service Agency (FSA) office listed in the local telephone directory under U.S. Government, Agriculture •Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD)
USDA website for additional information:	www.fsa.usda.gov/pas/disaster/assistance1.htm

CIMIS REPORT AND UC DROUGHT MANAGEMENT PUBLICATIONS

Khaled Bali and Steve Burch*

California Irrigation Management Information System (CIMIS) is a statewide network operated by California Department of Water Resources. Estimates of the daily reference evapotranspiration (ET_o) for the period of November 1 to January 31 for three locations in the Imperial County are presented in Table 1. ET of a particular crop can be estimated by multiplying ET_o by crop coefficients. For more information about ET and crop coefficients, contact the UC Imperial County Cooperative Extension Office (352-9474) or the IID, Irrigation Management Unit (339-9082). Please feel free to call us if you need additional weather information, or check the latest weather data on the worldwide web (visit http://tmdl.ucdavis.edu and click on the CIMIS link).

Table 1. Estimates of daily Evapotranspiration (ET_o) in inches per day

Station	November		December		January	
	1-15	16-30	1-15	15-31	1-15	16-31
Calipatria	0.14	0.10	0.07	0.07	0.08	0.09
El Centro (Seeley)	0.13	0.09	0.06	0.06	0.08	0.09
Holtville (Meloland)	0.13	0.10	0.06	0.06	0.08	0.09

* Irrigation Management Unit, Imperial Irrigation District.

Link to UC Drought Management Publications

http://ucmanagedrought.ucdavis.edu/

Heat and Farm Safety Bilingual Information

Khaled M. Bali

The University of California Communication Services News & Information Outreach program published a bilingual brochure on information that helps you stay safe in the farm.

For information about heat and farm safety in English and Spanish, please visit the AsisTel website:
AsisTel is a bilingual toll-free information line, available nationwide. 1-800-514-4494.
www.asistel.org.

AsisTel de la UC: 1-800-514-4494
Servicio de Información en Español: http://espanol.ucanr.org