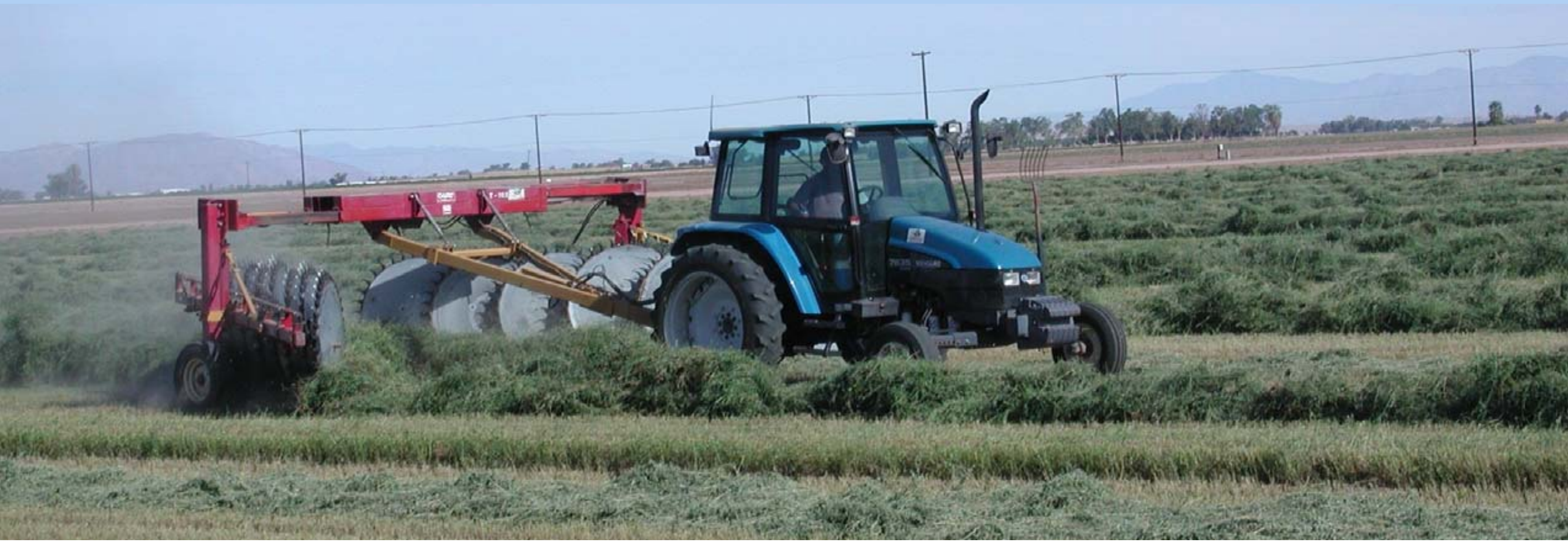
Imperial County Agricultural Briefs



Features **From your Farm Advisors**

January, 2010

Rhizoctonia Damping-off

Donna Henderson

Rhizoctonia solani is a pathogen that causes seedling Damping-off. However, there are other pathogens that may cause Damping-off in addition to *R. solani*, including *Fusarium sp.* and *Pythium sp.*. Damping-off is a general term used to describe the deterioration of the stem and root tissue at or below the soil line. Damping-off can also occur at the seed stage, infecting the seed and resulting in seed rot and a poor plant stand (Figure 2). Although Damping-off may affect the seedling stage, *R. solani* may also be responsible for some post-emergent diseases later in the plant's life.

R. solani is a ubiquitous fungus, found in virtually all agricultural soils throughout the world. This fungus can survive on plant debris and in the soil as microsclerotia. This pathogen usually attacks plant tissue at or near the soil line.

Seedling Damping-off The plant tissue at the soil line becomes brown, water-soaked, and eventually girdles the stem, causing the seedling to wilt and collapse. Typical symptoms of seedling Damping-off (lettuce shown) can be viewed below (Figures 1 & 2). *R. solani* is an opportunistic fungus that is capable of taking advantage and causing disease in already stressed seedlings. *R. solani* seedling damping-off, may develop during periods of stress to the seedling in combination with wet soil, and ideal weather temperature between 41 and 96 degrees. It is important to manage this disease with quality fungicide-treated seed, and timely and accurate herbicide and fertilizer applications to prevent stress to the seedling.

PCA's or growers interested in finding more information on the above-mentioned diseases and management techniques may peruse this website (http://www.ipm.ucdavis.edu/PMG/crops-agriculture.html).

Figure 1. Rhizoctonia infection of lettuce seedlings. Note the typical Rhizoctonia symptoms of blackened, girdled stem at the soil line.

Figure 2. Rhizoctonia Damping-off reduces lettuce plant stand (left).

Sprinkler Irrigation Efficiency

Khaled M. Bali

The main objective of evaluating any irrigation system is to identify management practices that can be implemented to improve water use efficiency. Evaluating the performance of sprinkler irrigation systems can be conducted in a relatively short time. Distribution Uniformity (DU) is commonly used to determine how evenly the water is distributed across the field. During irrigation events, the average depth of applied water varies from one irrigation system to another. But for most sprinkler irrigation systems used in the Imperial Valley, the average depth of application is between 0.10 and 0.15 in per hour of irrigation run time. The average depth of applied water in an irrigation event depends on many factors such as nozzle size, sprinkler spacing, pressure of irrigation water, and other factors.

If one inch of water was applied during an irrigation event that lasted 10 hours, then the average depth of application is 0.10 in/hr. For the same inch of applied water, if it was applied uniformly across the field, then every section of the field would receive 1 inch and DU would be 100%. However, the average depth of applied water is 1 inch but the actual depth of water applied in the field would vary from one location to another. Therefore, we need to know the depth of applied water at various locations across the field. One way to estimate uniformity is to measure the average depth applied in 4 or more locations (20 or more locations would be best). For example, if we measure the depth applied in four locations and found the depth as; 0.95, 0.9, 1.1, and 1.05 inch (Example 1.). Then the average depth is 1 and the uniformity is good because of the low variability between these four measurements.
However, if we find the average depth is 1 in but found high variability (example 1.2, 0.8, 0.7, 1.3 in, Example 2), the average depth is the same but the variability is high so that is an indication of lower uniformity and lower efficiency.

The Distribution Uniformity (DU) is mathematically defined as

DU=(Average volume (or depth) of water stored in the lowest quarter of the field)/(Average volume (or depth) stored in soil profile)

Example 1:

DU= 0.95/(average of 0.95, 0.9, 1.1, and 1.05) = 0.95 or 95%

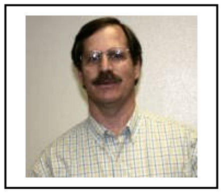
Example 2:

DU= 0.7/(average of 1.2, 0.8, 0.7, 1.3)= 0.7 or 70%

The first example shows a sprinkler irrigation system with high efficiency while the other one shows a system with lower efficiency. In general DUs below 70% are considered poor, DUs between 70-90% are considered good, and DUs above 90% are considered excellent.

Please feel free to contact me if you need any help in evaluating your agricultural sprinkler irrigation system.

Aphid Complex and Egyptian Alfalfa Weevil Control Trial in 2009.



Eric T. Natwick

A field study was conducted during the spring of 2009 at the UC Desert Research and Extension Center. A stand of alfalfa, var. CUF 101, was used for the experiment. Plots were arranged in a randomized complete block design with five replications. Four insecticide treatments were included along with an untreated control. Insecticide treatments and rates are listed in Table 1. Furadan 4F is no longer sold, but remaining supplies that growers have may be used according to label directions. Plots measured 33.3 ft. by 50 ft. and insecticide treatments were applied on February 19, 2009, using a broadcast application with a tractor mounted boom. Egyptian alfalfa weevil larvae (EAW) and aphid populations {blue alfalfa aphid (BAA) pea aphid (PA) and cowpea aphid (CPA)} were measured in each plot with a standard 15-inch diameter insect net consisting of ten, 180^{o} sweeps. Plots were sampled on 13, 23, 26 February, 5 and 12 March 2009; 6-days pre-treatment (DPT), 4-days after treatment (DAT), 7-DAT, 14-DAT, and 21-DAT, respectively.

There were no differences (P = 0.05) among the treatment means prior to insecticide applications (Table 1). All insecticide treatments had significantly fewer EAW larvae than the untreated check 4-DAT, 7-DAT, 14-DAT and 21-DAT.

There were no significant differences among the insecticide treatments and the untreated check for BAA, PA or CPA in the pre-treatment sampled (P = 0.05), Tables 2, 3 and 4. All of the insecticide had significantly fewer BAA, PA and CPA compared to the untreated check 4-DAT, 7-DAT, 14-DAT and 21-DAT.

Table 1. Egyptian Alfalfa Weevil Larvae per Sweeps, Holtville, CA, 2009.

Treatment	oz/acre	6 DPT[x]	4 DAT[y]	7 DAT	14 DAT	21 DAT	PTA[z]
1. Check	--------	89.66	23.36 a	22.54 a	13.18 a	9.74 a	17.21 a
2. Cobalt	19.0	99.65	0.10 b	0.32 b	0.58 b	0.76 b	0.44 b
3. Cobalt	26.0	85.92	0.04 b	0.96 b	0.32 b	0.56 b	1.19 b
4. Lorsban Advanced + Steward	16.0 + 9.0	95.72	0.84 b	0.76 b	0.40 b	0.96 b	0.74 b
5. Furadan 4F	16.0	94.30	0.06 b	0.16 b	0.62 b	0.96 b	0.45 b
LSD; P=0.05		NS	4.48	5.26	6.81	2.52	2.33

Means within columns followed by the same letter are not significantly different.

[x] Days pre-treatment

[y] Days after treatment

z Post treatment average.

Table 2. Blue Alfalfa Aphids per Sweeps, Holtville, CA, 2009.

Treatment	oz/acre	6 DPT[x]	3 DAT[y]	7 DAT	14 DAT	21 DAT	PTA[z]
1. Check	--------	499.22	355.74 a	397.08 a	51.30 a	25.78 a	207.48 a
2. Cobalt	19.0	463.88	2.06 b	1.54 c	3.62 b	5.92 cd	3.29 b
3. Cobalt	26.0	399.22	1.86 b	15.28 b	2.06 b	4.32 d	5.88 b
4. Lorsban Advanced + Steward	16.0 + 9.0	439.52	2.48 b	1.20 c	3.26 b	8.88 bc	3.96 b
5. Furadan 4F	16.0	435.50	3.22 b	5.58 c	9.52 b	10.52 b	7.21 b
LSD; *P*=0.05		NS	70.10	8.16	32.66	3.97	41.88

Means within columns followed by the same letter are not significantly different.
x Days pre-treatment
y Days after treatment
z Post treatment average.

Table 3. Mean Numbers of Pea Aphid per Sweeps, Holtville, CA, 2009.

Treatment	oz/acre	6 DPT[x]	3 DAT[y]	7 DAT	14 DAT	21 DAT	PTA[z]
1. Check	--------	17.52	14.32 a	15.40 a	2.64 a	3.18 a	8.89 a
2. Cobalt	19.0	12.00	0.28 b	0.12 b	0.02 b	0.14 b	0.14 b
3. Cobalt	26.0	16.06	0.34 b	0.72 b	0.02 b	0.30 b	0.35 b
4. Lorsban Advanced + Steward	16.0 + 9.0	7.96	0.30 b	0.04 b	0.32 b	0.92 b	0.40 b
5. Furadan 4F	16.0	11.92	0.78 b	0.30 b	0.22 b	0.80 b	0.53 b
LSD; *P*=0.05		NS	3.71	3.76	1.34	1.30	1.80

Means within columns followed by the same letter are not significantly different.
x Days pre-treatment
y Days after treatment
z Post treatment average.

Table 4. Mean Numbers of Cowpea Aphid per Sweeps, Holtville, CA, 2009.

Treatment	oz/acre	6 DPT[x]	3 DAT[y]	7 DAT	14 DAT	21 DAT	PTA[z]
1. Check	--------	247.68	33.20 a	35.36 a	4.12 a	1.02 a	18.43 a
2. Cobalt	19.0	225.76	6.64 b	1.46 b	0.52 b	0.08 b	2.18 b
3. Cobalt	26.0	250.14	9.02 b	2.52 b	0.56 b	0.16 b	3.06 b
4. Lorsban Advanced + Steward	16.0 + 9.0	229.88	8.96 b	1.36 b	1.40 b	0.90 a	3.15 b
5. Furadan 4F	16.0	202.56	8.70 b	1.06 b	0.74 b	0.10 b	2.65 b

LSD; *P*=0.05	**NS**	**5.58**	**13.37**	**1.85**	**0.53**	**3.78**

Means within columns followed by the same letter are not significantly different.
[x] Days pre-treatment
[y] Days after treatment
[z] Post treatment average.

CIMIS REPORT AND UC DROUGHT MANAGEMENT PUBLICATIONS

Khaled Bali and Steve Burch*

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 January 1 to March 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	January		February		March	
	1-15	16-31	1-15	15-29	1-15	16-31
Calipatria	0.08	0.09	0.12	0.14	0.18	0.22
El Centro (Seeley)	0.08	0.09	0.12	0.14	0.16	0.20
Holtville (Meloland)	0.08	0.09	0.12	0.14	0.17	0.21

* Irrigation Management Unit, Imperial Irrigation District.

Link to UC Drought Management Publications

http://ucmanagedrought.ucdavis.edu/