UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources | UC Cooperative Extension

Imperial County Agricultural Briefs

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Features from your Advisors

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ALFALFA DOWNY MILDEW BEING NOTED IN AREA ALFALFA

Michael D. Rethwisch, Field Crops Farm Advisor, UCCE Riverside County, Palo Verde Valley Office

The current influx of moisture into California this winter has brought multiple small events of rainfall into the Palo Verde Valley. While this is good for settling the dust, it also creates great conditions for fungal and other disease development. One disease being noted in alfalfa is downy mildew.

Until a few years ago, the only downy mildew species that attacked alfalfa in the United States was *Peronospora trifolium*. This changed in 2019 when *Peronospora aestivalis* was found in Utah. This latter species mostly occurs in Europe and Asia. There is also a third species of downy mildew which affects alfalfa. The current movement of rain (and air) from the Pacific region could be facilitating long range movement of diseases. Samples are being collected in an attempt to determine which downy mildew species is/are present in the Palo Verde Valley. It is unknown if there are differences in disease severity between the two species on alfalfa varieties currently grown in the low desert.

With recent rainfall/available moisture on leaves and with additional showers forecast, excellent conditions for damage from downy mildew exist.

Initial Infection and Disease Review

Wind-blown and/or rain splashed spores land on alfalfa plants and infect leaves. Only young, succulent tissue is susceptible. Infection occurs either by direct penetration of the leaflet surface or by entry through stomata. The spores are very fragile and only survive for a few hours to a few days. Under favorable conditions, secondary infection cycles occur every five days.

Germination can occur at temperatures between 39-84^{o}F. Optimum temperature for germination is 64^{o}F. The spores require standing water on leaves for germination, which can occur from rainfall, overhead irrigation and/or dew. This is because downy mildew is an Oomycete (water mold), and is considered to be more closely related to bacteria than other true fungi.

Figures 1-2. Alfalfa leaves showing initial and expanded yellow yellowing associated with downy mildew infection.

As the disease progresses, these chlorotic areas may enlarge and eventually cover the entire leaflet. Infected leaflets become twisted and the margins curl down (Figs. 3, 4). Infected leaves can drop off the plant, reducing yield and quality.

Fig. 3. Initial distortion of leaves from downy mildew infection, with leaflet edges curling down.

Fig. 4. Later distortion of leaflets, showing shriveling. Note contrast with new growth at top of stem.

Spores and fruiting structures of downy mildew will often be found on the undersides of leaflets (Fig. 5).

Fig. 5. Spores of downy mildew on underside of alfalfa leaflet.

It has been reported that once plants get systemically infected, they can have stems that have a wider diameter and a rosette-like growth at the tip.

Downy mildew in alfalfa is usually only a problem for a few to several weeks during the winter, even in "wet" years, based on experiences with *Peronospora trifolium.*

The extent of the damage/yield loss is difficult to predict due to variances in weather/available moisture on alfalfa plants. This also makes it challenging to determine if fungicide applications are economic. This is further complicated by differences in alfalfa varieties for their susceptibility/ resistance to downy mildew.

2023 California Date Palm Workshop
March 1st, 2023

Location:
Coachella Valley History Museum
82616 Miles Ave, Indio, CA 92201

Registration link:
https://surveys.ucanr.edu/survey.cfm?surveynumber=39904

	8:00 a.m. – 12:40 p.m.
7:30	Registration
8:00	**Welcome** –*Ali Montazar, Irrigation and Water Management Advisor, UCCE Irrigation and Water Management Advisor in Imperial, Riverside and San Diego Counties*
8:05	**Welcome** - *Albert Keck, Chair of California Date Commission*
8:10	**Opening comments** - *Manuel Perez, Riverside County Board of Supervisor*
8:15	**Management of Insect and Mite Pests in Dates** – *Thomas Perring, Professor of Entomology, UC Riverside*
8:45	**Updates on the South American Palm Weevil Invasion into Southern California** –*Mark Hoddle, Professor of Extension in Biological Control, UC Riverside*
9:15	**Irrigation Tools and Technologies to Enhance Resource-Use Efficiency in Date Palms** –*Ali Montazar, UCCE Irrigation and Water Management Advisor in Imperial, Riverside and San Diego Counties*
9:45	**Potential Pre- and Post-Emergent Herbicides for Use in Non-Bearing Date Palms** - *Peggy Mauk, Director of Agricultural Operations and Professor of Extension, UC Riverside*
10:15	**Industry Updates –** *Syngenta Crop Protection & Corteva Agriscience*
	Break (10 minutes)
10:40	**Agricultural Commissioner Update –** *Ruben Arroyo, Riverside County Agricultural Commissioner*
11:10	**Arizona Date Palm Research Update** - *Glenn Wright, Professor and Extension Tree Fruit Specialist, University of Arizona*
11:40	**Overview of Diseases Potentially Threatening Date Production** –*Robert Krueger, Horticulturist & Research Leader, USDA-ARS National Clonal Germplasm Repository for Citrus & Dates*
12:10	**Research Committee's Report** - *Gordon Chuchian, California Date Commission*
12:20	**Marketing Committee's Report** - *Mark Tadros, California Date Commission*
12:30	**Government Affairs Committee's Report** - *Stacy Creasy, California Date Commission*
12:40	Lunch - Please stay for lunch.

For additional information on the workshop, please contact Ali Montazar, amontazar@ucanr.edu PENDING CEU CREDITS: CALIFORNIA DPR (3.0 hrs.), ARIZONA DEPT. Of AG (3.0 hrs.), CCA (4 hrs.)

IMPERIAL VALLEY CIMIS REPORT AND UC WATER MANAGEMENT RESOURCES

Ali Montazar, Irrigation and Water Management Advisor, UCCE Imperial and Riverside Counties

The reference evapotranspiration (ET_o) is derived from a well-watered grass field and may be obtained from the nearest CIMIS (California Irrigation Management Information System) station. CIMIS is a program unit in the Water Use and Efficiency Branch, California Department of Water Resources that manages a network of over 145 automated weather stations in California. The network was designed to assist irrigators in managing their water resources more efficiently. CIMIS ET data are a good guideline for planning irrigations as bottom line, while crop ET may be estimated by multiplying ET_o by a crop coefficient (K_c) which is specific for each crop.

There are three CIMIS stations in Imperial County include Calipatria (CIMIS #41), Seeley (CIMIS #68), and Meloland (CIMIS #87). Data from the CIMIS network are available at: http://www.cimis.water.ca.gov/. Estimates of the average daily ET_o for the period of February 1st to April 30th for the Imperial Valley stations are presented in Table 1. These values were calculated using the long-term data of each station.

Table 1. Estimates of average daily potential evapotranspiration (ET_o) in inch per day

Station	February		March		April	
	1-15	16-28	1-15	16-31	1-15	16-30
Calipatria	0.12	0.13	0.16	0.19	0.22	0.25
El Centro (Seeley)	0.13	0.15	0.19	0.22	0.24	0.28
Holtville (Meloland)	0.12	0.14	0.17	0.21	0.23	0.27

For more information about ET and crop coefficients, feel free to contact the UC Imperial County Cooperative Extension office (442-265-7700). You can also find the latest research-based advice and California water & drought management information/resources through link below:

http://ciwr.ucanr.edu/.