

# Onion Disease Management

Thomas Turini  
University of California Cooperative  
Extension  
Imperial County

## Downy mildew



## Downy mildew *Peronospora destructor*



## Onion Downy Mildew *Peronospora destructor*

- Host range: many Allium species (including, onions, garlic, chives and shallots)
- Pathogen over-winters in onion bulbs and as oospores in debris from diseased foliage.
- Sporangia can be carried long distances on air currents.

## Disease development

- Favorable environmental conditions:
  - Cool temperatures (43° to 80°F)
  - Moisture (1.5 hours of leaf wetness)
  - Low light
- Spores are produced at night and are dispersed during the day.
- The spores can survive for up to 3 days
- Nine to 16 days between infection and sporulation

## Disease control

- Do not plant infested bulbs
- Likelihood of disease is lower in fields with air movement
  - Well drained fields
  - Lower plant densities
  - No windbreaks
- Frequent fungicide applications when conditions favor disease development

## Fungicide efficacy, Imperial County 2003

- Imperial Valley Research Center, Brawley
- Dehydrator onions were grown according to commercial practice
- Experimental design
  - Six replication RCB
  - Plot size: 4 rows x 30 ft
- The first sign of downy mildew was observed on 11 March

## Application details

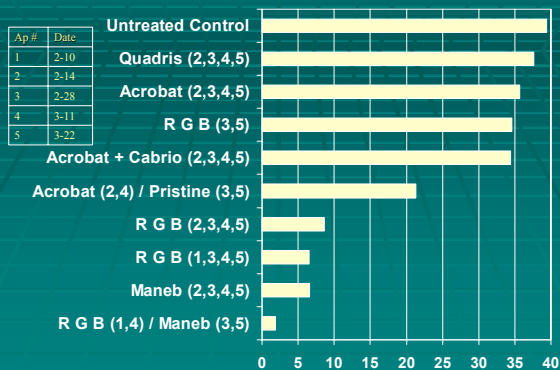
- CO<sub>2</sub>-pressurized backpack sprayer (30 gal/acre)
- Applications were made before disease was observed

Treatment, units/acre	Application dates				
	2-10	2-14	2-28	3-11	3-21
Acrobat 50WP 6.4 oz (A) Pristine 1.45 lbs (P)		A	P	A	P
Acrobat 50WP 6.4 oz + Cabrio 1.0 lbs		x	x	x	x
Acrobat 50WP 6.4 oz		x	x	x	x
Ridomil Gold Bravo 2.0 lbs (R) : Maneb 75DF 3.0 lbs (M)		R		M	R
Maneb 75DF 3.0 lbs		x	x	x	x
Quadris 15.4 fl oz		x	x	x	x
Ridomyl Gold Bravo 2.0 lbs		x		x	x
Ridomil Gold Bravo 2.0 lb		x	x	x	x
Ridomyl gold Bravo 2.0 lbs			x		x

## Results



## Results



## Iris yellow spot virus of onion



Imperial County

## Iris yellow spot virus of onion



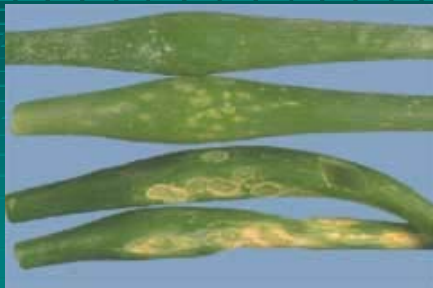
Imperial County

## Iris yellow spot virus of onion



Sample from Yuma

## Iris yellow spot virus of onion



Idaho

## Distribution of Iris yellow spot virus

- Previously reported in Netherlands, Israel and Brazil.
- First reported in US in Idaho in 1991.
- Lesions were reported on onion in Yuma in 2002-3, and were widespread throughout Imperial County in 2003.

## Biology

- Host Range: Iris, Jimsonweed, green onion, chives, bulb onion.
- The virus has not been detected in seed or bulbs.
- Onion thrips (*Thrips tabaci*) transmit this virus: Western flower thrips (*Franklinella occidentalis*) does not appear to be a vector.

## Symptoms

- The characteristic lesions were rarely reported on leaves until recently.
- In 2001, necrotic lesions leaves of onion bulb and seed crops, and these were confirmed to be infected with IYSV in Colorado, Idaho and Utah.

### **Economic loss**

- In most infected fields, seed yield reduction is minimal, but there are isolated reports of severely affected fields that were not harvested.
- Reports from Colorado, Israel and Brazil claim substantial yield losses to bulb onion.

### **Control of Iris yellow spot virus**

- In variety trials in Idaho, there were differences in symptom severity, but further research is needed before any conclusive statement could be made.