



# Fosphite®

## LETTUCE Tech Update

**JH Biotech**  
Biotechnologies for Safer Agriculture

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### LETTUCE DOWNY MILDEW CONTROL

Downy mildew is a serious disease of lettuce that occurs worldwide. Downy mildew, primarily a foliar disease, has a direct effect on yield and quality, since it affects the marketable portion of the crop. Although yield losses in the field at harvest may be substantial, downy mildew's impact is often accentuated by significant postharvest losses that occur during transit or storage. During the past several years, costs to control downy mildew have risen dramatically.<sup>1</sup>

### CAUSAL AGENT AND SYMPTOMS

Downy mildew on lettuce is caused by the fungus *Bremia lactucae*. The fungus is an obligate parasite, i.e., it is capable of infecting and colonizing only living host tissue. The fungus belongs to a class of relatively primitive fungi known as the Oomycetes. Other well-known members of this group are Pythium and Phytophthora.

*Bremia lactucae* is capable of infecting any lettuce growth stage from seedling to mature plant. Head, leaf, and cos lettuce are all susceptible. Although downy mildew is usually most severe on the older outer leaves, the disease may become systemic over time, infecting lettuce heads internally and colonizing even the roots. Downy mildew lesions may also serve as portals for secondary invaders, such as the fungus *Botrytis cinerea*.<sup>1</sup>

FOSPHITE® is a systemic fungicide for the control of downy mildew on lettuce as well as all other susceptible crops. FOSPHITE contains mono- and dipotassium salts of phosphorous acid. It is a liquid fungicide and carries a reduced risk designation from the US EPA. FOSPHITE fits well into any IPM program and is compatible with most other pesticides and fertilizers. (Consult product label for compatibility details and application instructions.)



UNIVERSITY OF CALIFORNIA

### COOPERATIVE EXTENSION RESEARCH

Research was conducted by the University of California Cooperative Extension of Santa Barbara County. The Lettuce field was located in Santa Maria. Three applications were made starting May 13, 2005. Fosphite® alternating with Acrobat® showed superior results to all other treatments. An average of less than 1 lesion per head was found. As a comparison, Acrobat® by itself showed almost two lesions per head.

This trial and prior research confirms Fosphite provides superior control of downy mildew. Applied in alternation with fungicides of alternate modes of action, Fosphite seems to exhibit a synergistic effect which results in superior downy mildew control on lettuce.

To find out who carries Fosphite in your area, contact your local representative or call (800) 428-3493.

1. Fact Sheet HS-147, a series of the Horticultural Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: December 1992.



Symptoms of downy mildew appear initially as chlorotic yellow spots on the upper leaf surface (Image 1).

Under favorable conditions, a white cottony-like fungal growth that is indicative of sporulation (formation of fungal spores) generally appears on the lower leaf surface within 24 to 48 hours following initial symptom development (Image 2).

During the early stages of disease development, spots are often delineated by the veins of the leaf, giving lesions a rather angular appearance (Image 3).

As the disease progresses, only larger veins obstruct lesion expansion. Lesions become increasingly chlorotic with time and eventually turn brown (Image 4).

### Lettuce Downy Mildew Control Trial Results

Treatments <sup>1/</sup>	Rate/Ac	Ave. Lesions/Head
1. Fosphite alt. Acrobat	2 qts alt. 6.35oz	0.72 a <sup>2/</sup>
2. Agri Fos	2 qts	1.52 a
3. Acrobat	6.35oz	1.92 a
4. Maneb	2 lb	2.32 a
5. Acrobat + Sonata	6.35oz + 2 qts	2.82 a
6. No Fungicide Water + Insecticide	0	12.15 c

<sup>1/</sup> Three treatments were applied, 5/13, 5/23 and 6/2/05. All treatments were applied in 80 gallons of water per acre equivalent to using a CO<sub>2</sub>-powered sprayer at 55 psi. All treatments also received Pounce at 8 oz/ac Orthene at 1.33 lbs/ac.

<sup>2/</sup> Each treatment was replicated 4 times. Lesions on ten heads per replication were counted. Number is average lesions per head. Numbers followed by the same letter do not differ significantly at the 5% level according to Duncans multiple range test.



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Agri Fos<sup>®</sup> is a registered trademark of Agrichem.  
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