

Field evaluation of fungicide for controlling lettuce *Fusarium* wilt

Yu-Chen Wang, Plant Pathology Advisor, UC Cooperative Extension

Objectives. Lettuce *Fusarium* wilt can cause significant problems in lettuce production from summer to fall in Salinas Valley. This study investigates fungicide treatments for controlling lettuce *Fusarium* wilt in the field.

Methods. One fungicide trial was conducted in a commercial lettuce field near Soledad with natural infestation of *Fusarium oxysporum* f. sp. *lactucae* to test the efficacy of select fungicides for controlling lettuce *Fusarium* wilt in 2025 (Photo 1). Head lettuce ‘Tamarack’ was direct seeded on June 24, 2025 and drip irrigation was initiated to germinate the seeds on June 25, 2025. Ten fungicide treatments and a nontreated control were arranged in a randomized complete block design with four replications. Each plot consisted of five seedlines of lettuce that was 20-ft long on the 80-inch wide bed. Treatments were applied with a CO₂-pressurized backpack sprayer calibrated to deliver 79 gpa at 30 psi using a single TeeJet 8008evs flat fan nozzle in a 4-inch band over each seedline. The first fungicide applications were made on June 24 and June 25. Initial symptoms were observed at thinning on July 15. Lettuce *Fusarium* wilt incidence was evaluated at harvest on August 20, 2025. Disease incidence was expressed as the percentage of the number of plants with severe *Fusarium* wilt symptoms (dead, chlorotic leaves, or stunted) in the total number of plants within the plot (Photo 2). Data were square root transformed, analyzed using analysis of variance (ANOVA), and the Tukey HSD test to separate means at $P < 0.05$. The average daily soil temperature (°F) at 6-inch depth and total rainfall were recorded at a nearby CIMIS weather station (CIMIS #252). The average daily soil temperature and total rainfall for the trial were 70.5°F and 0.02 inches, respectively.

Results (Table 1). The disease pressure in this trial area was high with nontreated control having 80% *Fusarium* wilt. Disease incidence was expressed as the percentage of plants with severe *Fusarium* wilt symptoms (dead, chlorotic leaves, or stunted plants) in the total number of plants within the plot. None of the treatments applied at the rates used significantly reduced the incidence of lettuce *Fusarium* wilt compared to the nontreated control. Phytotoxicity was not observed with any treatment in this trial.



Photo 1. The trial was conducted in a commercial lettuce field in Soledad



Photo 2. Symptoms of lettuce Fusarium wilt (arrows)

Table 1. Mean of Fusarium wilt incidence at harvest

Product and rate/A	Active ingredient	FRAC group	Days after the first application on Jun 24 ^z	Fusarium wilt (%/plot)
Nontreated	-	-	-	80 a ^x
Minuet 12 oz	Bacillus subtilis, QST 713 strain	44	0, 22	77 a
Velum One 6.8 oz	Fluopyram	7		
Minuet 24 oz	Bacillus subtilis, QST 713 strain	44	0, 22	72 a
Velum One 6.8 oz	Fluopyram	7		
Minuet 24 oz	Bacillus subtilis, QST 713 strain	44	0	73 a
Velum One 6.8 oz	Fluopyram	7	0, 22	79 a
Miravis Prime 15.4 oz	Fludioxonil	12	0	75 a
	Pydiflumetofen	7		
Miravis 13.7 oz	Pydiflumetofen	7	0	81 a
EXP1 4.56 oz	-	-	0	73 a
EXP1 4.56 oz	-	-	0	73 a
EXP2 13.7 oz	-	-	0	73 a
EXP2 13.7 oz	-	-	0	73 a
EXP2 13.7 oz	-	-	0	68 a
Miravis 13.7 oz	Pydiflumetofen	7	0	
<i>P</i> -value ($\alpha=0.05$)				0.56

^zApplications were made on June 24 or June 25 and July 17 depending on the specific treatment

^xNumbers in a column followed by the same letter are not significantly different based on Tukey's significant difference test ($P<0.05$). The non-transformed data are displayed here.