Evaluation of fungicides for control of *Leveillula* and *Oidium* powdery mildews on tomato, 2016. Brenna Aegerter, UCCE San Joaquin County

This study was conducted in a commercial fresh market tomato field (cv. 'Bobcat) located SE of Stockton, CA. The site is located off of S. Austin Rd.; GPS coordinates are 37.873, -121.196, and the soil type is Jacktone clay. The closest CIMIS weather station is #70 Manteca. The field was transplanted July 3rd and furrow-irrigated. Each plot consisted of a single plant row per bed with 20-inch spacing within the row and 60-inch spacing between rows; plots measured 30 feet long. The experimental design was a randomized complete block design with four replications. The trial area was managed by the grower similarly to the rest of the field except that no sulfur or mildew fungicides were applied to the test area. Experimental fungicide applications were initiated early in the progression of the disease, however there were some symptoms already present when applications began. The first application was on August 30th, the second application following 14 days later on September 13th. All fungicides were applied in a water volume equivalent to 30 GPA (treatment timing A) or 50 GPA (treatment timing B). Applications were made with a CO_2 backpack sprayer (operating at 34 psi at the boom) and a handheld boom with one nozzle (applications A and B) to four nozzles (application C) (hollow cone TXVS-18 nozzles), two of which were on drops. A non-ionic surfactant was added to all treatments (0.25% Latron B-1956). No phytotoxicity symptoms were observed on foliage or fruit. Plots were rated for the percentage of the foliage that was affected by powdery mildew (exhibiting mildew symptoms, sporulation or mildew-induced necrosis). We believe that both mildew pathogens were present in this trial, but it was not possible to rate disease severity for each species separately. Disease pressure was relatively low, with only 10% mildew in the non-treated plots just prior to harvest. Most products performed well, limiting the damage to below 5% of the foliage affected. On October 3rd, four representative vines from each plot were hand-harvested and sorted for defects (sunburn and other culls). Fruit yield and cull rates were similar between treatments. Our great appreciation is extended to Mike Carr (Pacific Triple E), PCA Bill Vignolo (Simplot), and the grower for their generous cooperation.

Table 1. Impact of fungicide programs on powdery mildew severity, fruit yield and quality.

Product and rate per acre (timings)	Active ingredient and rate per acre	Disease severity (% foliage affected) 27-Sep		7-Oct		Total yield (t/ac)	Market yield (t/ac)	Sunburn (%)
Quintec 4oz (AB)	1 oz quinoxyfen	1.3	cd	1.3	d	26.3	20.3	9.3
Priaxor 8oz (AB)	1.4 oz fluxapyroxad + 2.8 oz pyraclostrobin	1.3	cd	1.9	d	32.9	25.5	11.2
Fontelis 16oz + Quadris 6.2oz (A) fb Quintec 6oz (B)	4 oz penthiopyrad + 1.6 oz azoxystrobin fb 1.5 oz quinoxyfen	0.6	d	1.9	d	24.7	18.0	14.3
Rhyme 7oz (AB)	1.8 oz flutriafol	1.3	cd	1.9	d	33.0	25.8	9.2
Torino 3.4oz (AB)	0.36 oz cyflufenamid	1.9	cd	1.9	d	33.3	27.0	5.8
Quadris Top 8oz (AB)	1.67 oz azoxystrobin + 1.05 oz difenoconazole	1.9	cd	2.5	cd	27.4	22.4	5.6
Fontelis + Quintec 4oz (A) fb Quadris Top 8oz (B)	4 oz penthiopyrad + 1 oz quinoxyfen fb 1.67 oz azoxystrobin + 1.05 oz difenoconazole	1.3	cd	2.5	cd	30.5	23.9	10.0
Mettle 8oz (A) fb Torino 3.4oz (B)	1 oz tetraconazole fb 0.36 oz cyflufenamid	1.9	cd	2.5	cd	31.3	23.7	11.5
Mettle 5oz (A) fb Torino 3.4oz (B)	0.625 oz tetraconazole fb 0.36 oz cyflufenamid	1.9	cd	3.8	cd	35.3	28.4	8.1
Quadris Top 8oz (A) fb Quintec 4oz (B)	1.67 oz azoxystrobin + 1.05 oz difenoconazole fb 1 oz quinoxyfen	1.9	cd	3.8	cd	32.4	26.1	3.8
Mettle 5oz (AB)	0.625 oz tetraconazole	1.9	cd	4.4	bcd	33.4	24.0	11.6
Fracture 24.4oz (AB)	6.4 oz BLAD protein	6.3	ab	6.3	abc	29.8	19.6	19.3
Aprovia Top 13oz (AB)	1.6 oz difenoconazole + 1.1 oz benzovindiflupyr	4.4	bc	8.1	ab	29.8	22.9	7.6
Microthiol Disperss 20 lb (A) fb Priaxor 8oz (B)	16 lb sulfur fb 1.4 oz fluxapyroxad + 2.8 oz pyraclostrobin	8.1	a	8.1	ab	30.5	20.8	18.5
Fracture 36.6oz (AB)	9.6 oz BLAD protein	4.4	bc	8.1	ab	32.6	23.9	11.9
nontreated control	none	8.1	a	10.0	a	29.9	23.1	6.0
	Mean	3.0		4.3		30.8	23.5	10.2
	LSD	3.38		3.78		*NS*	*NS*	*NS*
	CV	78.9		61.7		19.1	22.8	63.0
	P value	*< 0.0001*		*< 0.0001*		*NS*	*NS*	*NS*

Values represent the means of four observations; means in the same column followed by the same letter are not statistically different, according to Fisher's protected least significant difference test (*P = 0.05*).