

APPLE (*Malus x domestica* ‘Ginger Gold’, ‘Honeycrisp’, ‘Liberty’, ‘Macoun’, ‘Zestar!’)

Apple scab; *Venturia inaequalis*

Cedar apple rust; *Gymnosporangium juniperi-virginianae*

Powdery mildew; *Podosphaera leucotricha*

Necrotic leaf spot (unidentified)

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Apple cultivar disease evaluation under organic management in Vermont, 2006.

Disease symptoms were evaluated on five cultivars under organic management: Ginger Gold, Honeycrisp, Liberty, Macoun, and Zestar!. The study was conducted at the University of Vermont Horticultural Research Center in South Burlington, VT, in a new orchard planted on 21 Apr 2006. Cultivars were arranged in a completely randomized design with 10 three-tree replications. Because it was a new orchard site with no apparent overwintering inoculum and the newly planted trees exhibited delayed growth, fungicide applications were started late in the season and consisted of three applications: sulfur (3.33 lb/A) plus lime sulfur (1.33 gal/A) applied on 22 Jun and 1 Jul, and sulfur (10 lb/A) applied on 14 Jul. Fungicides were applied to drip with a Rears 50 gallon handgun sprayer at 100 psi. Weather conditions were monitored with a Davis Vantage Pro Wireless Weather Station (Davis Instruments Corp.) and primary scab infection periods were determined using “revised” Mills criteria, with the exception that all wetting periods including those starting at night were used in infection period determinations. Primary infection periods occurred on 15, 22-23, 24-25 Apr, 2-4, 11-21 May, and 26 May-1 Jun. Disease incidence and severity were assessed on all the leaves on two vegetative terminals per tree on 9-11 Aug. Data obtained were analyzed by analysis of variance and mean comparisons were performed using Tukey’s HSD Test ($P \leq 0.05$).

Honeycrisp had significantly less scab incidence than the other susceptible cultivars (i.e., Ginger Gold, Macoun, and Zestar!). Ginger Gold had the highest incidence of scab but was not significantly different than Zestar!; each had a similar number of lesions per leaf. Ginger Gold also had the highest incidence of cedar apple rust lesions than any of the cultivars, followed by Honeycrisp. The highest incidence of necrotic leaf spots, which resembled frog-eye leaf spots, was observed on Macoun and Zestar! although the incidence on Zestar! was not statistically different from the incidence observed on Ginger Gold. The incidence of cedar apple rust lesions and necrotic leaf spots on the scab-resistant cultivar Liberty were in the lower range observed across the cultivars. Powdery mildew was observed only on Ginger Gold where 0.22% incidence was present.

Cultivar	Apple scab ^z		Cedar apple rust ^z		Necrotic leaf spots ^z	
	% Incidence	Severity ^y	% Incidence	Severity	% Incidence	Severity
Ginger Gold	41.3 a ^x	5.5 a	25.6 a	1.4 a	5.4 bc	0.7 ab
Honeycrisp.....	2.7 c	0.4 c	13.5 b	1.1 a	3.8 c	0.7 ab
Liberty.....	0.0 d	0.0 c	0.3 c	0.1 b	3.1 c	0.5 b
Macoun	28.4 b	3.1 b	1.5 c	0.3 b	10.8 a	1.0 ab
Zestar!	34.1 ab	5.2 a	0.7 c	0.1 b	10.2 ab	1.1 a

^zAll leaves on two vegetative terminals per tree were assessed on 9-11 Aug on each of the 10 three-tree replications planted in a completely randomized design.

^yMean number of lesions per infected leaf

^xNumbers within columns followed by the same letter do not differ significantly, Tukey's HSD, $P \leq 0.05$.