



**2013 Tomato Variety List for TMV/ToMV and Leaf Mold Resistance**

Available Tobacco mosaic virus/Tomato Mosaic Virus and Leaf Mold Resistant Varieties are Important for use in High Tunnel and Greenhouse Production

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With ever increasing tomato production shifting to high tunnels and greenhouses, the importance of identifying tomato varieties with a good disease resistance package takes center stage. This is particularly true for mosaic virus diseases and leaf mold, two important diseases found in confined production facilities. Tobacco mosaic virus (TMV) and tomato mosaic virus (ToMV) are two closely related members of the tobamovirus group and share much in common including being seedborne in tomato and readily spread by normal high tunnel and greenhouse operations (suckering, tying, harvesting). Both remain infectious for long periods, allowing them to survive indefinitely. Seed treatments, sanitation and cross-protection even with attenuated (mild) strains of ToMV have not been totally effective control measures. TMV and ToMV do not cross protect against each other and can coexist in tomato, and they can only be distinguished from each other by serological affinities and protein composition. It is rare for TMV to be a lasting problem in tomato since ToMV is more adapted to tomato. The use of three dominant resistance genes for ToMV (Tm-1, Tm-2 and Tm-2<sup>2</sup>), corresponding to ToMV strains 0, 1 and 2, have been introduced into many commercial varieties as given below.

Leaf mold has increased in occurrence over the past 5 years with the increase in plastic house production; unheated and over-planting with many indeterminate plants with limited head room creates a perfect moisture environment for this fungus. Formerly called *Cladosporium fulvum*, it is now recognized in the vegetable seed industry as causal agent *Fulvia fulva* (*Ff*); although mycologists now recognize the name as *Passalora fulva*. The resistance genes take their name from the old name of the pathogen = *Cf*. Not all identified *Cf* genes have been used in commercial varieties, but gene *Cf-9* is very versatile with resistance conveyed to all 5 race groups (A-E). Common occurrence of leaf mold in European greenhouses (mostly unheated) has contributed to a wide selection of resistant varieties.

Variety name (all F1)	<u>Indeterminate</u> <u>Determinate</u> <u>Rootstock</u>	TMV or ToMV + other pertinent resistances	Source/Special Comments (OD = Outdoors; H = Hoop, GH = Greenhouse)
Round/ Oblate Fresh Market or Salad types with these Specified Resistances			
Arbason (7-9 oz)	<u>Indet</u> ; Cluster type	TMV; Fol 1, 2; V	Johnny's; GH type, HoopHs
BHN-871 (10-12 oz)	<u>Deter</u> ; Globe	TMV, Fol 1, 2, 3; For; Vd-1	Johnny's; gold orange, less acid than reds
Big Beef (10-12 oz)	<u>Indet</u> ; Deep oblate	ToMV; ASC; Fol-1, 2; N (3); GLS (Ss); V-1	Seminis; Johnny's; 1994 AAS Winner; for OD, GH, H; need staking
Caramba (7.1-9 oz)	<u>Indet</u> ; Flat	ToMV; LM A-E; Fol 0,1; N (3); Va/Vd-1	Seminis; OD, H; vigorous plant and good flavor; Italian salad tomato
Celebrity (7-8 oz)	<u>Deter</u> ; Deep oblate	ToMV; ASC; Fol-1, 2; N, GLS; V-1	Seminis; Johnny's; Widely adapted, AAS winner; green shoulder
Clermon (5 oz, 140 g)	<u>Indet</u> ; Cluster, 4-5 fruit	ToMV (0-2); LM A-E; Fol 1, 2; For; V	Syngenta; Johnny's; truss type, HoopHs
Debut (8 1/2)	<u>Strong Deter</u> ;	ToMV (0-2); ASC; Fol	Seminis; compact plant with large fruit; first



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oz./241 g)	Deep oblate	1, 2; GLS (3 spp.); Va-1, Vd-1	early
Empire (8 oz, 227 g)	<u>Deter</u> ; Deep oblate	<b>ToMV</b> ; ASC; Fol-1, 2; GLS (Ss); N (3); Va/Vd-1	Seminis; bush or stake culture; main season
Estiva (6-7 oz)	<u>Indet</u> ; Globe	<b>TMV</b> ; Fol 1, 2; V	Johnny's; OD or in well-ventilated H
Fabulous (10 oz)	<u>Deter</u> ; Flattened Globe	<b>TMV</b> ; Fol 1, 2, 3; V	Park Seed; good for Hoop Hs but too soft for a 25-pound box
Geronimo (8-10 oz)	<u>Indet</u> ; Cluster	<b>TMV</b> ; LM; Fol 1, 2; V	Johnny's; GH type, HoopHs
Heatmaster (7 oz)	<u>Deter</u> ; Deep oblate	<b>ToMV (0)</b> ; ASC; Fol 1, 2; GLS (3 spp.); Va-1, Vd-1; N (3)	Seminis; especially for hot climates, with large fruit
Pink Cupcake (Lrg)	<u>Deter</u> ; Deep oblate	<b>TMV</b> ; <b>LM A-E</b> ; Fol 1, 2; Vd1; N (Mi)	Sakata; Open field or HoopHs.
Pio (10 to 12 oz)	<u>Indet</u> ; Deep oblate	<b>ToMV (0)</b> ; ASC; Fol 1, 2; GLS (3 spp.); Va-1, Vd-1; N (3)	Seminis; county fair entry, and grows well even under warm temperatures
Polbig (6-8 oz)	<u>Deter</u> ; Globe	<b>TMV</b> ; Fol 1; V	Johnny's; compact plt
Poseidon 43 (225 grams)	<u>Indet</u> ; Globe	<b>ToMV (0-2)</b> ; <b>LM C,E</b> ; Fol 1, 2; FOR; N (3); Va/Vd-1	Seminis; pink fruit color therefore low acid levels
Rally (230 g)	<u>Deter</u> ; Lrg Beef	<b>ToMV</b> ; <b>LM A-E</b> ; Fol 1, 2; Va/Vd-1; TSWV; N (3)	Enza Zaden; HoopHs, OD
Rally (Ex lrg)	<u>Deter</u> ; Globe	<b>ToMV (0-2)</b> ; ASC; Fol 1, 2; For; Vd1; TYLCV	Sakata; good performer in SE US
Rebelski (7-8 oz)	<u>Indet</u> ; Ruffled	<b>TMV</b> ; <b>LM A-E</b> ; Fol 1, 2; For; PM; V	Johnny's; ruffled tom fruit French GH or Hoop type
Red Deuce (10 oz./280 g)	<u>Deter</u> ; Globe shaped	<b>ToMV</b> ; ASC; Fol 1, 2; GLS (Ss); V1	Harris Moran, others; second early vine ripe
Trust (6.5-10 oz)	<u>Indet</u> ; Oblate	<b>TMV</b> ; <b>LM A-E</b> ; Fol 1, 2; For; Vd	Johnny's; for GrHs production
Tycoon (9-12.5 oz)	<u>Deter</u> ; Oblate	<b>ToMV</b> ; Vd; Fol 1, 2; TSWV; N (2); GLS (SI); TYLCV	Hazera; OD, staking or bush
Tygress (12 oz)	<u>Deter</u> ; Deep oblate	<b>ToMV</b> ; ASC; Fol 1, 2; GLS (Ss); TYLCV; Va/Vd-1	Seminis; main season fresh market
<b>Saladette Indeterminate (50g plus) with these Specified Resistances</b>			
Golden Rave (2 oz, 50 g)	<u>Indet</u> ; Baby Roma	<b>ToMV (1)</b> ; Fol 1	Sakata; Johnny's; saladette type with mild taste with low acid level
Hermosa (Lrg.)	<u>Indet</u> ; Saladette	<b>ToMV (0-2)</b> ; ASC Fol 1, 2; Vd 1	Sakata; saladette with large fruit size
<b>Saladette Determinate (None with these Specified Resistances)</b>			



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Cocktail Indeterminate, 30-50 g with these Specified Resistances			
Bellini (40-50 g)	<u>Indet</u> ; Cocktail	ToMV (0-2); LM A-E; Fol 1, 2; Vd-1; N (Mi); GLS (Ss)	Sakata;
Rossini (30-40 g)	<u>Indet</u> ; Cocktail	ToMV; LM A-E; Fol 1, 2; For; N (Mi); GLS (Ss)	Sakata;
Cherry Indeterminate, 10-30 g with these Specified Resistances			
Camelia (3/4 oz, 15-20 g)	<u>Indet</u> ; Cherry	TMV, Fol 1; Vd-1	Hazera; OD or GH, long shelf life
Favorita (0.6 oz)	<u>Indet</u> ; Cherry	TMV; LM A-E; Fol 1, 2; N	Johnny's; nice long trusses; OD, GH
Sakura (15 g)	<u>Indet</u> ; Cherry	TMV; LM A-E; Fol 1, 2; N	Johnny's; OD or GH
Shiren (19 g)	<u>Indet</u> ; Cherry Cluster	ToMV; Fol 1, 2; N (2)	Hazera; long shelf life cluster
Sun Gold (15-20 g)	<u>Indet</u> ; Cherry	TMV; Fol 1	Johnny's; splitting; Early heavy yield
Sunpeach (15-20 g)	<u>Indet</u> ; Cherry Pink	ToMV; LM A-E	Johnny's; deep pink for GrHs production
Sunsugar (< 1 oz)	<u>Indet</u> ; Cherry	ToMV; Fol 1	Seminis; sweet golden-yellow,
Sweet Baby Girl (> 1oz)	<u>Indet</u> ; Cherry compact	ToMV (0-1); Fol 1	Seminis; small sweetie
Sweet Chelsea (lrg.)	<u>Indet</u> ; Cherry	ToMV (0-2); LM A-E; Fol 1, 2; N (Mi); Vd1	Sakata; lrg round cherry, easy to grow
Sweet Gold (10-15 g)	<u>Indet</u> ; Cherry	ToMV (0-1); Fol 1	Sakata; very early with yellow fruit, many markets
Sweet Hearts (grape size)	<u>Indet</u> ; Cherry	ToMV (0-2); LM A-E; Fol 1; GLS (Ss)	Sakata; impressive yields; H, GrHs, OD
Sweet Million (10-15 g)	<u>Indet</u> ; Cherry	ToMV (0-1); Fol 1	Sakata; cherry for home garden and retail
Sweet Treats (20-30 g)	<u>Indet</u> ; Cherry	ToMV (0-1); LM A-E; Fol 1, 2; For; GLS (Ss)	Sakata; pink cherry home garden and retail
Yellow Mini (15-20 g)	<u>Indet</u> ; Cherry	TMV only	Johnny's; resists splitting from too much water or inconsistent watering; OD, GH
Grape with these Specified Resistances			
Amsterdam (22 g)	<u>Indet</u> ; Grape, Plum	ToMV; Fol-0; N (3); Va/Vd	Seminis; highest sugar levels
Brixmore (grape size)	<u>Deter</u> ; Grape	ToMV; Fol 1; Vd-1	Harris Moran; very early with high brix
Santa (sm grape)	<u>Deter</u> ; Grape	TMV; Fol 1, 2, 3; Vd-1; N	Available through contract; Univ Idaho; breed for cool summer areas
Sweet Elite (10-12 g)	<u>Indet</u> ; Grape	ToMV (0-2); LM A-E; Fol 1, 2; GLS (Ss)	Sakata; deep red color and crack res.



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Sweet Hearts (grape size)	Indet; Grape	ToMV (0-2); LM A-E; Fol 1; GLS (Ss)	Sakata; H, OD, GH
Viva Italia (3-3.5 oz)	Deter; Blocky Pear	TMV; LM-A-E; ASC; Bac Speck (0); Fol 1, 2; N; GLS; V-1	Seminis; sets in hot weather with compact plant and sweet fruit
Roma (Plum) with these Specified Resistances			
Granadero (4-5 oz) (150 g)	Indet; Plum	ToMV; Fol 1, 2; PM; V; TSWV; N (3)	Enza Zaden; Johnny's; low occurrence of BER
Huichol (lrg.)	Deter; Elong Cyl. Roma	ToMV (0-2); ASC; Fol-1; N (3); TSWV; Va/Vd-1	Seminis; fresh market, with long shelf life
Hybrid 46 (lrg.)	Deter; Elong Cyl. Roma	ToMV (0-2); ASC, Fol-1, 2; For; GLS (Ss); N (3); Va/Vd -1; Bac Speck-0	Seminis; jointless
Picus (lrg.)	Deter; Roma	TMV; ASC; LM; Fol 1, 2; TSWV; Vd1	Seminis; vigorous and sets well in hot temperatures
Sunoma (lrg.)	Deter Vigor; Elong. Cyl. Roma	ToMV; Fol 1, 2; N (3); GLS (Ss); Va/Vd-1; Bac Speck (0)	Seminis; elongate fruit; stake culture
Rootstock for tomato grafting			
Beaufort	Rootstock	TMV; CRR; Fol 1, 2; Vd; N	De Ruiter; Johnny's; single leader
Colosus	Rootstock	TMV; Fol 1, 2, 3; For; N; CRR; Vs	Johnny's; for grafting to GH or indet. types
Maxifort	Rootstock	TMV; CRR; Fol 1, 2; Vd; N	De Ruiter; Johnny's; double leader

**Specified Disease Resistance:** Information on varietal disease resistance was acquired from seed company web sites. Not all growers may have encountered TMV or ToMV in their operations, but a complete list for Leaf Mold resistance is provided for its eventuality. Other resistances are provided for completeness, but are not important for NE tomato growers.

**Diseases:** **ASC (Aal)** = Alternaria stem canker (*Alternaria alternata* f. sp. *lycopersici*); **CRR (PI)** = Corky root rot (*Pyrenochaeta lycopersici*); **Fol** = Fusarium wilt races 1, 2, and 3, respectively (*Fusarium oxysporum* f. sp. *lycopersici*); **For** = Fusarium crown and root rot (*Fusarium oxysporum* f. sp. *radicis lycopersici*); **GLS** = Gray leaf spot (*Stemphylium botryosum* f. sp. *lycopersici* = **Sbl**; *S. lycopersici* = **Sl**; *S. solani* = **Ss**); **LM** = Leaf mold (Ff) races A to E (now *Passalora fulva* [syn. *Fulvia fulva*]); **Lt** = Powdery Mildew (*Leveillula taurica*); **On** = Powdery Mildew (*Oidium neolycopersici*); **Bacterial Speck (Pst)** (*Pseudomonas syringae* pv. *tomato* races 0 and 1; **N** = Root-knot nematode (3 = three species, *Meloidogyne arenaria* (Peanut RKN), *M. incognita* (Southern RKN), and *M. javanica* (Javanese RKN) (**Mi-1 gene** covers most, but not for resistance to the Northern root-knot nematode = *M. hapla*, which is most common in the NE); **V** = Verticillium wilt (**Vd-1** *Verticillium dahliae* [also **Va**, *Verticillium albo-atrum*]); **TMV** = Tobacco mosaic virus; **ToMV** = Tomato mosaic virus (both seed and mechanical); **TSWV** = Tomato spotted wilt virus (Thrips); Tomato yellow leaf curl virus (Whiteflies)