

<b>Gene</b> (G)	<b>Locus Name</b>	<b>Synonyms</b>
(K)		
<i>a</i>	anthocyaninless	<i>a1</i>
<i>a</i>	anthocyaninless	<i>a</i>
<i>a</i>	anthocyaninless	<i>a</i>
<i>aa</i>	anthocyanin absent	
<i>Abg</i>	Aubergine	
<i>abi</i>	aborted inflorescence	
<i>ac</i>	apocarpous	
<i>acr</i>	acroxantha	<i>acr1</i>
<i>acu-2</i>	acumbens-2	<i>acu2</i>
<i>adp</i>	adpressa	
<i>adp-2</i>	adpressa-2	<i>adp2</i>
<i>adu</i>	adusta	<i>adu1</i>
<i>adu-2</i>	adusta-2	<i>adu2</i>
<i>adu-3</i>	adusta-3	<i>adu3</i>
<i>ae</i>	entirely anthocyaninless	<i>a332</i>
<i>ae</i>	entirely anthocyaninless	
<i>ae</i>	entirely anthocyaninless	<i>afr, ap</i>
<i>ae</i>	entirely anthocyaninless	<i>ae</i>
<i>aeg</i>	aegrota	
<i>aeg-2</i>	aegrota-2	<i>aeg2</i>
<i>aer</i>	aerial roots	
<i>aer-2</i>	aerial roots-2	
<i>af</i>	anthocyanin free	<i>a325</i>
<i>afe</i>	afertilis	<i>afe1</i>
<i>afl</i>	albifolium	<i>af</i>
<i>afl-2</i>	albifolium-2	
<i>Aft</i>	Anthocyanin fruit	<i>Af</i>
<i>ag</i>	anthocyanin gainer	

<i>ag</i>	anthocyanin gainer	<i>ag</i> <sup>3</sup>
<i>ag</i>	anthocyanin gainer	<i>ag</i> <sup>2</sup>
<i>ag</i>	anthocyanin gainer	<i>ag</i> <sup>4</sup>
<i>ag</i>	anthocyanin gainer	
<i>ag</i>	anthocyanin gainer	
<i>ag-2</i>	anthocyanin gainer-2	
<i>ags-2</i>	aegrescens-2	
<i>ah</i>	Hoffman's anthocyaninless	<i>ao, a337</i>
<i>ah</i>	Hoffman's anthocyaninless	<i>ah</i>
<i>ah</i>	Hoffman's anthocyaninless	<i>ah</i>
<i>ah</i>	Hoffman's anthocyaninless	<i>ah</i>
<i>ah</i>	Hoffman's anthocyaninless	<i>ah</i>
<i>ah</i>	Hoffman's anthocyaninless	<i>ah</i>
<i>ah</i>	Hoffman's anthocyaninless	<i>ah</i>
<i>ai</i>	incomplete anthocyanin	<i>a342</i>
<i>ai</i>	incomplete anthocyanin	<i>am, a340</i>
<i>al</i>	anthocyanin loser	<i>a2</i>
<i>al</i>	anthocyanin loser	<i>pu-2</i>
<i>al-2</i>	anthocyanin loser-2	
<i>ala</i>	albina	<i>ala1, alb1</i>
<i>ala-2</i>	albina-2	<i>alb2, ala2</i>
<i>ala-3</i>	albina-3	<i>ala3, alb3</i>
<i>ala-4</i>	albina-4	<i>ala4, alb4</i>
<i>alb</i>	albescent	
<i>alb</i>	albescent	<i>alb</i>
<i>alc</i>	alcobaca	
<i>alu</i>	alutacea	<i>alu1</i>
<i>alv</i>	alvoviridis	<i>alb, alb1</i>
<i>Am</i>	Alfalfa mosaic	
<i>ama</i>	albomarginata	
<i>an</i>	anantha	<i>an</i> <sup>1</sup> , <i>an</i> <sup>2</sup> , <i>ca</i>
<i>an-2</i>	anantha-2	

<i>an-3</i>	anantha-3	
<i>ana</i>	angustata	<i>ana1</i>
<i>ang-2</i>	angustifolia-2	<i>ang2</i>
<i>anr</i>	antirrhinum	
<i>ant</i>	aurantia	<i>ant1</i>
<i>anu</i>	angusta	<i>anu1</i>
<i>ap</i>	apetalous	
<i>apl</i>	applanata	
<i>apn</i>	albo-punctata	
<i>ar</i>	arrecta	
<i>are</i>	anthocyanin reduced	
<i>ari</i>	aridifolia	
<i>as</i>	asynaptic	<i>as1, a</i>
<i>as-2</i>	asynaptic-2	<i>as2, a-2</i>
<i>as-3</i>	asynaptic-3	<i>as3, a-3</i>
<i>as-4</i>	asynaptic-4	<i>as4, a-4</i>
<i>as-5</i>	asynaptic-5	<i>as5, a-5</i>
<i>as-6</i>	asynaptic-6	<i>as6, a-6</i>
<i>as-7</i>	asynaptic-7	<i>as^b</i>
<i>at</i>	apricot	<i>fcd1^at</i>
<i>atn</i>	attenuata	<i>at</i>
<i>atv</i>	atroviolacium	
<i>au</i>	aurea	
<i>au</i>	aurea	
<i>au</i>	aurea	<i>au^2, au, brac</i>
<i>au</i>	aurea	<i>au^3</i>
<i>au</i>	aurea	<i>au-2, au2</i>
<i>au</i>	aurea	<i>yg^6, yg-6, au^yg-6, yo</i>
<i>au</i>	aurea	

<i>au</i>	aurea	<i>w616</i>
<i>auc</i>	aucta	
<i>aur</i>	aurantiaca	<i>aur1</i>
<i>aus</i>	austera	
<i>aut</i>	aureata	
<i>auv</i>	aureate virescent	
<i>avi</i>	albovirens	<i>avi1</i>
<i>aw</i>	without anthocyanin	<i>aba, ab, a179</i>
<i>aw</i>	without anthocyanin	<i>aw^2</i>
<i>aw</i>	without anthocyanin	<i>aw</i>
<i>aw</i>	without anthocyanin	<i>aw</i>
<i>aw</i>	without anthocyanin	<i>aw</i>
<i>aw-2</i>	without anthocyanin-2	
<i>B</i>	Beta-carotene	
		<i>og^c, Crn, Cr, cr</i>
<i>B</i>	Beta-carotene	<i>n-2, cr-2</i>
<i>B</i>	Beta-carotene	
<i>B</i>	Beta-carotene	<i>og</i>
<i>bc</i>	bicolor	<i>bi</i>
<i>Bco</i>	Brilliant corolla	
<i>be</i>	blue-green	
<i>Ber</i>	Blossom-end rot resistance	
<i>bg</i>	bursting resistance	
<i>bi</i>	bifurcate inflorescence	
<i>bip</i>	bipinnata	
<i>bip</i>	bipinnata	<i>bip</i>
<i>bip-2</i>	bipinnata-2	<i>bip2</i>
<i>bk</i>	beaked	
<i>bk</i>	beaked	
<i>bk</i>	beaked	
<i>Bk-2</i>	Beaked-2	
<i>bks</i>	black seed	<i>bks1-1</i>
<i>bks</i>	black seed	<i>bks1-2</i>

<i>bl</i>	blind	
<i>bl</i>	blind	<i>to</i> <sup>2</sup>
<i>bl</i>	blind	<i>to</i>
<i>bls</i>	baby lea syndrome	<i>alm</i>
<i>bls</i>	baby lea syndrome	<i>bls</i>
<i>bls</i>	baby lea syndrome	<i>bls</i>
<i>bn</i>	blunt	
<i>bn</i>	blunt	<i>sts, sl-6</i>
<i>br</i>	brachytic	
<i>brt</i>	bushy root	
<i>brt-2</i>	bushy root-2	
<i>bs</i>	brown seed	
<i>bs-2</i>	brown seed-2	
<i>bs-3</i>	brown seed-3	
<i>bs-4</i>	brown seed-4	
<i>Bt</i>	bursting digenic inheritance	<i>bg</i>
<i>btl</i>	brittle stem	
<i>bu</i>	bushy	<i>fru</i>
<i>bu</i>	bushy	<i>fru</i> <sup>ab</sup>
<i>bu</i>	bushy	<i>cin</i>
<i>bu</i>	bushy	<i>cin-2</i>
<i>bu</i>	bushy	<i>fru</i> <sup>hem</sup>
<i>bul</i>	bullata	
<i>buo</i>	bullosa	<i>buo1</i>
<i>c</i>	potato leaf	

<i>c</i>	potato leaf	<i>int</i>
<i>c</i>	potato leaf	<i>c</i>
<i>c</i>	potato leaf	<i>c</i>
<i>c</i>	potato leaf	<i>c</i>
<i>c</i>	potato leaf	<i>c</i>
<i>c</i>	potato leaf	<i>c</i>
<i>car</i>	carinata	
<i>car-2</i>	carinata-2	<i>car2</i>
<i>cb</i>	cabbage	
<i>cb-2</i>	cabbage leaf-2	
<i>cc</i>	constricting corolla	
<i>ccf</i>	cactiflora	
<i>cd</i>	condensata	
<i>ce</i>	cernua	<i>ce1</i>
<i>cfa</i>	conferta	<i>cfa1</i>
<i>cg</i>	congesta	<i>cg1</i>
<i>ch</i>	chartreuse	
<i>chl</i>	chloronerva	
<i>chrs</i>	chrysanthemum sterile	
<i>ci</i>	cincta	<i>ci1</i>
<i>cin-2</i>	compact inflorescence-2	
<i>cir</i>	circumsaepta	<i>cir1</i>
<i>cit</i>	citriformis	
<i>cjf</i>	conjunctiflora	
<i>ck</i>	corky fruit	
<i>Cl</i>	Cleistogamous	<i>Cl1</i>
<i>cl-2</i>	cleistogamous-2	<i>cl2</i>
<i>cla</i>	clara	
<i>clau</i>	clausa	<i>ff, vc</i>
<i>clau</i>	clausa	
<i>clau</i>	clausa	<i>ics</i>

*clau* clausa *clau*

*clau* clausa

*cle* collecta

*cls* clarescens

*clt* coalita

*clt-2* coalita-2

*cm* curly mottled

*cma* commutata

*cn* cana

*cna* citrina

*ca*

*Cnr* Colorless nonripening

*co* cochlearis

*co-2* cochlearis-2

*co2*

*coa* corrotundata

*coa1*

*com* complicata

*com* complicata

*in*

*com-2* complicata-2

*com2*

*con* convalescens

*con-2* convalescens-2

*con2*

*cor* coriacea

*cp* compacta

*cp1*

*cpa* composita

*cpa1*

*cpf* cupuliformis

*cpf-2* cupuliformis-2

<i>cpf-3</i>	cupuliformis-3	
<i>cps</i>	compactilis	
<i>cpt</i>	compact	
<i>cr</i>	radial crack resistance	
<i>Cri</i>	Crispa	
<i>Crk</i>	Crinkled	
<i>crt</i>	cottony-root	
<i>cru</i>	corrupta	<i>cru1</i>
<i>cry1</i>	cryptochrome 1	
<i>cs-2</i>	corollaless-2	
<i>cta</i>	contaminata	<i>cta1</i>
<i>cta-2</i>	contaminata-2	<i>cta2</i>
<i>ctb</i>	cotyledon tops bifurcation	
<i>ctr</i>	citrate concentration	
<i>ctr</i>	citrate concentration	
<i>ctt</i>	contracta	
<i>ctt-2</i>	contracta-2	
<i>Cu</i>	Curl	
<i>cu-2</i>	curl-2	<i>cu2</i>
<i>cu-3</i>	curl-3	
<i>cu-3</i>	curl-3	
<i>cua</i>	curta	
<i>cul</i>	culcitula	
<i>cup</i>	cupida	<i>cus</i>
<i>cur</i>	curvifolia	
<i>cv</i>	curvata	<i>cu</i>



<i>cv</i>	curvata	<i>acu</i>
<i>cv-2</i>	curvata-2	<i>cv2</i>
<i>cva</i>	conversa	
<i>cva-2</i>	conversa-2	<i>cva2</i>
<i>cvl</i>	convoluta	<i>cvl1</i>
<i>Cvx</i>	Convexa	
<i>cy</i>	cyathiformis	
<i>d</i>	dwarf	
<i>d</i>	dwarf	
<i>d</i>	dwarf	
<i>d</i>	dwarf	<i>rob^crisp</i>
<i>d</i>	dwarf	<i>rob^imm</i>
<i>d</i>	dwarf	<i>d</i>
<i>d</i>	dwarf	<i>d^cr</i>
<i>d</i>	dwarf	<i>d^cr</i>
<i>d</i>	dwarf	<i>d^x</i>
<i>d</i>	dwarf	
<i>d-2</i>	dwarf-2	<i>rob2, rob II,</i> <i>d2</i>
<i>d-3</i>	dwarf-3	<i>d3</i>
<i>d-4</i>	dwarf-4	<i>d4</i>
<i>d-5</i>	dwarf-5	<i>d5, d2, M-5</i>
<i>d-6</i>	dwarf-6	<i>d6, d5</i>
<i>d-7</i>	dwarf-7	
<i>d-8</i>	dwarf-8	
<i>dc</i>	decomposita	<i>dc1</i>
<i>dd</i>	double dwarf	<i>d^xx</i>
<i>de</i>	declinata	

<i>deb</i>	debilis	
<i>dec</i>	decumbens	
	02. Dez decumbens-2	02. Dez
<i>def</i>	deformis	
<i>def</i>	deformis	<i>vit</i>
<i>def-2</i>	deformis	
<i>Del</i>	Delta	
<i>deli</i>	deliquescens	
<i>deli-2</i>	deliquescens-2	<i>deli2</i>
<i>den</i>	densa	
<i>dep</i>	deprimata	
<i>depa</i>	depauperata	
<i>det</i>	detrimentosa	
<i>det</i>	detrimentosa	
<i>det-2</i>	detrimentosa-2	
<i>Df</i>	Defoliator	
<i>dfd</i>	delayed fruit deterioration	
<i>dgt</i>	diageotropica	<i>lz-3</i>
<i>dgt</i>	diageotropica	<i>dp</i>
<i>di</i>	divergens	
<i>dil</i>	diluta	
<i>dil-2</i>	diluta-2	<i>dil2</i>
<i>dim</i>	diminuta	
<i>dim-2</i>	diminuta-2	<i>dim2</i>
<i>dis</i>	discolor	
<i>dis-2</i>	discolor-2	<i>dis2</i>
<i>div</i>	divaricata	

<i>dl</i>	dialytic	
<i>dl</i>	dialytic	<i>DL^s</i>
<i>dlb</i>	dilabens	<i>dlb1</i>
<i>dlu</i>	dilucida	
<i>dm</i>	dwarf modifier	<i>d2</i>
<i>dmd</i>	dimidiata	
<i>dmt</i>	diminutiva	
<i>dpa</i>	deparca	
<i>dpi</i>	densipinnata	
<i>dpr</i>	depravata	
<i>dps</i>	diospyros	
<i>dpy</i>	dumpy	
<i>dpy</i>	dumpy	<i>dpy</i>
<i>dpy</i>	dumpy	<i>dpy</i>
<i>drt</i>	dwarf root	
<i>ds</i>	dwarf sterile	
<i>dt</i>	dilatata	<i>dt1</i>
<i>dtl</i>	detorta	
<i>du</i>	dupla	
<i>dv</i>	dwarf virescent	
<i>dx-2</i>	extreme dwarf-2	
<i>e</i>	entire	<i>b</i>

<i>e</i>	entire	
<i>e</i>	entire	<i>e</i>
<i>e-2</i>	entire-2	
<i>ec</i>	exserted carpels	
<i>eca</i>	echinata	
<i>ej-2</i>	enhancer of jointless-2	<i>ej2</i>
<i>el</i>	elongated	<i>e</i>
<i>ela</i>	elata	
<i>ele</i>	elegans	
<i>ele</i>	elegans	<i>ang</i>
<i>ele-2</i>	elegans-2	<i>ele2</i>
<i>elo</i>	elongata	<i>elo1</i>
<i>elu</i>	eluta	
<i>elu-2</i>	eluta-2	<i>elu2</i>
<i>em</i>	emortua	<i>em1</i>
<i>en</i>	ensiform	
<i>ent</i>	entire leaflet	
<i>ep</i>	easy peeling	
<i>Epi</i>	Epinastic	
<i>er</i>	erecta	
<i>er12.1</i>	earliness	
<i>er-2</i>	erecta-2	
<i>era</i>	eramosa	<i>era1</i>
<i>Erl</i>	Erectoid leaf	
<i>ete</i>	extenuata	<i>ete1</i>
<i>eu</i>	eugenol concentration	
<i>ex</i>	exserted stigma	
<i>exa</i>	expassa	<i>exa1</i>
<i>exl</i>	exilis	<i>ex</i>

<i>exs</i>	excedens	<i>exs1</i>
<i>f</i>	fasciated fruit	
<i>f</i>	fasciated fruit	
<i>fa</i>	falsiflora	<i>fa1</i>
<i>far</i>	farinosa	<i>far1</i>
<i>fc</i>	flaccescens	
<i>fcf</i>	fucatifolia	<i>fcf1</i>
<i>fd</i>	flecked dwarf	
<i>fe</i>	fertilis	
<i>Fen</i>	Fenthion sensitivity	
<i>fer</i>	fe inefficient	
<i>Fgr</i>	Fructose to glucose ratio	
<i>fgv</i>	fimbriate gold virescent	
<i>fi-2</i>	filiforme-2	
<i>fil</i>	filaris	
<i>fir</i>	firma	
<i>fir-2</i>	firma-2	<i>fir2</i>
<i>fir-3</i>	firma-3	<i>fir3</i>
<i>fis</i>	fistulosiflora	
<i>fl</i>	fleshy calyx	
<i>fla</i>	flavescens	
<i>flav</i>	flavida	
<i>flav-2</i>	flavida-2	<i>flav2</i>
<i>flc</i>	flacca	
<i>fld</i>	flaccida	<i>fld1</i>

<i>fle</i>	flexifolia	<i>fle1</i>
<i>fli</i>	filiform inflorescence	
<i>fms</i>	female-sterile	
<i>fn</i>	finely-netted	
<i>fp</i>	fruit pox	
<i>fr</i>	frugalis	
<i>fra</i>	fragosa	<i>fra1</i>
<i>frg</i>	fragilis	<i>frg1</i>
<i>fri</i>	far red light insensitive	<i>phyA</i>
<i>Frly</i>	Frilly	<i>Frl</i>
<i>fro</i>	frondea	
<i>Frs</i>	Frosty spot	<i>Nec</i>
<i>frt</i>	fracta	
<i>Fs</i>	Fruit stripe	
<i>fsc</i>	fuscatinervis	<i>dkv</i>
<i>ft</i>	fruiting temperature	
<i>fu</i>	fusiformis	
<i>fua</i>	fucata	<i>fua1</i>
<i>fug</i>	fulgida	<i>fug1</i>
<i>ful</i>	fulgens	
<i>ful</i>	fulgens	<i>ful1^2</i>
<i>ful-2</i>	fulgens-2	<i>ful2</i>
<i>ful-3</i>	fulgens-3	
<i>fus</i>	fulgescens	
<i>fv</i>	flaveola	
<i>Fw</i>	Furrowed	
<i>fx</i>	flexa	

<i>fy</i>	field yellow	
<i>g</i>	grooved	
<i>ga</i>	galbina	<i>ga1</i>
<i>ga-2</i>	galbina-2	<i>ga2</i>
<i>gas</i>	gamosepala	<i>gas1</i>
<i>gbl</i>	globula	
<i>Gdf</i>	Gold fleck	
<i>Ge</i>	Gamete eliminator	
<i>Ge</i>	Gamete eliminator	
<i>Ge</i>	Gamete eliminator	
<i>gf</i>	green flesh	
<i>gf</i>	green flesh	
<i>gf</i>	green flesh	
<i>gf</i>	green flesh	
<i>gf</i>	green flesh	
<i>gfl</i>	globular flower	
<i>gfo</i>	grandifolia	
<i>gh</i>	ghost	<i>ab</i>
<i>gh-2</i>	ghost-2	
<i>gi</i>	gibberosa	
<i>gib-1</i>	gibberellin deficient-1	
<i>gib-2</i>	gibberellin deficient-2	
<i>gib-3</i>	gibberellin-deficient-3	
<i>gib-3</i>	gibberellin-deficient-3	
<i>gil</i>	gilva	

<i>gl</i>	glauca	
<i>gl-2</i>	glauca-2	<i>gl2</i>
<i>gla</i>	glaucicolor	
<i>glau</i>	glaucescens	
<i>glau-2</i>	glaucescens-2	<i>glau2</i>
<i>glb</i>	globularis	
<i>glb-2</i>	globularis-2	<i>glb2</i>
<i>glc</i>	glaucophylla	
<i>glc-2</i>	glaucophylla-2	<i>glc2</i>
<i>glc-3</i>	glaucophylla-3	<i>glc3</i>
<i>glf</i>	globiformis	<i>glf1</i>
<i>glg</i>	galapagos light green	
<i>glm</i>	glomerata	
<i>glo</i>	globosa	
<i>glo</i>	globosa	<i>inx, intro</i>
<i>glo-2</i>	globosa-2	<i>glo2</i>
<i>glo-3</i>	globosa-3	<i>glo3</i>
<i>glu</i>	glutinosa	<i>glu1</i>
<i>gm</i>	gamosepalous	
<i>Gp</i>	Gamete promoter	
<i>gq</i>	grotesque	
<i>Gr</i>	Green ripe	<i>gr</i>
<i>Gr</i>	Green ripe	
<i>gra</i>	gracilis	
<i>gra-2</i>	gracilis-2	<i>gra2</i>
<i>gra-3</i>	gracilis-3	<i>gra3</i>
<i>grc</i>	gracillama	<i>grc1</i>
<i>grf</i>	grandifructa	<i>grf1</i>
<i>grl</i>	gracilentia	<i>grl1</i>
<i>grl-2</i>	gracilentia-2	
<i>grn</i>	granulosa	



<i>gro</i>	grossa	
<i>grs</i>	grisea	<i>grs1, gr1</i>
<i>gs</i>	green stripe	
<i>gt</i>	gametophytic factor	
<i>Gx</i>	Gibberellin-exserted	
<i>h</i>	hairs absent	<i>H</i>
<i>ha</i>	hastata	<i>ha1</i>
<i>he</i>	heteroidea	
<i>he-2</i>	heteroidea-2	<i>he2</i>
<i>hg</i>	heterogemma	<i>hg1</i>
<i>hi</i>	hilara	
<i>hl</i>	hairless	
<i>hl</i>	hairless	<i>cal, cal1</i>
<i>hl</i>	hairless	<i>hl</i>
<i>hl</i>	hairless	<i>hl</i>
<i>hl</i>	hairless	<i>hl</i>
<i>hl</i>	hairless	<i>hl</i>
<i>hl-2</i>	hairless-2	<i>hl<sup>prov6</sup></i>
<i>hp-1</i>	high pigment-1	<i>hp, hp1, hp2,</i>
<i>hp-1</i>	high pigment-1	<i>bs, dr</i>
<i>hp-2</i>	high pigment-2	<i>hp</i>
<i>hp-2</i>	high pigment-2	<i>dg</i>
<i>hp-2</i>	high pigment-2	<i>hp</i>
<i>hp-3</i>	high pigment-3	
<i>Hr</i>	Hirsute	
<i>Hrt</i>	Hirtum	
<i>hs</i>	hairless style	
<i>ht</i>	hastate	

<i>hy</i>	homogeneous yellow	
<i>ic</i>	inclinata	
<i>ic-2</i>	inclinata-2	<i>ic2</i>
<i>ica</i>	icana	
<i>icn</i>	incana	
<i>id</i>	indehiscens	
<i>ida</i>	inordinata	
<i>ig</i>	ignava	
<i>ig-2</i>	ignava-2	<i>ig2</i>
<i>ig-3</i>	ignava-3	<i>ig3</i>
<i>im</i>	impatiens	<i>im1</i>
<i>im-2</i>	impatiens-2	<i>im2</i>
<i>imb</i>	imbecilla	
<i>imb-2</i>	imbecilla-2	<i>imb2</i>
<i>imp</i>	impedita	
<i>imp</i>	impedita	
<i>in-2</i>	indiga-2	<i>in2</i>
<i>in-3</i>	indiga-3	<i>in3</i>
<i>ina</i>	inflexa	<i>ina1</i>
<i>inc</i>	incurva	
<i>inc-2</i>	incurva-2	<i>inc2</i>
<i>inf</i>	informa	
<i>ini</i>	inquieta	<i>ini1</i>
<i>ino</i>	involuta	<i>ino1</i>
<i>inr</i>	integer	<i>inr1</i>
<i>ins</i>	inconstans	<i>ins1</i>

<i>inta</i>	integrifolia	<i>inta1</i>
<i>inv</i>	invalida	
<i>inx-2</i>	introflexa-2	<i>inx2, intro2</i>
<i>lp</i>	Intense pigment	
<i>irr</i>	irregularis	
<i>ita</i>	inquinata	<i>ita1</i>
<i>ltm</i>	Intumescences	
<i>j</i>	jointless	<i>lf</i>
<i>j</i>	jointless	
<i>j-2</i>	jointless-2	<i>j2</i>
<i>j-2</i>	jointless-2	<i>j2^in</i>
<i>Jau</i>	Jaundiced	
<i>jug</i>	jugata	
<i>jug</i>	jugata	<i>jug1^2</i>
<i>l</i>	lutescent	<i>g</i>
<i>l</i>	lutescent	<i>rub</i>
<i>l</i>	lutescent	<i>l</i>
<i>l</i>	lutescent	<i>l</i>
<i>l</i>	lutescent	
<i>l-2</i>	lutescent-2	<i>l-3, l2</i>
<i>La</i>	Lanceolate	
<i>Lac</i>	Lacinate	
<i>lae</i>	laesa	
<i>lan</i>	languida	
<i>lap</i>	lamprochlora	<i>lap1</i>
<i>lat</i>	lata	
<i>lax</i>	laxus	<i>lax1</i>
<i>Lc</i>	Locule number	

<i>le</i>	lembiformis	<i>le1</i>
<i>lep</i>	leprosa	<i>lep1</i>
<i>lg</i>	light-green	<i>lme</i>
<i>lg-2</i>	light green-2	<i>lg2, li, pg392</i>
<i>lg-3</i>	light green-3	<i>lg3, lt, pg483</i>
<i>lg-4</i>	light green-4	<i>lg4</i>
<i>lg-5</i>	light green-5	<i>lg5, lm, fy, yt</i>
<i>li</i>	limbrata	
<i>liv</i>	livida	
<i>Ln</i>	Lanata	
<i>Ln</i>	Lanata	
<i>lo</i>	locule number reduced	
<i>loa</i>	low acid	
<i>loc</i>	locule number increased	
<i>lop</i>	longipes	<i>lop1</i>
<i>Lpg</i>	Lapageria	
<i>ls</i>	lateral suppresser	
<i>ls</i>	lateral suppresser	
<i>lt</i>	laeta	<i>lt1</i>
<i>lt-2</i>	laeta-2	<i>lt2</i>
<i>ltf</i>	latifolia	
<i>lu</i>	luteola	
<i>luc</i>	lucida	
<i>luc-2</i>	lucida-2	<i>luc2</i>
<i>luc-3</i>	lucida-3	<i>luc3</i>
<i>lur</i>	lurida	<i>lur1</i>
<i>lut</i>	lutea	
<i>lut-2</i>	lutea-2	<i>lut2</i>
<i>lut-3</i>	lutea-3	<i>lut3</i>
<i>lux</i>	luxurians	<i>lux1</i>
<i>Lx</i>	Lax	

<i>lyr</i>	lyrate	
<i>lz</i>	lazy	
<i>lz-2</i>	lazy-2	
<i>m</i>	mottled	
<i>m-2</i>	mottled-2	<i>m2, mo, md</i>
<i>M-3</i>	Mottled-3	<i>M3, M345</i>
<i>ma</i>	macrocarpa	
<i>maa</i>	macra	
<i>mac</i>	maculata	<i>mac1</i>
<i>mad</i>	marcida	<i>mad1</i>
<i>mal</i>	maculosa	<i>mal1</i>
<i>mar</i>	marcescens	
<i>marm</i>	marmorata	
<i>marm</i>	marmorata	<i>marm1^2</i>
<i>marm-2</i>	marmorata-2	
<i>mat</i>	matura	<i>mat1</i>
<i>mc</i>	macrocalyx	
<i>mcn</i>	maculonecrotic	
<i>mcr</i>	multicolor	
<i>mcs</i>	macrosepala	
<i>Me</i>	Mouse ears	
<i>med</i>	mediocris	<i>med1</i>
<i>mel</i>	melongenoida	<i>mel1</i>
<i>men</i>	mendosa	
<i>mes</i>	methyl salicylate concentration	

<i>mf</i>	multiformis	
<i>mgn</i>	marginal necrotic	
<i>mia</i>	minuscula	
<i>mic</i>	microcarpa	<i>mic1</i>
<i>min</i>	minutula	
<i>mlt</i>	malate concentration	
<i>mn</i>	minuta	<i>mi</i>
<i>mn-2</i>	minuta-2	<i>mn2</i>
<i>mnt</i>	miniature	
<i>mnx</i>	extreme miniature	<i>min<sup>ex</sup></i>
<i>Mo(I)</i>	Modifier of I	
<i>Mo(I)-2</i>	Modifier-2 of I	
<i>mo-B</i>	modifier of B	<i>mo(B), moB,</i>
<i>Moi</i>	Modifier inducer	<i>I<sup>B</sup>, i<sup>B</sup></i>
<i>mon</i>	monstrosa	
<i>mor</i>	morata	<i>mor1</i>
<i>mp</i>	modifier of parthenocarpy	
<i>mps</i>	miniature phosphorus syndrome	<i>ph</i>
<i>ms</i>	male sterile	<i>ms-1, ms1</i>
<i>ms-02</i>	male-sterile-2	<i>ms2</i>
<i>ms-03</i>	male-sterile-3	<i>ms3</i>
<i>ms-03</i>	male-sterile-3	<i>ms-42</i>
<i>ms-04</i>	male-sterile-4	<i>ms4</i>
<i>ms-05</i>	male-sterile-5	<i>ms5</i>
<i>ms-06</i>	male-sterile-6	<i>ms6</i>
<i>ms-07</i>	male-sterile-7	<i>ms7</i>
<i>ms-08</i>	male-sterile-8	<i>ms8</i>
<i>ms-09</i>	male-sterile-9	<i>ms9</i>
<i>ms-10</i>	male-sterile-10	<i>ms10</i>

<i>ms-10</i>	male-sterile-10	<i>ms-35, ms35</i>
<i>ms-10</i>	male-sterile-10	<i>ms-36</i>
<i>ms-11</i>	male-sterile-11	<i>ms11</i>
<i>ms-12</i>	male-sterile-12	<i>ms12</i>
<i>ms-13</i>	male-sterile-13	<i>ms13</i>
<i>ms-14</i>	male-sterile-14	<i>ms14</i>
<i>ms-15</i>	male-sterile-15	<i>ms15</i>
<i>ms-15</i>	male-sterile-15	<i>ms26, ms-26</i>
<i>ms-15</i>	male-sterile-15	<i>ms-47</i>
<i>ms-16</i>	male-sterile-16	<i>ms16</i>
<i>ms-17</i>	male-sterile-17	<i>ms17</i>
<i>ms-18</i>	male-sterile-18	<i>ms18</i>
<i>ms-19</i>	male sterile-19	<i>ms19</i>
<i>ms-20</i>	male sterile-20	<i>ms20</i>
<i>ms-21</i>	male sterile-21	<i>ms21</i>
<i>ms-22</i>	male sterile-22	<i>ms22</i>
<i>ms-23</i>	male-sterile-23	<i>ms23</i>
<i>ms-24</i>	male-sterile-24	<i>ms24</i>
<i>ms-25</i>	male-sterile-25	<i>ms25</i>
<i>ms-27</i>	male-sterile-27	<i>ms27</i>
<i>ms-28</i>	male-sterile-28	<i>ms28</i>
<i>ms-29</i>	male-sterile-29	<i>ms29</i>
<i>ms-30</i>	male-sterile-30	<i>ms30</i>
<i>ms-31</i>	male-sterile-31	<i>ms31</i>
<i>ms-32</i>	male-sterile-32	<i>ms32</i>
<i>ms-33</i>	male-sterile-33	<i>ms33</i>
<i>ms-34</i>	male-sterile-34	<i>ms34</i>
<i>ms-36</i>	male sterile-36	<i>ms36</i>
<i>ms-37</i>	male sterile-37	<i>ms37</i>
<i>ms-38</i>	male-sterile-38	<i>ms38</i>
<i>ms-38</i>	male-sterile-38	<i>ms-40</i>
<i>ms-39</i>	male-sterile-39	
<i>ms-41</i>	male sterile-41	
<i>ms-43</i>	male sterile-43	

<i>ms-44</i>	male-sterile-44	
<i>ms-45</i>	male-sterile-45	
<i>ms-46</i>	male-sterile-46	
<i>Ms-48</i>	Male-sterile-48	
<i>ms-49</i>	male-sterile-49	
<i>ms-50</i>	male sterile-50	
<i>Ms-51</i>	Male-sterile-51	
<i>mt</i>	midget	
<i>mta</i>	mutata	<i>mta1</i>
<i>mts</i>	mortalis	<i>mts1</i>
<i>mu</i>	multinervis	
<i>mu</i>	multinervis	<i>rv-3</i>
<i>mua</i>	multifurcata	<i>mua1</i>
<i>muf</i>	multifolia	
<i>mun</i>	multinata	<i>mun1</i>
<i>mup</i>	multiplicata	<i>mup1</i>
<i>mut</i>	mutabilia	<i>mut1</i>
<i>muv</i>	multivalens	<i>muv1</i>
<i>muv-2</i>	multivalens-2	<i>mus1</i>
<i>mux</i>	multiplex	<i>mux1</i>
<i>n</i>	nipple-tip	<i>nt</i>
<i>n-2</i>	nipple tip-2	
<i>n-3</i>	nipple tip-3	
<i>n-4</i>	nipple tip-4	
<i>na</i>	nana	
<i>na-2</i>	nana-2	<i>na2</i>
<i>nc</i>	narrow cotyledons	
<i>nd</i>	netted	<i>m-4</i>



<i>ndw</i>	necrotic dwarf	
<i>ne</i>	necrotic	
<i>ned</i>	necrodeformis	
<i>neg</i>	neglecta	
<i>neg</i>	neglecta	<i>ne-2, ne2</i>
<i>neg-2</i>	neglecta-2	<i>neg2</i>
<i>neg-3</i>	neglecta-3	<i>neg3</i>
<i>nf</i>	no flowers	
<i>ni</i>	nitida	
<i>ni-2</i>	nitida-2	<i>ni2</i>
<i>nit</i>	nitidula	<i>nit1</i>
<i>nor</i>	non-ripening	
<i>nor</i>	non-ripening	
<i>nor</i>	non-ripening	
<i>not</i>	notabilis	
<i>Nr</i>	Never ripe	
<i>nt</i>	nitens	
<i>nv</i>	netted virescent	
<i>o</i>	ovate	
<i>o</i>	ovate	<i>o/^3, ov, ov1,</i>
<i>O</i>	ovate	<i>o/^2</i>
<i>O</i>	ovate	<i>o/, O^1</i>
<i>ob</i>	obscura	
<i>ob-2</i>	obscura-2	<i>ob2</i>
<i>obl</i>	oblate fruit	
<i>obv</i>	obscuravenosa	
<i>obv</i>	obscuravenosa	

<i>obv</i>	obscuravenosa	
<i>obv</i>	obscuravenosa	
<i>oc</i>	ochroleuca	
<i>Od</i>	Odorless	
<i>oli</i>	olivacea	
<i>oli</i>	olivacea	<i>oli1^2</i>
<i>op</i>	opaca	
<i>op-2</i>	opaca-2	<i>op2</i>
<i>opa</i>	opacata	<i>opa1</i>
<i>or</i>	ordinata	
<i>Ora</i>	Orobanche aegyptica resistance	
<i>os</i>	oligosperma	<i>os1</i>
<i>ot</i>	obtusa	<i>ot1</i>
<i>ova</i>	ovata	
<i>ovi</i>	oviformis	<i>ovi1</i>
<i>p</i>	peach	
<i>p</i>	peach	<i>nor^3</i>
<i>pa</i>	parva	<i>pa1</i>
<i>pa-2</i>	parva-2	<i>pa1, pa2</i>
<i>paf</i>	pauciflora	<i>paf1</i>
<i>pai</i>	pseudoanthocyanin incomplete	
<i>pal</i>	pallida	
<i>pap</i>	paupercula	
<i>par</i>	parca	<i>par1</i>
<i>pas</i>	pallescens	<i>pas1</i>
<i>pas-2</i>	pallescens-2	<i>pas2</i>
<i>pat</i>	parthenocarpic fruit	
<i>pat-2</i>	parthenocarpic fruit-2	
<i>pat-3</i>	parthenocarpic fruit-3	
<i>pat-4</i>	parthenocarpic fruit-4	

<i>pau</i>	pauper	
<i>pc</i>	precocious centromere division	
<i>pca-2</i>	proclinata-2	<i>pca2</i>
<i>Pch</i>	Photoperiodic chlorosis	
<i>pct</i>	polycot	
<i>pcv</i>	polychrome variegated	
<i>pd</i>	pigment diluter	
<i>pdc</i>	pudica	
<i>pds</i>	phosphorus deficiency syndrome	<i>Ph-oid</i>
<i>pdw</i>	pale dwarf	
<i>pe</i>	sticky peel	
<i>pe</i>	sticky peel	<i>pe-2</i>
<i>pen</i>	pendens	
<i>per</i>	perviridis	
<i>pet</i>	penetrabile	<i>pet-2, pet2</i>
<i>pf</i>	parviflora	
<i>pg</i>	pale green	<i>pg329</i>
<i>pg-2</i>	pale green-2	<i>pg2, pa,</i> <i>pg390</i>
<i>pg-3</i>	pale green-3	<i>pg3, pl,</i> <i>pg391</i>
<i>phyB2</i>	phytochrome B2	
<i>pi</i>	pistillate	
<i>pi-2</i>	pistillate-2	
<i>pic</i>	picta	
<i>pic-2</i>	picta-2	<i>pic2</i>

<i>pic-3</i>	picta-3	<i>pic3</i>
<i>pic-4</i>	picta-4	<i>pic4</i>
<i>pin</i>	pinnosa	<i>pin1</i>
<i>pl</i>	perlucida	<i>pl1</i>
<i>pla</i>	plana	
<i>pla-2</i>	plana-2	<i>pla2</i>
<i>pli</i>	plicata	
<i>pli-2</i>	plicata-2	<i>pli2</i>
<i>pm</i>	praematura	<i>pm1</i>
<i>pm-2</i>	praematura-2	<i>pm2</i>
<i>pma</i>	praemortua	
<i>Pn</i>	Punctate	
<i>pol</i>	polylopha	
<i>pol-2</i>	polylopha-2	<i>pol2</i>
<i>Pox</i>	Poxed fruit	
<i>pp</i>	polyphylla	<i>pp1</i>
<i>ppa</i>	purpurea	
<i>ppa</i>	purpurea	
<i>ppi</i>	paucipinnata	
<i>pr</i>	propeller	
<i>pra</i>	praecclusa	
<i>pra-2</i>	praecclusa-2	
<i>prc</i>	procumbens	
<i>prc-2</i>	procumbens-2	<i>prc2</i>
<i>prc-3</i>	procumbens-3	<i>prc3</i>
<i>pre</i>	pressa	
<i>pro</i>	procera	

<i>prt</i>	protea	<i>prt1</i>
<i>prun</i>	prunoidea	
<i>prun-2</i>	prunoidea-2	<i>prun2</i>
<i>ps</i>	positional sterile	<i>va</i>
<i>ps</i>	positional sterile	<i>ps</i>
<i>ps-2</i>	positional sterile-2	
<i>psa</i>	perspicua	
<i>pst</i>	persistent style	
<i>psu</i>	paucisurcata	
<i>pt</i>	petite	
<i>pt-4</i>	pseudo-triplo-4	
<i>pta</i>	partiaria	
<i>ptb</i>	protuberant	
<i>Pts</i>	Petroselinum	
<i>ptu</i>	punctulata	
<i>pu</i>	pulvinata	<i>pul</i>
<i>pu</i>	pulvinata	<i>pu2</i>
<i>pum</i>	pumila	
<i>pun</i>	punctata	<i>pun1</i>
<i>pun-2</i>	punctata-2	<i>pun2</i>
<i>pur</i>	purilla	
<i>pur</i>	purilla	<i>gra</i>
<i>pus</i>	pustulata	<i>pus1</i>
<i>pv</i>	pulviniformis	

<i>pvs</i>	parvistata	
<i>px</i>	praecox	<i>px1</i>
<i>py</i>	pyramidalis	
<i>r</i>	yellow flesh	
<i>r</i>	yellow flesh	<i>r^2</i>
<i>r</i>	yellow flesh	<i>r^3, r-2, r2</i>
<i>r</i>	yellow flesh	<i>r</i>
<i>r</i>	yellow flesh	<i>r</i>
<i>r</i>	yellow flesh	<i>ry</i>
<i>ra</i>	rava	
<i>ra</i>	rava	<i>gri</i>
<i>ra-2</i>	rava-2	<i>ra2</i>
<i>ram</i>	ramosissima	<i>ram1</i>
<i>ran</i>	ranificans	<i>ran1</i>
<i>rc</i>	rolled cotyledons	
<i>rd</i>	reduced	
<i>re</i>	reptans	
<i>rea</i>	repleta	<i>rea1</i>
<i>ref</i>	refrenata	<i>ref1</i>
<i>rela</i>	relaxata	
<i>rep</i>	repens	
<i>rep-2</i>	repens-2	
<i>rep-3</i>	repens-3	
<i>res</i>	restricta	<i>res1</i>
<i>Rg-1</i>	Regeneration-1	
<i>Rg-2</i>	Regeneration-2	
<i>ri</i>	ridged	<i>rl</i>
<i>ria</i>	rigidula	<i>ria1</i>

<i>ria</i>	rigidula	<i>ria1^2</i>
<i>rig</i>	rigida	
<i>rig</i>	rigida	<i>pca, pca1</i>
<i>rig-2</i>	rigida-2	
<i>rin</i>	ripening inhibitor	
<i>rl</i>	radial cracking resistance	<i>ra</i>
<i>ro</i>	rosette	
<i>roa</i>	rotundata	<i>roa1</i>
<i>roa-2</i>	rotundata-2	<i>roa2</i>
<i>rot</i>	rotundifolia	
<i>rot-2</i>	rotundifolia-2	<i>rot2</i>
<i>rpa</i>	repetita	
<i>Rs</i>	Root suppressed	
<i>Rsc</i>	Resistant to skin cracking	
<i>rtd</i>	retarded dwarf	
<i>ru</i>	ruptilis	
<i>ru</i>	ruptilis	<i>ru</i>
<i>rust</i>	rustica	
<i>rust-2</i>	rustica-2	<i>rust2</i>
<i>rv</i>	reticulate virescent	
<i>rv-2</i>	reticulate virescent-2	
<i>rv-4</i>	reticulate virescent-4	
<i>rvt</i>	red vascular tissue	
<i>s</i>	compound inflorescence	
<i>s</i>	compound inflorescence	<i>mult</i>
<i>S.</i>	Self-incompatibility	
<i>sa</i>	sphacelata	<i>sa1</i>
<i>sar</i>	squarrulosa	<i>sar1</i>
<i>scf</i>	scurfy	
<i>scl</i>	seasonal chlorotic lethal	

<i>sco</i>	scopulina	
<i>sd</i>	sun dwarf	
<i>sd-2</i>	sun dwarf-2	
<i>sd-3</i>	sun dwarf-3	
<i>sdt</i>	semideterminate habit	
<i>sem</i>	semiglobosa	
<i>sem-2</i>	semiglobosa-2	<i>sem2</i>
<i>ser</i>	serpentina	<i>ser1</i>
<i>ser-2</i>	serpentina-2	
<i>ses</i>	semisterilis	<i>ses1</i>
<i>sf</i>	solanifolia	
<i>sf</i>	solanifolia	<i>wl, wr</i>
<i>sfa</i>	sufflaminata	<i>sfa1</i>
<i>sfa</i>	sufflaminata	<i>par</i>
<i>sft</i>	single flower truss	
<i>sft</i>	single flower truss	<i>sft-1906</i>
<i>sh</i>	sherry	
<i>sha</i>	short anthers	
<i>si</i>	sinuata	
<i>sig-1</i>	signal transduction-1	<i>JL1</i>
<i>sig-2</i>	signal transduction-2	<i>JL5</i>
<i>sit</i>	sitiens	
<i>sl</i>	stamenless	



<i>sl</i>	stamenless	<i>sl2</i>
<i>sl</i>	stamenless	<i>sl3</i>
<i>sl</i>	stamenless	<i>sl4</i>
<i>sl</i>	stamenless	<i>cs, sl^5, sl5</i>
<i>sl-2</i>	stamenless-2	<i>sl2</i>
<i>slx</i>	serrate lax leaf	
<i>sms</i>	small seed	
<i>sn</i>	singed	
<i>snt</i>	Snout	<i>sn</i>
<i>so</i>	soluta	
<i>sp</i>	self-pruning	
<i>sp</i>	self-pruning	
<i>sp</i>	self-pruning	
<i>sp</i>	self-pruning	
<i>spa</i>	sparsa	
<i>spe</i>	splendida	<i>spe1</i>
<i>Spf</i>	Superpuff	
<i>Spf-2</i>	Superpuff-2	
<i>sph</i>	sphaerica	
<i>Spi</i>	Sympodial index	
<i>spl</i>	splendens	<i>spl1</i>
<i>spl-2</i>	splendens-2	<i>spl2</i>
<i>spl-3</i>	splendens-3	<i>spl3</i>
<i>spl-4</i>	splendens-4	
<i>squa</i>	squarrosa	
<i>squa-2</i>	spuarrosa-2	<i>squa2</i>
<i>sr</i>	slender stem	<i>sm</i>
<i>sr</i>	subristica	
<i>ss</i>	spongy seed	
<i>ssp</i>	suppressor of self-pruning	<i>ssp-2129</i>

<i>ssp</i>	suppressor of self-pruning	<i>ssp-610</i>
<i>st</i>	sterile	
<i>sta</i>	stabilis	
<i>stam</i>	staminodea	
<i>ste</i>	sterilis	
<i>str</i>	striata	<i>str1</i>
<i>stri</i>	stricta	
<i>stri-2</i>	stricta-2	<i>stri2</i>
<i>stri-3</i>	stricta-3	<i>stri3</i>
<i>stri-4</i>	stricta-4	<i>stri4</i>
<i>stu</i>	stunted	
<i>su</i>	suffulta	
<i>su</i>	suffulta	<i>exa</i>
<i>su</i>	suffulta	<i>di</i>
<i>su</i>	suffulta	<i>di^ni, ni</i>
<i>sua</i>	suffusa	
<i>sua-2</i>	suffusa-2	<i>sua2</i>
<i>sub</i>	subtilis	
<i>suc</i>	succedanea	
<i>sucr</i>	sucrose accumulator	<i>TIV1</i>
<i>suf</i>	sufflava	
<i>suf-2</i>	sufflava-2	<i>suf2</i>
<i>sul</i>	suckerless	
<i>sulf</i>	sulfurea	
<i>sulf</i>	sulfurea	
<i>sun</i>	Sun1642 fruit shape	
<i>sun</i>	Sun1642 fruit shape	
<i>suo</i>	subrotunda	<i>suo1</i>
<i>sup</i>	superba	
<i>sur-2</i>	suberosa-2	<i>sur2</i>

<i>Sus</i>	Subsistens	
<i>Sx</i>	Sepal extender	<i>sx</i>
<i>sy</i>	sunny	<i>ye</i>
<i>sy</i>	sunny	
<i>syv</i>	spotted yellow virescent	
<i>t</i>	tangerine	
<i>t</i>	tangerine	<i>t1^2</i>
<i>t</i>	tangerine	
<i>t</i>	tangerine	
<i>ta</i>	tarda	
<i>tab</i>	tabescens	
<i>tc</i>	turbinate corolla	
<i>te</i>	terminata	<i>te1</i>
<i>tem</i>	tempestiva	<i>tem1</i>
<i>ten</i>	tenuis	
<i>tf</i>	trifoliate	<i>ct, tri</i>
<i>tf</i>	trifoliate	<i>tri</i>
<i>ti</i>	tiny plant	
<i>tl</i>	thiaminless	
<i>tl</i>	thiaminless	
<i>tmf</i>	terminating flower	
<i>tmf-2</i>	terminating flower-2	
<i>tn</i>	tenera	
<i>Tor</i>	Tortilis	
<i>tp</i>	tripinnate leaf	
<i>tr</i>	truncata	<i>tr1</i>
<i>tr-2</i>	truncata-2	<i>tr2</i>
<i>tri</i>	temporarily red light insensitive	<i>phyB1</i>
<i>trs</i>	tristis	

<i>tu</i>	tumida	
<i>tur</i>	turgida	
<i>Tv-1</i>	Trialeurodes vaporariorum resistance-1	
<i>Tv-2</i>	Trialeurodes vaporariorum resistance-2	
<i>u</i>	uniform ripening	<i>u1</i>
<i>u</i>	uniform ripening	
<i>u</i>	uniform ripening	<i>Fs</i>
<i>u</i>	uniform ripening	
<i>u</i>	uniform ripening	
<i>ub</i>	umbraculiformis	
<i>uf</i>	uniflora	
<i>ug</i>	uniform gray-green	<i>u2</i>
<i>ul</i>	upright leaf	
<i>um</i>	umbrosa	
<i>um-2</i>	umbrosa-2	<i>um2</i>
<i>um-3</i>	umbrosa-3	<i>um3</i>
<i>un</i>	unijuga	<i>un1</i>
<i>und</i>	undulatifolia	
<i>uni</i>	unicaulis	
<i>uni</i>	unicaulis	<i>suc-2, suc2, uni^2</i>
<i>uni-2</i>	unicaulis-2	<i>uni2</i>
<i>uni-3</i>	unicaulis-3	<i>uni3</i>
<i>uni-4</i>	unicaulis-4	<i>uni4</i>
<i>up</i>	upright pedicel	
<i>upg</i>	upright growth	
<i>v</i>	virescent	
<i>v-2</i>	virescent-2	<i>v2</i>
<i>v-3</i>	virescent-3	<i>V3</i>
<i>va</i>	varia	

<i>va</i>	varia	
<i>va-2</i>	varia-2	<i>va2</i>
<i>val</i>	valida	<i>val1</i>
<i>var</i>	variabilis	
<i>var-2</i>	variabilis-2	<i>var2</i>
<i>ven</i>	venosa	
<i>ver</i>	versicolor	<i>yv-4, ver1</i>
<i>ver-2</i>	versicolor-2	<i>ver2</i>
<i>ves</i>	versiformis	<i>ves1</i>
<i>ves-2</i>	versiformis-2	<i>vf</i>
<i>vg</i>	vegetative	
<i>vga</i>	virgulta	<i>vga1</i>
<i>vga-2</i>	virgulta-2	<i>vga2</i>
<i>vi</i>	villous	
<i>vio</i>	violacea	
<i>vio-2</i>	violacea-2	<i>vio2</i>
<i>vir</i>	viridis	
<i>vit</i>	vitiosa	
<i>vlg</i>	virescent light green	
<i>vms</i>	variable male-sterile	
<i>vo</i>	virescent orange	
<i>vra</i>	viridula	<i>vra1</i>
<i>vra-2</i>	viridula-2	<i>vra2</i>
<i>vrd</i>	viroid	
<i>vt</i>	vieta	
<i>vta</i>	virgatula	
<i>w</i>	wiry	
<i>w-2</i>	wiry-2	<i>w2</i>

<i>w-3</i>	wiry-3	<i>w3, w2</i>
<i>w-4</i>	wiry-4	<i>w4</i>
<i>w-5</i>	wiry-5	<i>w5</i>
<i>w-6</i>	wiry-6	
<i>w-7</i>	wiry-7	
<i>w-8</i>	wiry-8	
<i>Wa</i>	White anthers	
<i>wd</i>	wilty dwarf	
<i>wf</i>	white flower	
<i>Wlt</i>	Wilty	
<i>Wo</i>	Wooly	
<i>Wo</i>	Wooly	
<i>Wo</i>	Wooly	
<i>Wo</i>	Wooly	
<i>wt</i>	wilty	
<i>wt-2</i>	wilty-2	<i>wt2</i>
<i>wv</i>	white virescent	
<i>wv-2</i>	white virescent-2	
<i>wv-3</i>	white virescent-3	
<i>Wx</i>	Waxy	
<i>x</i>	gametophytic factor	
<i>x-2</i>	gametophytic factor-2	
<i>Xa</i>	Xanthophyllic	
<i>Xa-2</i>	Xanthophyllic-2	<i>Xa2, A</i>
<i>Xa-3</i>	Xanthophyllic-3	<i>Xa3</i>
<i>xan</i>	xantha	<i>xan1</i>
<i>xan-2</i>	xantha-2	<i>xan2</i>
<i>xan-3</i>	xantha-3	<i>xan3</i>
<i>xan-4</i>	xantha-4	<i>xan4</i>
<i>xan-5</i>	xantha-5	<i>xan5</i>

<i>y</i>	colorless fruit epidermis	
<i>yc</i>	yellow calyx	
<i>yg</i>	yellow-green	<i>yg1</i>
<i>yg</i>	yellow-green	
<i>yg-2</i>	yellow-green-2	<i>yc, yg282, yg2</i>
<i>yg-2</i>	yellow-green-2	<i>yg-2^r, aud</i>
<i>yg-3</i>	yellow-green-3	<i>yg3, yg330,</i> <i>ye</i>
<i>yg-4</i>	yellow-green-4	<i>yg4, yl, yg333</i>
<i>yg-5</i>	yellow-green-5	<i>yw, yg388,</i> <i>yg5</i>
<i>yg-7</i>	yellow-green-7	
<i>yg-8</i>	yellow-green-8	
<i>yg-9</i>	yellow-green-9	
<i>ys</i>	yellow seedlings	
<i>yv</i>	yellow virescent	
<i>yv</i>	yellow virescent	<i>vel^2, vel1^2</i>
<i>yv</i>	yellow virescent	<i>vel</i>
<i>yv</i>	yellow virescent	
<i>yv</i>	yellow virescent	
<i>yv-2</i>	yellow virescent-2	
<i>yv-4</i>	yellow virescent-4	

## Phenotype

Inhibits modifiers; permitting expression of tangerine gene; interacts with yellow fruit flesh gene.

Stems and leaves always lack anthocyanin.

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Stems and leaves always lack anthocyanin.

Complete absence of anthocyanin in all parts

Fruit epidermis purple, particularly on shoulder and where exposed to direct light; also enhanced by wounding.

Inflorescences reduced to an abortive 2-3 mm structure.

Highly deformed multicarpellate and apocarpous fruits

Smaller plant; short internodes; rugose, dull, light green leaves, turn yellow starting at tip.

Short, rounded cotyledons; short, compacted leaves.

Plant small and decumbent with short internodes and leaves.

Prostrate plant habit; short internodes and leaves; rugose, bright green pinnae.

Small plants, proportionately reduced; progressive necrosis from older to younger leaves.

Stems and leaves shortened, develop progressive necrosis; small, rounded, rugose pinnae

Slightly smaller leaves, shiny above, develop progressive necrosis.

Completely free of anthocyanin.

Completely free of anthocyanin.

Anthocyanin absent; small, brittle, fragile plants; leaves wilt in daytime.

Lacks anthocyanin in the seedling stem.

Brown necrotic layer spreads over leaves, which die prematurely.

Dainty leaves turn yellow and die early.

Adventitious roots on stem from soil level to considerable height above.

Abundance of root initials along the stems.

Completely free of anthocyanin; lacks glandular hairs.

Small plant; short internodes, leaves; dainty, yellowish, mostly keeled pinnae; poor fruit set; heterozygote intermediate.

Seedling very slow; cotyledons white; leaves becoming normal except for gray flecks; later growth nearly normal.

Cotyledons whitish light green; pinnae with irregular yellow-white areas; green-white stripes on the stems and petioles; foliage of mature plant grey-green with whitish blotches; plants erect, 1/3 - 2/5 normal size. Slightly dominant, the heterozygote att

Anthocyanin in green and ripe fruit; environmentally sensitive, absent when shaded.

Anthocyanin absent except on cotyledons and lower sides of leaves; anthocyanin accumulation more intense under growth retarding conditions; under low temperature and low light intensity, foliage becomes yellowish, webs of corolla-like tissue appear between



Anthocyanin absent except on cotyledons and lower sides of leaves.  
(Indistinguishable from ag).

Anthocyanin absent except on cotyledons and lower sides of leaves.

Anthocyanin absent except on cotyledons and lower sides of leaves.

Completely free of anthocyanin.

As for ag, purple pigment appears on cotyledons and lower sides of leaves when growth is slow.

Typical ag phenotype.

As for ag, purple pigment appears on cotyledons and lower sides of leaves when growth is slow.

Plant 1/3 normal size; reduced branching; leaves shortened; pinnae small, olive green, becoming necrotic at tips.

Completely free of anthocyanin

Completely free of anthocyanin

Completely free of anthocyanin

Completely free of anthocyanin

Completely free of anthocyanin

Completely free of anthocyanin

Completely free of anthocyanin

Early seedling stem has trace of anthocyanin, soon lost.

Early seedling stem has trace of anthocyanin, soon lost.

Anthocyanin pigmentation of medium intensity appears for ten to twenty days after seedling emergence, thereafter disappearing except for islands near the leaf nodes; within three days after this process begins, the stem becomes entirely green and remains

Semispherical bush, anthocyaninless; short internodes.

No anthocyanin in cotyledons and primary leaves; little anthocyanin in hypocotyl; internodes and leaves shorted; pinnae and interpinnae modified.

White or cream-colored cotyledons.

White or cream-colored cotyledons.

White or cream-colored cotyledons.

White or cream-colored cotyledons; lethal.

White variegation promoted by low temperatures.

Same as alb.

Greatly delayed fruit ripening processes.

Small plant, yellowish foliage.

Whitish green cotyledons, pinnae; strong anthocyanin in stems, veins.

Resistance to alfalfa mosaic virus

Shorter internodes; leaves small and spotted with yellow-green or yellow; flowers small and petals narrow with white edges.

Inflorescence exceptionally large and excessively branched; no flowers appear, instead the axes of the inflorescences ramify into smaller and smaller segments, continuing such growth throughout the season; flowers reduced to small vestigial structures; he

Inflorescence highly branched, terminates in very compact ovary-like masses of tissue; aborted flowers.

Leaves small, light green; inflorescence indefinitely ramifying, no normal flowers, resembling cauliflower; completely sterile.

Shortened leaves, stems; pinnae small, narrow, pointed; smaller flowers, narrow petals.

Smaller, compact, slow-growing plant; narrow, light-green pinnae.

Fruit elongated with hollow tip from which epiglotis extends resembling a snapdragon flower.

Short thick stems; many short side shoots; narrow, rugose, light green pinnae; light orange fruit; colorless pericarp.

Dark gray-green pinnae narrowed to 1/3 normal width; short leaves.

Corolla reduced or absent; pollen scarce and nonfunctional

Broad, spreading habit; long, laxly pinnate leaves; heterozygote intermediate.

Fine white speckling uniformly on cotyledons; mature leaves small, wilted; tiny flowers.

Small, compact plants; leaves yellow-green, virescent.

Almost no anthocyanin until fruits set, then moderate amount in young foliage.

Plants 1/3 normal size; cotyledons small, pointed, dull dark grey-green; die prematurely.

Asynaptic meiosis; high pollen and ovule sterility.

Asynaptic meiosis; high pollen and ovule sterility.

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asynaptic meiosis; high pollen and ovule sterility.

Delayed and asynaptic meiosis; chromatin degeneration; possibly two loci involved.

Desynaptic meiosis, reduced pollen fertility.

Flesh of ripe fruit yellow with pinkish blush; carotenoid content similar to r/r.; corolla pale yellow, nearly white, cotyledons yellow-green.

Narrow, pointed leaves, yellow-green, purple below; rigid cylindrical habit; thin shoots.

Excess anthocyanin on leaves, stems, and fruits.

Bright yellow cotyledons and leaves; seedling etiolates; plant vigorous.

Bright yellow cotyledons and leaves; some times whitish; corolla pale yellow; moderately vigorous in condine red; seedling etiolates; plant vigorous.

Elongated hypocotyl; yellowish foliage; smaller, slow-growing plant, dying prematurely.

Elongated hypocotyl; yellowish foliage; smaller, slow-growing plant, dying prematurely.

Bright yellow foliage, often whitish; pale yellow corolla and stigma. Very weak.

Bright yellow foliage, often whitish; pale yellow corolla and stigma. Very weak.

Bright yellow foliage, often whitish; pale yellow corolla and stigma. Very weak. Few branches; leaves broad, rounded, later becoming blistered, dark green; number of flowers and fruits reduced.

Small, pointed, yellowish light-green pinnae; orange fruit.

Plants always 1/3 to 2/3 normal size; pinnae finely divided, in some cases bent upwards; foliage darker and duller than normal.

Virescent, flush of gold near growing point in early development, not detectable in older plants.

Seedling 'gold dust' virescence; leaf segments pointed, sometimes fimbriate.

Mature plant nearly normal.

Smaller plant; foliage variously variegated yellow, white, grey-green; reduced fruit set.

Free of anthocyanin, same phenotype as a.

Completely free of anthocyanin. Radiation induced in Money Maker.

Free of anthocyanin, same phenotype as a.

Free of anthocyanin, same phenotype as a.

Free of anthocyanin, same phenotype as a.

No anthocyanin at any stages; reduced growth rate, dense bushy habit.

Flesh of ripe fruit orange, due to high B-carotene, low lycopene concentrations.

Crimson fruit; increased fruit lycopene content.

High B-carotene, low lycopene in ripe fruit. .

Corolla tawny orange, fading to white; anthers orange-yellow; increased fruit lycopene.

Young leaves mottled brownish olive normal, later glazed dark green; short internodes; heterozygote intermediate for some characters.

Corolla pigment intensifier.

Small plant with blue-green leaves.

#####

Resistance of fruit to bursting.

With f and j causes extreme fasciation of the "ring type".

Leaves highly divided, with smaller, acute segments.

Leaves highly divided, with smaller, acute segments.

Slender, pointed, light gray-green cotyledons; doubly pinnate, rugose leaves.

Fruits with sharp points at stylar end.

Fruits with sharp points at stylar end.

Fruits with sharp points at stylar end.

Sharp point at stylar end of fruit

Black seed testa, reduced germination.

Black seed testa, reduced germination.

Growth of axis terminates in single flower or inflorescence as if an extreme expression of sp (self-pruning); no buds in axils of leaves or cotyledons; late season adventitious shoots may emerge from the midribs; expression stronger in field than greenho

Determinant growth; few flowered inflorescences; fasciated flowers; enlarged, leafy calyx; less extreme than bl.

Determinate habit; firm, strongly uprolled pinnae; fasciated flowers and fruits; expression stronger in field.

Anthocyaninless; restricted root system; short internodes, leaves, and trusses

Anthocyaninless; restricted root system; short internodes, leaves, and trusses

Anthocyaninless; restricted root system; short internodes, leaves, and trusses

Stamens absent, rarely present, with functional pollen, in greenhouse. Usually petaloid stamens adnate to pistil; leaf segments obtuse

Stamens absent, rarely present, with functional pollen, in greenhouse; fewer blunt leaflets; with sp:+ 6-10 leaves between inflorescences.

Internodes shortened, resulting in low stature and compact growth habit; by the third-leaf stage, br plants are only half as tall as +; differs from dwarf (d) in having normal-colored, nonrugose foliage, and normal instead of sessile and compact leaf segm

Radical branches early; radical and root profusely branched; root tips twisting upwards, not dense growth.

severely stunted growth (1/20) dense bushy growth of twisted roots.

Brown seed color behaving as endosperm trait.

Brown seed color governed by genotype of endosperm.

Brown seed color determined by genotype of endosperm.

Brown seed color controlled by genotype of endosperm.

Susceptibility to fruit bursting.

Growth ceases with first flowering; stems brittle, with progressive defoliation; temperature-sensitive and expressed only under field conditions; B inefficient.

Hypocotyl normal, but cotyledons cuneate and held close to the plumule; first three internodes very short, resulting in dwarfing of the seedling to half height of normal; in later stages, internodes shortened, with excessive production of side branches,

Internodes and inflorescences shortened; long petioles.

Internodes and inflorescences shortened; long petioles.

Internodes and inflorescences shortened; long petioles. Duplicate genes determining character similar to bu.

Internodes and inflorescences shortened; long petioles. Phenotype like bu except leaves longer, more lax; heterozygote intermediate in some traits.

Leaf surface blistered and chlorotic with a network of darker veins; short internodes.

Plants and seedlings larger in all parts; broad and rugose pinnae.

Number of leaf segments reduced

Number of leaf segments reduced

Number of leaf segments reduced

Number of leaf segments reduced

Number of leaf segments reduced

Number of leaf segments reduced

Number of leaf segments reduced

Shortened, keeled pinnae, dark gray-green color; deformed flowers; elongated fruit.

Smaller plant; slender stems; smaller pinnae, nearly entire margin.

Compact habit; leaves large and dark green; flowers inconspicuous; corolla segments narrow; pollen and ovules partially sterile due to irregular meiosis; fruit with fewer locules.

Larger plant parts; leaves epinastic and blistered; broad, rugose leaves, similar to dwarf.

Flower greatly fasciated; androecium gynoecium and green tissues fused and distorted, enlarging into fruitlike structure; complete male and female sterility.

Seedling small; internodes shortened; leaf light grey-green with narrow, keeled segments; fruit round and relatively large.

Cotyledons lightly dotted in whitish yellow-green; lax, inclined plant.

Very small, compact bush; strongly shortened internodes, young leaves.

Small, dense bush; late growth retardation; short internodes; pointed primary leaves.

Greenish-yellow subnormal petals; reduced fertility.

Upper leaves smaller and chlorotic interveinally; strong graft response.

Flowers fasciated 6cm across; many small pale yellow petals; stamens dialytic and without pollen; fruits deformed, orange-red fruits with brown sectors; poor fertility.

Small, irregular bush; many side shoots of equal length from lower leaf axils.

Rounded, light gray-green pinnae, downrolled margin.

In pm stock; Plant reaches 1/3 - 2/5 typical size; half erect, weakly branched; foliage color grey-green; terminal segment of primary leaves long and narrow; older leaves serrated; lemon shaped fruit with conspicuous stylar scar.

Flowers joined in pairs or triplets, otherwise malformed.

Pericarp cracked, exposed tissues becoming brown and leathery.

Flowers fail to open.

Flowers open only slightly; reduced fertility.

Yellowish-green leaf color, purple veins and petioles; incompletely dominant.

Partly cleistogamous; leaves rugose, excessively divided; leaf lamina foreshortened, long petioled, flattened fruits.

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Pinnae margins deeply incised, dentations acute.

Partly cleistogamous; leaves rugose, excessively divided; leaf lamina foreshortened, long petioled, flattened fruits.

Partly cleistogamous; leaves rugose, excessively divided; leaf lamina foreshortened, long petioled, flattened fruits. Original description: cotyledons distinctively veined, leaflets slightly convex and twisted, shallow lobes; growth normal, fertility reduced

Reduced growth rate; internodes shortened; small compact bush habit; leaf segments large, rounded, foliolules fewer.

Foliage light yellow green early, becoming whitish green and blistered later, brilliant yellow green virescent; plants 1/4 typical size; growth very weak in field, setting fruits only in greenhouse.

Size and habit typically spl; primary leaves with entire end segments and only tiny laterals; mature leaves typically 5-segmented through fusion with end segment; segments always entire; resembles but is not allelic to sf.

Terminal pinnae large, second order pinnae few and masked by 1st order pinnae, little serration.

Strong virus-like mottling and distortion of leaves and abortion of flowers. Highly sensitive to environment, particularly temperature; highest expression and nearly complete sterility under low light, cool conditions of winter, whereas phenotype essential

dwarf with bright green foliage

Cotyledons and leaves gray-green especially on undersides; tiny and unbranched plants.

Foliage weak grey-green; petals light yellow; anthers greenish yellow.

Fruit exhibit greatly reduced ethylene production, inhibited softening, yellow skin, and nonpigmented pericarp due to the absence of carotenoid pigments in the pericarp tissue. The mutant phenotype is not reversed by exposure to exogenous ethylene.

Reduced gray-green leaves with concave spoon-shaped leaflets; small plants of normal habit.

Small leaves; deeply crenate, initially gray-green pinnae.

Plant small; pinnae fewer, broad, rounded, darker; flower parts short and broad.

Smaller, weakly branched erect plant; firm and keeled pinnae.

Small, dainty, nearly unbranched plants; shortened light gray-green leaves.

Very small plant; short leaves, internodes; few side shoots; purplish shoot tips.

Yellow-green, paler at growing point; variably depressed growth.

Narrow cotyledons, dull light gray-green foliage, weakly yellow-green in growth zones.

Smaller, unbranched plant; all parts reduced; short leaves with plicate segments.

Short leaves, smaller, dark green pinnae.

Large, strongly branched, leafy inflorescence; jointless pedicel.

Cotyledons fused, cup-shaped, becoming coarse and enlarged later; transition to mature leaves without primary leaves; plants die at 3-4 leaf stage; line maintained via heterozygotes.

Phenotype similar to cpf.

Cotyledons adnate to form a cup; no primary leaves develop; maintained via heterozygotes.

Plant smaller at all stages; leaves somewhat wider, lightly blistered and darker green.

Highly branched, compact plant; lax stems; pale, smaller leaves; reduced fruit set.

Resistance of fruit to radial cracking.

Very small in all parts; poorly viable without grafting; leaves light olive green, necrotic. Cri/+ necrotic spots on pinnae centers.

Leaves like those of Cu but less condensed and segments dentate; homozygote lethal.

Overgrown root hairs with cottony appearance

Smaller plant, irregular, sometimes distorted growth; spreading necrosis; firm, leathery, involuted brittle pinnae.

Hypocotyls and stems are elongated, and anthocyanins reduced; seedlings are de-etiolated under blue light; phenotype more extreme in combination with phyA and phyB1.

Apetalous; dialytic anthers; exerted stigma; self fertile, rarely sets fruits naturally.

Smaller, flat, broad bush; many side shoots; at end of season stems and leaf midribs turn necrotic and brittle; also reduced fertility.

Leaves 1/4 normal size; stems with corky surface, variable necrosis of vascular tissue.

Bifurcation of cotyledon tops by a central vein.

Low citric acid in fruit (cv. Tondo Liscio) vs. high concentration, ctr (PI 263713 = L. esculentum).

All shoots somewhat shortened, resulting in round bush habit; pinnae weakly serrated, plicate, and flattened; foliage somewhat lighter, and growing points are somewhat darker.

Plant half normal size at flowering; internodes shortened; leaves are narrow, pointed and blistered.

Mid- and lateral veins and petiole greatly foreshortened producing crumpled leaf; homozygous viable.

Small, downcurled leaves; resembling Cu.

Dwarf, short and thick hypocotyls, curled cotyledons, and dense curly leaves; reduced fertility.

Similar to cu-3, no restoration by brassinolide application

Seedling and mature plant smaller, round bush habit; internodes and leaves shortened; leaves rounded and wider.

Seedlings dark green with strong anthocyanin, later foliage dark grey-green; plants reach 1/3 to 2/5 typical size; internodes very short, habit cushion-like.

Extremely susceptible to drought damage at all stages; leaves small, yellowish, wilting, and eventually necrotic.

Leaves twisted, yellow-green; short internodes.

Young stem curves from node to node; dark rugose leaves; dwarf compact habit; heterozygote intermediate for some traits.

Small plant; leaves, pinnae briefly stalked; leaf surface furrowed; older leaves strongly bent downward.

Twisted cotyledons; short, rounded leaves; rugose, yellow-green pinnae.

Small, dense plant; variable fading of foliage.

Small, compact plant, leaves, pinnae.

Small, dense plant; short internodes; pinnae of oldest leaves involuted.

Seedling and mature plant with narrow convex leaves, deeply veined and tending to roll downward on margins.

Cotyledons united at one or both edges; lateral shoots suppressed; pinnae margins nearly entire.

Shortened hypocotyl, darker, broader and shorter cotyledons; stems heavy and erect; plant compact, internodes shortened to about 2.5cm; leaves very distinct, with reduced number and size of segments; dark green color, puckered rugose surface, down-curved

Wild-type allele of dwarf.

Extreme dwarf; more stunted than  $d^{\wedge}x$ ; leaves reduced to small, dark green globs of curled, rugose tissue; flowers reduced, with tiny corolla segments.

Allele of phenotype intermediate between  $d$  and  $d^{\wedge}x$ .

All parts foreshortened; leaves dark and rugose.

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All parts foreshortened; leaves dark and rugose.

All parts foreshortened; leaves dark and rugose.

Resembles dwarf ( $d$ ) but more extreme in all respects; growth is very slow; all parts of plant reduced in size and most organs modified in the direction of shorter and broader shape; leaves very dark green, the surface coarsely bullate and midrib twisted;

Shortened internodes and leaves; thick, rugose, bluish gray-green leaves; not allelic with the mimic,  $d1$ .

Smaller, sturdy, erect plant; all parts foreshortened; rugose and dark-green leaves.

Mildly dwarf type; broad, shortened, crowded, darker pinnae; darker flower color.

Slow growing plant with normal stem and leaf proportions; semi-sterile; classification good when three weeks old.

Compact and small plant; rugose, and keeled pinnae, upper surface shiny dark green.

Plants reduced to 10-12 inches tall; short internodes; leaves highly divided with strong anthocyanin.

Plants reduced to 6-8 inches tall, short internodes; normal flowers but no fruit set in field.

Slender, strongly sinuous and crenate pinnae; more secondary pinnae; micromutation.

Extremely retarded and highly modified dwarf.

Great reduction in size of all parts; leaves dark yellow-green, leaflets roll toward underside.



Leaves emerge yellowish; necrotic mottling, whitish, and later brown, often constricting leaves in middle.

Lax and decumbent habit; early fruiting.

After start of blooming plant becomes decumbent.

Seedlings normal, later leaves becoming progressively reduced, filiform, and with adnate segments; deformed flowers and reduced fertility.

Leaves become progressively more deformed with twisted filiform leaflets.

Like def; leaves deformed after flowering.

Reddish-orange mature fruit color, due to inhibition of lycopene, and increase of delta-carotene.

Early habit dense later loosely parting; shortened yellowish leaves with narrow acute segments.

Smaller compact bush; short internodes and leaves; all foliage is light yellow-green.

Typical spl seedlings; plant 3/4 normal size; stems and petioles strong; internodes somewhat shortened; leaf segments large and coarse; foliolules blistered; foliage color somewhat lighter.

Slightly depressed growth; dainty, darker leaves.

Very small plants with short internodes; leaflets bowed, color variable, and mostly yellowish.

Small, weakly branched and lax plant; yellowish foliage.

Small, plant; dainty, pale yellow-green leaves; slender pinnae; less discoloration and premature dying than det.

Plants reach 1/4-1/3 normal size; cotyledons narrow and tapered; leaves are shortened, segments small, keeled, margins serrated, and dull dark grey-green.

Homozygous seedlings retarded in growth, dark green, and die early; heterozygous are viable, but leaves become necrotic and fall prematurely.

Fruit softening greatly reduced; shelf life up to seven months; resistant to postharvest disease

Plant habit prostrate due to reduced gravitropic response; growth retarded; stems and leaves droopy; cotyledons concave. Roots grow horizontally rather than downwards; no lateral root formation.

Leaves drooping, elongate, dark green; stems weak, slender, and prostrate.

Leaves dull light green, small, and roughened; plants half normal size.

Light colored, denser plant; short leaves, smaller pinnae.

Somewhat smaller plants and leaves, shortened internodes; older leaves gray green with violet veins.

Very small plant, leaves, pinnae; much anthocyanin in hypocotyl, growth zones.

Leaf color light green with virescent growing regions, also with darker veins.

Cotyledons first yellow-green, then whitish light-green; small compact plant.

Small squarrose plant with intercostally yellowish leaves and ventrally purple.

Large trichomes partially suppressed and distorted; stamens not united, resulting in partially reduced fruit set from self pollination; seedlings can be distinguished in the 2- or 3-leaf stage by the shortening, bending and forking of the long and intermediate

Anthers free, but trichome modifications of original absent. Expression is dominant to wild type.

Small, compact plant with shortened yellowish leaves.

Plants reach 1/8-1/6 normal size, dwarf bush habit; foliage bright light green, light yellow-green virescent; petioles, stems, veins light violet; very low fruit set.

Causes extreme dwarfing.

Hypocotyl is strong; cotyledons are almost oval and arched downwards; internodes short and result in small plants; leaf segments broad, coarse, and flat with 1 - 2 pairs of laterals grey-green; few foliolules develop later; corolla segments broad and flat

Shortened plant height and length of stem internodes, leaves, and pinnae.

Small seedling and mature plant; little branching; leaf lighter at base, smaller, dark green; strong anthocyanin.

Plant 1/2-3/4 normal size; small bush habit; cotyledons narrow with tapered tip; leaves dull grey-green; leaf segments large, crowded and fewer foliolules.

Cotyledons and primary leaves strongly curled; internodes and leaves shortened; young leaves very asymmetrical, later deformed with long petiole.

Fruit tissue is dusky orange.

Leaves like those of d:x but internodes longer; Leaves greatly condensed, rugose, dark green; internodes somewhat foreshortened

Leaves like those of d:x but internodes longer.

Leaves like those of d:x but internodes longer.

Reduced root system

Stunted plants with short internodes and reduced leaves; partially male-sterile.

Plant small; pinnae yellowish; veins darker with uprolled margins.

Cotyledons epinastic, irregularly crooked, many seedlings with 3 cotyledons; plants 2/5-3/5 normal size, less erect than normal; stems crooked and leaves and pinnae disordered; pinnae partly plicate, partly spiraled.

Young plants typically splendens, later reach 2/3 size; habit half erect; branching reduced, particularly in the side shoot below the first inflorescence; leaf segments broad and doubled in number with many foliolules; strong anthocyanin in shoots exposed

Pale green virescent; plants always stunted.

Resembles d:x in most respects; all parts extremely shortened; plant erect with no branching, attains half normal size; leaves very rugose and bright dark green above; flowers are small.

First true leaf undivided but serrate, mature leaves usually have reduced number of lateral segments, which have variably serrate margins; contraction indicated by crowding of lateral segments and distortion of midvein. Parthenocarpic fruit.

Fused sepals

Fewer fused leaf segments and distorted midvein, entire or broad leaflets  
Fewer leaf segments; midvein distorted

Leaves with reduced numbers of segments, incompletely separated, irregularly lobed and undulate margins; cotyledons subnormal and often fused; produces few flowers of low fecundity with slender parts; calyx large, anthers deformed.

Fruits vary from none to many exserted carpels.

Early growth typically pm and later reaching 2/3-3/4 typical size; from fruit set on main stem and branches grow vertically with dense to loose bush habit, lending porcupine-like appearance.

Enlarged calyces; in combination with j-2 increases inflorescence subdivision.

Elongated fruits as in Oxheart.

Plants reach 3/4 normal size; dense, erect, and bush habit; internodes shortened; leaf segments large, wide, and strongly blistered.

Leaves reduced, yellow-green and dainty; plants tiny

Reduced, sometimes chlorotic, narrow leaves; slow growth.

Narrow, rounded cotyledons, margin rolled up; smaller, light yellow-green pinnae.

Elongated, weakly branched stems, initially erect, become procumbent.

Yellow green leaves; strong branching tendency; slight growth depression.

Yellow-green to light gray-green leaves; late in season strong anthocyanin in shoots, stems, and veins.

Small plant; reduced side branching; spreading necrosis of older leaves leading to their premature death; expression best in field.

Sword-shaped sepals.

Leaflets with entire margin.

Epidermis can be peeled from fruit without pretreatment.

Severe epinasty of leaves, swelling of stems and petioles, prolific branching of roots. Partially dominant.

Dwarf bushy plants with short internodes; shortened dark green leaves; heterozygotes intermediate.

Plant vigorous, branches erect, internodes slightly shortened; leaves shorter, segments smaller, keeled and blue-green at tips; many flowered.

Smaller, weakly branched plant; whitish zones in primary and later in leaves causing irregular pinnae development.

Leaves held at acute angle on stem; partially dominant.

Slender shoots; slender and thick pinnae; irregular growth; poor seed set.

High eugenol concentration in fruit.

Styles greatly elongated and stigmas exserted; on non-exserted flowers styles are twisted within anther tubes.

Branches partially decumbent; yellowish gray green older leaves turning yellow prematurely.

Very small plant; tiny plicate leaves of light gray-green color; narrow cotyledons; highly sterile.

Smaller bush; short internodes, young leaves; older leaves leathery, and shiny. Increased number of locules, stamens, and segments of the corolla and calyx; ovary and fruit more flattened and irregular in outline.

Fruits many-loculed; phenotype more extreme than original allele of f; carpels unfused; dominant allele.

Giant, vegetative, and highly ramified inflorescence; completely sterile.

Smaller, weakly branched plant; many, deeply crenate, wavy, gray to yellow-green pinnae.

Internodes and leaves shortened; cotyledons narrow, wavy, light green; plants retarded at flowering, reach 1/5 normal size; leaf segments small, dark grey-green, tending to shrivel and die early.

Small spreading plant; yellow or light green cotyledons, primary leaves, and lower leaves at later stages.

Retarded at all stages; leaves flecked with light green.

Leaves roll dorsally; fasciated flowers, fruits.

Severe chlorosis beginning in first true leaves due to faulty iron transport in xylem. Ratio of fructose to glucose in fruit approx. 1.5:1; partially dominant over L. esculentum allele

Leaf fimbriate margined, ephemerally "gold dust" virescent.

Phenotype like Schiemann's (1932), filiforme, equivalent to extreme wiry phenotype; cotyledons extremely narrow, grey-green; primary leaves also very narrow, later some leaves have only midveins, others with modified terminal segments and some epetiolate

Habit strongly branched and bushy; cotyledons slightly wavy; leaves wide, rounded, and often asymmetric with elongated petiole and filiform terminal segments; inflorescence very compound, petioles narrow, and fruit elongate.

Broad blunt leaf segments; bushy cylindrical plants; foreshortened inflorescence. Sturdy, compact seedlings; broad, rounded, rugose and dark green pinnae; small dark flowers.

Very small, compact bush; small, dark green, and rugose pinnae.

Corolla does not open although segments not fused.

Sepals fleshy, often curled.

Leaves light green with few segments; variably reduced plant size.

Leaves yellowish, mottled yellowish green, and small; heterozygote intermediate for some traits.

Smaller, compact bush; slender stems, many side shoots; leaves yellowish light green.

Leaves overwilt under dry or sunny conditions, leading to necrotic areas; plant small, erect, nearly unbranched, and later spreading.

Small, weakly branched and erect plant; darker and involuted wilted pinnae, dying prematurely.

Very small plant, leaves with strong anthocyanin, borne at acute angle to stem in young plant.

Filiform outgrowths and cupped leaves in late or terminal inflorescences; narrow corolla.

Distorted, poorly developed, highly sterile gynoecium; normal pollen production.

All true leaves light green with slightly darker veins.

Many small dark green spots on immature fruit, rupture prior to ripening.

Small compact bush; older leaves dark-green; brittle, shiny.

Smaller, very brittle bush; broad cotyledonsc pinnae; heterozygote recognizable.

Smaller, erect, nearly unbranched plant; short, dull light green leaves, yellowing prematurely.

Insensitive to far red light; hypocotyls elongated relative to wild type under far red light.

Leaf with serrate undulate margins.

Seedlings and plant habit and size normal; inflorescence highly proliferated; pedicels jointless; 4-parted corollae; segregation deficient in mutant homozygotes.

Hypertrophic pustules along leaf veins followed by chlorosis then necrosis.

Plants attain 1/4 normal size; habit upright, weakly branched; leaf margins later turned upward; foliage dark green, shoots brittle.

Fruit with dark green radial stripes opposite locules

Leaves yellow-green; veins always darker green.

Fruits can set at 40 deg. F.

Early growth habit is bushy and spindle shaped; leaves shortened, curved upwards, shiny yellowish, and paler at growing point.

Smaller plant; young pinnae yellow green, darker veins; older foliage variably lighter colored.

Small plant; foliage variably whitish or yellow-green, sometimes zonally marked.

Bright yellow virescent, older leaves becoming greener; golden yellow in field; yellow unripe fruit color.

Foliage at all stages light-green to light yellow-green; stems and leaf mid-ribs sometimes purplish.

Small plant; short internodes; light-green foliage, yellow-green growth zones.

Stunted virescentseedlings, overall brilliant yellow; closely resembling ful; mature plant bright yellow green.

Seedlings normal; plants normal size; foliage light green; growing points lighter; resembles, but is not allelic to ful.

Seedlings small; leaf color light grey-green, a flowering light yellow green virescent; older leaves yellowish.

Deeply furrowed, dark green cotyledons; severely stunted plant; homozygous inviable.

Young plants typically normal; main stem bends at start but becomes erect later, lending the plant a prostrate habit, similar to reptans(re).

Foliage yellow at all stages and under field conditions.

Grooved fruits.

Foliage at all stages variably white-gray-yellow-normal green; environmentally sensitive.

Pinnae dark to light gray-green, yellow base; stems at all stages with strong anthocyanin; plant smaller in some years.

Small plant; gray-to-light-green foliage; wavy, irregularly crenate and rugose pinnae; partly connate sepals.

Plants always greatly reduced; hypocotyls; extremely short internodes; strongly branched; pinnae grey-green, coarse, crooked, downward; only observed in greenhouse; no flowers developed; maintained via heterozygotes.

Small dark green spots on immature fruit, do not rupture but turn yellow on ripe fruit.

Most gametes abort when interacting with Ge:p.

neutral allele found in most genotypes

Most gametes abort while interacting with Ge:p.

Persistent chlorophyll giving ripe fruit purplish-brown color.

same as gf

same as gf

same as gf

same as gf

Corolla tips remain attached, resulting in globular form.

Habit flatter; cotyledons and primary leaves variable whitish; leaves and segments large and light grey-green.

Incomplete chlorophyll deficiency, starting green, later breaking to white.

Cotyledons yellowish; most leaves variegated; sectors can be either white, grey-green or dark green; phenotype resembles albescent (alb) more closely than the original ghost (gh) mutant; no response to grafting onto normal rootstock.

Seedling relatively coarse; plant size normal; main stem semi-prostrate with reduced branching; leaves mostly with 2 pairs lateral segments, very few foliolules, segments almost as broad as long, some terminal segments fused with laterals; less hairy stem

Gibberellin deficient; greatly reduced germination, and dwarf growth habit; leaves dark green, thick, and wrinkled; application of exogenous GA restores normal phenotype.

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Gibberellin deficient; greatly reduced germination, and dwarf growth habit; leaves dark green, thick, and wrinkled; application of exogenous GA restores normal phenotype. More extreme allele than gib-3.

Yellow cotyledons; highly variable ratios.

Leaf segments narrow, acute yellow-green; virescent.

Short internodes; small, dull, light gray-green leaves.

Flat dense bush habit, strongly sidebranched; internodes shortened; foliage dull light grey-green; shoot tips with much anthocyanin; flowers small.

Leaves shortened, dull green to yellowish gray-green; small upright habit.

Smaller plant; leaves dull gray-green; yellow-green growth zones.

Internodes and leaves shortened; leaves densely pinnate; yellow tinged.

Dense, rounded bush; very short internodes; many side shoots; poor fruit set.

Small plant; leaves light yellow or gray green, shortened.

Some pinnae larger, broader; pinnae light-green with lighter flecks.

Small plant and leaves of dull light grey-green.

Very small, irregular bush; all plant parts reduced; many side shoots; multibranching inflorescences; young heterozygotes recognizable.

Leaves pale gray-green, darker veins; plant very small and slow growing; wilted.

Seedlings normal; young plant with stronger anthocyanin; plants 1/3-2/3 normal size; shoots become necrotic at fruiting, resulting in condensed habit; later some branches become normal.

Internodes short; leaves short, pale green; incompletely dominant

Leaves tend to roll toward upper side, dull gray-light green; shortened internodes; excessively branched.

Very compact, rounded bush; many side shoots; short internodes; small flowers, fewer clusters.

Full sized erect bush; half sized, slender pinnae.

Dark green, shiny fruit with sticky epidermis; poor germination.

Calyx and corolla segments tending to be connivent.

Strongly increased fertilization of gametes carrying it.

Irregular androecium; pistil variably twisted, elongated, ridged, or lobed.

Fruit flesh turns slowly to yellowish green, remains firm; resembles gf, except that center of fruit turns red.

Resembles gf, except that center of fruit turns red.

Very small plant, pinnae, short internodes and leaves.

Plant very small, erect, nearly unbranched; short internodes and leaves; pinnae and seedlings smaller.

Smaller, weakly branched, half-erect plant; yellow-green, slightly involuted pinnae.

Broad, lax habit; fewer, large, flattened fruit; heterozygote intermediate.

Smaller, erect, weakly branched plant; large pinnae, close together, irregularly yellow green, normal green veins.

Slender, pointed, pale green cotyledons; primary leaves delayed; dainty foliage; yellowish shoot tips.

Base of large, multicellular trichomes greatly enlarged; associated chlorophyll deficiency and lack of vigor may be pleiotropic.

Cotyledons often more than 2; cotyledons and primary leaf segments short and broad, segments fewer, light grey-green; plants 2/3 normal height, upright, weakly branched; fruit and seed set reduced.

Smaller, light yellow green plant; dark gray-green growth zones.

Irregular longitudinal green stripes in epidermis of unripe fruit; retaining chlorophyll for longer period during ripening, and eventually assuming paler color in fully ripe fruit; changes limited to epidermis. Striping may be observed on stem under con

Reduced effectivity of female gametes.

Gibberellin-stimulated exertion of style.

Long trichomes absent except on hypocotyl and at growing point; heterozygote is intermediate.

Slender, long, pointed cotyledons; short leaves, with 2 pairs of slender, pointed pinnae; small, flat, dense bush.

Small plant; internodes shortened; leaflets somewhat narrowed; older leaves glossy, brittle, and light green.

Lax, low bush; slender stems, short internodes; small, keeled pinnae.

Small, lax plant; first inflorescence abnormal, numerous fasciated buds, elongated, unbranched peduncle.

Small plant, proportionately reduced; irregularly crenate and rugose and light-dark green patterned pinnae.

All types of hairs suppressed except for a few of the glandular type, which lack the chloroplasts normally present; presence of the large multicellular trichome bases imparts a granular or rough appearance to the stems; in contrast to h/h, hypocotyl is gl

Smaller, weakly pubescent plant; dark-green leaves. Curved upwards to involuted.

All herbage hairless; stems brittle

All herbage hairless; stems brittle

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All herbage hairless; stems brittle

Chlorophyll, carotenoids, ascorbic acid content of fruit intensified.

Similar to hp-1, but more extreme phenotype.

Similar to hp-1; enhances all pigments of green and mature red fruits; in presence of u<sup>+</sup> allele, immature fruit are completely dark green.

Immature fruit color normal; darker green color appears as fruit develops, then persists until onset of ripening, high chlorophyll compared to wild type or hp-1.

Similar to hp-2.

Increased accumulation of carotenoids.

Long hairs on upper leaf surfaces.

Increased density of large trichomes; incompletely dominant.

Style lack hairs.

Primary and mature leaves narrow, elongate, and entire, fewer lobed; abortive and deformed flowers.



All vegetative parts yellow in all stages.

Small bush; short internodes, leaves; older leaves epinastic, yellowish.

Many slender side shoots; short leaves; narrow, smaller pinnae.

Plants reach 3/4 typical size; habit denser with grey-green aspect, revealing some whitish-green of leaf under-surfaces; segments separate with light areas in younger leaves, partly fused, dirty yellow-grey in later leaves.

Small plant, slow growing; whitish seedling and mature leaves latter with prominent purpling.

Large pinnae; connate sepals; fruit irregularly cracked. (phenotype similar to cleistogamous).

Seedling typical pm; habit erect, irregular bush with less branching; some leaves with 2 pairs of lateral segments, others unsegmented, in later growth becoming normal; term segments almost cordiform; foliolules strongly blistered; foliage color brilliant

Dwarf upright, little branched; leaves relatively large, light green, bleaching to white; growth retarded (1/4 size)

Small plant; smaller leaves and pinnae of lighter color; short internodes.

Cotyledons small, narrow; lax, flat bush; sturdy shoots, yellowish tips in field; large pinnae.

Small, lax plant; reduced side shoots; darker, blue-green foliage wilts in strong sun and wind.

Small, flat bush; leaves short, small rugose, necrotic at tips; drought sensition.

Plant weak with few branches; younger leaves yellow-green then when older turning light green.

Light green cotyledons, dark veins; smaller, lax plant; short, yellowish to light green leaves.

Smaller, weak plant; leaves chlorotic at margins; plant smaller than imp:eg.

Smaller, weak plant; leaves chlorotic at margins, like imp;dia but plant larger.

Narrow, gray-green cotyledons; smaller plant; short internodes.

Small plant; smaller pinnae; reduced branching; inflorescences close together and numerous.

Lax growth, becoming partially decumbent.

Leaf segments weakly curved, undulate margins; stems, leaf veins and inflorescence crooked.

Smaller plant; short internodes and leaves; long, narrow, keeled and brownish-green pinnae.

Tiny plant with very short internodes; leaves small, plicate, and strongly down-curved.

Small, proportionately reduced, variable plant; young pinnae involuted, lighter colored; large trichomes absent.

Smaller, variable, cylindrical bush; short internodes; involuted pinnae.

Primary leaves almost undivided; long petioles; broad, rugose pinnae; few secondary pinnae.

Small, weakly branched plant; phenotype, including leaf size, variable from year to year.

Lax, high bush; short leaves; rounded, crowded pinnae.

Small, dainty plants; irregular chlorotic flecks, later leaves deformed.

Plants diminutive in all respects; keeled to rolled, wilted pinnae.

Dark pigmentation of the unripe fruit. Flowers deep orange-yellow with extra corolla segments (similar to Bco).

Leaves shortened, irregularly veined, dark green, tinged yellow; leaves erect on stem and stems swollen at leaf nodes; leaves, stems and inflorescences twisted.

Young leaves in midseason develop small necrotic flecks, later coalescing into large ones; variable expressivity.

Development of tumorous outgrowths on leaves and stems; heterozygote intermediate.

The normal pedicel joint, with swelling and abscission layer is absent; fruits separate at the juncture with the calyx; leafy or indeterminate growth of the inflorescence, suppressed in combination with sp (self-pruning).

Normal, jointed pedicels

Jointless elongate pedicel; teratological calyx; proliferated inflorescence; elongate fruit.

Jointless pedicel, with incomplete gene action. Pedicel joints with normal form, but do not separate when fruits ripen. Referred to as the 'arthritic' gene.

Yellow-green seedlings and young plants; homozygous lethal

Fasciated stems and fruits; short internodes; inflorescence almost sterile.

Fasciated stems, flowers, fruits, more extreme than jug.

Cotyledons and first true leaves turn yellow when the seedlings are 4-6 weeks old; as plants grow, the older leaves progressively yellow and abscise prematurely, the growing tips and immature leaves remaining green; stigmas yellow and fruit pigmentation r

Yellowish unripe fruits; premature yellowing of the leaves.

Yellowish unripe fruits; premature yellowing of the leaves.

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Phenotype similar to original lutescent.

Premature yellowing of older leaves; yellowish unripe fruit.

Leaves simple, limited to one small, elongated leaflet; margins entire; stems slender and excessively branched; cotyledons frequently fused; fruit small; homozygous inviable (shoot growth normally produces only a hypocotyl with little if any leaf tissue)

Leaf margins deeply incised, segments narrow.

Small bush; axillary sprouts later necrotic; primary leaves dainty.

Plant size and habit typical pm; until fruiting, variably light green virescent, later typical pm.

Small, lax plant; short, shiny leaves; end pinnae curved upwards.

Habit broad at first; growth much depressed in field.

Plant lax, weakly branched; slender shoots; smaller, slightly rounded pinnae.

Locule number is reduced

Prostrate, smaller plant, proportionately reduced; keeled or involuted yellowish pinnae, ventrally purplish.

Smaller, proportionately reduced plant; rapidly spreading necrosis on all older pinnae.

Light green foliage.

Cotyledons light yellow; leaves pale green; classification sometimes difficult.

Light green cotyledons, leaves; former fade to yellow, latter to pale-green.

Yellow-green cotyledons, light green leaves.

Foliage uniformly light green

Seedling development variably reduced; first leaves slightly deformed with terminal segments broader at tip, in early stages pinnae tend to be finer, more strongly plicate, margins curled upward, and yellow-green. These characters disappear in mature plant

Plant erect, near normal size; cotyledons narrow, light grey-green, white-spotted; leaf segments long, narrow, slightly notched, blunt, dull grey-green; shoot tips bluish with anthocyanin.

Resembles Wo:m but hairs concentrated on stem; all 3 genotypes viable and distinguishable.

resembles Wo:m but is more hairy; all 3 genotypes viable and distinguishable.

Reduced locule number.

Low titratable fruit acidity.

Locule number increased.

Small, somewhat spreading plant; broad, weak gray-green pinnae; long petioles; variable expression.

Leaves small, dark green, with obtuse extremities and a glossy, concave, slightly bullate surface; reduced hairiness; flowers campanulate; stamens dialytic; homozygote more extreme phenotype and completely sterile.

Few or no axillary branches; corolla suppressed; partially male sterile

Few or no axillary branches; corolla suppressed; partially male sterile.

Smaller, weakly branched plant; light gray-green foliage; growing points, later entire plant, yellow-green.

Dainty, light green foliage; shoot tips with yellowish pinnae and in late season has bluish veins, petioles.

Cotyledons and pinnae extremely broad proportioned.

Light yellow corolla. .

Leaves bright green, yellow-green at growing point.

Smaller, lax bush; short stems; small, light green leaves.

Plant and leaves small, light green to light olive.

Yellow-green cotyledons and primary leaves; dull light green later foliage.

Leaves yellow-green, darker veins; virescent.

Primary leaves flecked yellow-green; pinnae dull light green, yellowing early.

Cotyledons yellowish light green, small plant and leaves of dull light green.

Young plant larger, fewer side shoots; erect, long internodes.

Elongate, acute-segmented, pendent leaves.

First leaves entire and undivided; later fan shaped and deeply lobed; female-sterile. Notes: calyx greatly enlarged; heterozygotes have the leaf phenotype but not sterility.

Normal seedlings, 3 weeks later become strongly geotropic; weak branching.

Plant habit strongly prostrate due to reversed geotropic response of shoots (roots normal).

Cotyledons and all leaves speckled with light yellow-green spots, rather evenly distributed; leaflets narrow, irregular and distorted.

Many small chlorotic spots on leaves; plant stunted; temperature-dependent.

Variable sectoring for chlorophyll deficiency; homozygous lethal.

Leaves clearly longer; fruit large, smooth.

Branching inhibited, erect habit; leaf segments and flowers reduced size.

Small plant; necrosis on upper or lower leaf surface spreading from margin.

Small dark green plant with strong wilting of upper leaves.

Young plant leaves have irregular, yellowish light green flecks, disappear later.

Small plant; leaves dark-green, lightly wilting.

Marbling of several tones of white and light green on leaves, stronger expression in greenhouse than in field.

Marbling of several tones of white and light green on leaves, stronger expression in greenhouse than in field.

Cotyledons variably white, yellow, yellow-green or green with variegated true leaves.

Lax, flat bush, retarded in growth; short leaves; half-sized pinnae.

Calyx variable in size, but always larger than normal, exceeding corolla in length and often bladderly in appearance; corolla subnormal in development and rarely spread at anthesis; pedicel joint arthritic; inflorescence indeterminant.

Seedling 2/3 normal size with virescence, yellow spots becoming necrotic, mature leaves often deformed, especially mid-region, also virescent at maturity.

Seedling typical spl; plant 3/4 size; habit spreading; foliage color yellow green early to dark midveins with necrotic spots later, finally with variable whitish-yellow-green aspect.

Size and habit normal; inflorescence elongate, indeterminate; corolla enlarged; closed, but opening when touched; calyx with similar features; older leaves uncurled to reveal undersides. Note: calyx segments fused.

Leaves 3-4 pinnately compound with clavate segments; shortened internodes; homozygous viable; incompletely dominant.

Smaller plant, proportionately reduced.

Sometimes lax habit; oval fruit.

Seedlings variable size; plant reaches half normal size; leaves always deformed, segments reduced, curled, very blistered; flowers deformed, style exerted from bud stage.

High levels of methyl salicylate in fruit of certain lives.

Growth always retarded; thin branches; internodes and leaves shortened, segments small, oval, almost entire; very few foliolules, foliage starts grey-green, later dull green.

Seedling 1/4 normal size; cotyledons and leaves yellowish, becoming necrotic first at tips and margins; mature plant subnormal in size and leaves with brown necrotic blotches.

Seedlings small; nearly no branches, erect habit; leaf segments small, keeled, dull dark grey-green; inflorescence proportionately large.

Leaves, stems marked in gray-green; lighter yellow petals, uprolled margins; ridged or yellow-fissured fruits.

Growth always retarded; short, weak branches; internodes and leaves very shortened; stems grey-blue; foliage light grey-green.

Low malic acid levels in fruit versus high levels in mltD.

Small, upright and almost unbranched plants; shortened leaves prematurely yellowing.

Very small plant, pinnae; short leaves.

Small plant; reduced branching and fruit set.

Severely stunted chlorina mutant with 1cm internodes; flowers only after grafting on normal.

Heterozygote overdominant.

Exerts less effect of I than Mo(I).

Modifier of B. Increases content of beta carotene in presence of B.

Permits expression of Mo(I) and MO(I)-2 only in xx genotype.

Very tiny, upright, and unbranched plants; leaves much reduced, and strongly epinastic; stems slender; heterozygote intermediate for some traits. Note: leaves and stems strongly epinastic.

Smaller plant, reduced side branching; yellowish light green foliage.

Modifies expression of pat-2; in homozygous state, increases fruit set on pat-2 under low temperatures.

Very retarded and all parts extremely reduced; foliage chlorotic and strongly flushed with anthocyanin, resembles pds.

Pale, shrunken anthers; no pollen; hybrid stock

Anthers pale, shrunken; no pollen

Anthers variably small, discolored, occasionally fertile

Normal anthers, low amount of good pollen in some genetic backgrounds.

Pale, shrunken anthers; a few aborted pollen grains.

Abnormally small flowers; very pale and greatly shrunken anthers; usually no pollen.

Shrunken, pale anthers; no pollen.

Anthers near normal in size and color; pollen aborted in tetrads.

Abnormally small flowers with exerted stigmas; pale shrunken anthers; no pollen

Anthers nearly normal; no pollen

Abnormally small flowers; small, very pale anthers; greatly exerted stigmas; no pollen in mature anthers; meiosis delayed, breakdown mostly in early prophase; reduced ovule fertility.

Anthers small, slender, pale; empty PMCs in locules; breakdown in different stages of meiosis; stigmas exposed.

Anthers small, very pale; no pollen; flowers very small

Very pale, shrunken anthers; aborted pollen, free or in tetrads.

Abnormally small flowers; nearly normal-colored but shrunken anthers; no pollen.

Nearly normal anthers; free aborted pollen.

Anthers somewhat shrunken and paler than normal; abundant pollen, all abortive.

Anthers dwarfed, very pale; no pollen; flowers small; stigmas exerted

Abnormally small flowers with exerted pistils; very pale, dwarfed anthers; no pollen.

Anthers dwarfed, very pale; no pollen; flowers small; stigmas exerted

Pale shrunken anthers; clumped aborted pollen.

Pale shrunken anthers; no pollen.

Exserted stigmas; slightly pale, very shrunken anthers; no pollen;

Slightly shrunken anthers; stigma mostly protruding.

Anther tips equal or exceed stigma.

Anthers and style of equal length; flowers slightly smaller.

Anthers normal length, shrunken; flower color slightly lighter.

Anthers slender and paler; no pollen; meiosis delayed and prolonged; stigmas depressed.

Anthers slightly more slender and paler; 100 percent aborted pollen; meiosis normal stigmas mostly exposed.

Anthers slender, foreshortened, pale; stigmas mostly exposed.

Anthers slender, diverging distally, pale; stigmas mostly not exposed.

Anthers very slender, slightly shorter, pale; stigmas mostly exposed.

Anthers slender, often separate below, pale, often greenish; stigmas mostly exposed.

Stamens highly modified, very slender, free twisted, pale or greenish yellow; stigmas 100% exposed.

Stamens smaller, very pale; stigmas 100% exposed.

Stamens greatly reduced and shrunken, very pale, often brown.

Anthers very irregular, yellow-green; no pollen; breakdown in early meiosis; stigmas exposed.

Anthers short, pale; no pollen; meiosis normal, possibly delayed; stigmas exposed.

Anthers slightly shrunken and greenish.

Flowers appear normal, but have no pollen.

Flowers small; anthers pale; no pollen; stigma not exposed

Flowers small; anthers pale (matching corolla); no pollen; stigma inserted.

Flowers possibly more fasciated than normal; stamens pale and slender; no pollen; stigma variably exposed; plant somewhat chlorotic and weak.

Anthers slightly smaller, paler than +; all pollen aborted.

Few or no stamens produced, pollen viable

Solanifolium leaf shape; small flowers with protruding style and divided stigma.

Anthers long, slender, and pale; stigmas usually not exposed; breakdown sporogenesis and vestigia resorbed in later anther development.

Anthers long, slender, and pale; stigmas usually not exposed; breakdown sporogenesis and vestigia resorbed in later anther development.

Anthers pale, slender; completely male sterile; only small, abortive cells visible, no pollen grains.

Anthers pale, slender.

Anthers pale, shrunken. High level of male-sterility; (but some pollen produced) anthers tend to brown and shrivel distally.

Dominant male-sterile mutant, similar to Ms-48.

All parts of plant reduced; high sterility; in field, make very compact dwarf mounds of growth; internodes short; most flowers abort and few open, exceedingly small and prob. nonfunctional.

Small broad bush; internodes short; leaves long; light yellow-green, virescent in early stages.

No inflorescences even if grafted on normal stock; smaller bush; strongly reduced internodes and leaves.

Dainty young leaves, and light green intercostally.

Seedlings with strong virescence of light green color between veins of normal green.

Small plant, all parts proportionately reduced; first inflorescence multibranched.

Leaves elongate, rugose, highly divided, gray-green.

Small bush; many equal side shoots; short internodes and leaves.

Enlarged, multibranched inflorescences; variable whorled flower parts; fruits fewer

Small plant, reduced branching; midseason leaf color weak gray-to-dark green.

Plants and leaves small, light green, inflorescences close together

Small plant, shiny, shorter leaves; light yellowish growing points.

Stems often end abruptly in leafy structure; inflorescences irregularly branched to fasciate; jointless pedicels swollen at calyx base; petaloid sepals.

Nipple tips at stylar end of fruits.

Nipple tips at stylar end of fruits.

Nipple tips at stylar end of fruits.

Nipple tips at stylar end of fruits.

Tiny plant, internodes and leaves very short, plicate and rugose.

Very small, erect bush; tiny, narrow, rugose pinnae, often with necrotic flecks.

Narrow cotyledons and slow growth.

Primary leaves strongly attenuated and chlorotic; leaflets curled upwards, accumulate much anthocyanins; cotyledons malformed; later leaves less extreme, with chlorophyll concentrated around veins.

Semi-dwarf habit, epinastic leaves, necrosis in stems and leaves. Phenotype more pronounced in the winter.

Autogenous necrosis of leaves and stems, appearing first when the plants are 6-10 weeks of age as small, angular yellowish to brown, necrotic spots near the tips of the lower leaves; the spots are not superficial, but extend right through the leaf; accomp

Leaf chlorosis, turns necrotic; some plants stunted and distorted; temperature dependent.

Plants small, weakly branched; leaves pale, darker veined, becoming necrotic, and prematurely shed.

Leaves with many grayish necrotic spots; plant small, weak, killed by defoliation.

Plants diminutive in all parts; pinnae become necrotic.

Smaller, weakly branched plant; dark gray-green pinnae, necrotic flecks at tips, dying prematurely.

Scanty flower production.

Narrow cotyledons, pinnae; older shoot tips blue-green and slender.

Lax, low bush; small, dark gray-green leaves, slightly glossy above.

Very retarded pigmentation, non-softening, and crack resistance of fruits.

Very retarded pigmentation, non-softening, and crack resistance of fruits.

Leaves wilt under dry, sunny conditions, leading to necrosis, particularly on margins; leaves reduced.

Fruits turn color at normal time, but develops pigmentation slowly and never assume as deep a color as normal, either from exterior or interior, no matter how long fruits are retained on the plant or in storage. Dominant expression. Also displays abnor

Plants reach 1/3 normal size, branching reduced; internodes and leaves shortened; leaf dark green, upper surface bright.

Pale interveinal areas of cotyledons and true leaves; older leaves never with full green color.

Ovate or pear shaped fruits; incompletely dominant, sometimes permitting classification of all three genotypes, but usually treated as a recessive.

Small compact bush; short internodes; small leaves and pinnae; ovate fruits.

Ovate fruits.

Elongate fruits with low locule number; completely recessive for fruit shape, partially dominant for locule number.

Smaller, weakly branched plant; early foliage dark-green.

Smaller bush; short internodes; smaller, broad, compacted, dark-green pinnae.

Oblate fruit shaped.

Leaf veins appear green with back lighting, due to presence of chloroplasts in epidermal layer beneath veins.

Leaf veins appear clear with back lighting due to absence of chloroplasts in epidermal cells beneath veins.



Leaves discolored and becoming white variegated; exposed unripe fruit is yellowish gray.

Herbage with little or no characteristic tomato odor.

Very small plant; small, malformed olive-green leaves, dying prematurely.

Small plant; pinnae more divided, short, variously light-olive-dark green, wavy margin, dying early.

Lighter leaf color, yellow at growing point.

Small plant with light green foliage, particularly in growth zones.

Smaller somewhat spreading plant; yellow-green foliage.

Plant size and habit typical pm; until fruiting, variably light green virescent, later typical pm.

Resistance to broomrape based on single gene action.

Small, weakly branched, half erect plant; distorted cotyledons; dark green leaves, fewer pinnae.

All leaves short, broad, dark green, weakly shiny above.

Seedlings smaller, branches slender, internodes shortened; foliage early whitish light green, later normal but light green virescent; fruits variably egg shaped.

Broad, keeled, more crenate pinnae; long oval fruit.

Denser and more persistent pubescence of fruit epidermis, imparting a dull appearance to the fruit surface; herbage also more pubescent and showing a blue-gray cast; classification not good under arid field conditions.

Dull-colored fruit epidermis, from mature green to ripe. Phenotype similar to nor<sup>2</sup>, but pericarp more pink-colored and skin less strong, possibly equivalent to nor.

Very small plant; few side shoots; short internodes; small leaves and pinnae.

Small, nearly unbranched, erect plant; firm leaves, weakly curved upwards.

Fewer flowers per inflorescence; small plant and pinnae.

Strong purple of hypocotyls fades shortly after germination to dusky green but returns to positive level by flowering time.

Light green color; paler corolla; plant size variable; foliage color dominant.

Seedlings typical praematura, plants reaching 1/3-2/5 praematura size; branching variably reduced; susceptible to wilting from flowering on.

Smaller, weakly branched, half erect plant; fewer boat-shaped to involuted pinnae, purplish ventrally.

Small plant; dull light green foliage.

Small, narrow, light green, keeled pinnae.

Fruit mostly parthenocarpic, with some seed set, especially in late season; anthers reduced, but pollen viability normal.

Parthenocarpic fruit.

Parthenocarpic fruit; expression dependent on prevention of pollination and fertilization; requires pat-4.

Parthenocarpic fruit; only expressed when pollination and fertilization are prevented; requires pat-3.

Plants tiny, weak, and unbranched; tend to die before fruiting; marked reciprocal graft influence with normal.

Centromeres divide prematurely in meiosis starting in anaphase I and completed in all by prophase II; completely pollen sterile, highly egg sterile.

Smaller, dainty plant; short, light gray-green leaves; full-sized flowers.

Chlorosis under constant illumination; apparently in all *L. esculentum*; dominant absence allele in other species.

Multiple cotyledons, smaller leaves with fewer segments, entire margins, grayish, strongly convex, deep veined. Stunted growth. Inflorescence large, compound, epinastic. Flowers fasciated. Corolla segments narrow.

Fine striated variegation for white, green and various intensities of gray-green on distorted leaves.

Reduces plant chlorophyll and fruit pigment, the latter by 50%.

Seedling very retarded and dark colored; cotyledons and first true leaves plicate, arched and hooded; mature plant greatly retarded; leaves narrow, strongly plicate, and tips acute.

Development retarded; leaves reduced, distorted, blotched dull yellow green and flushed with anthocyanin.

Plant small; leaves pale yellow, not turning green.

Sticky fruit epidermis.

Phenotype similar to *pe* (sticky fruit epidermis); waxy fruit.

Broadly spreading, drooping, glossy, and yellowish pinnae.

Leaves darker green, dropping early, anthocyanin strong; very small, slow-growing plants.

Plant small, stocky shoots; short internodes and leaves; rugose pinnae; heterozygote intermediate at season's end. Note: leaves broad and round.

Plants reach half normal size; internodes and leaves shortened; leaf segments small, narrow, keeled, dark grey-green; branch tips purplish; flowers smaller, petioles narrow and slightly paler.

Cotyledons first pale yellow, turn gray-green, which is mature plant color; slow growing.

Cotyledons and leaves pale-green.

Cotyledons pale gray-green; leaves fading to dull yellow color.

In combination with *phyB1 (tri)*, increases internodes are elongated and leaves are chlorotic; alone, phenotype is normal..

Only vestiges of stamens present; calyx and corolla segments slender, elongate, strap shaped, and unequal in size; pistil distorted in varying fashion; small, extra locules usually present; inflorescences indeterminate; no pollen produced, and high ovule

Plant size and vigor reduced; inflorescences tending to abort; flowers small with only calyx and pistil; calyx subnormal, tightly adpressed to pistil; female fertility and/or fruit set affected.

Leaves at first normal green, later turning yellowish then brown necrotic above, some eventually brown below.

Young pinnae with marginal necrotic flecking, later more numerous.

Plant diminutive in all parts; pinnae light yellow-green turning necrotic at tips, dying early.

Scattered necrotic flecks on smaller, light gray to olive green pinnae.

Small, flat bush; short internodes, leaves; keeled, sometimes yellowish, light green pinnae.

Light green, narrow pinnae, yellowing prematurely.

Small plant, stiff when young, yellowish to light green leaves darker veins.

Longer hypocotyl; larger cotyledons and pinnae.

All parts small; leaves dark, yellowish, plicate; strong anthocyanin.

Small, lax bush; slender shoots, short internodes; smaller gray-green pinnae.

Small plant; dainty, shorter, sometimes yellowish leaves; fruit ripen early.

Short internodes; small, rounded, crowded, dark green pinnae; fruit ripen early.

Plants reach 1/4 normal size, weakly branched; leaves reduced; starting at flowering: stem epidermis becomes dry; brown, silvery, leaves gradually necrose; fruit set good for plant size.

Heavy anthocyanin accumulation at base of large trichomes on upper leaf surface.

Short internodes; leaves plicate and twisted; fruit flat and fasciated.

Main, lateral shoots end in large branched inflorescence with large, fasciated central flower; fruit flattened 4 to 9 locules.

Longer, more divided, lighter-colored leaves, micromutation.

In early stages indistinguishable from elu; as fruits set, becomes distinguishable by its high anthocyanin content.

In early stages indistinguishable from elu; as fruits set, becomes distinguishable by its high anthocyanin content.

Plants always retarded, weakly branched, shortened internodes; leaves often with 1 pair of segments, acuminate, slightly keeled; reduced fruit set.

Cotyledons propeller like; true leaves greatly modified: leaf lamina narrow, twisted, and mottled.

Cotyledons short, broad, bent downwards on strong hypocotyls; plants (seen only in greenhouse) of variable height 10-40 cm; habit upright with no branches; leaves extremely foreshortened and crupled with 1-2 partial segments, dark green, strongly blistere

Plant always severely retarded, reaching 10-20 cm, unbranched, seem very thick; leaves and cotyledons small, dark green, leaves very rugose; no inflorescences seen; maintained via heterozygotes.

Shortened internodes and leaves; rugose leaves lightly mottled yellow.

Older stems become prostrate.

Prostrate cushiony plant; elongated leaves with fewer long stalked pinnae.

Plants attain 1/3 height; habit weakly branched, semi-erect and slender; angle of leaf emergence very narrow; leaves very short, segments relatively coarse and plicate; fruit development reduced.

More rapid growth rate; few foliolules, larger segments entire. Tall, slender, weak plant. Increases internode length, the number of internodes before the first inflorescence and the total number of internodes.

Smaller plant, variably reduced; pinnae keeled, pale-yellow, partly shiny, leathery.

All parts, particularly fruit, are elongated; traits weakly dominant.

Elongated hypocotyl internodes, leaves, fruit; very lax habit.

Essentially cleistogamous in respect to opening of the corolla; corolla normal in color and probably also in size, but segments are so tightly bound in dorsal grooves of the anthers, into which they normally fold in the bud, that they do not ordinarily u

Corolla does not unfurl; pollen is not shed.

Positional sterile flowers; pollen is not shed. .

Plants attain 1/2-3/4 normal size; early leaves pale light green; pinnae bent strongly upwards and more serrate, exposing undersides; distinctive yellowish light green color with exposed pale green lower surface.

Style adnate to fruit throughout development; fruit becomes strongly beaked.

Plant small, almost without branches; internodes and leaves strongly shortened; leaf segments very small, light keeled, dull grey-green; flowers small; fruit set variably low.

Small, slow-growing chlorotic plants; light green cotyledons; frequently tricot or bifid.

Resembles triplo-4 in dainty habit, elongate leaf and flower parts; differs in defective flowers.

Seedling and plant habit normal; leaf segments narrow, dainty with deeper serration and plicate, tending to be pendant; foliolules more abundant.

Stylar end of mature fruit markedly pointed, protuberant.

Leaves resemble plain parsley foliage in being excessively divided (to the 3rd and 4th order in homozygotes, heterozygotes are intermediate).

Bushy habit with slightly shorter internodes; cotyledons and primary leaves are light green with white-green background; foliage dull light grey-green, yellow-light green virescent with fine white-yellow spots; shoot tips bluish.

Shortened internodes, stronger branching; elongate cotyledons; leaflets broad and much divided.

Shortened internodes, stronger branching; elongate cotyledons; leaflets broad and much divided.

Tiny, dainty plant with few or no branches; slow growth rate.

Smaller plant, variably branched; narrow, keeled, firm pinnae, mostly finely variegated or mottled in light to dark-green.

Pinnae, filiform, thick, gray-green.

Plants much retarded, erect, and little branched; leaf edges yellow with normal green veins.

Very small, unbranched, delicate plants; much reduced leaves yellowing at margins.

Strongly rugose, broad, rounded pinnae; sturdy, erect bush; dark green foliage at all stages

Plants reach 1/4 to 1/3 pm size, habit cushion like via controlled growth of side shoots; leaves shortened, older ones prematurely yellowing, later drying; young stems normal, developing brown. sunken spots later.

Plants always small, reaching 1/4 normal size; internodes and leaves shortened, leaf segments small, bright, dark green below; shoot tips bluish with anthocyanin. Lax, spreading plant; small pinnae; larger, earlier fruit.

Cotyledons wider, hypocotyl shorter; plants reach 2/3 normal height; habit first upright, weakly branched, later becoming pyramidal, leaves at this time are irregularly epinastic; terminal segments broader; foliage color shiny dark yellowish. Yellow color of ripe fruit flesh; synthesis of lycopene is inhibited; associated with paler corolla color, which often affords a satisfactory classification at flowering stage.

Yellow color of ripe fruit flesh.

Yellow fruit flesh; lighter yellow flowers.

Yellow color of ripe fruit flesh.

Yellow color of ripe fruit flesh.

Likely allele of r with reddish flesh tones in ripe fruit

Leaves down curled and gray-green; larger trichomes longer and silky.

Small plant; leaves small, strongly recurved dorsally, light yell to gray-green; trichomes longer.

Cotyledons heavily dotted in white; purplish hypocotyl; smaller lax plant.

Variably branched inflorescence; proportionately reduced all other plant parts.

Slender shoots, pinnae, petals; variably branched inflorescence.

Retarded growth; cotyledons uprolled.

In greenhouse plants grow normally to about 30 cm height; thereafter grow slowly or not at all; intolerant of field conditions.

Seedlings inclined from epicotyl, mature plants recumbent; elongate internodes; less branched.

Plant denser; crowded pinnae on shorter leaves of light yellow-green.

Strongly retarded growth; sturdy shoots; short leaves; small, narrow pinnae.

Lax open habit; tiny plants; light green yellow tinged leaves; heterozygotes intermediate color.

Strong creeping tendency even in seedling; less branching; shortened, prematurely dying leaves; mimics 'lazy' series by strong reversed geotropism of shoots.

Early growth typical spl; from flowering on, all parts develop plagiotropically, exposing fruits, which ripen earlier than normal.

Plants reach 1/3 normal size, weakly branched and plagiotropic, internodes and leaves shortened; foliage light grey-green; leaves necrose prematurely; fruits relatively large.

Smaller, squarrose bush; yellowish light-green, boat-shaped pinnae, purplish ventrally.

High shoot regeneration capacity from callus cultures established from root explants.

High shoot regeneration capacity.

Ridged leaves; retarded growth of shoots and roots.

Smaller plant; stiff, yellowish young leaves turn dark-green later.

Smaller, stiff, compact plant; erect sideshoots; young pinnae keeled to involuted light yellow-green, dark veins, purplish below.

Plant small, rigidly erect when young; leaves yellowish, and darkening later.

Small, lax, spreading plant; pinnae keeled, yellowish to light-green; early flowering, ripening; heterozygote recognizable.

Plant small, rigidly erect when young; leaves yellowish, and darkening later.

Fruits green at maturity, later turning bright yellow, retarded ripening.

Resistance of fruit to radial cracking.

Internodes extremely short, inducing rosette plant habit; no flowers, but axillary buds formed on older plants; height 6 inches or less; reduced branching of root system, producing a single tap root; leaflets narrower than normal.

Small plant; short internodes, leaves; broad, rounded, rugose, light gray-green pinnae.

Rounded, slightly rugose pinnae; shortened leaves

Short internodes; short, broad, rugose leaves.

Small plant; short internodes, sideshoots; small, broad pinnae, nearly round.

Seedling size variable; plants weak, attaining 1/3 size; habit weakly branched, upright; leaves highly divided, each main segment equivalent to a normal leaf, early color dull grey-green, becoming normal later.

Greatly restricted or no root development.

Small plant of slow growth; mature leaves drooping.

Leaflets narrow, keeled, dull light green, darker veined; heterozygote variably intermediate.

Leaflets narrow, keeled, dull light green, darker veined; heterozygote temporarily intermediate.

Dwarf plants with short internodes; leaves broad, and blunt with fewer segments.

Small, lax bush; fewer, rounded pinnae.

Cotyledons and new leaves pale with dark veins, turning to normal green with age.

Cotyledons light green; leaves yellowish with green veins.

Sharply defined virecence- yellowish color of the immature leaves strongly contrasted with dark green network of the veins; seedling retarded.

Vascular tissue deep red in roots and stems.

Inflorescence branches excessively, resulting in a large hemispherical mass of 80 or more flowers and buds; inflorescence appears at every sixth node, instead of every third in normal genotypes.

Greatly increased number of flowers per inflorescence.

Small plant; light yellowish leaves, developing necrotic lesions ventrally or on pinnae tips; environmentally sensitive.

Small plant, somewhat squarrose and slender branched.

Striated, scurfy cotyledons.

Cotyledons pale yellow, sometimes grooved; lethal in early stages except for recovery in mid summer.

Plants reach 3/4 normal size, erect, bushy, thick coarse branches, internodes and leaves shortened; leaf segments large, broad, very wavy and rugose; fastigate inflorescences resemble broom.

Exposed leaves are greatly stunted, internodes less than 1 cm; stems somewhat constricted above the nodes, showing a brownish discoloration at first, scar tissue later; new shoots from base of plant grown normally until they break through the thick canopy

Very short, scarred internodes in high light intensity; heterozygotes usually intermediate.

Interacts with *sd-2* and *br* to yield birdsnest phenotype.

Semideterminate habit in background of *sp/sp*.

Smaller, compact plant; very short internodes; small dark leaves.

Smaller plant, leaves, pinnae; short internodes.

Curved shoots, leaves inflorescences.

Seedlings normal; plant size almost normal; all vegetative parts, particularly midveins and petioles irregularly elongated, resulting in twisting.

Smaller, erect, nearly unbranched plant; thick, yellowish, light gray-green leaves; weakly fertile in greenhouse, unchanged on normal graft stock.

Primary leaves entire; segments of later leaves entire and folded; filiform calyx and corolla; fruit shape often modified.

Primary leaves entire; segments of later leaves entire and folded; filiform calyx and corolla. Leaf margin finely wrinkled; flower parts small and distorted.

Usually smaller, weakly branched plant; yellowish to yellow-green, involuted pinnae, purplish ventrally; slight F1 seedling heterosis.

Usually smaller, weakly branched plant; yellowish to yellow-green, involuted pinnae, purplish ventrally; slight F1 seedling heterosis.

Reduced number of flowers per inflorescence, reduced number of inflorescences; indeterminate inflorescence; flowering is delayed; only a few inflorescences develop, before reverting to indeterminate vegetative branches that infrequently produce single fe

Suppresses determinate growth imposed by the self-pruning (*sp*) mutation, restores indeterminate growth; average sympodial index = 3. Weak allele, with normal inflorescences.

Fruit flesh yellow with reddish tinge.

Upper portion of anthers aborted; stigma protruding. Plant and seeds of low viability.

Small plant, proportionately reduced; wavy, yellow-green leaves.

Deficient for production of proteinase inhibitor II in leaves following wounding

Deficient for production of proteinase inhibitor II in leaves following wounding  
Leaves overwilting and becoming necrotic; plant small and very weak in field; leaves short and down-curved, .

Stamens usually reduced to mere vestiges adherent to the pistil; in the winter greenhouse stamens with normal pollen may appear; radial roughenings on the fruit surface attributed to adnation of stamens in early stages; fertile as female parent.

Nearly stamenless, anthers much distorted

Nearly stamenless, anthers much distorted; Like sl:2 except for greater anther development

Nearly stamenless, anthers much distorted; Like sl:2 except anthers nearly normal in winter greenhouse

Corolla and androecium sepaloid, stigma irregular and protruding.

Stamens abortive or absent; fruit form modified. Same general features as sl except for subnormal stamens.

Drooping, elongate, serrate leaves. Unknown variety from Romania.

Endosperm almost absent; testa thin and transparent; reduced germination.

Epidermal hairs smaller; trichomes crooked, curved and otherwise distorted.

Persistent style (beaked fruit)

Plant size normal, habit loose; pinnae narrow, pointed, deeply serrate, margins slightly elevated; similar to prunoidea but with normal fruits.

Plant habit determinate; the position of the inflorescences varies greatly within and between plants in respect to whether they recur every internode or every second internode; plants cover a much smaller space than do normal ones, but cover it more dense

Indeterminate growth habit.

Dominant allele; severe determinate growth habit; homozygous lethal.

Plant habit determinate.

Plant size reduced; leaves emerge yellow-green, becoming blotched whitish yellow-green; growth nearly normal with thiamine treatment.

Small plant; shiny, yellowish foliage; older leaves darker than younger ones.

Extremely puffy, hollow locules and bell pepper shaped fruit.

Extremely puffy, hollow locules and bell pepper shaped fruit.

Smaller, spherical bush; short internodes; older leaves firm, dark green, and shiny. Sympodial index-two nodes. An average of 2 leaves between successive inflorescences.

Shiny, yellowish to light green, boat-shaped, rugose pinnae.

Lax, flat bush; short leaves; small, narrow, pointed, keeled, crowded pinnae.

Flat, dense bush; narrow, pointed, keeled pinnae.

Distinctive seedling resembling spl; interveinal areas brilliant yellow; leaf margins tend to roll inward especially near growing point.

Small, very weak plants of squarrose habit, few branches; small, pale gray-green leaves; heterozygote intermediate in color and size.

Narrow, light green cotyledons; diminutive plant, leaves, and pinnae.

Stem slender, stiff, upright, with few branches; leaves elongate, blue-green, with few segments.

Growth always retarded, plants reaching half normal size; cotyledons short, rounded and blunt; heavily branched, internodes shortened; leaf segments broad, ovate, slightly rugose, and dark green.

Smooth but spongy seed surface.

Suppresses determinate growth imposed by the self-pruning (sp) mutation, restores indeterminate growth; average sympodial index = 2.



Suppresses determinate growth imposed by the self-pruning (sp) mutation, conferring indeterminate or semi-determinate growth; average sympodial index = 2.

Completely sterile; plants later become purple.

Seedlings normal with marked later reduction in growth, plants reaching 1/3 pm size; habit small round bush, internodes being proportionately much more foreshortened than leaves and strongly branched.

Staminoid petals; anther tips free and more slender.

Smaller plant; numerous, rugose, smaller pinnae; many flower buds, often aborting; weak fruit and seed set.

Pinnae with downward rolled margins and finely dotted in yellow early, turning green later except at base.

Rigid upright growth; broader blistered leaves.

Larger plant, leaves, pinnae; stocky stems.

Larger, dark to strong green pinnae, margins rolled upwards.

Large, stocky bush; rounded, rugose, moderately dark green pinnae.

Very slow growth; strong anthocyanin.

Leaves deeply veined, yellow-tinged; fruit cluster upright; strong anthocyanin.

Leaves deeply veined, yellow-tinged; fruit cluster upright; strong anthocyanin.

Rachis very short, leaf color yellowish gray-green; stems white, streaked green.

Leaves long-petioled with dainty, deeply cut segments

Small, broad plant; paler leaves, yellowing prematurely.

Small, keeled, light green pinnae; branched inflorescences.

Tiny plant with short internodes, fastigate habit; narrow acute leaf segments.

Small, weakly branched, erect plant; short, firm leaves, yellowing prematurely.

Accumulates predominantly sucrose in mature fruit, rather than glucose and fructose.

Uniform light green color.

Larger, lighter cotyledons; small plant and leaves.

reduced side-shoot formation; often a few basal shoots are produced. Inflor. With 1 - 2 flowers only.

Cotyledons greenish yellow, turning pale yellow; true leaves yellow; lethal unless grafted on normal stock.

Leaves variegated green-white; some homozygotes lethal unless grafted

Elongated fruit shape, from Sun1642.

Wild type allele for round fruit

Many slender side shoots; very small, irregularly rounded, dark gray-green pinnae.

Seedlings normal, plants later becoming strongly upright and elongated; strong mainstem and petioles; leaf segments large, coarse, and blistered, dark, and shiny.

Necrotic flecks on the deformed whitish cotyledons and older pinnae.

Growth variably suppressed; few or no branches; varied meiotic abnormalities; homozygous lethal.

Elongated sepals; heterozygote intermediate.

Cotyledons green bleaching to yellow; yellow virescent.

Yellow cotyledons, growing point.

Bright yellow virescent; fine whitish speckling on mature leaves; can turn necrotic.

Tangerine or rich orange color of fruit flesh; pleiotropic on flower color, causing suffusion of an orange tone over the anthers.

Yellowish growing point; light green foliage; resembles t in flower and fruit color

Fruit phenotype similar to original tangerine allele; also accumulates prolycopene in leaves.

Fruit and flower color typical of t; irregular yellowing near growing point.

Smaller, dainty plant; leaves reduced, glossy, gray-green.

Normal seedling growth followed by severe stunting; leaves irregular, yellow-green, violet veined with necrotic specklings.

Plant smaller; petal tips turbinate.

Determinate growth; fasciated inflorescences, flowers, and fruit.

Small plant, short internodes, leaf midribs; involuted pinnae, lighter with darker veins.

Very slow growth; leaves light green, reticulated with whitish yellow veins; growth partially normalized with thiamine treatment..

First leaves narrower and more entire than normal and with a characteristic rough texture; leaves above the 5th position usually with only three segments at the end of a very long petiole; internodes short, branches few; plant has a stiff, upright appearance

Leaf usually with only three segments, petiole elongate.

Plant about 1/4 normal size; stiff leaves and branches.

Cotyledons normal; leaves small, yellow, developing green veins, and dying prematurely; lethal; viable and normal if fed thiamine.

Similar to original tl. Heterozygotes have an intermediate phenotype.

First inflorescence with single, abnormal flower; lateral branches have normal inflorescences.

Early flowering, primary inflorescence is single-flowered, however penetrance is <9%.

Plants attain 1/3 typical size; habit erect, rarely branching; stems slender; foliage color dark green early, becoming irregular with variable anthocyanin content later.

Coiled or downrolled cotyledons, leaves, or petals.

Leaves tripinnately compound; retarded growth.

Smaller, weak plant; short, gray-green leaves, yellowing prematurely.

Blue-green seedlings; smaller plant, leaves, pinnae; older leaves dying prematurely.

Insensitive to red light for up to 2 days; hypocotyls elongated and cotyledons reduced compared to wild type.

Seedlings 1/4 normal size; leaves narrow, plicate and strongly pendant.

Plants reach 1/3-2/3 normal size, fewer branches; main stem bent at nodes, which are swollen; cotyledons and leaves deformed, wavy, blistered; petals and sepals narrow, wavy, and anther often fringed.

Growth retarded at all stages; branching strong, internodes shortened, dense bush habit; leaf segments long petioled, light yellowish margins; flowers smaller.

Unripe fruits of uniform light green color, lacking normal darker shoulder; entire coloration of immature fruit somewhat lighter.

Presence of green shoulder on immature fruit.

Dominant allele; dark shoulder; dark green radial striped opposite each locule of highly pigmented unripe fruit

Resembles u except for partial dominance.

Very light green shoulder; resembles u:G

Plants attain 2/3 typical size; habit erect; leaves coarser with flatter pinnae; young leaves convex.

Inflorescence with single flower.

As of u except for grayish color.

Upright leaf.

Mature leaves darker green, wilted appearance; later growth stunted; reduced root growth.

Small, lax bush; smaller pinnae, dark green to dull gray-green.

Broad, crowded, dark green pinnae; small leaves, short internodes; small, erect bush.

Very small plant; narrow pinnae, cotyledons; fewer flowers.

Habit flatter than normal; cotyledons and primary leaves are narrow, acuminate, and margins are deeply notched; leaf segments small, keeled, wavy, and dull light grey-green.

Weak, thin, upright, growth with great suppression of branching.

Purplish grey green seedlings; leaves and pinnae smaller, short, rounded, narrow, slightly deformed cotyledons; very small pinnae, leaves, and plant; slow-growing.

Strongly retarded growth and branching; pinnae 1/3 normal size; strong anthocyanin.

Retarded growth and branching; very small, keeled pinnae.

Pedicels straight, oriented upward.

upright growth habit.

White virescent seedlings, white leaf margins; stunted growth.

New leaves pale under greenhouse conditions; frequently undistinguishable in field.

Leaves small, green and white patterned virescent. Expression may be dominant. Bright yellow-green virescent.

Like va:dec except older leaves retain yellow in region of veins.

Smaller plant; at flowering whitish yellow-green zones move from pinnae tips to bases.

Sturdy shoots; firm, keeled, rugose, light green pinnae, blue-green below in the shoots.

Leaves light green, yellow-green virescent; slightly smaller plant with shorter internodes.

Smaller plant; at flowering shiny yellow-green growth zones, later turning light green.

Variably reduced growth; tiny folded leaves, whitish yellow with green veins.

Younger leaves with fine mottling of yellow; green veins.

Smaller plant, leaves; light green pinnae weakly flecked in white, margins strongly uprolled.

Pinnae pointed, keeled, bright green; unripe fruit darker.

Small, compact plant; dainty, shiny, yellowish pinnae, wavy margin.

Greatly deformed and usually functionless flowers.

Smaller plant; short internodes; dull-green foliage, light yellow-green growing points.

Leaves yellowish light-green, green margins and veins.

Stems very hairy.

Heavy anthocyanin on stems and veins; dull light green leaf color.

Light green foliage; shoot tips, petioles, leaf veins with strong anthocyanin.

Early leaves dark green, third order leaf divisions.

Seedlings 1/3 normal size with light green virescence, leaves broad,,; mature plants normal size, leaves light green.

Abortive anthers, reduced corolla high temperature; normal otherwise.

Yellow virescent; mature leaves pale bluish green; fruit flesh orange, redder in outer walls.

Small plant; boat-shaped, dull light-green pinnae, wavy margin.

Yellowish light green leaves, darken after onset of flowering; growth retardation.

Scalloped cotyledons; highly distorted leaves with white speckled chlorosis; extreme environmental sensitivity, winter expression best.

Plants attain 1/3-1/2 size; habit erect with robust main stem and few branches; young pinnae slightly undulated; foliage color normal except yellow-green virescent.

Plants reach 1/4-1/2 normal size; cotyledons narrow; plant color dull light grey-green; stems blue with anthocyanin; young leaf segments rugose and striped yellow-olive.

Cotyledons narrow, often with irregular margins; lower leaves nearly normal, but upper ones progressively become narrower until some are reduced to a threadlike midrib; all flower parts tend to be dialytic and highly abnormal; calyx tends to be petaloid;

More extreme strap shaped leaves, petals, and sepals than wiry, plant sterile.

Resembles wiry, except ovary more syncarpous.

Similar to previously described wiry mutants; leaves progressively more reduced.

Resembles previously described wiry mutants.

Cotyledons with shorter lamina, longer petiole, bent downward, grey-green; primary leaf almost string-like, later also strongly epinastic; next leaves with sac-like terminal segment on hair-like petiole; later leaves with 1-5 lateral segments, often part I

Smilar to w-6 but with more extreme expression and less fruit set; not allelic to w-6.

Similar to w-7.

Anthers white or cream-colored.

Grayish-green, droopy leaves; stunted plants; leaves droop when drought stressed.

Corolla color is buff, light tan, or white.

Leaves overwilt when drought stressed. Wilting under field or greenhouse conditions; marginal leaf necrosis.

All vegetative parts, including hypocotyl densely tomentose, the long hairs being more abundant, branched, and stellate, but no longer than normal. Increased development of other hair types. Homozygous lethal, dying before or in cotyledon stage, rarely

Pelage on all parts wooly but less than Wo; homozygous viable; heterozygote intermediate.

All parts densely pubescent; leaves have a velvety, wilty appearance; resembles Wo<sup>m</sup> and is homozygous viable.

Denser hairiness than Wo; homozygous lethal.

Leaf margins curl adaxially

Leaf margin rolled upwards at all stages.

Plant retarded; cotyledons whitish yellow; leaves become white virescent, always with white speckled.

White, green-veined virescent, plant retarded.

Seedling 1/20 normal size, cotyledons, white or greenish white, virescent.

Ineffective microgametes associated with l.

Altered transmission rate associated with c.

Cotyledons and leaves always distinguished from normal by yellow color, which, however, varies with the light intensity; under diffuse light or short day conditions, plants are light green, but under more intense light, plants become bright yellow, the li

Resembles Xa.

Darker green than Xa.

Yellow cotyledons; lethal.

Yellow cotyledons; lethal.

Yellow cotyledons; lethal.

Yellow cotyledons; lethal.

Yellow cotyledons; survives under optimal conditions.

Fruit epidermis lacks normal yellow pigmentation; as a result, fruit appears pink instead of red..

Calyx turns yellow when fruit ripens.

All foliage yellow-green, vireescent.

Foliage chlorotic yellow-green under all conditions; long hypocotyls.

All foliar parts bright yellow under all conditions.

Resembles yg4 with leaves appearing ragged.

Foliage chlorotic whitish yellow-green under all conditions; leaves more deeply serrate, edges curled.

Very yellow cotyledons and leaves; slow growing; good plant viability.

Leaves light yellow-green, dotted in early growth; flowers normal; pollen inviable; growth weak. Radiation induced.

Leaves bright yellow at all stages.

Pronounced yellow-green leaves, becoming somewhat darker with age.

Lethal in early stage.

Pale yellow-green; virescent foliage.

Smaller, irregular bush; short internodes; soft yellow, velvety growing points shading to normal green below; smaller than vel.

Light yellow-green leaves, paler at growing point, which has velvety appearance.

Male-sterile allele of yv; seedling yellow becoming yellow green (field) or light green (greenhouse).

Male sterile variegated allele of yv; green color frequently mutating to yv: ms

Smaller, irregular bush; short internodes; soft yellow, velvety growing points shading to normal green below; smaller than vel. C. R.

Narrow, yellow green leaflets, dark green veins, becoming irregular, grey green.