

Recommended Codes for Pest Organisms in Vegetable Crops

September 2019
Subject to regular review

Adopted by the ISF Working Group Disease Resistance Terminology

1. Cabbage, Broccoli, Cauliflower, Chinese cabbage

Scientific name	English common name	Code
<i>Cauliflower mosaic virus</i>	Cauliflower mosaic	CaMV
<i>Turnip mosaic virus</i>	Turnip mosaic	TuMV
<i>Pseudomonas syringae</i> pv. <i>maculicola</i>	Bacterial leaf spot, Peppery leaf spot	Psm
<i>Xanthomonas campestris</i> pv. <i>campestris</i>	Black rot	Xcc
<i>Albugo candida</i>	White rust	Ac
<i>Albugo macrospora</i>	White rust	Am
<i>Alternaria brassicae</i>	Black spot	Abe
<i>Alternaria brassicicola</i>	Black spot	Aba
<i>Erysiphe cruciferarum</i>	Powdery mildew (Oidium)	Ec
<i>Fusarium oxysporum</i> f. sp. <i>conglutinans</i>	Fusarium yellows	Foc
<i>Fusarium oxysporum</i> f. sp. <i>rapae</i>	Fusarium yellows	Foa
¹ <i>Hyaloperonospora brassicae</i> (ex <i>Peronospora</i> / <i>Hyaloperonospora parasitica</i>)	Downy mildew (Peronospora)	Hb (ex Pp/ Hp)
<i>Mycosphaerella brassicicola</i>	Ring spot	Mb
<i>Leptosphaeria maculans</i> (anamorph: <i>Phoma lingam</i>)	Black leg	Lm
<i>Plasmiodiophora brassicae</i>	Clubroot	Pb
<i>Verticillium albo-atrum</i>	Verticillium wilt	Va
<i>Verticillium dahliae</i>	Verticillium wilt	Vd
<i>Verticillium longisporum</i>	Verticillium wilt	Vl

Insects

<i>Brevicoryne brassicae</i>	Cabbage aphid	Bb
<i>Plutella xylostella</i>	Diamond back moth	Px
<i>Thrips tabaci</i>	Thrips	Tt

¹ *Hyaloperonospora parasitica* is currently and widely known as *H. brassicae*. *H. parasitica* is a pathogen with a host range different to cultivated Brassicas.

2. Pepper

Scientific name	English common name	Code
Viruses		
<i>Chilli veinal mosaic virus</i>	Chilli veinal mosaic	ChiVMV
<i>Cucumber mosaic virus</i>	Cucumber mosaic	CMV
<i>Paprika mild mottle virus</i>	Paprika mild mottle	PaMMV
<i>Pepper mild mottle virus</i>	Pepper mild mottle	PMMoV
<i>Pepper mottle virus</i>	Pepper mottle	PepMoV
<i>Pepper yellow mosaic virus</i>	Pepper yellow mosaic	PepYMV
<i>Potato Y virus</i>	Potato Y	PVY
<i>Tobacco etch virus</i>	Tobacco etch	TEV
<i>Tobacco mild green mosaic virus</i>	Tobacco mild green mosaic	TMGMV
<i>Tobacco mosaic virus</i>	Tobacco mosaic	TMV
<i>Tomato mosaic virus</i>	Tomato mosaic	ToMV
<i>Tomato spotted wilt virus</i>	Tomato spotted wilt	TSWV
Bacteria		
<i>Ralstonia solanacearum</i>	Bacterial wilt	Rs
<i>Xanthomonas campestris</i> pv. <i>vesicatoria</i> ²	Bacterial spot	Xcv
Fungi		
<i>Colletotrichum acutatum</i>	Anthraxnose	Ca
<i>Colletotrichum capsici</i>	Anthraxnose	Cc
<i>Colletotrichum gloeosporioides</i>	Anthraxnose	Cg
<i>Fusarium oxysporum</i> f. sp. <i>capsici</i>	Fusarium wilt	Foc
<i>Leveillula taurica</i> (anamorph: <i>Oidiopsis sicula</i>)	Powdery mildew (Oidium)	Lt
<i>Phytophthora capsici</i>	Phytophthora blight	Pc
Nematodes		
<i>Meloidogyne arenaria</i>	Root-knot (Nematode)	Ma
<i>Meloidogyne incognita</i>	Root-knot (Nematode)	Mi
<i>Meloidogyne javanica</i>	Root-knot (Nematode)	Mj

² Taxonomic studies on the bacteria causing bacterial spot on tomato and pepper have shown there are four different species (*Xanthomonas euvesicatoria*, *X. vesicatoria*, *X. perforans* and *X. gardneri*) that cannot be differentiated by pathogenicity as they all cause very similar symptoms. As resistance in tomato and pepper to bacterial spot is based on races that go across these species the old and traditional name *X. c. vesicatoria* and its acronym Xcv have been maintained.

3. Watermelon

Scientific name	English common name	Code
Viruses		
<i>Cucumber vein yellowing virus</i>	Cucumber vein yellowing	CVYV
<i>Cucumber mosaic virus</i>	Cucumber mosaic	CMV
<i>Papaya ringspot virus</i>	Papaya ringspot	PRSV
<i>Squash leaf curl virus</i>	Squash leaf curl	SLCV
<i>Watermelon mosaic virus</i>	Watermelon mosaic	WMV
<i>Zucchini yellow mosaic virus</i>	Zucchini yellow mosaic	ZYMV
Fungi		
<i>Colletotrichum orbiculare</i>	Anthracnose	Co
<i>Fusarium oxysporum</i> f. sp. <i>niveum</i>	Fusarium wilt	Fon
<i>Podosphaera xanthii</i>	Powdery mildew (Oidium)	Px

4. Cucumber

Scientific name	English common name	Code
Viruses		
<i>Beet pseudo yellowing virus</i>	Beet pseudo yellows virus	BPYV
<i>Cucumber green mottle mosaic virus</i>	Cucumber green mottle	CGMMV
<i>Cucumber mosaic virus</i>	Cucumber mosaic	CMV
<i>Cucumber vein yellowing virus</i>	Cucumber vein yellowing	CVYV
<i>Cucurbit yellow stunting disorder virus</i>	Cucurbit yellow stunting disorder	CYSDV

<i>Kyuri green mottle mosaic virus</i>	Cucumber green mottle	KGMMV
<i>Papaya ringspot virus</i>	Papaya ringspot	PRSV
<i>Squash leaf curl virus</i>	Squash leaf curl	SLCV
<i>Watermelon mosaic virus</i>	Watermelon mosaic	WMV
<i>Zucchini yellow mosaic virus</i>	Zucchini yellows	ZYMV

Bacteria		
<i>Erwinia tracheiphila</i>	Bacterial wilt	Et
<i>Pseudomonas syringae</i> pv. <i>lachrymans</i>	Angular leaf spot	Psl

Fungi		
<i>Cladosporium cucumerinum</i>	Scab and gummosis	Ccu
<i>Colletotrichum orbiculare</i>	Anthracnose	Co
<i>Corynespora cassiicola</i>	Corynespora blight and target spot	Cca
<i>Golovinomyces cichoracearum</i>	Powdery mildew (Oidium)	Gc
<i>Fusarium oxysporum</i> f. sp. <i>cucumerinum</i>	Fusarium wilt	Foc
<i>Fusarium oxysporum</i> f. sp. <i>radicis-cucumerinum</i>	Fusarium crown and root rot	For
<i>Pythium aphanidermatum</i>	Damping off, Pythium fruit rot (cotony leak)	Pa
<i>Pseudoperonospora cubensis</i>	Downy mildew (Peronospora)	Pcu
<i>Podosphaera xanthii</i>	Powdery mildew (Oidium)	Px

5. Basil

Scientific name	English common name	Code
Fungi		
<i>Fusarium oxysporum</i> f. sp. <i>basilicum</i>	Fusarium wilt	Fob
<i>Peronospora belbahrii</i>	Downy mildew (Peronospora)	Pb

6. *Solanum integrifolium* (Eggplant rootstock)

Scientific name	English common name	Code
Fungi		
<i>Fusarium oxysporum</i> f. sp. <i>melongenae</i>	Fusarium wilt	Fom

7. Tomato

Scientific name	English common name	Code
Viruses		
<i>Beet curly top virus</i>	Curly top	BCTV
<i>Cucumber mosaic virus</i>	Cucumber mosaic	CMV
<i>Groundnut ringspot virus</i>	Groundnut ringspot	GRSV
<i>Pepino mosaic virus</i>	Pepino mosaic	PepMV
<i>Tobacco mosaic virus</i>	Tobacco mosaic	TMV
<i>Tomato apex necrosis virus</i>	Tomato apex necrosis	ToANV
<i>Tomato chlorotic spot virus</i>	Tomato chlorotic spot	TCSV
<i>Tomato mosaic virus</i>	Tomato mosaic	ToMV
<i>Tomato torrado virus</i>	Tomato torrado	ToTV
<i>Tomato spotted wilt virus</i>	Tomato spotted wilt	TSWV
<i>Tomato yellow leaf curl virus</i>	Tomato yellow leaf curl	TYLCV ⁶

Bacteria

<i>Clavibacter michiganensis</i> subsp. <i>michiganensis</i>	Bacterial canker	Cmm
<i>Pseudomonas corrugata</i>	Pith necrosis	Pc
<i>Pseudomonas syringae</i> pv. <i>tomato</i>	Bacterial speck	Pst
<i>Ralstonia solanacearum</i>	Bacterial wilt	Rs
⁷ <i>Xanthomonas campestris</i> pv. <i>vesicatoria</i>	Bacterial spot	Xcv

Fungi

<i>Alternaria alternata</i> f. sp. <i>lycopersici</i>	Alternaria stem canker	Aal
<i>Alternaria solani</i>	Early blight	As
<i>Corynespora cassiicola</i>	Target spot	Cc
⁸ <i>Fulvia fulva</i> (now <i>Passalora fulva</i>)	Leaf mold	Ff (now Pf)
<i>Fusarium oxysporum</i> f. sp. <i>lycopersici</i>	Fusarium wilt	Fol
<i>Fusarium oxysporum</i> f. sp. <i>radicis-lycopersici</i>	Fusarium crown and root rot	For
<i>Leveillula taurica</i> (anamorph: <i>Oidiopsis sicula</i>)	Powdery mildew	Lt
<i>Oidium neolycopersici</i>	Powdery mildew	On
<i>Phytophthora infestans</i>	Late blight	Pi
<i>Pyrenochaeta lycopersici</i>	Corky root rot	Pl
<i>Stemphylium botryosum</i> f. sp. <i>lycopersici</i>	Gray leaf spot	Sbl
<i>Stemphylium lycopersici</i>	Gray leaf spot	Sl
<i>Stemphylium solani</i>	Gray leaf spot	Ss
<i>Verticillium albo-atrum</i>	Verticillium wilt	Va
<i>Verticillium dahliae</i>	Verticillium wilt	Vd

Nematodes

<i>Meloidogyne arenaria</i>	Root-knot (Nematode)	Ma
<i>Meloidogyne incognita</i>	Root-knot (Nematode)	Mi
<i>Meloidogyne javanica</i>	Root-knot (Nematode)	Mj

8. Eggplant/Aubergine

Scientific name	English common name	Code
Viruses		
<i>Tomato mosaic virus</i>	Tomato mosaic	ToMV
<i>Tomato spotted wilt virus</i>	Tomato spotted wilt	TSWV
Bacteria		
<i>Ralstonia solanacearum</i>	Bacterial wilt	Rs
Fungi		
<i>Fusarium oxysporum</i> f. sp. <i>melongenae</i>	Fusarium wilt	Fom
<i>Verticillium albo-atrum</i>	Verticillium wilt	Va
<i>Verticillium dahliae</i>	Verticillium wilt	Vd
Nematodes		
<i>Meloidogyne incognita</i>	Root-knot (Nematode)	Mi

9. *Solanum torvum* (Eggplant rootstock)

Scientific name	English common name	Code
Bacteria		
<i>Ralstonia solanacearum</i>	Bacterial wilt	Rs
Fungi		
<i>Fusarium oxysporum</i> f. sp. <i>melongena</i>	Fusarium wilt	Fom
<i>Verticillium albo-atrum</i>	Verticillum wilt	Va
<i>Verticillium dahliae</i>	Verticillum wilt	Vd
Nematodes		
<i>Meloidogyne incognita</i>	Root knot (Nematode)	Mi
<i>Meloidogyne mayaguensis</i> (Syn. <i>M. enterolobii</i>)	Root knot (Nematode)	Me
<i>Meloidogyne arenaria</i>	Root knot (Nematode)	Ma
<i>Meloidogyne javanica</i>	Root knot (Nematode)	Mj

