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PLANT VIRUS NAMES

An annotated list of names and synonyms
of plant viruses and diseases

Compiled by the
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and

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Mycology

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COLLABORATORS

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INTRODUCTION

In this third revision of the CMI listing of plant viruses and virus diseases, the 2nd edition of which was published in 1957, a number of changes have been made. The present list is primarily of names of viruses, and the name of the disease from which that of the virus is derived, a separate entry in earlier editions, has been omitted. In addition to the data published in the last list, amended where necessary, and similar information concerning the very large number of new viruses that have been named in the last ten years, the list now includes all records of viruses or suspected viruses that have been found in the *Review of Applied Mycology* and other sources, even when only consisting of a host name and an addition such as 'virus' or 'mosaic'. Such names have been included in two Appendices, covering miscellaneous viruses or suspected viruses of ornamentals and of other plants, and in lists of miscellaneous viruses or various crops following the major viruses of these in the main list. Such a complete listing will probably not be repeated; it is hoped to record future information in supplements issued from time to time. The present list includes information from publications received at the CMI up to the autumn of 1967.

The information concerning the viruses is arranged in the following order:

The virus name, with author and references, followed by a cryptogram (see below and Appendix III, p. 135).

'*Other names*', being those used for the diseases in various European languages. (Regarding Czechoslovak names the Slovak names only have been noted from Bojňanský's list, in which, however, the Czech names can be found also.) These are also indexed. Russian names in cyrillic are listed separately, p. 163. A list of names of viruses in Scandinavia in Danish, Norwegian, Finnish, Swedish, and English is published in *Nord. JordbrForsk.*, Sekt. IV, 1967 (Cyclostyled). [47, 63].

Synonyms, which in the case of some major viruses are subdivided into 'common' and 'other' synonyms. The author named in the reference following is generally but not always the originator of the name.

Other diseases induced, i.e., other than the disease after which the virus is named. This is a new heading, introduced partly to break up long lists of names 'of synonyms or suspected synonyms', and some virologists will prefer to consider some of these diseases as being induced by distinct strains.

Strains, those of such viruses as alfalfa, cucumber, and tobacco mosaics being subdivided into better and lesser known strains. 'Other names' and synonyms follow the major strains as appropriate.

The listing of 'synonyms', 'other diseases induced', and 'strains' has inevitably been somewhat arbitrary, partly owing to varying views among the authorities consulted on the different groups of viruses, and some virologists

will consider that names occurring under one heading should appear under another.

Although major cross references, e.g., to apple mosaic virus, now regarded as a strain of *Prunus* necrotic ring spot virus, appear in the main list, it is recommended that users of the list first consult the index, where full details of cross references appear.

In addition to the abbreviated references, giving author's name only, full citations of which are listed (p. ix), references in square brackets are to the *Review of Applied Mycology*, where the full citation of the paper will be found and generally the abstract will contain relevant information. References dating before the *Review* began or to papers not noticed therein have in most cases been cited in full. For virus names and major strains or related diseases references are generally to the first use of the name, to a description of the virus, and to subsequent papers concerning reassessments of relationships or other information modifying its status.

Appendix III, compiled by A. J. GIBBS, concerns the use of cryptograms in virus nomenclature, describing the code used, grouping viruses accordingly, and indicating virus relationships.

The original draft was based on the old list, a card index that has been kept of new virus names appearing since 1957, and of other virus names found in the cumulative index to vols. 1-40 of the *Review*. Relevant parts of this draft were then sent to authorities on various groups of viruses, and the final list has been prepared from their amendments, additions, and rearrangements. Notes have been added as to serologic relationships, etc., based partly on published information and partly on information received from the various virologists consulted.

REFERENCES

These mostly cite author and date, with a reference to the appropriate abstract(s) in the *Review of Applied Mycology* or the original publication. In some cases, however, the author's name only is given. These are listed below.

Abbreviated citations

- | | |
|------------------|--|
| Bojňanský. | BOJŇANSKÝ, V. 1961. Názvoslovie viróz rastlin. [Terminology of plant viroses.] <i>Rost. Vyř.</i> , 7 (34), 10: 1437–1462 [41:290]. |
| Brierly 1944. | BRIERLY, P. Viruses described primarily on ornamental or miscellaneous hosts.— <i>Pl. Dis. Rept., Suppl.</i> 150: 410–482 [23:438]. |
| Holmes Hb. | HOLMES, F. O. 1939. Handbook of phytopathogenic viruses [19:229]. |
| Holmes Bg. M. | HOLMES, F. O. 1948. The filterable viruses. Suppl. 2 to <i>Bergey's Manual of Determinative Bacteriology</i> , 6th edition, 1948 [28:514]. |
| Klinkowski. | KLINKOWSKI, M. 1958. Pflanzliche Virologie. Band II. Die Virosen des europäischen Raumes. [Plant Virology. Vol. 2. Viroses of the European region] [38:584]. |
| Lexicon. | MERINO-RODRÍGUEZ, M. 1966. <i>Elsevier's Lexicon of Plant Pests and Diseases</i> . [46, 16]. |
| Posnette. | POSNETTE, A. F. 1963. Virus diseases of Apples and Pears. <i>Tech. Commun. Bur. Hort., E. Malling</i> 30 [43, 1350]. |
| Roland. | ROLAND, G. 1959. Rapport sur l'activite de la Commission de nomenclature des virus 1954–1959. <i>Taxon</i> , 8 (4): 126–130 [38:677]. |
| Smith Tb. | SMITH, K. M. 1957. <i>Text book of plant virus diseases</i> [36:303]. Some synonyms are only in the earlier edition, 1937. |
| U.S.D.A. Hb. 10. | Handbook of the United States Department of Agriculture, No. 10, 1951 [32:681]. |

References in [] are to the *Review of Applied Mycology*, to page nos. for Vols. 1–42, abstract nos. for vols. 43–47.

Latin names of viruses

A complete list of these may be found in Thornberry 1966. *Agric. Handb. U.S.D.A.* 307 [45, 3310]. This includes the nomenclatural proposals of Hansen, 1955 [35:745], 1957 [37:28], 1960 [40:211, 597].

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ANNOTATED LIST OF NAMES AND SYNONYMS OF PLANT VIRUSES AND VIRUS DISEASES

Abutilon mosaic virus. Holmes *Bg.M.*; Smith *Tb.*

*/ * */ * (S) / * S / AI

Other names

Infektiöse Buntblättrigkeit des Abutilon; infectieuze bontheid, Klinkowski.
"Clorose infecciosa" das Malvaceas, Orlando & Silberschmidt 1946 [26: 546].
Pestrolistost' abutilonu, Bojňanský.
Panachure infectieuse de l'Abutilon, Lexicon.

Common Synonyms

Abutilon infectious chlorosis virus. Baur 1906 [*Ber. dt. bot. Ges.*,
24: 416-428].

Abutilon infectious variegation virus. [Morren 1869] Brierly 1944.

Other synonyms

Infectious chlorosis of Malvaceae. Hertzsch 1923 [7: 385].

Abutilon virus 1. Smith *Tb.*

Abutilonvirus variegans. Roland.

Marmor abutilon. Holmes *Bg. M.*

Photophilus elegans. Ryzhkov *fide* Klinkowski.

Other diseases induced

BEAN MOTTLE DWARF (Brazil). Costa 1965 [45, 2295].

Leonurus sibiricus YELLOW MOSAIC (Brazil). Flores & Silberschmidt
1962 [41: 647]

Malvastrum YELLOW VEIN MOSAIC (India). Rao & Varma 1964 [46, 76].

A large number of unidentified viruses on allied host genera in Africa
may be referable to this virus.

Acacia ring spot virus. Marras 1962 [42: 495].

*/ * */ * */ * S / *

Acalypha little leaf virus. Van Velsen 1961 [42: 127].

*/ * */ * */ * S / *

Acalypha yellow mosaic virus. Chenulu & Phatak 1965 [44, 3063].

*/ * */ * */ * S / AI

Agropyron mosaic virus. McKinney 1944 [24: 136]; Slykhuis 1967 [46: 401].

*/ * */ * E / E S / Ac

Synonyms

Agropyron green mosaic virus. McKinney 1944.

Agropyron streak mosaic virus. Slykhuis 1952 [33: 285].

Agropyron yellow mosaic virus. McKinney 1944.

Couch grass streak mosaic virus. Smith *Tb.*

Wheat virus 2. McKinney 1937.

Agropyrumvirus maculans. Roland.

Marmor agropyri. McKinney 1944.

Marmor agropyri var. *flavum*. McKinney 1944.

Marmor agropyri var. *typicum*. McKinney 1944.

Staples & Brakke 1963 [43, 428] suggest that AMV is a mild str. of
wheat mosaic virus, but Slykhuis 1966 [46, 289] considers them distinct.

ALFALFA, see also LUCERNE

Alfalfa dwarf virus. Weimer 1936 [16: 103].

*/ * / * / * S/Au

Other names

Die Zwergkrankheit der Luzerne; zakrpatenost' lucerny, Bojňanský.

*Common synonyms*Lucerne dwarf virus. Smith *Tb*.

Pierce's vine disease virus. Hewitt & Houston 1941 [21: 278];

Hewitt *et al.* 1946 [25, 437].*Other synonyms**Medicago* virus 3. Smith *Tb*.*Medicagovirus nanescens* Roland.*Morsus suffodiens*. Holmes *Bg.M.**Other diseases induced*"ARRUGAMIENTO VIROSA" ("VIRUS CORRUGATION") OF THE VINE (Argentina). Vitoria *et al.* [29: 75].

PIERCE'S DISEASE OF THE GRAPEVINE. Hewitt 1939 [18: 370].

Other names

Die Pierce'sche Krankheit der Weinrebe; Pierceova choroba viniča; Bojňanský.

Alfalfa mosaic virus. Weimer 1931, 1934 [10: 388; 13: 518]; Smith *Tb*.

R/1 1.3/18 U/U S/Ap

Other names

Mozaika lucerny, Bojňanský.

Mosaico de la alfalfa; mosaico dell'erba medica; Luzernemosaik, Lexicon.

*Common synonym*Lucerne mosaic virus. Smith *Tb*.*Other synonyms*

Alfalfa mosaic virus 1. Zaumeyer 1938 [17: 721].

Alfalfa virus 1. Pierce 1934 [13: 488].

Medicago virus 1. Smith *Tb*.*Medicago* virus 2. Pierce 1934.*Crystalococcus medicaginis*. Ryzhkov *fide* Klinkowski.*Marmor medicaginis*. Holmes *Bg.M.**M. medicaginis* var. *typicum*. Black & Price 1940 [19: 563].*Medicagovirus maculans*. Roland.*Other diseases induced*BEET YELLOW BLOTCH AND RINGSPOT. Shepherd *et al.* 1965 [45, 910].

See also beet yellow blotch induced by tobacco rattle virus.

CELERY CALICO (MOAIC). Snyder & Rich 1942 [21: 513]; Smith *Tb*.

CHILLI MOSAIC. Kovačevsky 1942 [22: 275].

Daphne MOSAIC (U.S.A.). Milbrath & Young 1956 [36: 103].

LETTUCE CALICO. Stone & Nelson 1966 [46, 815].

RED CURRANT INTERVEINAL WHITE MOSAIC. Van der Meer 1961 [De Fruiteelt, p. 161; 45, 2328i]; Thresh 1967 [46, 2282].

Viburnum opulus MOSAIC. Schmelzer 1962 [42: 464].*Strains**Potato calico virus*. Hungerford 1922; Porter 1931 [11: 320].*Synonyms**Solanum* virus 10. Smith *Tb*.*Marmor medicaginis* var. *solani*. Black & Price 1940 [19: 563].*Potato tuber necrosis virus*. Oswald 1950 [30: 283]; may be related to potato calico virus.

Alfalfa mosaic virus—continued

Other strains, suspected strains, or variants

- Alfalfa mosaic viruses 1A and 1B. Zaumeyer 1938 [17: 721].
 Alfalfa mosaic virus, *Glycine* str. } Klessner 1961 [40: 737].
 Alfalfa mosaic virus, necrotic str. }
 Alfalfa mosaic virus, tobacco str. Silber & Heggstad 1965 [45, 864].
 Alfalfa N(ecrotic) virus. McWhorter, *vide* Smith *Tb.*, and see Halisky
et al. 1960 [39:473].
 Alfalfa virus 2. Pierce *vide* Zaumeyer 1938.
 Alfalfa yellow mosaic virus. Zaumeyer 1953 [32: 663]; Smith *Tb.*
 Syn. *Marmor medicaginis* var. *flavovarians* Zaumeyer 1953.
 Alfalfa yellow spot virus. Zaumeyer 1962 [42: 29].
 Bean vein necrosis virus. Zaumeyer 1959 [39: 138]; Zaumeyer &
 Patino 1960 [39: 522].
 Bean yellow dot virus. Thomas 1951 [31: 266].
 Syn. *Marmor medicaginis* var. *phaseoli*. Kreitlow *et al.* 1949.
 May be related to alfalfa mosaic virus N [cf. Thomas 1951].
 Chilli (*Capsicum*) mosaic virus. Berkeley 1947 [27: 187]; Smith *Tb.*
 Syn. *Marmor medicaginis* var. *capsici*. Berkeley 1947.
 Clover yellow patch virus. Kreitlow *et al.* 1949 [29: 29].
 Syn. *Marmor medicaginis* var. *ladino*. Kreitlow *et al.* 1949.
 May be related to alfalfa mosaic virus N [cf. Thomas 1951].
 Pea streak virus I-7. Kim 1958 [38: 235]; Kim & Hagedorn 1959
 [39: 362].

ALMOND MOSAIC (Italy). Scaramuzzi 1946, 1956 [26: 113; 36: 412].

? = PLUM LINE PATTERN Cation, or possibly a complex of viruses
 [Gualaccini, 1960, 40: 370].

A mosaic of almond is also reported from India [Bhargava & Bisht 1961
 [41: 467] and Bisht & Gupta 1962 [42: 31].

ALMOND YELLOW VEIN (India). Nagaich & Vashisth 1965 [46, 671] is noted as
 resembling Scaramuzzi and Bisht & Gupta's mosaics.

Amaranthus mosaic virus. Phatak 1965 [45, 1610].

/ */* */* S/*

Andean potato latent virus, see Potato (Andean) latent virus.

Anemone alloiophylly virus. Klebahn 1926 (as "alliophyllie") [5: 753, cf. 11:
 256].

/ */* */* S/*

Other names

Deformácia listov veternice, Bojňanský.

Synonyms

Anemone virus 1. Smith *Tb.*
Anemonevirus deformans. Roland.
Galla anemones. Holmes *Bg.M.*

Anemone brown ring virus. Hollings 1958 [38: 7].

/ */* */* S/*

Other names

Hnedá kružkovitost' veternice; braune Ringfleckigkeit der Anemone,
 Bojňanský.

Anemone parsley leaf virus. Klinkowski.

Other names

Petersilienblättrigkeit der Anemone; petržlenovitost veternice, Bojňanský.

Anthoxanthum mosaic virus. Catherall 1966 [45, 3259d]; 1967 [46, 3310d].

Anthriscus yellows virus. Murrant & Goold 1967 [46, 3311g].

*/ * */ * */ * S/Ap

Apple brown ring spot virus. Novak 1965 [44, 3398].

*/ * */ * */ * S/*

Apple chat fruit virus. Luckwill & Crowdy 1950 [30: 325].

*/ * */ * */ * S/*

Other names

Fruit atrophie; kleinvruchtigheid; småfrugter; virosi della meletaccia, Posnette.
Maloplodost' jablone, Bojňanský.

Atrofia de los frutos del manzano, Lexicon.

Apple "small fruit" in New Zealand, Chamberlain 1966 [45, 1423]
may be a similar virus.

Apple chlorotic leafspot virus. Mink & Shay 1959 [39: 179].

*/ * */ * E/E S/*

Other names

Chlorotische bladplekkenziekte; klorotiske bladpletter; maculatura clorotica
fogliare; taches chlorotiques, Posnette.

Synonyms

?Apple latent virus 1. Kirkpatrick & Lindner 1964 (see p. 5), cf.

Lister *et al.* 1965 [45, 134]; Gibbs in litt. 1967.

Chlorotic leaf spot virus, Cadman 1965 [44, 2205].

Platycarpa line pattern virus. Luckwill & Campbell [39: 592].

Other diseases induced

AMELANCHIER LINE PATTERN. Van Katwijk 1956 [38: 216].

MOUNTAIN ASH RING SPOT. Králiková 1961 [41: 416].

PEACH GREEN MOTTLE (Europe). Cropley *et al.* 1963 [43: 779h];

Posnette 1967 [46, 2354i].

Synonym

Plum latent virus. Ellenberger 1959 [39: 597].

PEAR RING PATTERN MOSAIC. Van Katwijk 1954 [35: 831]; Cropley
et al. 1963 [43, 779h]; Cropley 1965 (1966) [45, 3362c].

Other names

Kringvlekken mozaiek; mosaico anulare fogliare; mosaïque [de la poire]; Ring-
fleckenkrankheit der Birne; Ringfleckenmosaik; ringmosaik, Posnette.
Krůžkovitá mozaika hrušky, Bojňanský.

Synonyms

Pear green ring mosaic virus. Nemec 1967 [46, 2268].

Pear mosaic virus. Khristov 1952 [14: 639].

Pear ring mosaic. Ramsfjell 1957 [37: 46].

Pear ring spot mosaic. Van Katwijk 1954.

Pyrus virus 3. Khristov.

Pyrus virus 7. Van Katwijk.

Annulus pyri. Khristov.

Marmor dilucidum. Van Katwijk.

} Klinkowski.

PLUM PSEUDOPOX. Posnette & Ellenberger 1963 [43, 1078];
Posnette 1967 [46, 2354j].

Apple chlorotic leafspot virus—continued*Strain*

Raspberry bushy dwarf virus. Cadman & Harris 1951 [31: 192];
Cadman 1965 [44, 2205].

Apple dapple virus. Smith *et al.* 1956 [36, 327].*Other names*

Blakkede aebler; chiazzatura; fruit pommel , Posnette.

Synonym

Dapple apple virus.

Apple (Virginia Crab) decline virus. Welsh & Nyland 1965 [45, 487].**Apple flat limb virus.** Thomas 1942 [21: 462].

*/ * */ * */ * S/ *

Other names

Spl st nost' jablone, Boj ansk .

Crinkle wood; Flach stigkeit des Appels; furede grene; Gravenstein gnari;
Gravenstein-zweig virosis; lijstenziekte; plastomania; Rillenkrankeheit; twisted
limb, Posnette.

Flate greiner; f rade grenar, Klinkowski.

Plastomanie du pommier; aplastamiento de las ramas del manzano; Graven-
steinerkrankheit, Lexicon.

A variant form known as "apple swollen shoot virus" and found on Ontario and other apple vars. may involve both "flat limb" and "rubbery wood" (Posnette) and it is suggested that these 2 viruses are either identical or generally occur together (*Rep. E. Malling Res. stn.* 1962, 23–29, 1962) [42: 650].

Apple green crinkle virus. Atkinson & Robbins 1951 [31: 612].

*/ * */ * */ * S/ *

Other names

Bukkelaebler; fruit bossel ; gibbosita verde, Posnette.

This disease shows certain relationships with apple star crack virus.

Suspected synonym

Apple false sting virus. Hockey 1941 [20: 213].

APPLE GREEN DIMPLE AND RING BLOTCH. Mezzetti, *Riv. Frutic.* 18: 133–137, 1956 [Posnette].

This condition, found in Italy, may be related to dapple apple, rough skin, and green crinkle viruses. Apple green mottle virus, Palmiter & Parker 1955 [*Phytopathology*, 45: 186] may also be related.

Apple "kikei-ka" virus. Sawamura 1965 [44, 3089].

This virus shows symptoms resembling both apple green crinkle and apple star crack viruses.

Apple latent virus 1. Kirkpatrick & Lindner 1964 [43, 1971].

*/ * */ * E/E S/ *

Identity uncertain. May be apple chlorotic leaf spot, q.v. [Posnette].

Apple leaf pucker virus. Welsh & Keane 1957 [37: 359].

*/ * / * / * / * S / *

Synonym

Apple vein clearing virus. Posnette & Cropley 1956 [35: 615].

APPLE LEAF PUCKER AND ASSOCIATED FRUIT DISORDERS

Associated disorders include:

APPLE (NEWTOWN) RING RUSSETTING. Welsh & Keane 1961 [40: 692].

APPLE RUSSET RING. Reeves & Cheney 1959 [40: 545].

APPLE (STAYMAN) BLOTCH. Welsh *et al.* 1962 [43, 779].

(For details of associated disorders, see Posnette.)

Apple mosaic virus, str. of *Prunus* necrotic ring spot virus, see p. 90.

Apple (Tulare) mosaic virus. Gilmer 1958 [38: 13]; Mink & Bancroft 1962 [41: 662].

R / * * / 11 S / S S / *

Apple (Malus) platycarpa dwarf virus. Luckwill & Campbell 1959 [39: 592].

*/ * / * / * / * S / *

Apple (Malus) platycarpa scaly bark virus. Luckwill & Campbell 1959.

*/ * / * / * / * S / *

May be related to (Apple) Spy 227 epinasty and decline virus, but differs in thermal inactivation *in vivo* [Posnette].

Apple proliferation virus. Mulder 1953 [33: 33].

*/ * / * / * / * S / *

Other names

Blastomanie; Heksenbezemziekte; Hexenbesenkrankheit; maladie du proliférations du pommier; proliferatieziekte; proliferationsvirose; scopazzi virosici; Viröse Besenwuchs; Viröse triebsucht, Posnette.
Proliferácia jablone, Bojňanský.

Synonym

Apple witches' broom virus. Rui, *Humus*, 6:7, 1950.

Apple ring spot virus. Atkinson *et al.* 1954 [33: 731].

*/ * / * / * / * S / *

Other names

Anulatura concentrica; taches annulaires (de Henderson); thumb-mark (N.S.W.); zebatura concentrica, Posnette.

Synonym

Apple Henderson spot virus. Smith *Tb.*

Apple rosette virus. Van Katwijk 1953 [33: 487]. Smith *Tb.*

*/ * / * / * / * S / *

Other names

Rosetta virosica; rozetziekte, Posnette.
Ružicovitost' jablone; Rosettenkrankheit des Äpfels, Bojňanský.
Rosette du pommier; roseta del manzano; rosetta del melo, Lexicon.

Synonyms

Acrogenus rosettiae. Van Katwijk 1953.

Pyrus virus 6. Van Katwijk 1953. Smith *Tb.*

Pyrusvirus rosettans. Roland.

APPLE ROSETTE as described in the U.S.S.R. [Posnette; Dunin & Chefranova 1965 (1966) [45, 3362h]; Moskovets & Shelud'ko 1965 (1966) [45, 3363y], is considered sometimes to be due to nutritional causes and not always to virus infection.

Apple rough bark virus. Posnette 1962. E. Malling Report 1962 [42: 650].

Other names

Rauhrindigkeit des Apfels, Klinkowski.
Drsnost' kôry jablone, Bojňanský.

Apple rough skin virus. Van Katwijk 1955 [34: 374].

*/ * */ * */ * S/*

Other names

Maladie des taches ligneuse; Rauhschaligkeit; rugginosità ulcerosa; rugosité de la peau; ruwshilligheid; smårevner, Stilletenkrankheit; Viröse Berostung, Posnette.
Piel rugosa de las manzanas, Lexicon.
Drsnost' šupky jabl'k, Bojňanský.

This virus may be the same as apple star crack [Posnette 1963; Hamdorf 1965 (1966), 45, 3362l].

Synonym

Pyrus virus 8. Smith *Tb*.

Apple rubbery wood virus. Prentice 1950 [30: 167].

Other names

Bois souple; Gummiholzkrankheit; gummived; legno di gomma; mal del cauciu; rubberhoutziekte, Posnette.
Gummovitost jablone, Bojňanský.
Bois caoutchouc; madera gomosa (elástica), Lexicon.

Synonyms

Quince bark necrosis virus. Posnette & Cropley 1958 [38: 152].
Pyrusvirus molliens. Roland.

Apple "sabi-ka" virus. Sawamura 1965 [44, 3089].

*/ * */ * */ * S/*

Considered identical with Manchurian "sabi-ka". The symptoms resemble apple scar skin virus.

Apple scar skin virus. Millikan 1956 [36: 411].

*/ * */ * */ * S/*

Apple Spy 227 epinasty and decline virus. Gardner *et al.* 1946 [*Proc. Amer. Hort. Sci.* 48: 195-199].

*/ * */ * */ * S/*

Disease induced

APPLE SPY 227 BARK NECROSIS [Posnette].

Apple star crack(ing) virus. Jenkins & Storey [35: 303].

*/ * */ * */ * S/*

Other names

Spaccatura stellare; sterbarstziekte, Posnette.
Craquelure en étoile du pommier; agrietado estrellado del manzano; Sternrisigkeit der Äpfel, Lexicon.

This virus may be related to apple rough skin and apple green crinkle viruses, see Posnette pp. 33, 47. Apple "kikei-ka" virus, q.v., shows symptoms resembling both, according to the host.

Apple star crack(ing) virus—continued*Suspected strain**Apple horse shoe wound virus* (Denmark) [40: 580; 43, 1514].**Apple stem grooving (E36) virus.** de Sequeira 1965 (1966) [45, 3362d]; 1967 [46, 3488].**Apple stem pitting virus.** Guengerich & Millikan 1956 [36: 328]; Posnette & Cropley 1961 [41: 44].

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Other names

Bois strié; butteratura del legno; grubet ved; houtgroefziekte, Posnette.

See also McCrum *et al.*, 1959 [39: 178].Apple dwarf fruit virus, Cation & Gibson 1952 [*Phytopathology*, 42(1): 4] (syn. "flute fruit"), may be related [Posnette, p. 77].**Apple (Virginia crab) stem pitting virus.** Welsh & Nyland 1965 [45, 487].*Miscellaneous Apple viruses reported*

Apple branch swelling ?virus (Switzerland). Bovey 1953 [34: 598].

Apple bud necrosis virus (U.S.A.), *fide* Welsh 1967 *in litt.* Gibbs.Apple flat apple virus. Cheney *et al.* 1967 [46, 2772].

Apple line mosaic virus, Klinkowski.

Other names

Linienmosaik des Äpfels; Pyrus virus 5 Khristov, Klinkowski.

Průžková mozaika jablone, Bojňanský.

Apple little leaf virus (India). Nagaich & Vashisth 1965 [46, 671].

Apple polygonal spot virus. Canova *et al.* 1962. Fifth fruit virus symposium [cf. 43, 779].Apple red ring virus. Coyier *et al.* 1967 [46, 2262].

Apple stem hollows virus. Gualaccini 1962. Fifth fruit virus symposium.

For a classification of sap transmissible apple viruses into Types 1 and 2 see Lister *et al.* 1965 [45, 134]. Type 2 may be synonymous with apple stem pitting virus. Gibbs *in litt.* 1967.**Apricot gummosis virus.** Blodgett & Twomey 1958 [38: 18].

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This may be a str. of *Prunus* necrotic ring spot or prune dwarf virus. Fridlund 1963 [42: 620]; 1966 [46, 1042].**Apricot Moorpark mottle virus.** Chamberlain *et al.* 1954 [33: 734].

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Apricot necrotic leaf roll virus. Wolfswinkel 1965 (1966) [45, 3363k].**Apricot ring pox virus.** Reeves 1943 [23: 391].

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Other names

Die Ringpockenkrankheit der Aprikose; neštovice marhúl, Bojňanský.

Synonym

Apricot ring spot virus. Bodine & Kreutzer 1942 [21: 339].

Apricot yellow mosaic virus. Wolfswinkel 1965 (1966) [45, 3363k].

Miscellaneous Apricot viruses or suspected viruses reported

Apricot chlorotic leaf roll virus(es). Morvan 1960 [41: 466], Morvan & Castalain 1965 (1966) [45, 3363d].

Apricot "line pattern" (Italy). Gualaccini 1960 [40: 370].

Apricot pucker leaf virus. Wadley 1966 [45, 1990m].

Apricot stunt virus. Wagnon *et al.* 1960 [40: 177].

Apricot viruses in India, Nagaich & Vashisth, 1962 (1963) [43, 1349] who state that oak leaf patterns on apricot var. Blenheim may be induced by plum line pattern [apple mosaic] virus and another mild mosaic by a virus of the *Prunus* necrotic ring spot type.

Arabis mosaic virus. Smith & Markham 1944 [23: 363].

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Other diseases induced by strains

BLACK CURRANT LEAF SPECKLE. Thresh 1966 [45, 2548].

CUCUMBER STUNT MOTTLE. Hollings 1963 [42: 587].

FORSYTHIA YELLOW NET. Schmelzer & Schmidt 1959 [39: 110; 42: 551]. cf. FORSYTHIA LEAF NET (Poland). Michalski 1966 [46, 1511].

HOP LINE PATTERN. Legg 1964 [43, 3278]; Bock 1966 [45, 1458].

Synonym

Hop latent virus X. Legg 1961 [40: 552].

LABURNUM CHLOROSIS. Schmelzer 1962 [42: 551].

LETTUCE CHLOROTIC STUNT. Walkey 1967 [46, 2915].

PRIVET CRINKLE MOSAIC. Schmelzer 1963 [42: 614].

Ptelea VARIEGATION. Brierly 1944 [23: 439]; Schmelzer 1963.

RASPBERRY YELLOW DWARF. Harrison 1958 [37: 669; 39: 261].

RHUBARB VIRUS 3. Tomlinson & Walkey 1966 [45, 2647c].

STRAWBERRY MOSAIC. Posnette 1956 [35: 904]; Jha 1961 [41: 160].

Strawberry yellow crinkle. Posnette 1958 [37: 439; 39: 427] is a variant symptom expression of strawberry mosaic [Jha 1961].

AMV has also been found occurring naturally in Rose, Cammack 1966 [45, 2431b].

Suspected strain

?*Dock mosaic virus* (New Zealand). Chamberlain & Matthews 1949 q.v. According to Schade 1962 [42: 456].

The grapevine viruses [cf. Dias & Harrison 1963 (42: 513)]—vine fan-leaf virus and related viruses (q.v., p. 51) are related to *Arabis* mosaic virus, but are distinct.

Areca yellow leaf virus. Menon 1963 [43, 1109].

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Artichoke curly dwarf virus. Leach & Osvald 1950 [*Phytopathology*, 40: 967]; Smith *Tb.*

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Synonyms

Cynara curly dwarf virus [C.M.I. virus list, 1957].

Globe artichoke curly dwarf virus. Smith *Tb.*

Artichoke (California) latent virus. Costa *et al.* 1959 [38: 440].

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