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SCIENTIA VITIS ET VINI

The viroses and virus-like diseases of the grapevine

A bibliographic report, 1971—1978

by

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Preview

This is the third of a series, "A bibliographic report" on progress in research and knowledge on the cause, nature and control of viroses and the virus-like diseases of grapevines. The first was "Bibliographie des Viroses de la Vigne, des origines à 1965", 1019 references to literature, by CAUDWELL, O.I.V. special publication 76 pp., 1965; and the second was "Les Viroses de la Vigne; Bibliographie de 1965 à 1970", references numbered 1020—1386, by CAUDWELL and text by HEWITT, BOVEY and CAUDWELL, Vitis **11**, 303—324, 1972.

This report covers advances in knowledge expressed in literature from 1970 into 1978. It also has some omissions from prior dated literature. Efforts have been made to include as many as possible of the references in the literature on viruses, viroses, virus vectors, and virus-like diseases of grapevines. It is recognized that no doubt some references have been overlooked and that especially not all of the literature published in 1978 has been included.

This report contains references to papers presented at each of the last three meetings and published proceedings and/or abstracts of the International Council for the Study of Viruses and Virus Diseases of the Grapevine (ICVG), Colmar, 1970, Salice Terme, 1973 and Cordoba 1976.[3]) The objective of the ICVG is to encourage on an international basis, research into the cause, nature and control of virus and virus-like diseases of grapevines. Researchers are encouraged to present results of research at international meetings of the ICVG, in seminars, formal and informal discussion sessions. Information concerning ICVG and the meetings may be obtained from the Secretary or any member of the steering committee. They are:

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[3]) Although the Proceedings of this last meeting were published in 1979, they have been included in this bibliography. Some papers that are not included in the Proceedings are referred to as abstracts.

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The seventh meeting of the ICVG will be held in Ontario, Canada, in September 1980, H. F. Dias is Chairman and may be contacted for information.

Introduction

The application of modern concepts into research on the cause, nature and control of grapevine and vineyard degeneration problems began only a relatively short time ago, 122, 124, 345, 347, 421, 482, 487, 488, 757, 964. (These numbers are references to literature in the "Bibliographie des Viroses de la Vigne des origines à 1965", OIV, 1965.)

During the years 1970 through 1978, great advances have been made in knowledge on the pathology of the degenerative virus and virus-like diseases of the grapevine. In reviewing the literature and progress it is interesting to note the activity of researchers, country by country, and the steps taken to analyze their local disease situation, review world knowledge, and proceed in research. The time lapse from the start of work as demonstrated in literature reviews, evaluations of vineyard problems, diagnosis of specific diseases and entry into research on development of new knowledge has in general decreased as the overall knowledge on the viroses and virus-like diseases has increased. Furthermore, progressive improvement in research on these grapevine and vineyard problems is evident in papers presented at the meetings of ICVG. Continuous and substantial improvement is demonstrated in reports on vine and vineyard performance, and quality of wine made from "healthy" and/or improved grapevine cultivars.

References

These references are of a more general nature, including reviews and commentaries, and some survey material.

Bibliographies: 1578 and 1993.

1388 — 1392 — 1396 — 1399 — 1405 — 1407 — 1410 — 1419 — 1422 — 1428
1431 — 1432 — 1446 — 1461 — 1474 — 1480 — 1497 — 1514 — 1517 — 1522
1528 — 1529 — 1532 — 1536 — 1538 — 1544 — 1545 — 1548 — 1549 — 1552
1553 — 1554 — 1555 — 1556 — 1559 — 1561 — 1563 — 1571 — 1591 — 1593
1626 — 1630 — 1638 — 1644 — 1658 — 1659 — 1669 — 1684 — 1685 — 1686
1693 — 1696 — 1709 — 1713 — 1715 — 1716 — 1725 — 1726 — 1727 — 1728
1730 — 1750 — 1752 — 1753 — 1760 — 1767 — 1784 — 1792 — 1794 — 1798
1804 — 1810 — 1814 — 1815 — 1816 — 1818 — 1819 — 1820 — 1851 — 1853
1856 — 1859 — 1860 — 1897 — 1902 — 1905 — 1906 — 1920 — 1921 — 1922
1940 — 1950 — 1954 — 1958 — 1959 — 1996 — 2009 — 2012 — 2015 — 2027
2030 — 2045 — 2046 — 2049 — 2052 — 2063 — 2079 — 2084 — 2085 — 2089
2091 — 2103 — 2104 — 2107 — 2109 — 2111 — 2112 — 2116 — 2117 — 2119
2123 — 2127 — 2129 — 2141 — 2143 — 2147 — 2154 — 2162.

Comments

It is necessary to retain the two groupings viroses and virus-like diseases within this general class of the diseases of grapevines. This is essential because viroses are caused by specific viruses that have been properly identified, whereas the virus-like diseases behave like and/or have the characteristics of a virus-caused disease but the pathogen of each has not been properly identified. In the past, some diseases were classed and referred to as virus diseases but the pathogens proved later to be other than viruses. For example, Flavescence dorée (FD) and Pierce's disease (PD) were in earlier literature termed or classed as virus diseases. It is known at this time that the pathogen of FD is a mycoplasma (1575, 1577, 1581), and that of PD to be a bacterium (1610, 1611, 1741, 1786, 2071). Perhaps in the reasonable future it will be possible to place each of the virus-like diseases under a pathogen class. Researchers should pursue in so far as practical the nature of the pathogens of the virus-like diseases. Knowledge of the pathogens of a disease opens the broader store of information and experience of the pathogen class to research on the grapevine disease.

Viruses and viroses of the grapevine

Following is a list of the viruses, viroses, and the reference numbers to literature in this bibliographic report. The literature shows that there are 25 viruses that have been isolated out of grapevines. Twenty-two of them have been identified and/or characterized and named, two had not been named and five as we know them appear to have been viruses of the grapevine for a long period of time; to wit, GBLV, GCMV, GFV, GLRV and possibly GJSV. Reference 1987 reports only that carnation ringspot virus was found in *Stellaria media* growing in vineyards with virus-like diseases. Viruses and viroses receiving the greatest attention are GFV, GLRV, TomBRV, TomRSV and AMV. There is good reason for high activity in research on GFV and GLRV — they appear to be distributed in vineyards over the world, and result in substantial losses.

References

Viruses isolated from grapevine and viroses. Common names of the diseases in grape in parentheses.

AlMV, Alfalfa mosaic virus
1510 — 1535 — 1537 — 1762 — 1890 — CMI/AAB 46[4]).

AMV, Arabis mosaic virus
1404 — 1505 — 1506 — 1509 — 1511 — 1512 — 1564 — 1605 — 1735 — 1762 1910 — 1939 — 1983 — 1997 — 2020 — 2050 — 2099 — 2151 — 2152 — CMI/AAB 16.

AILV, Artichoke Italian latent virus
1762 — 1763 — 1820 — 1829 — 2002 — CMI/AAB 176 (= 1829).

BBWV, Broad bean wilt virus
1762

[4]) CMI/AAB Descriptions of Plant Viruses (with publication number). Edited by B. D. Harrison and A. F. Murant. Issued jointly by the Commonwealth Mycological Institute, Ferry Lane, Kew, Surrey, England and the Association of Applied Biologists.

Carnation ringspot virus (in *Stellaria media* in vineyards)
1987.

CM 112 virus
1645 — 1646 — 1838.

GBLV, Grapevine Bulgarian latent virus
1762 — 1820 — 1821 — 1822 — 1828 — 2090 — CMI/AAB 186 (= 1828).

GCMV, Grapevine chrome mosaic virus (Hungarian chrome mosaic)
1793 — 1805 — 1808 — 1824 — 1826 — 1827 — 1997 CMI/AAB 103 (=1827).

GFV, Grapevine fanleaf virus (fanleaf, yellow mosaic and vein banding, court-noué, panachure)
1387 — 1391 — 1394 — 1400 — 1409 — 1416 — 1420 — 1421 — 1429 — 1430
1434 — 1436 — 1437 — 1438 — 1439 — 1440 — 1441 — 1442 — 1452 — 1457
1458 — 1495 — 1505 — 1506 — 1509 — 1511 — 1512 — 1513 — 1520 — 1521
1557 — 1614 — 1622 — 1631 — 1632 — 1633 — 1638 — 1650 — 1651 — 1653
1654 — 1655 — 1664 — 1667 — 1670 — 1674 — 1679 — 1681 — 1694 — 1695
1707 — 1711 — 1712 — 1718 — 1724 — 1733 — 1735 — 1751 — 1759 — 1788
1793 — 1801 — 1805 — 1808 — 1825 — 1835 — 1846 — 1849 — 1850 — 1852
1854 — 1856 — 1858 — 1861 — 1865 — 1867 — 1878 — 1883 — 1898 — 1899
1907 — 1909 — 1910 — 1911 — 1922 — 1926 — 1938 — 1939 — 1947 — 1948
1950 — 1960 — 1964 — 1997 — 1999 — 2000 — 2003 — 2050 — 2052 — 2062
2065 — 2066 — 2067 — 2068 — 2088 — 2100 — 2106 — 2108 — 2116 — 2126
2138 — 2151 — 2152 — 2153 — 2154 — 2163 — CMI/AAB 28 (= 1733).

GFFV, Grapevine false fanleaf virus
1820.

GJSV, Grapevine Joannes-Seyve virus (Joannes-Seyve disease)
1617 — 1622.

GLRV, Grapevine leafroll virus (leafroll)
1407 — 1444 — 1445 — 1450 — 1515 — 1516 — 1520 — 1560 — 1625 — 1628
1629 — 1638 — 1664 — 1680 — 1718 — 1751 — 1764 — 1788 — 1795 — 1800
1801 — 1820 — 1825 — 1856 — 1867 — 1880 — 1883 — 1907 — 1922 — 1950
1997 — 2023 — 2028 — 2041 — 2048 — 2052 — 2053 — 2054 — 2055 — 2056
2057 — 2065 — 2096 — 2136 — 2161 — 2163.

PRMV, Peach rosette mosaic virus
1615 — 1616 — 1618 — 1623 — 1624 — 1942 — 1943 — 1944 — CMI/AAB 150 (= 1618).

PotXV, Potato X virus
1691 — CMI/AAB 4.

PotYV, Potyvirus (Potato virus Y group)
1757 — 2053 — 2054 — 2055 — 2056.

RRV, Raspberry ringspot virus
1402 — 1506 — 1511 — 2039 — 2099 — 2151 — 2152 — CMI/AAB 6.

SMV, Sowbane mosaic virus
1923 — CMI/AAB 126.

SLRV, Strawberry latent ringspot virus
1509 — 1735 — CMI/AAB 126.

TMV, Tobacco mosaic virus
1474 — 1505 — 1509 — 1627 — 1758 — 1773 — 1856 — CMI/AAB 151.

TNV, Tobacco necrosis virus
CMI/AAB 14.

TRV, Tobacco ringspot virus
1687 — 1689 — 1802 — 1910 — 1998 — 2080 — 2083 — 2086 — CMI/AAB 17.

TomBRV, Tomato black ring virus
1402 — 1403 — 1505 — 1509 — 1512 — 1826 — 1835 — 1981 — 2021 — 2151
2152 — CMI/AAB 38.

TomBSV, Tomato bushy stunt virus
1762 — 1890 — CMI/AAB 69.

TomRV, Tomato ringspot virus
1459 — 1619 — 1620 — 1621 — 1688 — 1886 — 1998 — 2078 — 2080 — 2081
2083 — 2086 — 2087 — CMI/AAB 18.

GTomRV, Grapevine strain TomRV (Yellow vein)
1459 — 1696.

Viruses unknown or not identified
1856 — 2040.

Virus-like diseases of the grapevine

Following is a list of the virus-like diseases of grapevines and literature reference numbers. There are 17 listed, some may be synonyms. The truth will not be known until the pathogens are properly identified. Among these diseases, it appears that fleck (marbrure), legno riccio (stem pitting), corky bark, and yellow speckle are old diseases of the grapevine. They are latent in some cultivars and widely dispersed among the cultivars and rootstocks. Spread may have taken place as did that of GFV and GLRV, with nursery practices and the distribution of hybrid rootstock. Yellow speckle is latent in many cultivars when grown in California yet symptoms develop in the same cultivars when grown in parts of Australia. Legno riccio is latent in some cultivars and not in others, furthermore, there appears to be a scion/stock interaction for symptoms that show on some but not all combinations.

References

Virus-like diseases: probably caused by viruses but not demonstrated to have a virus pathogen

Asteroid mosaic
1420

Bratislava mosaic
1922.

Corky bark (refer also to legno riccio, stem pitting, stem grooving)
1390 — 1525 — 1574 — 1666 — 1699 — 1722 — 1729 — 1734 — 1867 — 1883
1950 — 1952 — 2048 — 2094.

Chasselas latent (refer also to fleck)
1524.

Enation
1470 — 1690 — 1704 — 1706 — 1720 — 1801 — 1922 — 1929 — 1930 — 2066
2163.

Flat trunk
1729 .

Fleck (marbrure)
1400 — 1495 — 1632 — 1633 — 1718 — 1720 — 1724 — 1732 — 1790 — 1801
1847 — 1853 — 1856 — 1857 — 1867 — 1883 — 1894 — 1907 — 1922 — 1949
1951 — 1953 — 1960 — 1997 — 2096 — 2147 — 2163.

Grapevine summer mottle
1768.

Interveinal chlorosis
1856 — 1862.

Interveinal necrosis
1856.

Legno riccio (wood pitting, stem pitting, stem grooving); also refer to corky bark
1435 — 1443 — 1445 — 1447 — 1448 — 1449 — 1453 — 1454 — 1456 — 1520
1534 — 1636 — 1637 — 1638 — 1639 — 1640 — 1641 — 1666 — 1675 — 1676
1677 — 1699 — 1702 — 1705 — 1719 — 1729 — 1734 — 1791 — 1830 — 1835
1856 — 1900 — 1901 — 1922 — 2001 — 2003 — 2010 — 2051 — 2081 — 2083
2102 — 2113 — 2125.

Linear pattern
1856 — 1994.

Marbrure: see fleck

Rcaziteli yellow stipple
1451.

Shoot necrosis
1812.

Vein mosaic

1768 — 1790 — 1811 — 1856 — 1862 — 1915 — 1918 — 1951 — 1997 — 2147.

Vein necrosis

1790 — 1833 — 1853 — 1855 — 1856 — 1862 — 2147.

Yellow speckle

1451 — 1718 — 1866 — 2064 — 2065 — 2163.

Evidence would indicate that corky bark and legno riccio have the same pathogen because they each cause the same symptoms in the indicator plant LN33. However, this may or may not be so. Transmission tests from donors that induce common symptoms in a cultivar or even a group of cultivars (indicator plants) do not alone determine that the donors all had the same pathogen. For example, GFV, yellow mosaic strain and GCMV, and apparently a potyvirus also can induce common symptoms in several cultivars of grapevine. It will be necessary to determine the pathogen of some different corky bark and legno riccio diseased plants; then only if the pathogens are the same in each case are the names synonymous.

Complexes of viruses and/or pathogen combinations in grapevines

Classical examples of grapevine diseases composed of complexes of virus pathogens are infectious degeneration (Dégénéscence infectieuse), Reisigkrankheit, and Roncet. Though GFV will be found most commonly in collections of the disease, there seems little doubt but that infectious degeneration in parts of each, France, Italy, Greece or elsewhere will have a different component of virus pathogens. The disease problems in any locality can be evaluated more accurately by proper diagnosis of causal viruses.

References

1395 — 1397 — 1401 — 1406 — 1412 — 1413 — 1414 — 1421 — 1425 — 1426
1509 — 1564 — 1631 — 1681 — 2011 — 2086.

Surveys, general distribution and spread of the viroses and virus-like diseases

Surveys on the presence of grapevine virus disease problems in any country or locality are the first step in an analysis of vineyard health. These lead into research and vineyard improvement programs. Also after proper diagnosis, surveys establish distribution of the more specific diseases, set a basis for evaluating the health condition of vineyards, the potential for improvement, and support levels needed for research and amelioration programs.

Literature reports of surveys help in understanding world distribution of the viroses and potential for improvement in total production.

References

The reader will also find survey literature in the references to the introduction, and later in the section on selection, sanitation and preservation.

1388 — 1397 — 1411 — 1421 — 1422 — 1461 — 1473 — 1511 — 1568 — 1648
1679 — 1681 — 1693 — 1749 — 1762 — 1792 — 1800 — 1897 — 1902 — 1907
1917 — 1919 — 1926 — 1995 — 1997 — 2015 — 2016 — 2017 — 2052 — 2079
2080 — 2103 — 2105 — 2111 — 2161 — 2162 — 2163.

Diagnosis: Indexing, transmission, trabeculae, and serology

Proper diagnosis is fundamental to any plant health program. The presence of signs such as vine degeneration, presence of internal signs like trabeculae and external symptoms are indicative of any disease condition. A syndrome in symptomology gives a better diagnosis. Indexing by graft-transmission onto a set of indicator plants establishes transmissibility and virus-like nature of the causal pathogen(s). Sap inoculation to a class of indicator plants will further establish the potential virus pathogen. Electron microscopy provides information on morphology and more precise information on class and grouping of a pathogen. Serology will establish pathogen relationship and prove the presence of specific viruses and other pathogens. Final accurate diagnosis, however, requires isolation, purification, identification, reinoculation, establishment of disease and reputation as with the Koch's Postulate. Once an experienced researcher becomes familiar with a pathogen, its symptomatology in a host-range, etc., short cuts in diagnosis are justified.

References

General

1393 — 1427 — 1433 — 1475 — 1496 — 1563 — 1565 — 1566 — 1567 — 1613
1652 — 1761 — 1916 — 1919 — 2095 — 2127 — 2139 — 2141 — 2144 — 2146.

Indexing by grafting on *Vitis* indicators

1574 — 1680 — 1699 — 1721 — 1866 — 1867 — 2024 — 2028 — 2037 — 2065
2088 — 2092 — 2112 — 2116 — 2130 — 2143 — 2146.

Mechanical (sap) transmission

1550 — 1841 — 1965 — 2031 — 2034 — 2053 — 2065 — 2088 — 2101 — 2133
2134 — 2135 — 2143 — 2152.

Serology

1506 — 1507 — 1508 — 1651 — 1695 — 1920 — 2035 — 2124 — 2140 — 2142
2143 — 2149 — 2150 — 2160.

Trabeculae

1504 — 1513 — 1653 — 1654 — 1655 — 1657.

Comparison of different methods

2065 — 2088.

Vectors of soil-borne viruses and nematodes

Viruses of some of the important and widely distributed viroses of grapevines are soil-borne and have nematode vectors. The importance and place of nematodes

as vectors of the soil-borne viruses is constantly enhanced in reports of research on the subject.

In the following the general papers on surveys and presence of nematodes in various countries and situations and soil treatments are listed. Included also are reports of research on specific nematodes and those found in vineyards with grapevine disease problems.

References

Nematodes, nematode vectors of soil-borne viruses, and soil treatments

General

1662 — 1774 — 1775 — 1776 — 1777 — 1782 — 1818 — 1957 — 2058 — 2059 2118.

Virus-vector relationships

1402 — 1404 — 1714 — 1802 — 1818 — 1957 — 2060 — 2061.

Nematode-surveys, soil treatments, fallowing

1408 — 1423 — 1463 — 1464 — 1465 — 1521 — 1546 — 1551 — 1562 — 1568
1592 — 1595 — 1599 — 1600 — 1601 — 1602 — 1603 — 1604 — 1606 — 1607
1608 — 1635 — 1679 — 1681 — 1682 — 1683 — 1711 — 1712 — 1738 — 1765
1766 — 1774 — 1775 — 1777 — 1778 — 1779 — 1780 — 1781 — 1783 — 1806
1808 — 1818 — 1836 — 1863 — 1864 — 1896 — 1931 — 1941 — 1945 — 1946
1948 — 1956 — 1966 — 1968 — 1969 — 1970 — 1973 — 1974 — 1975 — 1976
1979 — 1980 — 1982 — 1984 — 1985 — 1986 — 2018 — 2040 — 2043 — 2085
2115 — 2131 — 2137 — 2155 — 2156.

Xiphinema species

1417 — 1463 — 1464 — 1595 — 1735 — 1770 — 1864 — 1962 — 1966 — 1974
2001 — 2043 — 2156 — 2157.

X. americanum

1408 — 1703 — 1738 — 1802 — 1864 — 2066 — 2155.

X. diversicaudatum

1404 — 1564 — 1605 — 1778 — 1779 — 1780 — 1864 — 1983 — 2060 — 2099
2151 — 2152 — 2153 — 2154 — 2155.

X. index

1408 — 1425 — 1457 — 1458 — 1465 — 1519 — 1596 — 1598 — 1650 — 1703
1710 — 1711 — 1712 — 1738 — 1778 — 1779 — 1781 — 1783 — 1805 — 1808
1835 — 1836 — 1864 — 1924 — 1925 — 1928 — 1947 — 1948 — 1988 — 1990
1991 — 2018 — 2042 — 2060 — 2066 — 2068 — 2072 — 2126 — 2137 — 2151
2152 — 2153 — 2154 — 2155 — 2158.

X. italiae

1465 — 1778 — 1779 — 1780 — 1796 — 1864 — 2153 — 2154 — 2155.

X. mediterraneum

1778 — 1779 — 1780 — 1962 — 2072.

X. vuittenezi
1805 — 1807 — 1808 — 1864 — 1967 — 1977 — 1978.

Longidorus species
1402 — 1403 — 1463 — 1770 — 1778 — 1779 — 1780 — 1981 — 2099 — 2155 2157.

Trichodorus species
1770.

It is interesting to note that investigators continue to report *X. vuittenezi* associated with grapevine degeneration problems, but that no reports demonstrate the nematode to be a vector of one of the viruses of grapevines. Reports demonstrate that vector-nematodes may acquire and may transmit virus in a short period of feeding, hold and transmit virus over long periods if not for the entire adult life. Sites of virus retention by *Xiphinema* spp. appear in that portion of the alimentary tract shed in molting, and/or retained in adults.

Control of nematodes by chemical soil treatment is accomplished, but not without problems apparently related to soil variability, soil type, temperature and moisture. Experience and proper chemical placement have improved results of treatment.

Transmission of viruses through grapevine seed has been demonstrated in the case of false fanleaf virus (1820), peach rosette mosaic virus (1943) and Bulgarian latent virus (2090). Attempts to transmit fanleaf or fleck through grapevine seed gave negative results (1495, 1632, 1633, 1724). Several Nepoviruses are seedborne in weeds (1943, 1944).

Yellows diseases: mycoplasma, rickettsia-like organisms and bacterial diseases

Earlier this group of diseases were thought to be caused by viruses, because of their modes of transmission and responses. Now they may be separated into two groups — those that are caused by mycoplasma, for example Flavescence dorée and those caused by a bacterium, for example Pierce's disease. As research continues with these two groups of diseases, reports demonstrate vector-pathogen relationships and host-pathogen immune response, each of considerable interest in plant pathology. The application of advances in technology, isolation, culture, inoculation have contributed to the timely understanding of the nature of these two groups of diseases and opened new avenues to their control.

Disease of these yellows types have been reported in the French Jura, Burgondy and Aube, in Switzerland, Italy and Germany. However, their etiology is not clear. — Bois noir is similar in many respects to Flavescence dorée but has a different etiology.

It has been suggested that a yellows disease present in vineyards of Western Germany (1887, 1888, 1889, 1988, 1989, 1990, 1991, 2018) and Greece (1989) with symptoms similar to those of Bois noir could be caused by rickettsia-like microorganisms, transmitted by *Xiphinema index*. An electron microscope study of the same yellows disease in Germany (1837) showed no microorganisms, but thread-like structures similar to virus particles in the phloem cell of infected grapevines.

In USSR, fleck and vein necrosis are considered to be caused by mycoplasma- or chlamidia-like microorganisms (1847, 1853, 1855, 1857).

In India, a little-leaf disease of grapevine is suspected to be caused by mycoplasmas (2019).

Diseases like Pierce's disease are known only in North America. However, a rickettsia-like organism is associated with infectious necrosis. It would be well to have a better understanding of this pathogen-host combination and its possible relationship to that of Pierce's disease.

References

Yellows diseases: mycoplasma-like organisms, rickettsia-like organisms, and bacteria

Yellows diseases

1503 — 1528 — 1580 — 1583 — 1588 — 1727 — 1728 — 1740 — 1760 — 1771
1837 — 1851 — 1884 — 1887 — 1888 — 1889 — 1892 — 1988 — 1989 — 1990
1991 — 2018 — 2082 — 2086.

Flavescence dorée

1445 — 1500 — 1501 — 1518 — 1528 — 1575 — 1576 — 1577 — 1579 — 1581
1582 — 1583 — 1584 — 1586 — 1587 — 1588 — 1589 — 1590 — 1722 — 1723
1772 — 1873 — 1874 — 1875 — 1892 — 2008 — 2052 — 2082 — 2086.

Bois noir

1525 — 1528 — 1585 — 1586 — 1588.

Pierce's disease

1466 — 1467 — 1468 — 1469 — 1610 — 1611 — 1697 — 1701 — 1739 — 1740
1741 — 1742 — 1743 — 1744 — 1745 — 1746 — 1747 — 1748 — 1785 — 1786
1799 — 1868 — 1869 — 1870 — 1871 — 1872 — 1912 — 1932 — 1933 — 1934
1936 — 1937 — 2071 — 2073.

Infectious necrosis

1649 — 1740 — 1803 — 1856 — 1862 — 2077 — 2128.

Other diseases

1839 — 1847 — 1853 — 1855 — 1857 — 2019.

Vectors and/or transmisison

1518 — 1528 — 1575 — 1576 — 1579 — 1586 — 1588 — 1589 — 1590 — 1722
1868 — 1873 — 1875 — 1892 — 1932 — 1934 — 1935 — 2008 — 2009.

Vineyard amelioration and control of viroses

Most of the viroses and virus-like diseases of grapevines result in vine and vineyard degeneration. The factors that bear upon and influence the success of a program of amelioration and control of the viroses and virus-like diseases of the grapevine are: 1) the presence of the disease (the pathogen = inoculum), 2) the amount of disease (inoculum potential), and 3) the modes of spread, a) not spread naturally or rarely so or spread by man through nursery practices and distribution, b) air-borne or spread by insect vectors, and c) soil-borne or spread only in the soil by nematodes or fungi. Amelioration may be accomplished in either of two

ways and/or a combination program: 1) the "direct way"; selection within degenerating vineyards, testing performance and replanting with the best selected clones, and 2) control or the "clean health way"; selection in vineyards for high performance, rendering clones pathogen free, cleaning up soil and replanting with healthy selected clones (scion/rootstock combinations). Vineyards regenerated by the "direct way" will have relatively short productive lives, whereas those regenerated by the "clean health way" will have much longer useful lives. The two ways may be carried out at the same time in parallel programs. The direct way may be put into operation within some three to five years, while the clean health way may take up to ten or more years to function.

Vine selection on the basis of performance is the first step in either or both programs. It is well established that high vineyard performance (top quality and production) may be had by planting and/or replanting with high quality clones. In any selection program, it is good practice to select several clones and to replant with a random mixture of several of the high performance selected clones. Clones selected on a performance basis over three or more years are likely to be more stable. For example, some vines are known to produce good one year and poorly another. Selected clones of scion cultivars and rootstock should be planted in separate clonal plantings.

1) The "direct way" to vineyard amelioration

This may be termed the quick way; it requires the shortest time to become operative and costs are comparatively small.

Selections are made for trueness to variety, vigor, high quality, and production. Selected clones are propagated, increased in numbers and maintained in seperate plantings. These clonal selected plantings serve as continuous test plantings for performance and as mother vines for replanting vineyards. Rootstocks, when used, should be as clean and free of viruses as possible. In areas and/or in some countries where soil-borne viruses are wide-spread and the vineyard soils contaminated with nematode vectors, selections are best made in several vineyards. Under these conditions, it is likely that all vines contain viruses. Some vines are usually found that perform much better than others. They have vigor and produce a good crop of fruit. Though the reasons why these few vines have only mild disease and good crops are not known, it appears that the more vigorous vine and its rootstock have a component of virus and/or viruses that cause only mild disease and "protect" the vine against the more severe forms of disease. When possible, it is simpler to force the rootstock of each clone (scion-rootstock combination) and to propagate the selected scion again on the same original rootstock. In case it is not possible to obtain the rootstock in this way, the clones should be propagated on clean (virus-free) rootstocks. Such rootstock lines are now available, they have been produced by thermotherapy, fully tested, and can be certified to be clean.

All selected clones and combination rootstocks should be grown in a separate multiplication block, (clonal mother block), in clean soil (free of the nematode vectors). Plants for replanting vineyards are propagated from the clonal mother vines. Rootstocks, each numbered to match each clone, are also grown in mother blocks.

Replanting infested vineyards: Vineyard soils can be sampled for the presence of nematode vectors. In most soils where vectors are found it is best to fallow the

soils (plant to no host crops) for some three or more years until vector nematode populations decline.

2) Control — the "clean health way" to vineyard amelioration

One of the cardinal principles in the control of a plant disease is to "plant clean propagating units in clean soil". The production of clean (pathogen-free) propagation material, planting in clean, vector-free soil, and the prevention of spread are thus of prime importance in control of the grapevine virus and virus-like diseases. Fortunately, most of the viruses that affect grapevines are soil-borne and the majority of virus-like diseases do not or rarely spread naturally. Control, therefore, has become directed to the soil-borne viroses. In this program, the selection of grapevine cultivar clones of high quality and high performance is one of the keys to success.

The program therefore requires: 1) the production of a number of clones of each of the desired grapevine cultivars and rootstocks, 2) maintaining clonal lines in good health, 3) performance testing clonal lines, 4) developing ways and means of cleansing infested soils, and 5) propagating and distribution of healthy materials. It will normally take some ten or more years to bring the program to maturity.

Healthy clones are produced after selection, by thermotherapy, and meristem culture, or combinations of meristem culture and thermotherapy, and may in the future be produced by way of protoplast (single cell) culture.

References

Selection, sanitation, preservation, propagation and certification

1389 — 1415 — 1418 — 1431 — 1433 — 1471 — 1475 — 1476 — 1477 — 1478
1479 — 1481 — 1482 — 1483 — 1484 — 1485 — 1491 — 1492 — 1493 — 1494
1496 — 1497 — 1498 — 1499 — 1502 — 1504 — 1523 — 1527 — 1530 — 1531
1533 — 1536 — 1539 — 1540 — 1541 — 1542 — 1543 — 1544 — 1547 — 1563
1569 — 1570 — 1572 — 1573 — 1594 — 1597 — 1608 — 1609 — 1612 — 1630
1634 — 1636 — 1637 — 1642 — 1643 — 1647 — 1656 — 1657 — 1665 — 1668
1678 — 1679 — 1681 — 1683 — 1692 — 1693 — 1700 — 1717 — 1731 — 1736
1737 — 1749 — 1754 — 1755 — 1756 — 1787 — 1789 — 1797 — 1809 — 1823
1831 — 1832 — 1834 — 1840 — 1876 — 1882 — 1891 — 1895 — 1903 — 1904
1914 — 1916 — 1917 — 1919 — 1927 — 1940 — 1955 — 1961 — 1963 — 1971
1972 — 2007 — 2013 — 2014 — 2017 — 2022 — 2023 — 2025 — 2029 — 2032
2044 — 2047 — 2063 — 2069 — 2075 — 2076 — 2091 — 2092 — 2093 — 2095
2097 — 2121 — 2122 — 2132 — 2137 — 2145 — 2146 — 2159.

Therapy (thermotherapy), meristem culture, shoot apex culture

1398 — 1455 — 1460 — 1472 — 1488 — 1489 — 1490 — 1526 — 1527 — 1528
1537 — 1541 — 1660 — 1663 — 1670 — 1671 — 1672 — 1673 — 1692 — 1698
1708 — 1769 — 1813 — 1842 — 1843 — 1844 — 1845 — 1877 — 1878 — 1879
1880 — 1881 — 1893 — 1894 — 1908 — 1913 — 1960 — 2026 — 2033 — 2036
2038 — 2039 — 2074 — 2076 — 2092 — 2096 — 2098 — 2110 — 2114 — 2119
2120 — 2127 — 2141 — 2144 — 2148.

Performance

1450 — 1462 — 1527 — 1540 — 1548 — 1558 — 1628 — 1638 — 1751 — 1752
1788 — 1793 — 1795 — 2001 — 2006 — 2013 — 2070 — 2087 — 2106 — 2108
2117 — 2127.

Host-pathogen interaction: histology, cytology, physiology and biochemistry of disease, electron microscope studies

1390 — 1391 — 1424 — 1430 — 1438 — 1441 — 1442 — 1452 — 1486 — 1487
1667 — 1677 — 1718 — 1719 — 1803 — 1817 — 1837 — 1846 — 1848 — 1849
1850 — 1852 — 1854 — 1858 — 1865 — 1870 — 1885 — 1886 — 1910 — 1911
1992 — 1999 — 2000 — 2004 — 2005 — 2057 — 2074 — 2117 — 2133 — 2134.

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Table of References

A. Errata in references in Vitis **11**, 303—324, 1972

1288. should read Teliz-Orliz, D., 1967.
1306. should read Rives, M. and Hévin, M., 1970.
1342. should read Taylor, R. H., Woodham, R. C. and Allen, A. W., 1967.

B. References omitted from prior publications

(* = References taken from the bibliography by I. N. Samonina, No. 1993)

1387. Alazraqui, J., 1910: Gomosis bacilar y court-noué en los vinedos de Mendoza. Buenos-Aires, Min. Agr., 33 pp.

1388. * Allen, W. R., Dias, H. F. and Davidson, T. R., 1969: Virus disease problems in Ontario fruit orchards and vineyards. Canada Agr. 14 (1), 18—20.

1389. * Alley, C. J., 1954: Grape virus diseases tackled. West. Fruit Grower, 8 (4), 30—31.

1390. Beukman, E. F. and Gifford, E. M., 1969: Anatomic effects of corky bark virus in *Vitis*. Hilgardia 40 (3), 73—103.

1391. * Bosc, M., 1962: Sur les formations vacuolaires de l'épiderme des feuilles de vigne de ceps court-noués et sains. C. R. Hebd. Séances Acad. Sci., 254, 2816—2818.

1392. * Branas, J., 1966: Remarques sur les maladies à virus de la vigne. Progr. Agric. Vitic. 83 (10), 229—235; (12), 283—291; (14), 27—32.

1393. Brückbauer, H. und Rüdel, M., 1965: Untersuchungen über den Nachweis der Rebvirosen und die Erkennung früher bzw. latenter Infektionen. Jahresber. 1964 des FDW bei der DLG, 29—34.

1394. Castella, F. de, 1934: Court-noué — a mysterious vine disease. J. Agricult. (Victoria) 32 (6), 298—301.

1395. Čečuk, S., 1963: La dégénérescence infectieuse de la vigne. Poljopriv. Pregled. 11—12, 374—383 (Serbo-Cr.).

1396. Ciferri, R., 1963: Acquisizione e prospettive negli studi sulle virosi della vite alla luce della III Conferenza internazionale de Lisbona. Atti Acad. Ital. Vite e Vino, Siena, 14, 209—214; Riv. Patol. Veg. Ser. III, 2, 297—333.

1397. Démétriadès, S. D. *et al.*, 1957—1960, 1962: Rapport sommaire sur les principales maladies de plantes cultivées observées en Grèce. Ann. Inst. Phytopathol. Benaki, N.S. 1, 91—97; 323—329; 2, 2—11; 3, 33—41; 4, 75—88 (French).
Observation of infectious degeneration in various parts of Grece.

1398. * Dufrénoy, J., 1966: Essais de thermothérapie de la vigne effectués au C.E.T.A. de Saint-Emilion de 1963 à 1966. C. R. Séances Acad. Agricult. France, 52, 940—943.

1399. du Plessis, S., 1950: Virus diseases and some symptomatologically related abnormalities of the vine. Ann. Univ. Stellenbosch 26, Sect. A (13), 3—33.

1400. Engelbrecht, D. J., 1961: A graft-transmissible disease resembling fanleaf of grapevines. South Afr. J. Agricult. Sci. 4, 631—633.
First demonstration of presence of a graft-transmissible disease in grapevine in South Africa which could have been grapevine fleck and grapevine fanleaf.

1401. * Gallay, R., 1956: La dégénérescence infectieuse de la vigne. Rev. Romande Agricult. Viticult. Arboricult. 12 (7), 55—57.

1402. Harrison, B. D., 1964: Specific nematode vectors for serologically distinctive forms of raspberry ringspot and tomato black ring viruses. Virology 22, 544—550.

1403. — —, Mowat, W. P. and Taylor, C. E., 1961: Transmission of a strain of tomato black ring virus by *Longidorus elongatus* (Nematoda). Virology 14, 480—485.

1404. — — and Winslow, R. D., 1961: Laboratory and field studies on the relation of arabis mosaic virus to its nematode vector *Xiphinema diversicaudatum* (Micoletzky). Ann. Appl. Biol. 49, 621—633.

1405. Kissock, Mc. A., 1964: Two important virus diseases of grapevines in New Zealand. N. Z. J. Agricult. 108 (4), 332—339.

1406. Krimbas, B. D., 1958: La dégénérescence infectieuse de la vigne en Grèce. Publ. Agricult. College, Athens, 36 pp. (Greek with French sum.).
A literature survey and historical account of virus-like diseases in Greece and Crete, based on symptoms; new and old collections at Agric. College, Athens evaluated, Savvatiano no symptoms, others range mild to severe.

1407. Krivánek, V. et Blattny, C., 1961: Contribution à l'étude de l'enroulement viral de la vigne. Vinarstvi 54, 123 (Czech).

1408. Kyrou, N., 1964: Parasitic nematodes found in the island of Thassos on grapevine. Geoponika 9—10, 114—115, 12—13 (Greek with Eng. sum.).
Xiphinema americanum Cobb, 1913 and X. index Thorne and Allen, 1950 were isolated and identified, among other nematodes.

1409. Lévy, J. F., 1961: Où en est la lutte contre le court-noué. Vignes et Vins 103, 31—32.

1410. Masten, V. J., 1968: Eine virusähnliche Krankheit der Reben in Slovenien, Jugoslawien. Weinberg u. Keller, 15, 530—533.

1411. Mink, G. I., 1969: Virus in deciduous fruit trees and grapes. In: Research Progress State of Washington Agric. Exp. Sta. Bull. 707, 51.

1412. Pastena, B., 1957: Sulla confusione di un sintomo della degenerazione infettiva con un carattere organografico normale delle vite. Coltivatore G. Vinic. Ital. 103 (9), 182—185.

1413. — — , 1957: L'asimmetria fogliare nella vite. Ital. Agricola 94 (5), 457—463.

1414. — — , 1959: Nuovi sintomi della degenerazione infettiva della vite. Coltivatore G. Vinic. Ital. 105 (11), 310—314.

1415. — — , 1969: La selezione sanitaria della vite. Terra Viva, 4, 19—24.

1416. Pejčinovski, F., 1969: Observations sur une panachure de la vigne, variété Cardinal. Zasht. Bilja (Plant Protect.) 20 (105), 249—251 (Serbo-Cr.).

1417. Pelekassis, C. E. D., 1962: A catalogue of the more important insects and other animals harmful to the agricultural crops of Greece during the last thirty-year period. Ann. Inst. Phytopathol. Benaki N.S. 5, 5—104.
Xiphinema sp. is recorded on grapevine.

1418. Peyer, E., 1963: Eine zwölfjährige Leistungsprüfung von 44 Klonselektionen der Sorte Blauer Burgunder, Pinot noir. Schweiz. Landwirtsch. Forsch. 2 (1), 64—82.
Selection of 44 clones of the variety Pinot noir, results of 12 years of performance testing, discussion on the relation between quantity and quality of yield.

1419. Plunge, Al G., 1969: Degeneration of grapevine, *Vitis labrusca* L. "Concord" in Michigan: Description of the disease and the associations of viruses and vector species. Ph. D. Diss., Michigan State Univ., 69 pp.
A description of the diseases, viruses and vectors.

1420. Psarros, E. E. and Fotiadou, T. A., 1963: Identifying plant diseases and recommending control measures. Thessaloniki Plant Prot. Res. Sta. Bull. 1, 22—24.
Symptoms of grapevine fanleaf, grapevine vein banding yellow mosaic, and grapevine asteroid mosaic were observed on specimens received from the island of Thassos.

1421. Sarejanni, J. A. *et al.*, 1950—1955: Rapport sommaire sur les principales maladies des plantes observées en Grèce. Ann. Inst. Phytopathol. Benaki, 4, 5—7; 5, 12—14; 6, 5—9; 7, 5—10; 9, 3—9.
Observations on the presence of symptoms of infectious degeneration in various parts of Greece.

1422. Shterenberg, P. M., Milkus, B. N. and Berezovskaya, E. A., 1969: Virus diseases of grapevine in Ukraine. Proc. 6th All-Union Conf. on virus diseases of plants, Kiev (USSR), 212—213 (Russ.).

1423. Stoyanov, D., 1964: A contribution to the nematode fauna of the grapevine, Rasht. Zasht. (Plant Protect.), 12 (6), 16—24 (Bulg. with Eng. sum.).
Noted in root zone of grapevines were: Xiphinema opistohysterum Siddiqi 1961, X. bulgariensis n. sp., Longidorus closelongatus n. sp., and L. goodeyi Hooper, 1961; all are described in detail.

1424. Stubbs, L. L., 1965: Effects of multiple viruses on host plants, immunity and synergistic reactions. Proc. Internat. Conf. on virus and vector on perennial hosts, Davis, Calif., 55—71.
Discusses virus-host interactions and mild-strain protection including GFV.

1425. Thanassoulopoulos, C. C. and Mavraganis, S. G., 1969: Phytopathological problems in Greece. II. Virus diseases of grapevine and infectious degeneration. Geoponika 15, 182—183, 502—507 (Greek).
On the Ionian Isle Zante infectious degeneration occurs in vineyards to 90 % or more. Xiphinema index reported but low populations.

1426. * Tominić, A., 1961: La dégénérescence infectieuse, obstacle à l'obtention de rendements élevés de la vigne. Biljna Zasht. 5 (6), 121—123 (Serbo-Cr.).

1427. van Velsen, R. J., 1969: Virus indexing in vines and citrus. J. Agricult. S. Austral. 72, 308—310.
Lists major virus diseases of grapevines together with indicator plants used for detection.

C. References published during 1971—1978. A few references of 1970 and 1979 (ICVG meeting of 1976, Proceedings published in 1979) are included

1428. Abracheva, P., 1971: Grapevine virus diseases. Priroda, No. 3, 76—79 (Bulg.).

1429. — —, 1971: Serological verification of the fanleaf virus on grapevine in Bulgaria. Rasht. Zasht. (Plant Protect.) 19 (5), 22—23 (Bulg.).
A comparative review, history and identification of the grapevine fanleaf virus in grapevines.

1430. — —, 1972: Influence of the fanleaf virus on the intensity of transpiration of the vine. Gradinar. Lozar. Nauka (Hort. Viticult. Sci.) 9 (4), 115—119 (Bulg. with Russ., French sum.).
Studies of the effects of the fanleaf (court-noué) virus on transpiration, translocation, and production of chlorophyll.

1431. — —, 1973: Le problème de l'obtention de bois et plants de vigne exempts de virus. Selskostop. Nauka (Agricult. Sci.) 12 (2), 61—64 (Bulg.).

1432. — —, 1973: The grapevine virus diseases in France. Selskostop. Nauka (Agricult. Sci.) 12 (3), 79—82 (Bulg.).
A historical account of virus diseases reported in France 1853—1935 and later work on nature, cause and control.

1433. — —, 1973: Methods to control the virus diseases in the vine. Rasht. Zasht. (Plant Protect.) 21 (5), 9—13 (Bulg.).
A discussion of methods used in the control of grapevine virus diseases in other countries and in Bulgaria as work began in 1967.

1434. — —, 1973: Caractéristique biologique et économique du virus du court-noué de la vigne. Diss. Pleven, 197 p. (Bulg. with French sum.).
Identification of 3 strains of fanleaf virus (fanleaf, yellow mosaic, veinbanding) properties of the virus, effects on the infected grapevines and on quantity and quality of yield.

1435. — —, 1973: Sur la symptomatologie de «legno riccio» (bois strié) de la vigne en Bulgarie. Riv. Patol. Veg., Ser. IV, 9 (Suppl.), 31—36.
Description of wood pitting and grooving.

1436. — —, 1974: Court-noué virus identification on grapevines in Bulgaria and investigations on some physiological virus-induced changes in the vine plant. In: Virusni Bolesti po Rasteniyata (Plant Virus Diseases), The Georgi Dimitrov Agricult. Acad. Sofia, 13—24 (Bulg. with Eng., Russ. sum.).
Reports on use of four methods of identification including transmission and serology, and reports effects of virus on vine growth, chlorophyll content and yield.

1437. — —, 1975: Research on the development of the rootsystem of grapevines with yellow mosaic. Gradinar. Lozar. Nauka (Hort. Viticult. Sci.), 12 (4), 99—103 (Bulg. with Russ., French sum.).
A comparative study of the root systems of diseased and normal vines.

1438. — —, 1975: Effects of yellow mosaic on the composition of free amino acids in grape leaves. Gradinar. Lozar. Nauka (Hort. Viticult. Sci.), 12 (5), 123—127 (Bulg. with Russ., French sum.).

1439. — —, 1975: The vine roncet (fanleaf) virus. Zasht. Rasht. (Plant Protect.) 23 (1), 25—29 (Bulg.).
A popular account on three forms of the grapevine fanleaf virus, shape and size of particles, transmission and effects of diseases on vine physiology, composition, and yield.

1440. — —, 1976: The influence of fanleaf virus upon vine growth and fruit bearing. Rasht. Zasht. (Plant Protect.) 24 (12), 37—39 (Bulg.).
An account of the effects of the virus on metabolism, growth and fruiting.

1441. — —, 1977: The chlorophyll content of vine leaves as influenced by the court-noué (Fan leaf virus). Gradinar. Lozar. Nauka (Hort. Viticult. Sci.) 14 (8), 102—106 (Bulg. with Eng. sum.).

1442. — —, 1977: Changement dans la teneur en chlorophylle des feuilles de la vigne sous l'action du court-noué. Fiziol. Vinogr. Losi (Sofia) 471—478 (Russ.).

1443. — —, 1977: La maladie du «bois strié» (Stem pitting) de la vigne en Bulgarie. Materiali sov. spetzialistov stran-tchlenov CEE- Technologia virachtchivanija besvirusnava posadachnava materiala plodovih kultur i vinograda. Kichinev, 144—148 (Russ.).

1444. — —, 1977: Grapevine leafroll. Rasht. Zasht. (Plant Protect.) 25 (9), 32—33 (Bulg.).

1445. — —, 1977: Stem pitting, leafroll and Flavescence dorée diseases of grapevine. In: Kovat-

CHEVSKI *et al.*, Virusni i mikoplasmeni bolesti po kulturnite rastenia. Zemisdat (Publ.), Sofia, 290—293 (Bulg.).

1446. — — , 1978: Réaction de la vigne aux maladies à virus. Vndreni novosti 9, 20—27 (Bulg.).

1447. — — , 1978: On the sensitivity of some grapevine varieties to stem pitting (legno riccio). Sb. 75 godini Institut po lozarstvo i vinarstvo, Pleven (Publication on the 75th anniversary of the Institute for viticulture and enology, Pleven), 185—192 (Bulg.).

1448. — — , 1978: Sensitivity of some grapevine varieties and rootstocks to stem pitting disease. Dokl. na I Nazionalen simposium po imunitet na rastenijata kam bolesti (Sofia) 3, 128—131 (Bulg.).

1449. — — , 1979: Sensibilité de quelques variétés de vignes et des porte-greffes à la maladie legno riccio. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 163—169.
Stem grooving symptoms show in a number of varieties and rootstocks. In mother vine plants, St. George showed a higher degree of contamination than 41 B and 5 BB.

1450. — — and CHALKOV, I., 1974: Influence of grapevine leafroll virus on the vine, the fruit, and the wine of the vine Cabernet Sauvignon. Gradinar. Lozar. Nauka (Hort. Viticult. Sci.), 11 (7), 121—126 (Bulg. with French sum.).

1451. — — , MARTELLI, G. P., QUACQUARELLI, A. and SAVINO, V., 1979: A possible virus disease of Rcaziteli vines in Bulgaria. Proc. 6th meeting ICVG, Cordoba 1976. Monographias INIA No. 18, Minist. de Agricult., Madrid, 127—130.
Vines of cultivar Rcaziteli has symptoms that resemble yellow speckle.

1452. — — and SLAVCHEVA, T., 1974: The effects of fanleaf virus on the intensity of photosynthesis in the grapevine. Gradinar Lozar. Nauka (Hort. Viticult. Sci.), 11 (2), 125—129 (Bulg. with Russ., French. sum.).
Fanleaf virus causes a decrease in photosynthesis of about 20 % in late-July and early-August.

1453. — — and TSVETANOV, D., 1970: A new virus disease on grapevines in Bulgaria. Rasht. Zasht. (Plant Protect.) 18 (2), 25—28 (Bulg.).
A description of stem grooving disease in grapevines in Bulgaria. Attempts to transmit the agent to herbaceous hosts by mechanical inoculation failed.

1454. — — and — — , 1974: Studies on the symptomatology of grapevine wood pitting disease (legno riccio) in Bulgaria. Gradinar. Lozar. Nauka (Hort. Viticult. Sci.) 11 (4), 106—114 (Bulg. with Russ., French sum.).

1455. ABRAMENKO, N. V. and SULTANOVA, O. D., 1977: Studies on the possibility of using isolated buds in combination with heat and chemical treatments to produce virus-free and mycoplasma-free vine clones. In: Teknologiya Vyrashchivaniya Bezvirunogo Posadochnogo Materiala Plodovykh Kul'tur i Vinograda. Štiinca (Publ.) Kishinev, 28—37 (Russ.).
Cure of vines infected by yellow mosaic virus by heat treatment (70 d, 35—40 °C) and culture of isolated buds taken from young shoots.

1456. AGRIOS, G. N., 1971: A stem pitting disease of grapevine in Greece. Plant Dis. Reptr. 55, 869—871.
General observations and symptoms of the disease.

1457. ALFARO GARCIA, A., 1971: Presencia en España del virus del "fanleaf" de la vid. An. INIA Ser. Prot. Veg. 1, 71—81.
Fanleaf virus and its vector Xiphinema index are frequent in the Jerez area.

1458. ALFARO, A. and GOHEEN, A. C., 1974: Transmission of strains of grapevine fanleaf virus by *Xiphinema index*. Plant Dis. Reptr. 58, 549—552.
Identical transmission of strains of the virus by the vector.

1459. ALLEN, W. R. and DIAS, H. F., 1977: Properties of the single protein and two nucleic acids of tomato ringspot virus. Can. J. Botany 55, 1028—1037.
Virus isolates studied included grapevine yellow vein, peach yellow bud mosaic from peach and apricot and from Seibel 9549 Ontario.

1460. ALPI, A., 1973: La coltura «in vitro» di meristemi apicali di specie arboree con particolari riferimenti alla vite. Riv. Ortoflorofrutticolt. Italiana 57 (4), 268—280.
Description of the method and review of the literature, with special reference to grapevine.

1461. ANONYMOUS, 1971: Diseases of cultivated plants observed in Greece from 1962 to 1967. Ann. Inst. Phytopathol. Benaki N.S. 10, 70—118 (Eng.).
Reports of observations of grapevine virus-like diseases in various localities from 1962 to 1969.

1462. ANTCLIFF, A. J., 1973: Comparison of some local and imported clones of important wine grape varieties. Austral. Grapegrower Winemaker 113, 3—4.

Local selections were found equal to imported. Some imported clones were virus infested. Yields are given for Riesling, Sémillon and Cabernet Sauvignon.

1463. Arias, M., 1979: Nematodos posibles transmisores de virus en los viñedos españoles. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 247—250.
Members of genus Xiphinema found most frequently, Longidorus spp. in less than 0.5 % of cases.

1464. — — and Navacerrada, G., 1973: Geographical distribution of *Xiphinema* Cobb in Spanish vineyards. Nematol. Mediter. 1 (1), 28—35.

1465. — — and — — , 1976: Nematodes on the Spanish vine crops. Poljoprivredna znanstvena smotra — Agriculturae Conspectus Scientificus, 39 (49), 587—591 (Eng.).
Xiphinema index frequently found in association with fanleaf in Jerez, and X. italiae in several spots in Navarra.

1466. Auger, J. G., 1974: Etiology and diagnosis of Pierce's disease of grapevines. Ph. D. Diss., Univ. of Cailf., Davis, 61 pp.
A report that Lactobacillus sp. was the causal agent of Pierce's disease.

1467. — — and Shalla, T. A., 1975: The use of fluorescent antibodies for detection of Pierce's disease bacteria in grapevines and insect vectors. Phytopathology 65, 493—494.
Fluorescent antibodies were used to detect the presence of Lactobacillus in insect vectors and plant materials.

1468. — — , — — and Kado, C. I., 1974: Pierce's disease of grapevines: evidence for a bacterial etiology. Science 184, 1375—1377.
The authors claimed that a species of Lactobacillus was the causal agent of Pierce's disease.

1469. — — , — — and — — , 1974: Bacterium discovered to be cause of Pierce's disease of grapevines. Calif. Agricult. 28 (10), 8—10.
Popular account of the Lactobacillus claimed to be the causal agent of Pierce's disease.

1470. Avgelis, A. and Xafis, C., 1978: Presence of enations in Razaki grapevines in Crete (Greece). Phytopathol. Mediter. 17, 195.

1471. Avramov, L. et Hrcek, L., 1975: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Diffusion du matériel sélectionné. Rapport yougoslave. Bull. OIV 48 (532), 511—519.

1472. Ayuso, P. y Pena-Iglesias, A., 1979: Microinjerto de meristemos: Una nueva y prometedora técnica para regenerar vides enfermas por virus. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 319—323.
Plants given heat treatment for periods of 1 to 3 months at 37 °C and excised meristems (0.2—0.3 mm) grafted into green rootstock cultured in vitro.

1473. Babović, M. and Perišić, M., 1977: Some observations on the occurrence of virus diseases in vineyards of Serbia. Savjetovanje o ekskoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.), Mostar (Yugoslavia) 107—115 (Serbo-Cr.).

1474. Bailova-Yankulova, M., 1971: Viruses and virus diseases in grapevine. Rasht. Zasht. (Plant Protect.) 19 (5), 16—22 (Bulg.).
A review article on subject over world literature and work carried out in Bulgaria. Reports isolation of a strain of TMV from grapes.

1475. Baldacci, E., 1971: Miglioramento sanitario della vite in relazione alle virosi. Ital. Agricola 108, 691—707.
Discussion of selection, tests for grapevine fanleaf and leafroll, heat treatment, vectors, control and Italian legislative regulations.

1476. — — , 1972: La selezione clonale della vite. Ascoli Economica 3.
The text of a conference on clonal selection.

1477. — — , 1973: Virosi e selezione clonale della vite all' anno 1973. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 7—14.
The introduction to the conference, a brief historical account of ICVG meetings, the importance of results of research and the place for selection in vineyard improvement.

1478. — — , 1976: Certification and distribution of selected clones. 6th meeting ICVG, Cordoba 1976, Abstr., 56.
Details on the progress of the National project were presented.

1479. — — e Belli, G., 1970: La selezione sanitaria della vite. Informatore Agrario, 26 (3), 279—282.
Techniques and results of selection of virus disease clean vines in northern Italy.

1480. — — and — — , 1971: Virus diseases of the grapevine. In: Nedelchev, N. (Ed.): Problems of viticulture. Zemizdat (Publ.) Sofia, 236—248 (Bulg.).

1481. — und — — , 1971: Stand der Gesundheitsselektion in Italien. I. Internat. Symp. über Probleme der Klonenselektion und der Erhaltungszüchtung im Weinbau. Trier (Germany).
An account of clonal selection in Italy.

1482. — — e — — , 1974: Definizione del metodo per la selezione sanitaria. Tavola Rotonda "Aspetti genetici, sanitari e normativi della selezione del materiale viticolo di base". Ann. Accad. Naz. Agric. Bologna (Italia), 167 (2), 137—147.
A discussion of the steps to be taken in the development of virus disease free grapevines.

1483. — — et — — , 1975: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Distribution du matériel sélectionné. Rapport italien. OIV 48 (527), 14—22.

1484. — — , — — e Fortusini, A., 1973: Il centro di selezione viticola di Riccagioia. Riv. Patol. Veg., Ser. IV, 9 (3), 295—303.
A description and activities in progress at the selection center, vineyards origination from visual selection and from biological selection.

1485. — — , — — ,— — e Osler, R., 1972: Selezione sanitaria della vite in Italia settentrionale: risultati e considerazioni. Ann. Phytopathol., No. hors série, 13—16.
Selection in Vitis vinifera and rootstocks in northern Italy, indexed by grafting on indicator plants.

1486. Barna, J., 1973: Untersuchungen über die Zusammenhänge zwischen Peroxydaseaktivität und Virusinfektion bei *Chenopodium murale* und *Vitis vinifera*. Mitt. Klosterneuburg 23, 241—248 (Eng. with French., Span. sum.).
Reports on methods of study on interrelation between peroxidase activity and virus infection by fanleaf.

1487. — — , 1973: Investigations on correlations between peroxidase activity and virus infection by *Chenopodium murale* and *Vitis vinifera*. Rev. Patol. Veg. Ser. IV, 9 (Suppl.), 140—141.

1488. Basler, P., 1974: Die Erzeugung von gesunden Reben durch Wärmebehandlung (Thermotherapie). Schweiz. Z. Obst- Weinbau 110, 536—542.
A description of the methods used at the Federal Agricultural Research Station of Changins, Switzerland, for heat treatment and indexing of grapevines, symptoms of leafroll, fanleaf and methods of control.

1489. Bass, P. et Vuittenez, A., 1976: Amélioration de la thermothérapie des vignes virosées au moyen de la culture d'apex sur milieux nutritifs ou par greffages sur vignes de semis, obtenues aseptiquement *in vitro*. Ann. Phytopathol. 9, 539—540.
Thermotherapy improved by cultivating shoot apex on nutritive media or by grafting on aseptic grape seedlings in vitro.

1490. — — , — — et Legin, R., 1979: Amélioration de la thermothérapie de la vigne par culture d'extrémités de pousses sur milieux nutritifs ou par greffage d'apex sur plantules de semis cultivées aseptiquement *in vitro*. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 325—332.

1491. Basso, M., Casini, E., Scaramuzzi, G., Stella, C. e Triolo, R., 1977: Stato attuale delle ricerche sulla selezione clonale e sanitaria della vite in Toscana e nelle Marche. In: Martelli, G. P. (Ed.): Utilizzazione dei risultati della selezione della vite da vino. Atti Seminario C.N.R., Bari (Italia), 91—104.
Work in progress on clonal and sanitary selection of grapevine in Tuscany and the Marche region.

1492. — — , Natali, S. e Triolo, E., 1976: Selezione clonale e sanitaria dei vitigni da vino in Toscana. Cinque nuovi cloni. Ital. Agricola 113 (4), 91—103.
Methods and results of vine selections over a fourteen year period.

1493. Becker, H., 1974: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Diffusion du matériel sélectionné. Rapport allemand. Bull. OIV 47 (521—522), 547—561.

1494. — — , 1974: Die Virusfrage in der Rebenzüchtung — eine kritische Betrachtung —. Dt. Weinbau-Jahrb. 25, 53—64.
Discusses the genetical background of grapevine multiplication, a long and succesful period of visual selection and advises the results of virus research be accepted.

1495. Bellegarde, H., 1975: Essai de transmission de virus par la graine chez la Vigne. Mémoire E.N.I.T.A., Bordeaux, 90 pp.

1496. Belli, G., 1975: L'indexing per la selezione di cloni di vite esenti da virus in Italia. Coltivatore e G. Vinic. Ital., 121 (9), 272—274. (Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. Appl. C.N.R., Torino, 61—66).
Methods of indexing and criteria for selection.

1497. — —, 1977: Importanza dello stato sanitario del materiale di moltiplicazione della vite. Atti Convegno Regionale „Aspetti di agronomia e patologia della vite", Brescia (Italia), 39—60.
Brief survey of the grapevine virus diseases present in Italy, necessity of using healthy material and ways to obtain it.

1498. — — e Baldacci, E., 1977: Aspetti fitosanitari della selezione clonale nell'Oltrepò pavese. Coltivatore G. Vinic. Ital., 123 (1), inserto 1—6.
A discussion of problems of vine sanitation in Oltrepò pavese vineyards, selection and program.

1499. — —, Calò, A. e Itrieri, C., 1975: Stato attuale e prospettive della produzione e del commercio del materiale di propagazione della vite. Atti Convegno S.O.I. sul. Vivaismo Viticolo, Ascoli Piceno, 17—50.
A discussion of problems of production and distribution of selected clonal vines in Italy. (Reprints available from senior author.)

1500. — —, Fortusini, A. and Osler, R., 1979: Present knowledge on diseases of the type "Flavescence dorée" in vineyards of Northern Italy. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 7—13.

1501. — —, — —, — — e Amici, A., 1973: Presenza di una malattia del tipo „Flavescence dorée" in vigneti dell'Oltrepò pavese. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 50—56.
Symptoms, indexing, electron microscope observation and vector studies are reported.

1502. — — e Marro, M., 1977: Stato attuale della selezione clonale e sanitaria della vite in Lombardia. In: Martelli, G. P. (Ed.): Utilizzazione dei risultati della selezione della vite da vino. Atti Seminario C.N.R., Bari (Italia), 60—70.
Work in progress on genetical and sanitary selection of grapevine in Lombardy.

1503. — — e Osler, R., 1975: Malattie della vite riferite a Micoplasmi e a Rickettsie. Coltivatore G. Vinic. Ital. 121 (8), 210—218. (Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. Appl. C.N.R., Torino, 21—29).
Review of literature, history and distribution mycoplasma and rickettsia-like organism diseases of grapevines.

1504. — —, — — e Fortusini, A., 1972: Indagini sulla validita dei cordoni endocellulari come test per la selezione sanitaria della Vite. Ann. Phytopathol., No. hors série 17—21.

1505. Bercks, R., 1970: Untersuchungen über Viren in Weinbergen von Baden-Württemberg. Wein-Wiss. 25, 193—196.
AMV, TMV, TomBRV and GFV were identified in preliminary serological tests in 12 different cultivars of grapes.

1506. — —, 1971: Serologische Untersuchungen über Vorkommen und Nachweismöglichkeiten von Viren in Weinbergen von Baden-Württemberg. Wein-Wiss. 26, 328—334.
Arabis mosaic, fanleaf and raspberry ringspot viruses detected by serology in grapevines; reliability of tests were dependent on state of growth of vine and temperature.

1507. — —, 1972: Die Serologie als Hilfsmittel bei der Erforschung und Bekämpfung von Rebenviren (unter Berücksichtigung von Erfahrungen bei anderen Kulturen). Weinberg u. Keller 19, 481—487.
Results of serological tests on occurrence of viruses in grapevines in Germany are summarized.

1508. — —, 1973: Untersuchungen über die Zuverlässigkeit des serologischen Virusnachweises bei im Gewächshaus kultivierten Reben und Rebenstecklingen. Weinberg u. Keller 20, 215—226.
Reports on reliability of the latex-serological test for viruses in naturally and experimentally infected grapevines. Test found satisfactory within conditions of growth and temperatures given.

1509. — —, Brückbauer, H., Querfurth, G. und Rüdel, M., 1977: Untersuchungen über die Viruskrankheiten der Rebe unter besonderer Berücksichtigung „atypischer Formen" der Reisigkrankheit. Weinberg u. Keller 24, 133—180.
Arabis mosaic, fanleaf, strawberry latent ringspot, tobacco mosaic and tomato black ring viruses were isolated from atypical Reisigkrankheit vines from several vineyard districts. Varied test plants and immuno-electrophoretic patterns distinguished different fanleaf isolates.

1510. — —, Lesemann, D. und Querfurth, G., 1973: Über den Nachweis des alfalfa mosaic virus

in einer Weinrebe. Phytopathol. Z. 76, 166—171.
Alfalfa mosaic virus recovered from a grapevine in Baden-Württemberg state.

1511. — — und — — , 1973: Untersuchungen über das Vorkommen von Viren im fränkischen Weinbaugebiet. Wein-Wiss. 28, 328—331.
Fanleaf, arabis mosaic and raspberry ringspot viruses were identified by latex-serological test over three years in Franconia areas.

1512. — — und — — , 1976: Untersuchungen zur Frage der mechanischen Virusübertragung bei Freilandreben. Wein-Wiss. 31, 121—215.
Arabis mosaic, fanleaf and tomato black ring viruses were not transmitted from infected vines to adjacent healthy vines over a nine year trial in spite of close contacts between roots and aerial parts of the plants.

1513. Berezovska, O. O., 1973: Formation de cordons à l'intérieur des vaisseaux chez les variétés de porte-greffe de vigne contaminés par le virus de la mosaïque. Visn. Sel'skogospodar. Nauky U.R.S.R., SSSR No. 10, 65—68 (Ukr.).
The formation of trabeculae in grapevine rootstocks infected by fanleaf or/and yellow mosaic viruses can be considered as a diagnosis element.

1514. Boubals, D., 1971: Importance économique des viroses de la vigne. Circonstances favorisant leur propagation. Lutte contre ces maladies. Bull. OIV 44 (479), 5—39.
Economic importance of grapevine virus diseases of grapevine, control methods.

1515. — — , 1972: Observations sur l'infection par le virus de l'enroulement chez les porte-greffes usuels. Ann. Phytopathol., No. hors série, 23—25.
High incidence of leafroll among commonly used hybrid rootstocks.

1516. — — , 1972: Observations sur l'infection par le virus de l'enroulement chez le Carignan et l'Alicante Bouschet. Ann. Phytopathol., No. hors série, 28—30.
Red leaves can occur in absence of leafroll; in Alicante Bouschet the phenomenon is of genetic nature.

1517. — — , 1976: Le point actuel sur les maladies à virus de la vigne. Chronique. Progr. Agric. Vitic. 93 (21), 625—633.
Summary of the 6th Internat. conference on viruses and virus diseases of grapevine (ICVG 6th Meeting), Cordoba — Madrid, September 1976.

1518. — — et Caudwell, A., 1971: Une épidémie de jaunisse dans le vignoble Corse: probablement la Flavescence dorée. Progr. Agric. Vitic. 88 (19), 355—364.
La jaunisse qui se développe en Corse est probablement la Flavescence dorée car on découvre la présence simultanée du vecteur Scaphoideus littoralis. L'article donne les premières mesures à prendre, et les opérations prévues pour l'année suivante.

1519. — — , Pistre, R., Dalmasso, A. et Bongiovanni, M., 1971: Aspect des atteintes sur racines de vigne du nématode *Xiphinema index* vecteur du court-noué de la vigne. Progr. Agric. Vitic. 88 (9), 153—156.

1520. — — , — — , Giraud, G. et Roche, J., 1976: Distribution du symptôme des cannelures du tronc (bois strié) dans des vignes atteintes de court-noué et des vignes infectées par l'enroulement. Progr. Agric. Vitic. 93 (21), 634—642.
On the presence and distribution of stem pitting on grapevines with fanleaf and leafroll.

1521. — — , — — and Gouze, Y., 1979: Effects of different fumigants and doses on court-noué (GFV) eventual eradication in different types of soils. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 259—260.

1522. Bovey, R., 1970: Importance économique des viroses de la vigne. Bull. OIV 43, 124—138.
The economics of grapevine viruses is discussed on the basis of several experiments made in Switzerland and in other countries.

1523. — — , 1971: Verfahren zur Herstellung von gesundem Pflanzgut. I. Internat. Sympos. über Probleme der Klonenselektion und der Erhaltungszüchtung im Weinbau, Trier (Germany), Abstr. 10.

1524. — — , 1972: Un virus latent dans le Chasselas. Ann. Phytopathol., No. hors série, 31—34.
A latent virus similar to fleck or marbrure was detected in Chasselas by graft transmission to 5 BB, 5 C and Rupestris Saint-George.

1525. — — , 1972: Présence de la Flavescence dorée en Suisse et relations possibles de cette maladie avec le «corky bark». Ann. Phytopathol., No. hors série, 167—170.
Several cases of "Flavescence dorée" were observed on Chardonnay, Amigne, Arvine, Gamay and Pinot in vineyards near Lake Leman and Valais in Switzerland. In a graft transmission typical corky bark symptoms appeared on LN 33 indicator.

1526. — — , 1972: Therapeutic methods applied to the grapevine. Proc. 18th Internat. Hort. Congr. Tel-Aviv, March 1970, Vol. III, 32—38.

Description of methods of heat treatment, meristem culture, and selection of healthy grapevine material.

1527. — —, 1972: Verfahren zur Herstellung von gesundem Pflanzgut. Rebe u. Wein 25, 200—204.
Selection, heat treatment and results of growing healthy material.

1528. — —, 1973: Prevention and control of virus and mycoplasma-like diseases of the grapevine. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 145—154.
Prevention and control of virus diseases of the grapevine can be obtained by visual selection, indexing and/or heat treatment, crop rotation and/or soil disinfection; that of Flavescence dorée by controlling the vector, and no control measure is known for Pierce's disease. A discussion is on the use of virus-tested material for viticulture.

1529. — —, 1974: Virologia de la vid. a) Enfermedades de virus de la vid. Segundas Jornadas Tecnicas de Rioja, Vid y Vino, Haro — Logrono, Junio 1972 (INIA), 148—165.
Description of the most important virus and virus-like diseases of the grapevine (fanleaf, leafroll, stem pitting, fleck, corky bark and Flavescence dorée), economic importance.

1530. — —, 1975: La sélection sanitaire de la vigne et ses conséquences pour la viticulture. Atti Acc. Ital. Vite Vino, Siena, 27, 269—280.
Description of important virus diseases of the grapevine, and methods for obtaining disease-free material, with a discussion on the consequences of healthy material. Values of several years experimentation with heat treatment of the material before releasing on a large scale.

1531. — —, 1975: Seleccion y certificacion de la vid en algunos paises. VI Jornadas de estudio de la Associacion Interprofesional para el Desarollo Agrario: La calidad del material vegetal en las plantas de vivero. Zaragoza, 2—4 Mayo 1974, 255—262.
A Spanish translation of a paper on the selection and certification of grapevine in California, France, West. Germany, Switzerland, South Africa, Australia and Canada.

1532. — —, 1975: Maladies à virus et à mycoplasmes de la vigne. Stat. Féd. Rech. Agron. Changins, Nyon (Suisse). 91 pp., 13 fig., 213 references. (Mimeographed textbook available from the author).
A textbook written for students at the International Course of Viticulture jointly organized by the International Vine and Wine Office (OIV), the Centre international de hautes études agronomiques méditerranéennes (CIHEAM) and the Organization for Economic Cooperation and Development (OECD). It gives the essential knowledge on most of the known viruses and virus-diseases affecting the grapevine, and on the control measures.

1533. — —, 1979: Disease control, sanitary selection, certification. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 307—311.
A summary of methods and progress in prevention and control of grapevine virus and virus-like diseases.

1534. — — and Brugger, J. J., 1973: Stem pitting of grapevine in Switzerland. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 37—42.
Stem pitting found on the rootstocks Kober 5 BB grafted with two old grapevine varieties previously grown on their own roots in Valais. (Swizerland): Païen and Humagne. Mechanical inoculation to Chenopodium quinoa, serological tests and electron microscopy failed to detect fanleaf virus in diseased grapevines.

1535. — — et — —, 1975: Le virus de la mosaïque de la luzerne sur la vigne. Rev. Suisse Viticult. Arboricult. Hort. 7, 63—65 (French with Ital., Germ. sum.).
Alfalfa mosaic virus was detected by electron microscopy and by serology, in Chenopodium quinoa infected by mechanical inoculation from a grapevine with line pattern and ringspot symptoms in leaves. The virus can be eliminated from grapevine by heat treatment (37 d sufficient).

1536. — —, — —, Simon, J.-L. et Jaquinet, A., 1974: La sélection sanitaire de la vigne en Suisse romande. Rev. Suisse Viticult. Arboricult. Hort. 6, 77—83 (French with Ital., Germ. sum.).
Description of the most important virus diseases of the grapevine in Switzerland and of the methods of selection, indexing and heat treatment used for obtaining disease-free material.

1537. — — and Cazelles, O., 1979: Alfalfa mosaic virus on grapevine. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 131—134.
Virus symptoms on grapevine are given. Virus identified by serology. Electron microscopy of thin sections of infected cells reveal virus particles distributed randomly in the cytoplasm or aggregated in regular array. Virus eliminated by heat treatment in 37 days at 37—38 °C.

1538. — — and Pelet, F., 1977: Grapevine and temperate fruits. In: Hewitt, W. B. and Chiarappa, L.: Plant health and quarantine in international transfer of genetic resources. C.R.C. Press, Inc., Cleveland, Ohio, pp. 165—195.
A discussion of important contageous diseases of grapevine and fruit trees, including virus, virus-like, mycoplasma and rickettsia-like organisms, bacteria, and fungus, with tables on disease, cause, distribution, vectors, relative pathogenicity on grapevine and references.

1539. — — , Rochaix, M. et Simon, J.-L., 1973: La sélection phytosanitaire de la vigne. Méthodes, résultats et perspectives d'avenir. Bull. OIV 46, 1077—1093.

1540. — — , — — et — — , 1975: Résultats et perspectives d'avenir de la sélection sanitaire de la vigne. Rev. Suisse Viticult. Arboricult. Hort. 7, 161—166 (French with Ital. sum.).
Selection and heat treatment of grapevine can eliminate most viruses. Selected and/or heat-treated material has greater vigour and productivity, with advantages and disadvantages: lower quality of the wine due to over-production, higher sensitivity to some diseases. Cultural and fertilization has to be adapted to increased vigour, and experimentation in field conditions is necessary before new material is released on a large scale.

1541. — — , Simon, J.-L. et Brugger, J. J., 1969: Vigne: sélection clonale et thermothérapie, contrôle des importations de bois. Rapport d'activité 1966—1968, Stat. Féd. Rech. Agron. Lausanne. Annu. Agric. Suisse, N.S. 18, 368.

1542. Branas, J., 1974: Sélection phytosanitaire. Résultats obtenus jusqu'à ce jour en viticulture et en oenologie par le moyen de la sélection visuelle et de la méthode dite de «thermothérapie». Bull. OIV 47 (519), 369—378.

1543. Brückbauer, H., 1970: Bekämpfung der Rebvirosen und Maßnahmen zur Erzielung virusfreien Vermehrungsmaterials. Dt. Weinbau 25, 432—435, 597—600.

1544. — — , 1972: Rebenveredlung und Viruskrankheiten der Rebe. Weinberg u. Keller 19, 511—535.

1545. — — , 1972: Viruskrankheiten der Rebe. Kali-Briefe, Fachgebiet 12, Folge 5, 1—11.

1546. — — , 1972: Die Bedeutung der Brache für die Wiederbepflanzung virusverseuchter Weinbergsböden der Ahr. Zweijahresber. der LLVA Ahrweiler 1972, 49—55.
On the effects of fallowing before replanting grapevines in infected soils.

1547. — — , 1973: Möglichkeiten zur Erzeugung von gesundem Vermehrungsmaterial im Weinbau. Dt. Weinbau-Jahrb. 24, 94—99.

1548. — — , 1973: Die negativen Auswirkungen der Viruskrankheiten auf die Rebe. Mitteilungsbl. des Vereins ehemal. Schüler der LLFA Neustadt/Wstr. 21, 27—32.

1549. — — , 1973: Die wirtschaftliche Bedeutung der Rebvirosen und ihre Bekämpfung. Vorträge 24. Rheinhessische Weinbauwoche der LLVA Oppenheim/Rhh., 35—46.

1550. — — , 1973: Untersuchungen über den Einfluß virusstabilisierender Substanzen auf die mechanische Übertragung von Rebviren. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 132—139.
On techniques of mechanical transmission, with stabilizers and buffers at pH 8.

1551. — — , 1974: Die Bedeutung der Brache im Weinbau. Kali-Briefe, Fachgebiet 5, Folge 1, 1—8.

1552. — — , 1974: Entwicklung und Aufgaben der „Abteilung für Virologie". In: Forschung—Schule—Praxis. Festschrift zum 75jährigen Bestehen der LLFA für Wein- und Gartenbau, Neustadt/Wstr. 1899—1974, 223—224.

1553. — — , 1974: Ergebnisse rebvirologischer Untersuchungen. In: Forschung—Schule—Praxis. Festschrift zum 75jährigen Bestehen der LLFA für Wein- und Gartenbau, Neustadt/Wstr. 1899—1974, 224—233.

1554. — — , 1975: Rebvirologische Untersuchungen. Jahresber. 1974 der LLFA Neustadt/Weinstr., 80—90.

1555. — — , 1976: Rebvirologische Untersuchungen. Jahresber. 1975 der LLFA Neustadt/Wstr., 93—103.

1556. — — , 1976: Ergänzende Befunde zu der Veröffentlichung von Bercks und Querfurth über „Untersuchungen zur Frage der mechanischen Virusübertragung bei Freilandreben". Dt. Wein-Wiss. 31, 259—262.
No evidence of transmission of grapevine viruses by root contact or by pruning.

1557. — — , 1977: Untersuchungen über die Virusanfälligkeit von Cinerea Arnold und einiger Cinerea-Kreuzungen. Wein-Wiss. 32, 189—198.
Symptoms of fanleaf virus on Vitis cinerea and on its hybrids with 125 AA, Riesling and Trollinger.

1558. — — , 1977: Der Einfluß latenter Virusinfektionen auf das Wachstum der Reben. Dt. Weinbau-Jahrb. 28, 127—134.

1559. — — , 1977: Rebvirologische Untersuchungen. Jahresber. 1976 der LLFA Neustadt/Weinstr., 82—90.

1560. — — , 1978: Verstärktes Auftreten des Blattrollens an Reben. Pfälzer Bauer 30, 13—14.

1561. — — , 1978: Die Viruskrankheiten der Rebe. Die Erkennung und Bedeutung für den Weinbau. Rebe u. Wein 31, 217—221.

1562. — — , 1978: Brache beim Neuaufbau von Weinbergen. Aus der Sicht der Bekämpfung der Rebvirosen. Dt. Weinbau 33, 213—217.
On the usefulness of fallowing before replanting a vineyard, as a control measure for grapevine viruses.

1563. — — und Rüdel, M., 1971: Die Viruskrankheiten der Rebe. Bedeutung, Diagnose und Bekämpfung. Verlag E. Ulmer, Stuttgart, 119 S., 118 Abb., 6 Farbtafeln.

1564. — — und — — , 1976: Untersuchungen über eine „atypische" Form der Reisigkrankheit bei der Rebsorte Silvaner. Weinberg u. Keller 23, 53—79.
The first symptoms are yellow mosaic-like and later shoots are stunted with pale colored leaves. Disease appears in patches, spreads slowly, associated with Xiphinema diversicaudatum. Arabis mosaic virus has been isolated from all infected grapevines.

1565. — — und Schaefer, H., 1971: Verbesserung vorhandener und Entwicklung neuer frühdiagnostische Nachweismethoden zur Erfassung latenter Virusinfektionen bei Reben. Jahresber. 1970 des Forschungsringes des Deutschen Weinbaues bei der DLG, 25.

1566. — — und — — , 1972: Verbesserung vorhandener und Entwicklung neuer frühdiagnostischer Nachweismethoden zur Erfassung latenter Virusinfektionen bei Reben im Hinblick auf die Gesundheitsselektion. Jahresber. 1971 des Forschungsringes des Deutschen Weinbaues bei der DLG, 24.

1567. — — und — — , 1973: Verbesserung vorhandener und Entwicklung neuer frühdiagnostischer Nachweismethoden zur Erfassung latenter Virusinfektionen bei Reben im Hinblick auf die Gesundheitsselektion. Jahresber. 1972 des Forschungsringes des Deutschen Weinbaues bei der DLG, 20—21.

1568. Buturović, D. and Klindić, O., 1977: Contribution to the study of virus diseases and nematodes in the vineyards of Herzegovina. Savjetovanje o ekskoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.), Mostar (Yugoslavia), 177—180 (Serbo-Cr.).

1569. Calavan, E. T., Goheen, A. C. and Nyland, G., 1973: Techniques for rapid multiplication of clean foundation stocks. Proceedings of the 18th Internat. Hort. Congr., Tel-Aviv, March 1970, Vol. III, 74—79.
Rapid increase methods for certified grape stocks.

1570. Calò, A., Costacurta, A., Egger, E. e de Rosa, T., 1977: La selezione clonale e sanitaria della vite da vino nelle Venezie. In: Martelli, G. P. (Ed.): Utilizzazione dei risultati della selezione della vite da vino. Atti Seminario C.N.R., Bari (Italia), 71—77.
Work in progress on genetical and sanitary selection of grapevine in Venezia.

1571. Cameron, H. P., 1975: Diseases affecting grapevines in Oregon: fungus, bacterial and virus diseases. Ann. Rept. Proc. Oreg. Hort. Soc. 66, 93—94.

1572. Canova, A., 1975: Selezione sanitaria e risanamento della vite in Emilia e Romagna e Piemonte. Coltivatore G. Vinic. Ital. 121 (10), 324—325. (Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. Appl. C.N.R., Torino, 83—86).
A description of criteria and methods of vine selection, and a listing of rootstocks and varieties which have had heat treatment.

1573. Cartechini, A., 1977: Selezione clonale e sanitaria dei vitigni per uve da vino dell'Umbria e del Lazio. In: Martelli, G. P. (Ed.): Utilizzazione dei risultati della selezione della vite da vino. Atti Seminario C.N.R., Bari (Italia), 105—110.
Work in progress on sanitary and clonal selection of grapevine in Umbria and Lazio.

1574. Castillo, J., Hévin, M. et Rives, M., 1975: Transmission d'une virose de la vigne (maladie de l'écorce liégeuse ou Corky Bark) par la méthode de la greffe en vert. C. R. Hebd. Séances Acad. Sci. (Paris), Sér. D, 281, 147—150.
La transmission de la maladie dite de l'écorce liégeuse a été obtenue, pour la première fois, par la greffe en vert d'un fragment de tige de «Rupestris du Lot», porteur du virus mais sans symptôme apparent, sur des plantes en végétation de la variété LN 33. Cette technique peut être utilisée pour la détection pratique de la virose.

1575. Caudwell, A., 1977: Aspects statistiques des épreuves d'infectivité chez les Jaunisses (yellow's) des plantes et chez les viroses transmises selon le mode persistant. Intérêt de la Fève *(Vicia faba)* comme plante test pour les Jaunisses. Ann. Phytopathol. 9, 141—159.

On évalue les proportions de Cicadelles devenues infectieuses en fonction des proportions observées de plantes devenues malades, lorsqu'il y a plusieurs cicadelles par plante. On évalue le nombre de particules infectieuses par millilitre en fonction des proportions de Cicadelles devenues malades.

1576. — — , Brun, P., Fleury, A. et Larrue, J., 1972: Les traitements ovicides contre la cicadelle vectrice, *Scaphoideus littoralis* (Ball.), leur intérêt dans la lutte contre la Flavescence dorée en Corse et dans les autres régions. Vignes et Vins 214, 5—10.
Destruction des vecteurs par un traitement ovicide à l'oléoparathion appliqué au moment du premier gonflement des bourgeons. Bonne efficacité.

1577. — — , Giannotti, J., Kuszala, C. et Larrue, J., 1971: Etude du rôle de particules de type «mycoplasme» dans l'étiologie de la Flavescence dorée de la vigne. Examen cytologique des plantes malades et des cicadelles infectieuses. Ann. Phytopathol. 3, 107—123.
Des particules de type mycoplasme sont observées dans le liber des fèves inoculées par la Flavescence dorée et dans les cellules des vecteurs infectés. On ne les retrouve pas chez les fèves et les vecteurs sains témoins. Chez la vigne, les cellules libériennes apparaissent saines ou trop nécrosées. Les mycoplasmes n'ont pu être décelés que dans le cas de vignes inoculées artificiellement et qui ne montraient pas encore de symptômes.

1578. — — , Hewitt, W. B. et Bovey, R., 1972: Les viroses de la vigne. Bibliographie de 1965—1970. Vitis 11, 303—324. — Refer also to: Caudwell, A., 1965: Bibliographie des viroses de la vigne des origines à 1965. OIV, Paris, 76 pp.

1579. — — , Kuszala, C. et Larrue, J., 1973: Techniques utilisables pour l'étude de la Flavescence dorée de la Vigne. Riv. Patol. Veg. Ser. IV, 9 (3), 269—276.
Revue de toutes les nouvelles techniques utilisables: la transmission aux plantes herbacées, l'injection des cicadelles et l'épreuve d'infectivité. Résultats négatifs des essais de culture de l'agent infectieux, et des observations en coloration négative.

1580. — — , — — et — — , 1974: Sur la culture *in vitro* des agents infectieux responsables des jaunisses des plantes (MLO). Ann. Phytopathol. 6, 173—190.
Les milieux liquides préconisés pour les mises en culture des mycoplasmes des animaux ne permettent pas la culture des agents pathogènes des jaunisses des plantes (Flavescence dorée en particulier). Il en est de même des milieux préconisés pour les «Mycoplasmes des végétaux». Ces milieux ont donné des résultats négatifs quelles que soient les multiples précautions prises. Nous préconisons l'utilisation exclusive de l'épreuve d'infectivité pour tester la survie ou la culture des agents pathogènes des jaunisses.

1581. — — , — — et — — , 1974: Etude de l'agent pathogène d'une jaunisse: la Flavescence dorée de la vigne. Congr. Internat. sur les mycoplasmes de l'Homme, des animaux, des végétaux et des insectes, Bordeaux, sept. 1974. Résumé des communications, p. 11.

1582. — — , — — et — — , 1974: Conservation in vitro de l'agent pathogène de la Flavescence dorée de la vigne qui est de type mycoplasme (MLO). Sté Biologie Poitiers Séance 26 oct. 1974.
L'agent infectieux de la Flavescence dorée, déterminé par son pouvoir pathogène (Epreuve d'infectivité) est très fragile in vitro. Nous rapportons ici les améliorations qui ont pu être apportées au milieu pour permettre sa survie pendant 44 h. Nous vérifions s'il y a survive au début de culture.

1583. — — , — — et — — , 1974: Approches de la survie et de la culture de l'agent (MLO) d'une jaunisse végétale, la Flavescence dorée de la vigne, par les épreuves d'infectivité. C. R. Hebd. Séances Acad. Sci. (Paris), Sér. D, 279, 523—525.
Après une discussion sur la culture des mycoplasmes associés aux jaunisses végétales, nous présentons une épreuve d'infectivité qui est utilisée pour améliorer peu à peu les milieux de survie de l'agent infectieux de la Flavescence dorée. Les recherches ont abouti à la mise au point d'un milieu 747 qui permet d'atteindre une survie de 30 h.

1584. — — , — — and — — , 1976: Progress in the culture of the etiologic agent, type mycoplasma, of the Flavescence dorée of grapes. Proc. Soc. Gen. Microbiol. III, 4, 154.
L'usage de l'épreuve d'infectivité a permis de vérifier que les améliorations du milieu de survie permettent de passer de 2 à 100.000 unités infectieuses/ml.

1585. — — , — — , — — et Bachelier, J. C., 1972: Responsabilité d'un vecteur aérien dans l'épidémiologie du Bois noir de la vigne. Etude de l'existence de ceps sensibles et de ceps tolérants expliquant la permanence de la maladie sur les mêmes ceps. Ann. Phytopathol., No. hors série, 171—180.
Il est certain que le Bois noir a été épidémique en 1946. Le comportement des jeunes plantations suggère qu'il y a, encore actuellement un vecteur aérien en Bourgogne. La permanence de la maladie, toujours sur les mêmes plants, suggère qu'il y aurait

dans un même vignoble des ceps sensibles et des ceps tolérants. Les premiers seuls réagiraient aux réinoculations.

1586. — —, — —, — — et — —, 1972: Transmission de la Flavescence dorée de la fève à la fève par des cicadelles des genres *Euscelis* et *Euscelidius*. Intervention possible de ces insectes dans l'épidémiologie du Bois noir en Bourgogne. Ann. Phytopathol., No. hors série, 181—189.

1587. — —, — —, — — et Fleury, A., 1979: Recherche d'un milieu liquide d'extraction, de survie et éventuellement de culture pour l'agent infectieux (mycoplasme) de la Flavescence dorée. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 231—235.
Research on a liquid medium for extraction, survival and possibly for the culture of the infectious agent of "Flavescence dorée".

1588. — —, Larrue, J., Kuszala, C. et Bachelier, J.-C., 1971: Pluralité des jaunisses de la vigne. Ann. Phytopathol. 3, 95—105.
Le «bois noir» semble devoir être considéré comme différent de la Flavescence dorée (FD), car le vecteur naturel de la FD, Scaphoïdeus littoralis, ne transmet pas le Bois noir. D'autre part, une jaunisse appelée Φ, voisine de l'aster yellows a pu être transmise à la vigne à l'aide de S. littoralis. Les symptômes obtenus sur la vigne sont voisins de ceux de la FD. La vigne réagit donc au moins à trois jaunisses, dont deux l'infectent naturellement. On peut conclure à la pluralité des jaunisses de la vigne.

1589. — —, Moutous, G., Brun, P., Larrue, J., Fos, A., Blancon, G. et Schick, J. P., 1974: Les épidémies de Flavescence dorée en Armagnac et en Corse et les nouvelles perspectives de lutte contre le vecteur par des traitements ovicides d'hiver. Bull. Techn. Inform. 294, 783—794.
Etat actuel des épidémies de Flavescence dorée en Gascogne et en Corse. Différences variétales de sensibilité. Raisons qui nous ont orienté en Armagnac vers l'utilisation de traitements larvicides contre le vecteur. Raisons qui conduisent à préconiser pour la Corse, les traitements ovicides d'hiver. Intérêt possible de ces traitements ovicides en Armagnac et dans d'autres régions.

1590. — —, Schvester, D. et Moutous, G., 1973: Variété des dégâts des cicadelles nuisibles à la vigne — Les méthodes de lutte. Progr. Agric. Vitic. 89 (24), 583—590: 90 (1), 8—16.

1591. Chamberlain, E. E., Over de Linden, A. J. and Berrysmith, F., 1971: Grapevine virus diseases: I. Symptoms, II. Prevalence, III: Effect on yield. N. Z. J. Agricult. 122 (3), 62—73.

1592. Choleva-Abadzhieva, B., 1975: Study on the species composition and spread of nematodes of the family Longidoridae (Nematoda, Dorylaimoidae) on the vine in Bulgaria. Acad. Sci. Bulgaria, Acta Zool. Bulg. 3, 19—30.
A survey of viticultural regions for nematodes of family Longidoridae: 13 species identified, 7 Xiphinema, 6 Longidorus, X. mediterraneum wide-spread, as was L. siddiqii, X. index and X. italiae also wide-spread, records of damages given as well as distributions.

1593. Ciccarone, A., 1971: Orientation souhaitée par les experts dans le domaine de la recherche, de l'information et de la réglementation. Bull. OIV 44 (482), 326—338.
Importance of virus diseases of grapevine, identification of the viruses, transmission, control, need for a better information.

1594. — —, Donno, G., Martelli, G. P. e Godini, A., 1974: Risanamento e selezione clonale del patrimonio viticolo pugliese. Ital. Agricola 111 (4), 50—61.

1595. Cohn, E., 1970: Virus-transmitting nematodes in Israel. B. Genus *Xiphinema*. Hassadeh, 51, 197—201.

1596. Coiro, M. I. and Lamberti, F., 1979: Reproduction of *Xiphinema index* under different environmental conditions. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 255—257.
Reproduction rate higher in sand and sandy loam soils and in glasshouse at 24—26 °C than at screenhouse temperatures.

1597. Cosmo, I., 1973: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Diffusion du matériel sélectionné. Rapport général. Bull. OIV 46 (513), 973—998.

1598. Cotten, J., 1973: Feeding behaviour and reproduction of *Xiphinema index* on some herbaceous plants. Nematologica 19, 516—520.
In pot tests, Xiphinema index reproduced on Vitis vinifera, Solanum tuberosum, S. nigrum, S. dulcamara and Lycopersicum esculentum. It fed without reproducing on Lolium perenne and Brassica oleracea.

1599. Cuany, A., Pistre, R. and Leclair, P., 1977: Vers de nouvelles perspectives en matière de désinfection des sols en viticulture. Progr. Agric. Vitic. 94, 488—498.
Essais de lutte avec divers nématicides: DD, bromure de méthyle, aldicarbe, dibromure de propylène, phenamiphos.

1600. Dalmasso, A., 1971: La désinfection nématicide du sol dans la prévention de la dégénérescence infectieuse de la vigne. Union Agriculture 315, 55—66.

1601. — —, 1973: Les nématodes des vignobles. La lutte. Progr. Agric. Vitic. 90 (11 bis), 270—277; (13), 317—327.

1602. — —, 1974: Dans la région Provence-Corse. La lutte contre le court-noué. Rev. Franç. Oenol. 14 (53), 17—20.

1603. — —, 1978: Le point sur la désinfection nématicide du sol en viticulture. Causes de réussites et d'échecs. Défense Vég. 32 (190), 63—71.

1604. — —, Boubals, D., Bongiovanni, M. et Pistre, R., 1972: Distribution des nématodes propagateurs du court-noué dans les vignobles méditerranéens français. Progr. Agric. Vitic. 89 (19), 456—462.

1605. — —, Cardin-Munck, M. C. et Legin, R., 1972: Résultats préliminaires d'essais de transmissions de sérotypes de la mosaïque de l'*Arabis* trouvés sur vigne, par l'intermédiaire de *Xipihinema diversicaudatum*. Ann. Phytopathol. 4, 410 (Résumé).

1606. — —, Cuany, A. et Joubert, J., 1972: Utilisation de l'aldicarbe contre les nématodes vecteurs de maladies à virus. C. R. J. Aldicarbe Versailles, Décembre 1972, 221—230.

1607. — — et Vuittenez, A., 1978: Problèmes de replantation de la vigne et désinfection du sol dans les pays tempérés. Bull. OIV 51 (567), 337—351.

1608. — — et Weischer, B., 1976: Les nématodes vecteurs de virus et la sélection sanitaire en France et en Allemagne. IIe Symp. Internat. Sél. clonale de la vigne, Le Grau du Roi, 10—11 Sept. 1976. 2 p. dactyl (Résumé).

1609. Daris, B. T., 1974: Etat actuel des travaux sur le sélection clonale génétique et sanitaire. Méthodes et résultats. Diffusion du matériel sélectionné. Rapport grec. Bull. OIV 47 (521—522), 562—568.

1610. Davis, M. J., Purcell, A. H. and Thomson, S. V., 1978: Pierce's disease of grapevines: Isolation of the causal bacterium. Science 199, 75—77.
A gram-negative rod-shaped bacterium consistently isolated from diseased vines has proved to be the pathogen.

1611. — —, Thompson, S. V. and Purcell, A. H., 1978: Pathological and serological relationship of the bacterium causing Pierce's disease of grapevines and almond leaf scorch disease. 3rd Internat. Congr. Plant Pathol., Munich (Germany), 64 (Abstr.).

1612. Deidda, P., Prota, U., Dettori, S. e Garau, R., 1977: Notizie sul lavoro di selezione clonale e sanitaria della vite ad uva da vino in Sardegna. In: Martelli, G. P. (Ed.): Utilizzazione dei risultati della selezione della vite da vino. Atti Seminario C.N.R., Bari (Italia), 125—130.
Work in progress on clonal and sanitary selection of grapevine in Sardinia.

1613. Deth, P. S., 1973: The New York State grape certification program. N. Y. Food and Life Sci. Quart. 6, 5 (Oct—Dec).
A short note on methods used in indexing for viruses.

1614. Dias, H. F., 1970: Grapevine yellow mosaic. In: Frazier, N. W. (Ed.): Virus diseases of small fruits and grapevines (a Handbook), Univ. of Calif. Div. Agricult. Sci. (Berkeley), 228—230.

1615. — —, 1972: Purification and some characteristics of peach rosette mosaic virus (grape isolate). Ann. Phytopathol., No. hors série, 97—103.

1616. — —, 1972: Strains of peach rosette mosaic virus differentiated by cross absorption and immunodiffusion tests. Ann. Phytopathol., No. hors série, 105—106.

1617. — —, 1973: A sap-transmissible virus associated with a severe disease of the hybrid *Vitis* sp. cv. Joannes-Seyve (26—205). Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 64—66.
The paper describes the isolation of a new virus responsible for a severe disease of Joannes-Seyve 26—205 cultivar, and describes the physical, chemical and morphological characteristics of the virus.

1618. — —, 1975: Peach rosette mosaic virus. C.M.I./A.A.B. Description of Plant Viruses No. 150, 4 p.

1619. — —, 1976: Tomato ringspot virus endangers DeChaunac vineyards in the Niagara Peninsula. The Growers Feb. 13—14.

1620. — —, 1977: Incidence and geographic distribution of tomato ringspot virus in DeChaunac vineyards in the Niagara Peninsula. Plant Dis. Reptr. 61, 24—28.
The paper describes the isolation of tomato ringspot virus from DeChaunac vines

with short internodes, stem rosetting, yellowing and rolling of leaves and severe stunting and reports the incidence and geographic distribution of the virus in DeChaunac vineyards in the Niagara Peninsula. The virus was also isolated from weeds and recovered from soils from infected areas in the vineyard.

1621. — — , 1979: Tomato ringspot virus in the DeChaunac vineyards in the Niagara Peninsula, Ontario, Canada. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 15—23.

1622. — — , 1979: The properties of virus and RNA components of the grape fanleaf and grape Joannes-Seyve viruses. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 37—39.

1623. — — and Allen, W. R., 1978: Properties and RNA components of peach rosette mosaic virus. 3rd Internat. Congr. Plant Pathol., Munich (Germany), 41 (Abstr. 019).

1624. — — and Cation, D., 1976: The characterization of a virus responsible for peach rosette mosaic and grape decline in Michigan. Can. J. Bot. 54, 1228—1239.
The paper demonstrated that peach rosette mosaic and grape decline in Michigan, USA, are caused by the same virus and describes the physical, chemical, morphological and serological characteristics of the virus.

1625. Dimitrijevic, B., 1970: The occurrence of "leafroll" of grapevine in Yugoslavia. Zašt. Bilja (Plant Protect.) 21, 373—378 (Serbo-Cr. with Eng. sum.).

1626. — — , 1972: Virological problems in viticulture. Jugoslov. Vinograd Vinar. 6 (8), 20—25 (Serbo-Cr.).

1627. — — , 1972: Quelques observations concernant le virus de le mosaique du tabac chez la vigne atteinte de la dégénérescence infectieuse en Yougoslavie. Ann. Phytopathol., No. hors série, 107—111.
TMV in grapevines as determined by inoculation on Chenopodium murale.

1628. — — , 1973: Influence of leafroll virus infection on grapevine yield and wine quality. I. kolokvij o virozah vinske trte v zvezi s selekcijo (First colloquium on grapevine virus diseases in relation with selection), Ljubljana, 22—28 (title in Sloven., text in Serbo-Cr.).

1629. — — , 1973: Some observations on natural spread of grapevine leafroll disease in Yugoslavia. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 114—119.
The number of diseased vines doubled over a three-year period; discussion and distribution map.

1630. — — , 1977: Modern methods for the control of virus diseases of grapevine. Savjetovanje o ekskoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.), Mostar (Yugoslavia), 117—123 (Serbo-Cr. with Eng. sum.).

1631. — — , 1979: Some characteristics of infectious degeneration of grapevine in Yugoslavia. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 25—29.
GFV and similar viruses degeneration problems prevalent in parts of the country.

1632. Doazan, J. P., 1979: On the seed-transmission of some grapevine virus diseases. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 83—85.
GFV and fleck not transmitted through seed.

1633. — — , Bellegarde, H., Ottenwaelter, M. M. et Hévin, M., 1977: Essai de transmission par la graine de viroses de la vigne (Court-noué, Marbrure). Ann. Amélior. Plantes 27 (2), 245—253.
The experiments give no evidence of seed transmission of fanleaf and fleck.

1634. Egger, E. e Costacurta, A., 1975: Lavori di miglioramento genetico e selezione sanitaria della vite nelle tre Venezie. Coltivatore G. Vinic. Ital. 121 (10), 329—330. (Vedi anche [with E. Egger as author] Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. Appl. C.N.R., Torino, 93—95).
It is a report on the work of genetical and sanitary selection done in northeastern Italy.

1635. — — , Moretti, G., Roncador, I., Mori, P. and de Fanti, P., 1979: Investigations on fumigations of vineyards in North-East of Italy. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 261—292.
A discussion on effects of some different chemicals on nematodes, weeds, etc. and economics.

1636. — — , Roncador, I., Gollino, G. e Tempesta, G. F., 1977: Primi risultati di selezione clonale sanitaria per il legno riccio della vite. Esperienze e Ricerche, Sta. Sper. Agrar. Forest. S. Michele all'Adige 6, 115—126 and Riv. Viticolt. Enol. 30, 366—375.

1637. — — , — — , — — and — — , 1979: First results of sanitary clonal selection for grapevine bark and wood pitting disease (legno riccio). Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 337—344.

1638. Engelbrecht, D. J., 1971: The significance of virus infection in table grape vineyards. Decid. Fruit Grow. 21, 261—263.
Review of the economic importance of some virus diseases present in table grape cultivars, including grapevine leafroll, grapevine fanleaf and grapevine stem-grooving (legno riccio) and a discussion of the virus infection potential of the rootstock.

1639. — — , 1973: Effect of stem-grooving on yield of young "Queen of the Vineyard" table grapes (*Vitis vinifera* L.) grafted on a tolerant rootstock. Riv. Patol. Veg. Ser. IV, 9 (3), 235—242.
Grapevine stem-grooving was found to significantly decrease the average yield, over the first 3 years of production, of a Queen of the Vineyard clonal selection trial. Disease symptoms were only observed on the scion.

1640. — — , 1979: Nature and effect of the breakdown in tolerance of Jacquez rootstock to grapevine stem-grooving in grafted *Vitis vinifera* L. cv. Queen of the Vineyard vines. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 171—178.
Clonal selection trial showed a progressive increase of grapevine stem-grooving infection in the scion and rootstock over a 3 year period. A variable latent period is suggested to explain the progressive decline in view of the lack of evidence of spread through the soil. Significant decreases in yield and growth with increased severity were recorded.

1641. — — and Nel, A. C., 1971: A graft-transmissible stem-grooving of grapevines in the Western Cape Province (South Africa) resembling legno riccio (rugose wood). Phytophylactica 3, 93—96.
The presence of grapevine stem-grooving reported for the first time in South African vineyards. Grapevine fanleaf virus found not associated with the disease.

1642. Eynard, I., Gandini, A., Giunchedi, L., Conti, M., Mannini, F. e Lenzi, R., 1977: Selezione genetica e sanitaria di vitigni ad uva da vino in Piemonte, Valle d'Aosta e Liguria. In: Martelli, G. P. (Ed.): Utilizzazione dei risultati della selezione della vite da vino. Atti Seminario C.N.R., Bari (Italia), 51—65.
Work in progress on genetical and sanitary selection of grapevine in Piedmont, Aosta Valley and Liguria.

1643. Faccioli, F., Giunchedi, L. e Credi, R., 1977: Stato attuale delle ricerche sulla selezione clonale e sanitaria della vite ad uva da vino in Emilia-Romagna. In: Martelli, G. P. (Ed.): Utilizzazione dei risultati della selezione della vite da vino. Atti Seminario C.N.R., Bari (Italia), 83—90.
Work in progress on clonal and sanitary selection of grapevine in Emilia-Romagna.

1644. Fenner, F., 1975: Classification and nomenclature of viruses, 2nd rept. Internat. Committee on Taxonomy of Viruses. Intervirology 7, 4—115.

1645. Ferreira, A. A., 1970: A new virus of grapevine. Thesis Agric. Engineer. School, Lisbon, 139 pp. (Port.).
A study of 2 isolates of a new virus out of grapevines: seed transmitted in Chenopodium amaranticolor and Phaseolus vulgaris; serologically not related to most of the ringspot viruses known to infect grapevine.

1646. — — and Sequeira, O. A. de, 1972: Preliminary studies on an undescribed grapevine virus. Ann. Phytopathol., No. hors série, 113—120.
A ringspot virus, isolated from grape, purified out of C. quinoa, not serologically related to many others out of grapevine.

1647. Ferreira de Almeida, J. F. L., 1975: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Diffussion du matériel sélectionné. Rapport portugais. Bull. OIV 48 (527), 5—13.

1648. Festić, H. and Šutić, D., 1977: Occurrence of some vine viruses in Herzegovina. Savjetovanje o ekskoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.) Mostar (Yugoslavia), 125—130 (Serbo-Cr. with Eng. sum.).

1649. Fic, V. and Vanek, G., 1970: Necrosis of the grape. In: Frazier, N. W. (Ed.): Virus diseases of small fruits and grapevines (a Handbook). Div. Agricult. Sci. Univ. Calif. (Berkeley), 214—217.

1650. Fijo de Lemus, M. A. and Arias Delgado, M., 1976: La «Dégénérescence infectieuse» et les populations de *Xiphinema index* dans les vignobles de Jerez. Poljopriv. Znanstvena Smotra (Agriculturae Conspectus Scientificus) 39 (49), 575—585.
Presence of infectious degeneration and Xiphinema index in vineyards of Jerez (Spain).

1651. Fisac, R. y Pena-Iglesias, A., 1979: Aplicación de la técnica serológica de la simple difusión radial en agar en la detección del virus del entrenudo corto infeccioso de la vid (Grapevine fanleaf virus o GFV). Comparación con la técnica de doble difusion en agar. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 91—95.

1652. Fogliani, G., 1970: Un nuovo metodo per la diagnosi delle malattie da virus della vite: l'irraggiamento con raggi X e neutroni e i „Centri Regionali di raccolta e di conservazione del materiale viticolo". Ann. Fac. Agrar. Univ. Cat. Sacro Cuore (Milano) N.S. 10 (1/3), 420—435.

1653. — —, 1971: Osservazioni e relazioni fra traslocazione del virus del mosaico giallo (GYMV), della scolorazione perinervale (GVBV) e cordoni endocellulari in piante di vite. I. Ann. Fac. Agrar. Univ. Cat. Sacro Cuore (Milano), N.S. 11 (1/3), 497—504.

1654. — —, 1972: Osservazioni e relazioni fra traslocazione del virus del mosaico giallo (GYMV) della scolorazione perinervale (GVBV) e cordoni endocellulari in piante di vite. Ann. Phytopathol., No. hors série, 35—40.
Discusses formation of trabeculae and virus movement with the 2 viruses GYMV and GVBV.

1655. — —, 1972: Nuove acquisizioni sull'impiego della tecnica dei cordoni endocellulari, in viti affette dal virus dell'arricciamento (GFV), del mosaico giallo (GYMV), e presunte sane. Ann. Phytopathol., No. hors série, 41—42.
Methods for locating trabeculae in grape tissues.

1656. — —, 1974: Le malattie da virus della Vite, „origini", „tappe", „passaggi", „finalità", e „modalita" de lavoro seguite, per la preparazione del materiale viticolo riguardante la prima selezione clonale, genetica e sanitaria, impostata, realizzata e sviluppata nell'Oltrepò pavese a datare dal 1953 (1953—1964). Nota 1. Pavia economica No. 3.

1657. — —, 1974: Dieci anni di ricerche sperimentali (1959—69) sui cordoni endocellulari in viti affette dai virus dell'arricciamento (GFV), mosaico giallo (GYMV) e scolorazione perinervale (GVBV). Note 2. Ed. Promanuscripto. Tip. Lito-tipo Pironi Broni, 110 pp.
Sanitary selection in Oltrepò pavese, trabeculae used for diagnosis.

1658. — —, 1975: Le malattie da virus della vite. I. Ann. Fac. Agrar. Univ. Cat. Sacro Cuore (Milano), N.S. 15 (1/3), 51—77 (with Eng. sum.).

1659. — —, 1975: Le malattie da virus della vite. II. Ann. Fac. Agrar. Univ. Cat. Sacro Cuore (Milano), N.S. 15 (1/3), 78—175 (with Eng. sum.).

1660. — —, 1976: Applicazione della termoterapia in pieno campo su viti variamente virosate. Informatore Agrario 32 (14), 365—373.

1661. — —, 1977: Particolare sintomatologia, del tipo ring-pattern, sulla cv. Barbera nell'Oltrepò Pavese. Ital. Agricola, 114 (7/8), 71—75.

1662. — —, 1979: Occurrence of a symptomatology of the ringspot-line pattern type in cv. Barbera plants of the Oltrepò Pavese (Italy). Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 87—89.

1663. — —, 1979: Virus diseases of the grapevine. The use of heat therapy in the field; "Attenuation" or elimination of viruses? Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 313—317.
Experiments on use of low voltage heating devices to heat treat vines in place in the vineyard.

1664. — —, Basaglia, R. and Minelli, L., 1975: Ricerche sul virus dell'accartocciamento della vite. Ital. Agricola, 112 (1), 102—113.
The authors put forward the hypothesis, based on graft transmission experiments, that grapevine leafroll could be caused by a particular strain of fanleaf (yellow mosaic) virus.

1665. Fortusini, A. e Belli, G., 1975: La selezione di cloni di vite esenti da virus in Lombardia. Coltivatore G. Vinic. Ital. 121 (10), 326—328. (Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. Appl. C.N.R., Torino, 87—92).
A report on the work of clonal selection in Lombardia (Northern Italy).

1666. — — e — — , 1978: Gravi danni da suberosi corticale (corky bark) in vigneti del Tortonese. Vignevini 5 (3), 31—35.
Severe damage due to corky bark in the vineyards of the Tortona region (Northern Italy). Several vines with severe symptoms of corky bark on the canes showed also symptoms of "legno riccio" on the rootstock, suggesting a possible etiological identity of the two diseases.

1667. Fresno, J., Pena-Iglesias, A., Castro, S. y Ray, M. C., 1979: Ultraestructura de *Chenopodium quinoa* y *Cucumis sativus* infectados por el virus del entrenudo corto infeccioso de la vid (Grapevine fanleaf virus o GFV) con tratamiento previo para eliminar ribosomas. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 97—101.

1668. Füri, J. und Németh, M., 1972: Stand der Leistungsselektion bei der Rebe in Ungarn. Wein-Wiss. 27, 79—96.

1669. Galet, P., 1977: Les maladies et les parasites de la vigne. Tome 1. Paysan du Midi, Montpellier, 871 p.
Important chapitre (168 pp.) consacré aux maladies à virus et à mycoplasmes.

1670. Galzy, R., 1971: Recherches sur la croissance de la vigne saine et court-nouée cultivée «in vitro». I. Première partie. Connaiss. Vigne Vin 5, 1—41.

1671. — — , 1972: La culture in vitro des apex de *Vitis rupestris*. C. R. Hebd. Séances Acad. Sci. (Paris) 274, 210—213.

1672. — — , 1972: Remarque sur la nutrition minérale des apex de *Vitis rupestris*. C. R. Hebd. Séances Acad. Sci. 275, 561—564.

1673. — — , 1977: Recherche d'un milieu minéral permettant la culture *in vitro* des apex de *Vitis rupestris* comportant trois ébauches foliaires. Participation à un recueil de travaux originaux dédiés à la mémoire de G. Morel. Masson Editeur.

1674. — — , Galzy, P., Nigond, J. et Plan, C., 1971: Remarques sur les causes d'extension du court-noué de la vigne. C. R. Séances Acad. Agricult. France 57, 1590—1597.

1675. Garau, R., Prota, U. e Servazzi, O., 1973: Indagini di alterazioni del tipo „legno riccio" della vite in Sardegna. Studi Sass. Sez. III Agr. 21, 321—332.
A wood pitting disease found to be widespread in Sardinia.

1676. — — , — — e — — , 1973: Ricerche intorno a comportamenti particolari delle viti con sintomi assimilabili al „legno riccio" in Sardegna. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 43—49.
On wood pitting of grapevines in Sardinia.

1677. — — , — — e — — , 1974: Osservazioni istologiche su viti portinnesto con sintomi riferibili al „legno riccio". Phytopathol. Mediter. 13, 64—70.
Histological abnormalities in xylem and phloem, growth of vines with symptoms, importance of microscopy examination for diagnosis.

1678. Garcia gil de Bernabé, A., 1973: Sélection phytosanitaire. Résultats obtenus jusqu'à ce jour en viticulture et en oenologie par le moyen de la sélection visuelle. Bull. OIV 47 (523), 678—681.

1679. — — , 1974: Problemas de la replantación del viñedo en la zona del Jerez, causados por la degeneración infecciosa de la vid. Aportación al caso de las cepas carrasqueñas y canarias. Thèse Ecole Tech. Sup. Ing. Agron., Univ. Polytech. de Madrid, 339 p., polycopie.
Description des principales viroses de la vigne, identification du virus du court-noué dans la région de Jerez. Sélection de matériel amélioré en se basant sur les symptômes, essais de désinfection du sol, avec replantation après un nombre variable d'années. Elaboration d'un programme de lutte contre les viroses de la vigne pour la région.

1680. — — , 1975: El enrollado de la vid en la zona del Jerez. An. INIA Ser. Prot. Veg. No. 5, 81—110 (Eng. with Span. sum.).
Description of symptoms, graft-transmission on the cv. Cabernet Sauvignon used as indicator.

1681. — — , 1976: La degeneración infecciosa y las enfermedades de virus de la viña en la zona del Jerez. Comunicaciones INIA Ser.: Prot. Veg. No. 6, 225 pp. (Summary of the author's thesis, see ref. 1679).
The paper covers a general discussion on grapevine viruses, symptoms in Jerez region, soil types, effects on soils, methods of diagnosis, replanting, plant selection, and plant health measures.

1682. — — , 1978: Problèmes de la replantation de la vigne et de la désinfection du sol. Bull. OIV 51 (571), 669—676.

Essais de non culture et de désinfection du sol au DD en vue de lutter contre le court-noué (fanleaf). Les résultats confirment la bonne efficacité du repos du sol et l'utilité de la désinfection comme complément.

1683. — — , 1979: La desinfección de suelos y la selección visual de la variedad Palomino Fino en la lucha contra las virosis de la vid en Jerez. Proc. 6th meeting ICVG, Cordoba 1976. Monografias No. 18, Minist. de Agricult., Madrid, 293—299.

1684. Gärtel, W., 1971: Importance économique des viroses de la vigne. Circonstances favorisant leur propagation. Lutte contre ces maladies. Bull OIV 44 (479), 40—46.

1685. — — , 1972: Présentation de symptômes de maladies ou d'attaques parasitaires rappelant des viroses chez la vigne. Ann. Phytopathol., No. hors série, 195.

1686. Geard, I. D., 1974: Virus diseases of grapevines. Hobart Tas. Dept. Agricult. 13 p.
General discussion of symptoms, transmission, and detection of the more common virus diseases.

1687. Gilmer, R. M. and Uyemoto, J. K., 1970: Tobacco ringspot virus infection of grapevine. Phytopathology 60, 574 (Abstr.).

1688. — — and — — , 1972: Tomato ringspot virus in "Baco Noir" grapevines in New York. Plant Dis. Reptr. 56, 133—135.
The vineyard under study had a long history of decline.

1689. — — , — — and Kelts, L. J., 1972: Infection of grapevine, in New York, by tobacco ringspot virus. Ann. Phytopathol., No. hors série, 121—122.

1690. Giunchedi, L., 1972: La malattia delle enazioni della vite nei vigneti dell'Italia Centro-Settentrionale. Informat. Fitopatol. 22 (23/24), 8—10.
The enation disease observed in several vineyards of Emilia-Romagna and Marche — delayed spring growth, bushy and stunted.

1691. — — , 1973: Virus X della patata isolato da radici e foglie di vite. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 73—77.
A strain of potato X virus isolated from the grapevine cv. Barbara after 100 d at 37 °C. The mother vine had symptoms of leafroll, however no symptoms had shown on indicator grape plants, and the virus was not re-isolated from inoculated grape.

1692. — — , 1975: Risanamento dei cloni di vite e loro mantenimento in sanità. Coltivatore G. Vinic. Ital. 121 (9), 275—277. (Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite" Lab. Fitovirol. Appl. C.N.R., Torino, 67—72).
Techniques used in obtaining virus disease free grapevines, maintaining them, and alterations in plants following heat treatment are discussed.

1693. — — e Credi, R., 1975: Le malattie degenerative della vite (virosi, micoplasmi e rickettsie). Sintomatologia, epidemiologia, aspetti sanitari ed agronomici. Vignevini 2 (4), 23—33.
Describes degenerative diseases of grapevines found in Italy, methods of maintaining healthy stocks and effects of procedures on vines are discussed.

1694. Glaser, T. and Skowronski, Z., 1970: A virus disease of grapevine. Ochrona Roślin 14 (2), 13—15 (Pol.).
Fanleaf of grapevine has been recorded in a vineyard in western Poland.

1695. Gnutova, R. V., Samonina, I. N. and Milkus, B. N., 1977: Serodiagnosis of the infectious chlorosis strains of grapevine fanleaf virus (GFV). In: Shtami virusov rastenii (Plant virus strains). Proc. Inst. Biol. and Pedol. Far East Science Centre, Acad. Sci. USSR, 46 (149), 250—252 (Russ.).

1696. Goheen, A. C., 1977: Virus and viruslike diseases of grapes. HortScience 12, 465—469.

1697. — — and Lowe, S. K., 1973: Use of electron microscopy for indexing grapevines for Pierce's disease. Riv. Patol. Veg. Ser. IV, 9 (3), 279—280.
Detection of rickettsialike bacteria in infected grape tissues and demonstration that such bacteria occurred in vines from northeastern Mexico.

1698. — — and Luhn, C. F., 1973: Heat inactivation of viruses in grapevines. Riv. Patol. Veg. Ser. IV, 9 (3), 287—289.
A method for the heat inactivation of heat-stable viruses and virus-like agents in grapevines, using dormant buds grafted to a healthy nurse plant.

1699. — — and — — , 1978: Association of stem pitting with corky bark in grapes and detection by indexing in standard indicators. Phytopathology News 12 (9), 172 (Abstr.).
Research done in 1976 and 1977 suggests that stem pitting is a sensitive symptom expression of the agent that produces corky bark. This agent is not a recognized NEPO virus.

1700. — — and Nyland, G., 1971: Rapid propagation of heat-treated grapevines. Wines and Vines 52 (5), 25—27.
Methods for rapid propagation of clean grapevines.

1701. — — , — — and Lowe, S. K., 1973: Association of a rickettsialike organism with Pierce's disease of grapevines and alfalfa dwarf and heat therapy of the disease in grapevines. Phytopathology 63, 341—345.
Demonstration that a heat labile organism was the causal agent of Pierce's disease and that the agent was very likely a rickettsialike bacterium.

1702. Goidanich, G., Canova, A. e Giunchedi, L., 1976: Una preoccupante degenerazione della vite: il „legno riccio". Terra e Vita 17 (5), 2 pp.
Criteria followed for the sanitary selection of the vine and the symptomatic aspects of the "legno riccio" are described.

1703. González, R. H., 1970: Nuevas especies de nematodes que atacan la vid en Chile (New species of nematodes that attack grapevine in Chile). Agricultura Téc. 30 (1), 31—37.
Xiphinema index and X. americanum associated with soil-borne virus diseases of grapevines in Chile.

1704. Graniti, A. and Martelli, G. P., 1970: Enations. In: Frazier, N. W., (Ed.): Virus diseases of small fruits and grapevines (a Handbook). Div. Agricult. Sci. Univ. Calif. (Berkeley), 241—243.

1705. — — and — — , 1970: Legno riccio. In: Frazier, N. W. (Ed.): Virus diseases of small fruits and grapevines (a Handbook). Div. Agricult. Sci. Univ. Calif. (Berkeley), 243—244.

1706. Gueorguieva, P., 1978: Enation of grapevine in Bulgaria. Vnedreni novosti 9, 51—52 (Bulg.).

1707. Guzman-Serrano, J.-C., 1970: Enquête sur le court-noué dans le Rioja. Progr. Agric. Vitic. 87 (20), 299—304.

1708. Hahn, H., 1973: Erfahrungen mit der Wärmetherapie bei Rebvirosen. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 175—176.
Modified method of heat treatment and propagation of grape shoot tip cuttings.

1709. Handreck, K. A., 1974: Grapevine virus diseases. 1. What are they? 2. Finding and getting rid of virus diseases. 3. Virus tested plants — supply and reliability. Austral. Grapegrower Winemaker (122), 6—7; (123), 6—7; (125), 6—7.
A popular series, prepared from discussions with Australian workers, publicizing Australian research on virus diseases; how they spread, description of some viruses in Australian vines, detection and elimination, quarantine and supply of virus tested material to industry.

1710. Harris, A. R., 1977: A first record of *Tylenchulus semipenetrans* and males of *Xiphinema index* in vineyards in north-eastern Victoria. Austral. Plant Pathol. Soc. Newsletter. Occurrrence of nematodes and indexing grapevines for presence of GFV.

1711. — — , 1978: Don't spread fanleaf Nematode. Austral. Grapegrower Winemaker (172), 20—22.
Importance, biology, ecology, dissemination and control of Xiphinema index with particular reference to the Australian environment.

1712. Harris, A. R., 1978: The effect of *Xiphinema index* and grapevine fanleaf virus on grapevines and vineyard management. 20th Int. Hort. Congress, Sydney, Aug. 1978, Abstr. 1375.
The persistence of the nematode and virus makes the complex difficult to control. Prevention of spread is therefore important in the Australian situation.

1713. Harrison, B. D., Finch, J. T., Gibbs, A. J., Hollings, M., Shepherd, R. J., Valenta, V. and Wetter, C., 1971: Sixteen groups of plant viruses. Virology 45, 356—363.
A proposal for grouping, characterizing and naming plant viruses.

1714. — — , Robertson, W. M. and Taylor, C. E., 1974: Specificity of retention and transmission of viruses by nematodes. J. Nematol. 6, 155—164.
General review of the problem, 35 references.

1715. Hartmair, V., 1972: Viruskranke Reben — eine Gefahr für den Weinbau. Winzer 28, 168—170.

1716. — — , 1972: Viruskranke Reben — eine Gefahr für den Weinbau? Im Blickfeld 23 (27), 5—8.

1717. — — , 1973: Phytosanitäre Maßnahmen im Rahmen der Rebenzüchtung. Winzer 29, 146—149.

1718. Hawker, J. S., Woodham, R. C. and Downton, W. J. S., 1974: Activity of B-1,3-glucan hydrolase in virus infected grapevines and other plants. Z. Pflanzenkrankh. Pflanzensch. 81, 100—107.
Grapevine fanleaf virus increased the activity of B-1,3-glucan hydrolase in laminae of Chenopodium quinoa, yet no difference in activity in laminae were found between healthy and infected vines with fanleaf, leafroll, yellow speckle, or fleck virus examined at intervals during the season. Many infected vines showed marked leaf symptoms in autumn.

1719. Hegedüs, Á. and Lehoczky, J., 1978: Histopathology of vascular tissue system in grapevine affected by legno riccio (rugose wood, stem pitting). Acta Phytopathol. Acad. Sci. Hung. 13, 133—149.

1720. Hévin, M., Gazeau, J. P., Leclair, P. and Rives, M., 1973: Enation symptoms found in France. Riv. Patol. Veg. Ser. IV, 9 (3), 251—252.
Des symptômes d'énation ont été observés dans des vignobles de l'Aude sur plusieurs cépages. Le greffage-indexage en vert sur Rupestris du Lot a induit dans un cas des symptômes de marbrure et dans un autre cas des «ringspots».

1721. — —, Leclair, P. and Rives, M., 1973: Green-grafting as a quick and secure method for graft-indexing viruses in the grapevine. Riv. Patol. Veg. Ser. IV, 9 (3), 277—278.
La technique de greffage en vert utilisée avec succès à Bordeaux est décrite. Elle permet l'apparition des symptômes de marbrure et de fanleaf sur Rupestris du Lot 20 à 30 jours après le greffage. Dans le cas de l'enroulement, les symptômes sur l'indicateur Merlot apparaissent à l'automne de l'année même du greffage.

1722. — —, Moutous, G. et Fos, A., 1978: Transmission de la Flavescence dorée par greffage en vert et présence du «corky bark» sur un cépage corse (Nielluccio). *Scaphoideus littoralis* Ball., vecteur possible de cette maladie. Connaiss. Vigne Vin 12, 79—86.
From vines showing atypical symptoms of Flavescence dorée, a disease has been transmitted to the indicator LN 33, giving symptoms similar to those of corky bark. Experiments for testing the transmissibility of corky bark by Scaphoideus littoralis are under way.

1723. — —, — —, — — et Rives, M., 1979: La transmission de la Flavescence dorée par la greffe en vert est facile et suggère que cette maladie est distincte du corky bark. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 227—229.
Transmission of Flavescence dorée by green drafting.

1724. — —, Ottenwaelter, M. M., Doazan, J. P. and Rives, M., 1973: Investigating the transmission of marbrure and fanleaf through the seed in the grapevine. Riv. Patol. Veg. Ser. IV, 9 (3), 253—258.
Des pépins récoltés en fécondation libre sur des souches de 4 cépages, reconnues porteuses de marbrure ou de court-noué, ont été semés et 145 descendants on été indexés par greffage avec Rupestris du Lot. Aucun d'eux ne s'étant révélé virosé, on conclut à la non-transmission de ces deux viroses par la graine.

1725. Hewitt, W. B., 1971: Transmission of grapevine viruses. In: Nedeltchev, N. (Ed.): Problems of viticulture. Zemizdat (Publ.) Sofia (Bulgaria), 276—280 (Bulg.).

1726. — —, 1971: Les maladies à virus de la vigne: symptômes, mode de dissémination et répartition géographique. Bull. OIV 44 (480), 97—125.
A review.

1727. — —, 1973: Avances recientes sobre enfermedades de la vid: organismos tipo mycoplasma y rickettsia. In: Proc. Simp. Internac. Viticult. Mexico, 21—29 Oct. 1973, 140—141, Comm. Nacional de Fruticultura S.A.G.
Recent development in virus diseases of the grapevine, mycoplasma-like and rickettsia-like organisms.

1728. — —, 1973: Advances on virus and viruslike diseases of grapevine: viruses, mycoplasmalike and rickettsialike organisms. Riv. Patol. Veg. Ser. IV, 9 (3), 218—226.

1729. — —, 1975: Graft transmission of a grapevine wood pitting and a flat trunk disease. Plant Dis. Reptr. 59 (10), 845—848.

1730. — —, 1979: On the origin and distribution of virus and virus-like diseases of the grapevine. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 3—5.

1731. — —, 1979: Improving vineyards. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 353—359.
Introduction and discussion on grapevine sanitary selection, testing of improved clones, multiplication of healthy material, performance of this material in the vineyard and re-invasion by nematode vectors and viruses.

1732. — —, Goheen, A. C., Cory, L. and Luhn, C., 1972: Grapevine fleck disease, latent in many varieties, is transmitted by graft inoculation. Ann. Phytopathol., No. hors série, 43—47.
Characterization of fleck disease.

1733. — —, Martelli, G. P., Dias, H. F. and Taylor, R. H., 1970: Fanleaf virus of grapevine. CMI/AAB Descriptions of Plant Viruses No. 28, 4 pp.

1734. — — and Neja, R., 1971: Grapevine bark and wood pitting disease found in California. Plant Dis. Reptr. 55 (10), 860—861.

1735. Heyd, J. Ch., 1975: La transmission des virus GFV, AMV, SLRV de la vigne et du framboisier par nématodes *Xiphinema* Cobb. Mémoire de fin d'études présenté à l'E.N.I.T.A. Angers. Stage effectué à la Stat. de Pathol. Vég. Colmar, Avril-Septembre 1975. 98 pp.

1736. Heyns, A. J., 1976: Progress in the production of improved plant material. Decid. Fruit Grower 26 (6), 216—220.
Outline of the progress made in the elimination of viruses from selected clones of grapevine.

1737. Hidalgo, L., 1974: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Diffusion du matériel sélectionné. Rapport espagnol. Bull. OIV 47 (520), 475—485.

1738. Hirschmann, H., Paschalaki-Kourtzi, N. and Triantaphyllou, A. C., 1966: A survey of plant parasitic nematodes in Greece. Ann. Inst. Phytopathol. Benaki N.S. 7, 144—156.
Xiphinema americanum, X. sp., and X. index were found in the soil of grape vineyards in 1960.

1739. Hopkins, D. L., 1976: Effect of tetracycline antibiotics on the development of Pierce's disease of grapevine. Proc. Amer. Phytopathol. Soc. 3, 259 (Abstr.).

1740. — — , 1977: Diseases caused by leafhopper-borne, rickettsia-like bacteria. Ann. Rev. Phytopathol. 15, 277—294.

1741. — —, 1978: Comparisons of Florida isolates of the Pierce's disease bacterium. 3rd Internat. Congr. Plant Pathol., Munich (Germany), 62 (Abstr.).

1742. — — , 1979: Pierce's disease of grapevine. Effects of oxytetracycline treatments on the rate of disease development in Florida. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 217—222.
Soil drenching with 50 or 100 ppm with the antibiotic compound, once or twice per week delayed disease symptoms as much as 1 to 2 years.

1743. — — and Mollenhauer, H. H., 1973: Rickettsia-like baeterium associated with Pierce's disease of grapes. Science 179, 298—300.

1744. — — and — — , 1975: Tylose and gum formation in the xylem of Pierce's disease infected grapevines. Proc. Amer. Phytopathol. Soc. 2, 65 (Abstr.).

1745. — — , — — and Mortensen, J. A., 1974: Tolerance to Pierce's disease and the associated rickettsia-like bacterium in muscadine grape. J. Amer. Soc. Hort. Sci. 99, 436—439.

1746. — — and Mortensen, J. A., 1971: Suppression of Pierce's disease symptoms by tetracycline antibiotics. Plant Dis. Reptr. 55, 610—612.

1747. — — and — — , 1974: Pierce's disease on muscadine grapes. Proc. Amer. Phytopathol. Soc. 1, 160 (Abstr.).

1748. — — , — — and Adlerz, W. C., 1973: Protection of grapevines from Pierce's disease with tetracycline antibiotics. Phytopathology 63, 443 (Abstr.).

1749. Hrček, L., 1973: Results of a visual determination of grapevine virus diseases in Slovenia. Zb. Biotechn. Fak. Univ. Ljubljani, Kmetijstvo 21, 225—229 (Sloven. with. Eng., Germ. sum.).

1750. — — , 1974: Problèmes posés par les maladies à virus en viticulture. Sobodno kmetijstvo (Ljubljana) 12, 603—606 (Sloven.).

1751. — — and Korošek, Z., 1976 (Publ. 1977): Effect of virus diseases on the yield and quality of wine grapevines. Zb. Biotechn. Fak. Univ. Ljubljani, Kmetijstvo 28, 111—117 (Sloven. with Eng., Germ. sum.).
Plants showing fanleaf or leafroll symptoms gave lower yields of poorer quality grapes than symptomless plants.

1752. — — and — — , 1977: Economic importance of grapevine virus diseases. Savjetovanje o ekskoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.), Mostar (Yugoslavia), 131—137 (Serbo-Cr.).
The yield of healthy and fanleaf-infected vines has been recorded for 3 years. Considerable and significant differences have been observed between the 2 groups.

1753. Huglin, P., 1971: Orientation souhaitée par les experts dans la recherche virologique, l'information et la réglementation. Bull. OIV 44 (481), 197—206.

1754. Ikin, R., 1975: The establishment of Australian repositories for virus-tested fruit varieties. Commonwealth Dept. Health, Canberra, 12 pp.
Details on formation, organization, operation, and objectives in the establishment of repositories for fruits and grapevines. State Departments of Agriculture will use material for release to industry.

1755. — — , 1978: Accession list of virus-tested fruit varieties in Australia. 6th Ed., Dept. Health Plant Quarant., Canberra, 35 pp.
A complete list of virus-tested grapevine clones in Australia, and those clones in the fruit variety foundation scheme.

1756. Ivanov, J., Valtchev, V., Abracheva, P. et Maléninе, I., 1975: Etat actuel des travaux sur la sélection clonale génétique et sanitaire Méthodes et résultats. Diffusion du matériel sélectionné. Rapport bulgare. Bull. OIV 48 (531), 430—442.

1757. Jacob, H., 1977: Vorkommen und Nachweis eines Potyvirus in Reben. Phytopathol. Z. 88, 85—90.
Isolation and demonstration of a potyvirus by biological, serological and electron microscopical means is reported. The virus was present in grapes showing symptoms of either grapevine fanleaf or yellow mosaic virus mechanically transmitted to Nicotina glutinosa and Solanum demissum "A6".

1758. Jankulova, M., 1970: Nachweis des Tabakmosaic-Virus an der Rebe in Bulgarien. Dokl. Akad. Sel'khoz. Nauk. Bolg. (C.R. Acad. Sci. Agric. Bulgarie), 3 (2), 123—130 (Germ.).

1759. — — , 1976: Investigations on the grapevine fanleaf virus (GFLV). Rastitelnozasht. Nauka (Plant Protect. Science) 4, 11—22 (Bulg. with Eng. sum.).
Nine isolates of GFLV from diseased and apparently normal grapevines were inoculated to herbaceous hosts, physical properties determined, and viruses serologically identified.

1760. — — , 1977: Virus and mycoplasma diseases of grapevine (Fam. Vitaceae). In: Kovatchevski *et al.*: Virusni i mikoplasmeni bolesti po kulturnite rastenia. Zemizdat (Publ.) Sofia (Bulgaria), 280—290 (Bulg.).

1761. — — , 1978: Methods for the diagnosis of grapevine virus diseases. Vnedreni novosti 9, 14—19 (Bulg.).

1762. — — and Kaitasova, P., 1978: New viruses isolated from grapevine in Bulgaria. Vnedreni novosti 9, 7—13 (Bulg.).
Arabis mosaic, broad bean wilt, alfalfa mosaic, tomato bushy stunt, Bulgarian latent and artichoke Italian latent viruses have been found recently in grapevines in Bulgaria.

1763. — — , Savino, V., Gallitelli, D., Quacquarelli, A. and Martelli, G. P., 1979: Isolation of Artichoke Italian latent virus from the grapevine in Bulgaria. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 143—147.
Symptoms like fanleaf, extended herbaceous host range, virus is characterized physically, single stranded RNA, not serologically related to some 26 viruses of similar nature, positive serologically with AILV.

1764. Kliewer, W. M. and Lider, L. A., 1976: Influence of leafroll virus on composition of Burger fruits. Amer. J. Enol. Viticult. 27, 118—124.
Biochemical changes found in grapevine infected with leafroll.

1765. Koblet, W., 1973: Viruskontrolle und Bodendesinfektion (Zusammenfassung). Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 177—179.
A description of the condition of vines in an old vineyard soil, after replanting, and methods of soil treatment.

1766. — — and Klingler, J., 1979: Influence of soil treatment, nematodes and virus symptoms on grapevines. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 303—304.
Results of soil treatment, replanting and reinfestation by nematodes after treatment in 1968 und 1969. Recurrence of disease was associated with Xiphinema vuittenezi in DD treated soil.

1767. Koeher, F. G., Valenzuela, J. B. y Villalobos, A. P., 1976: Algunos problemas nutricionales y causades per virus en la vid. Agricultura Tecnica (Chile) 27 (1), 1—8.

1768. Krake, L. R. and Woodham, R. C., 1978: Grapevine summer mottle: a new graft-transmissible disease. Vitis 17, 266—270.
Leaf symptoms, expressed during summer as a systemic mottling syndrome, are associated with a graft-transmissible disease of unknown etiology. Symptomatology, host range, and serological evidence distinguish summer mottle from any previously reported disease of grapevine.

1769. Kriedemann, R. E., Sward, R. J. and Downton, J. S., 1976: Grapevine responds to carbon dioxide enrichment during heat therapy of shoots for virus disease control. Austral. J. Plant Physiol. 3 (5), 605—618.

1770. Krnjaic, D., 1972: The distribution of *Xiphinema, Longidorus* and *Trichodorus* species in vineyards in Yugoslavia. Ann. Phytopathol., No. hors série, 191—194.

Species of Xiphinema found important based on geographic distribution and quantitative ratios.

1771. Küppers, P., Nienhaus, F. and Schinzer, U., 1975: Rickettsia-like organisms and virus-like structures in a yellows disease of grapevines. Z. Pflanzenkrankh. Pflanzensch. 82, 183—187.
RLO could be demonstrated in grapevines with yellows disease by electron microscopy, shortly before symptom development in early summer.

1772. Kyriakopoulou, P. E. and Bem, F. P., 1973: Some virus diseases of cultivated plants noticed in Greece during 1971 and 1972. A Symposium of Geotechnical Research, Athens, January 1973, Rept. No. 102 (Greek).
The complete symptomatology of grapevine Flavescence dorée was observed in Larissa, Central Greece, on the varieties Rozaki, Italia and Cardinal, where it caused a serious problem.

1773. Lacasta, A. P., 1976: Caracterizacão de um virus isolado de videira. Rel. tirocínio do curso de RegAgrícola, 55 pp. (Cicl.).
A strain of TMV isolated by mechanical transmission from grapevine cv. Jaen.

1774. Lamberti, F., 1975: Nematodi vettori di virus della vite e relativi metodi di lotta. Coltivatore G. Vinic. Ital. 121 (8), 220—221. (Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. Appl. C.N.R., Torino, 45—47).
A list of the nematode vectors of viruses found associated with grapevine plants is given. The main nematode-control methods are discussed.

1775. — — , 1977: Nematodi vettori di virus della vite e relativi metodi di lotta. Ital. Agricola 114 (1), 105—109.
List of the nematode vectors of grapevine viruses, and methods of nematode control are illustrated and discussed.

1776. — — , 1977: Nematode vectors of grapevine viruses. Savjetovanje o ekskoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.), Mostar (Yugoslavia), 139—142 (Croat.).

1777. — — , 1979: Nematode vectors of grapevine viruses and their spread and control. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 239—246.
A general paper, introduction to section on nematod vectors.

1778. — — , Bleve-Zacheo, T., Saric, A. e Inserra, R., 1973: Contributo alla conoscenza della nematofauna delle isole dalmate. I. Longidoridae di Vis, Biševo, Budikovac e Korčula. Riv. Patol. Veg. Ser. IV, 9 (3), 267—268 (Abstr.).

1779. — — , — — , — — e — — , 1973: Contributo alla conoscenza della nematofauna delle isole dalmate. I. I Longidoridae di Vis, Biševo, Budicovac e Korčula. Nematol. Mediter. 1, 115—213.
The results of an investigation on the Longidoridae spp. of Vis, Biševo, Budicovac and Korčula and their distribution are reported.

1780. — — , Coiro, M. T. e Saric, A., 1976: Contributo alla conoscenza della nematofauna delle isole Dalmate. II. I Longidoridae di Hvar. Nematol. Mediter. 4, 249—251.
Longidoridae spp. found in Hvar and their distribution are reported.

1781. — — , Greco, N. and Zaouchi, H., 1975: A nematological survey of date palms and other major crops in Algeria. F.A.O. Plant Prot. Bull. 23, 156—160.
Xiphinema index is reported from Algerian vineyards.

1782. — — , Taylor, C. E. and Seinhorst, J. W., 1975: Nematode vectors of plant viruses. Plenum Publisher, New York and London, 460 pp.
The volume reports the latest research on the transmission of plant viruses by nematodes and provides taxonomic and morphological studies.

1783. La Red, F. C. y. Vega, E., 1970: Control de nematodos en viñedos implantados. Rev. Invest. Agropecuar. Ser. 5, Patol. Veg. 7 (2), 31—35 (Span. with Engl. sum.).
The population level of Xiphinema index can be reduced temporarily by adding an emulsion of DBCP (Dibromochloropropane) in irrigation water.

1784. Larrea, A., 1971: Las virosis de la vid. Semana Vitivinic. (Valencia) No. 1281, 1292, 1294.

1785. Latorre-Guzmán, B. A., 1975: Further investigations of the etiology of Pierce's disease of grapevines. Ph. D. Diss., Univ. of Calif., Davis, 100 pp.
Proof that the Lactobacillus found by others in leafhopper vectors of Pierce's disease was a saprophyte associated with the insect and that it had no causal relationship with the disease. Also a study that showed antibiotic treatments to be of no value in Pierce's disease control.

1786. — — , Kado, C. I., Goheen, A. C. and Kunkee, R. E., 1975: Characterization of the bacterium associated with Pierce's disease. Proc. Amer. Phytopathol. Soc., 2, 67 (Abstr.).

1787. Legin, R., 1971: Virologische Teste bei der amtlichen Klonenanerkennung in Frankreich. I. Internat. Symp. über Probleme der Klonenselektion und der Erhaltungszüchtung im Weinbau, Trier, 23 (Kurzfassung).
The text of this paper is available at the Station de Pathologie Végétale, 28 rue de Herrlisheim, Colmar (France).

1788. — — , 1972: Expérimentation pour étudier l'effet des principales viroses sur la végétation et la production de la vigne. Ann. Phytopathol., No. hors série, 49—57.
Effects of fanleaf and leafroll diseases. Growth and productivity of Chardonnay and Pinot Noir in Burgundy, Alsace and Jura, 1961 to 1970.

1789. — — , 1973: Erfahrungen mit der Gesundheitsselektion im französischen Weinbau, sowie deren Organisation. Weinberg u. Keller 20, 351—353.

1790. — — et Vuittenez, A., 1973: Comparaison des symptômes et transmission par greffage d'une mosaique nervaire de *Vitis vinifera*, de la marbrure de *V. rupestris* et d'une affection nécrotique des nervures de l'hybride Rup.-Berl. 110 R. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 57—63.
Fleck (marbrure), vein mosaic and vein necrosis.

1791. Lehoczky, J., 1972: Destructive effect of legno riccio (rugose wood) on European grapevine varieties. Ann. Phytopathol., No. hors série, 59—65.

1792. — — , 1972: Present status of virus diseases of grapevine in Hungary and the antecendents. Növényvédelem 8 (3), 97—100.

1793. — — and Tasnády, Gy., 1971: The effects of fanleaf and chrome mosaic virus diseases on the yield and fruit sugar content of grapevines. Kis. Közl. 64/C (1—3), 49—64 (Publ. 1973).
Yields from grapevines with fanleaf and chrome mosaic were in order some 68 and 66 % less than that from normal vines.

1794. Leonhardt, A., 1978: Absterbeerscheinung bei Ertragsreben. Bad. Winzer 8, 8—14.

1795. Lider, L. A., Goheen, A. C. and Ferrari, N. L., 1975: A comparison between healthy and leafroll-affected grapevine planting stocks. Amer. J. Enol. Viticult. 26, 144—147.
Leafroll reduces the yield and causes fruit to mature much later on leafroll-infected than on healthy vines of "Burger". The adverse maturity delay can be mitigated by removing half or more of the potential crop before veraison.

1796. Lima, M. B., 1974: *Xiphinema italiae* Meyl, 1953 (Nematoda: Dorylaimida) found around roots of grapevine in Portugal. Agronomia Lusit. 35, 273—276.

1797. Loreti, F. e Lalatta, F., 1974: Definizione del metodo per la selezione clonale. Tavola Rotonda „Aspetti genetici, sanitari e normativi della selezione del materiale viticolo di base". Ann. Accad. Naz. Agric. Bologna (Italia) 167, 127—135.

1798. Lovisolo, O. e Conti, M. (Ed.), 1975: Malattie da virus e da mycoplasmi della vite. Atti Tavola Rotonda Lab. Fitovirol. Appl. C.N.R. Torino, 112 pp.
A collection of papers presented at a symposium on grapevine diseases caused by viruses and mycoplasmas. (Vedi anche Coltivatore G. Vinic. Ital. 121 [1975]).

1799. Lowe, S. K., Nyland, G. and Mircetic, S. M., 1976: The ultrastructure of the almond leaf scorch bacterium with special reference to topography of the cell wall. Phytopathology 66, 147—151.
Electron microscopy study of the bacterium causing almond leaf scorch and grapevine Pierce's disease.

1800. Luhn, C. F. and Goheen, A. C., 1970: Viruses in early California grapevines. Plant Dis. Reptr. 54 (12), 1055—1056.
Leafroll was present in 18 %, no other virus diseases detected by indexing.

1801. McGechan, J. K., 1970: Important virus diseases of grapevines in New South Wales. Agricult. Gaz. New South Wales 81, 349—52.
Describes symptoms of fanleaf virus, leafroll, fleck, and enation diseases.

1802. McGuire, J. M., Kim, K. S. and Douthit, L. B., 1970: Tobacco ringspot virus in the nematode *Xiphinema americanum*. Virology 42, 212—216.
Particles resembling those of TRSV were found in the lumina of the oesophagus.

1803. Malenin, I. and Petrova, I., 1974: Influence of infectious necrosis on the formation of free amino acids of grapevine. Gradinar. Lozar. Nauka, 11 (2), 119—123 (Bulg.).

1804. Maleš, P. and Bubić, J., 1977: Viruses as a limiting factor of grapevine productivity in Dalmatia. Savjetovanje o ekskoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.), Mostar (Yugoslavia), 143—148 (Croat.).

1805. Mali, V. R., 1976: *Xiphinema index* — a vector of grapevine yellow mosaic and Hungarian chrome mosaic diseases in Hungary. Indian Phytopathology 29, 363—369.
Xiphinema index (larvae and females) transmitted GYMV and HCMV, but Xiphinema vuittenezi failed to do so.

1806. — — and Vanek, G., 1972: Nematodes of the family Longidoridae (Thorne) Meyl and their role in Czechoslovakian vineyards. Biologia (Bratislava) B 27 (11), 841—852.

1807. — — and — — , 1973: *Xiphinema vuittenezi* as probable vector of some grapevine virus diseases in Czechoslovakia. Plant Virology, Proc. of the 7th Conf. Czechoslov. Plant Virologists, High Tatras (1971), 353—361.

1808. — — , — — and Bojnanský, V., 1975: Transmission by nematodes of some grapevine viruses occurring in Czechoslovakia and Hungary. Pol'nohospodárska Veda, Sér. A 3, 1—130 (Engl. with Slovak., Russ., French, Germ. sum.).
Xiphinema vuittenezi and Paralongidorus maximus were found in vineyards in Czechoslovakia, X. index and X. vuittenezi in Hungary. In transmission trials, X. index was found to be a vector of fanleaf and chrome mosaic viruses. No evidence could be given that X. vuittenezi can transmit either of these 2 viruses. 105 ref.

1809. Mariën, W., 1975: Selection and sanitation of grapevine. Tuinbouwberichten 39 (12), 477—480.

1810. Marinescu, V. G.. 1973: Les maladies virales de la vigne en Moldavie et les moyens de lutte. Thèse de doctorat en biologie, Kishinev (Russe).

1811. — — et Bondarchuk, V. V., 1976: La mosaïque des nervures, maladie à virus de la vigne. Sadovod. Vinogradar. Vinodel. Moldavii 31 (10), 41—42 (Russe).
La mosaïque des nervures est due à un virus différent du virus du court-noué.

1812. Martelli, G. P., 1970: Shoot necrosis. In: Frazier, N. W. (Ed.): Virus diseases of small fruits and grapevines (a Handbook). Div. Agricult. Sci. Univ. Calif. (Berkeley), 245.
A description.

1813. — — , 1970: Comments on the heat therapy of the grapevine. La thermothérapie des espèces ligneuses, Gembloux, 8 pp.

1814. — — , 1972: Recenti acquisizioni sulle virosi della vite. In: Problemi generali della lotta contro le malattie delle piante. Ist. Tech. Propag. Agr., Roma, 95—102.

1815. — — , 1975: Il punto sulle attuali conoscenze sui virus, le virosi ed altre malattie infettive della vite. Ital. Agricola, 112 (2), 80—97; (3), 107—118; (4), 94—102.

1816. — — , 1975: Le virosi della vite. Coltivatore G. Vinic. Ital. 121 (8), 207—209. (Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. C.N.R., Torino, 15—20).

1817. — — , 1975: Some features of nematode-borne viruses and their relationship with the host plant. In: Lamberti, F., Taylor, C. E., Seinhorst, I. W. (Ed.): Nematode vectors of plant viruses. Plenum Publishing Co., London, 223—252.
A review of nematode-borne viruses including those of grapevine with particular reference to chemico-physical, serological and ultrastructural properties and ecological behaviour.

1818. — — , 1978: Nematode-borne viruses of grapevine. In: Scott, P. R. and Bainbridge, A. (Eds.): Plant Disease Epidemiology, Blackwell Scientific Publications, Oxford, 274—282.
Review of the present knowledge on nematode-borne viruses of the grapevine. Summarized information is given on the diseases, viruses and vectors, virus-vectors relationships and epidemiology of the diseases. Possibilities of control are outlined.

1819. — — , 1978: Nematode-borne viruses of grapevine, their epidemiology and control. Nematol. Mediterr. 6, 1—27.
Review of the present status of knowledge on nematode-borne viruses of the grapevine (129 ref.).

1820. — — , 1979: New viruses of grapevine. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 119—125.
A discussion on new viruses found in grapevines given in an introduction to a section.

1821. — — , Gallitelli, D., Abracheva, P., Jankulova, M., Savino, V. and Quacquarelli, A., 1979: A manually transmissible latent virus of the grapevine from Bulgaria. Proc. 6th meeting ICVG, Cordoba 1976. Monografias ICVG No. 18, Minist. de Agricult., Madrid, 135—141.
Virus characterized, isometric 30 nm etc. Virus differed serologically from 28 isometric viruses, including 13 NEPO viruses.

1822. — — , — — , — — , Savino, V and Quacquarelli, A., 1977: Some properties of grapevine Bulgarian latent virus. Ann. Appl. Biol. 85, 51—58.
Virus was sap inoculated to a restricted host range and reinoculated to grape seed-

lings causing no symptoms. Methods and description of purified virus given and properties of components in sedimentation given in detail.

1823. — —, Godini, A., La Notte, E., Savino, V. e Russo, E., 1977: Progressi nella selezione clonale e sanitaria e nel risanamento della vite in Puglia e Basilicata. In: Martelli, G. P. (Ed.): Utilizzazione dei risultati della selezione della vite da vino. Atti Seminario C.N.R., Bari (Italia), 111—124.
Work in progress on clonal and sanitary selection of grapevine in Apulia and Basilicate. 48 varieties are included in the program. Heat therapy appears as a necessary complementation of visual selection in the field.

1824. — —, Lehoczky, J. and Quacquarelli, A., 1970: Hungarian chrome mosaic. In: Frazier, N. W. (Ed.): Virus diseases of small fruits and grapevines (a Handbook). Div. Agricult. Sci. Univ. Calif. (Berkeley), 236—237.
A description.

1825. — — and Piro, G., 1975: Virus diseases of the grapevine in a Sicilian herbarium of the past century. Vitis 13, 329—335.
Fanleaf, yellow mosaic and leafroll evident in herbarium specimens (dried) collected in Sicily between 1880—1886.

1826. — — and Quacquarelli, A., 1972: Hungarian chrome mosaic of grapevine and tomato black ring: two similar but unrelated plant viruses. Ann. Phytopathol., No. hors série, 123—141.
Purification and characterization, in part, of chrome mosaic virus as compared with some other ringspot viruses.

1827. — — and — —, 1972: Grapevine chrome mosaic. CMI/AAB Description of Plant Viruses, No. 103, 3 pp.
Hungarian chrom mosaic.

1828. — —, — — and Gallitelli, D., 1978: Grapevine Bulgarian latent virus. CMI/AAB Descriptions of Plant Viruses, No. 186, 4 pp.

1829. — —, Rana, G. L. and Savino, V., 1977: Artichoke Italian latent virus. CMI/AAB Descriptions of Plant Viruses, No. 176, 4 pp.

1830. — — e Rosciglione, B., 1973: Sintomi di legno riccio in vigneti siciliani. Informatore Fitopatol. 23 (10), 5—8.
Description of wood pitting disease in declining vines of Sicilian vineyards.

1831. — —, — — e Savino, V., 1975: Selezione sanitaria e clonale e risanamento della vite in Puglia, Basilicata e Sicilia. Coltivatore G. Vinic. Ital. 121 (10), 331—332. (Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. Appl. C.N.R., Torino, 97—100).

1832. — —, Salerno, M., Pastena, B. e Rosciglione, B., 1974: Selezione clonale di vitigni di uva da vino in Sicilia e loro risanamento. Vignevini 1, 19—25.
Review of clonal selection of grapevines in southern Italy, from about 1969 to date, the methods given in detail; discussion also includes Sicilian vineyards.

1833. — —, Savino, V., Abracheva, P. e Rosciglione, B., 1978: Necrosi delle nervature della vite in Italia e Bulgaria. Informatore Fitopatol. 28 (10), 3—5.
Vein necrosis of grapevine recorded in Italy and Bulgaria.

1834. — —, — —, Rosciglione, B. and Quacquarelli, A., 1979: Clonal and sanitary selection and production of virus disease-free grapes in southern Italy. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 345—348.
Progress report.

1835. Mavraganis, S. G., Thanassoulopoulos, C. C. and Panayotou, P. C., 1976: Some observations on virus and virus-like diseases in Greek grapevines. Vitis 15, 243—247 (Eng. with Fr. sum.).
TomBRV and fanleaf viruses identified by serology. Stem pitting in high numbers of Korinthiana on 5 BB and R 99. Fanleaf in 20—100 % of vines in N and NW Peloponnesus and isle of Zanthe. X. index found in most diseased vineyards.

1836. Meagher, J. W., Brown, R. H., Taylor, R. H. and Harris, A. R., 1976: Distribution of *Xiphinema index* and other parasitic nematodes associated with vines in northeast Victoria. Austral. J. Exp. Agricult. Animal Husb. 16, 932—936.
Occurrence of Xiphinema index only in Rutherglen district, and frequently associated with GFV.

1837. Mendgen, K., 1971: Untersuchungen über eine Vergilbungskrankheit der Reben an Rhein, Mosel und Saar. Weinberg u. Keller 18, 345—431.
The occurrence of a "Flavescence dorée"-like disease in vineyard, history, symp-

toms, cytological and EM study of diseased tissues. Thread-like structures similar to virus particles found in abnormal phloem cells.

1838. Mendonça, A. de V. E., Sequeira, O. A. de et Ferreira, A. A., 1972: Sur l'isolement d'un virus à partir de cultures de tissus de vigne. Ann. Phytopathol., No. hors série, 143—145.
Virus-induced symptoms different from fanleaf on herbaceous plants.

1839. — —, — — and Mota, M., 1974: Mycoplasma-like structures extracted from *Vitis vinifera* L. and observed by the negative staining technique. Agronomia Lusit. 35, 277—282.

1840. Melkonyan, M. V., 1975: Selection as a means of controlling grape virus diseases. Biol. Zh. Armenii 28 (8), 45—50.
Nematode vectors and soil treatment also discussed.

1841. Mikušová, A. and Vanek, G., 1974: Testing of virus diseases of grapevine on herbaceous indicator plants. Vinohrad 12, 232—233 (Slovak.).

1842. — — and — —, 1975: Heat treatment of grapevine virus diseases in practice. Vinohrad 13, 10 (Slovak.).

1843. — —, — — and Bojnanský, V., 1978: Thermotherapy of grapevine in practice. Sb. UVTIZ-Ochr. Rostl. 14, 29—34 (Slovak.).

1844. — —, — — and Kriváněk, V., 1977: Thermotherapy of new grapevine clones in practice. Vinohrad 15, 104—105 (Slovak.).

1845. — —, — — and — —, 1977: Morphological differences between virus-infected grapevines and grapevines cured by heat treatment. Sb. UVTIZ-Ochr. Rostl. 13, 161—167 (Slovak.).

1846. Milkus, B. N., 1970: Some anatomical and biochemical pecularities of grapevine affected by yellow mosaic virus disease. Proc. 2nd All-Union Conf. of Viticulturists, Moscow, 49—50 (Russ.).

1847. — —, 1974: Mycoplasma- or chlamydia-like bodies in grape, affected by marbour. Acta Phytopathol. Acad. Sci. Hung. 9 (3/4), 385—388.
Electron microscopy study of grapevine plants affected by fleck (marbrure). Mycoplasma-like organisms observed in phloem cells of diseased vines. Inhibitory effect of tetracycline antibiotics on the disease.

1848. — —, 1975: The influence of grapevine infectious chlorosis virus on chloroplast ultrastructure. Acta Phytopathol. Acad. Scient. Hung. 10 (3/4), 179—184 (Engl.).

1849. — —, 1976: The free amino acid composition of healthy grapevines and of grapevines infected by yellow mosaic virus. Virusnye bolzeni rastenii Dalnego Vostoka (Virus diseases of plants of the Far-East) 40 (143), 90—97 (Russ.).

1850. — —, 1976: Multivesicular bodies and microbodies in the tissues of infectious-chlorosis-virus-infected grapevines. Sel'skokhoz. Biol. 11 (2), 297—298 (Russ. with Eng. sum.).

1851. — —, 1977: The diseases of grapevine caused by mycoplasma-, chlamidia- and rickettsia-like bodies. In: Technologia virastivanija bezvirusnogo posadotchnogo materiala plodovich cultur i vinograda (The technology of production of virus-free planting material of fruit-trees and grapevines). Stiinza, Kishinev, 98—102 (Russ.).

1852. — —, 1977: Electron microscope study of leaf cells of grapevines infected by yellow mosaic virus. Izv. Akad. Nauk Moldav. SSR, Ser. Biol. i Chim. Nauk 2, 41—45 (Russ.).

1853. — —, 1978: Mycoplasma diseases of grapevine in Ukraina. 4th Internat. Congr. Virol., The Hague (Netherlands), 176 (Abstr.).
Fleck or marbrure ("marbour") and vein necrosis of grapevine are commonly found in Ukraine. Microorganisms identified as members of the PLT group (Chlamidia, Bedsonia) have been found in phloem sieve cells of grapevines affected by fleck, while typical mycoplasms were found in phloem parenchyma cells of grapevines affected by vein necrosis.

1854. — — and Eremeeva, N. E., 1975: Effect of grapevine chlorosis virus on protein metabolism in the plant. Fiziol. Biokhim. Kul'turn. Rast. USSR 7 (5), 503—565 (Russ. with Eng. sum.).

1855. — — and Kalaschyan, J. A., 1978: Mycoplasma-like bodies in phloem tissue of grapevine affected by vein necrosis. Izv. Akad. Nauk Moldav. SSR, ser. Biol. i Chim. Nauk 1, 29—30 (Russ.).

1856. — —, Marinesku, W. G., Samonina, J. N. und Krylow, A. W., 1976: Viruskrankheiten der Reben in der Sowjetunion. Weinberg u. Keller 23, 419—435.
Indexing and serology prove the presence of fanleaf, yellow mosaic, veinbanding, and graft transmission demonstrated leafroll, as well as fleck, chlorotic mosaic, wood pitting, vein mosaic, vein necrosis, interveinal necrosis and infectious necrosis. TMV was isolated and new grapevine line pattern is described.

1857. — — and Novits'ky, V. I., 1974: Mycoplasma-like bodies in grape leaves affected with marble disease. Mikrobiol. Zhur. (Kiev), 36 (4), 514—516 (Russ. with Eng. sum.).

1858. — — , Shtein-Margolina, V. A. and Kozar, F. E., 1975: Transformation of ultrastructure of grape leaves under the effects of infectious chlorosis virus. Sel'skokhoz. Biol. USSR 10 (4), 548—550 (Russ. with Eng. sum.).

1859. — — and Shterenberg, P. M., 1972: Grapevine virus diseases in Ukraine. 2nd Congr. Yugoslav. Microbiol. with Internat. Participants, Opatija (Yugoslavia), 250—251.

1860. — — , — — and Berezovskaya, E. A., 1977: The study of virus diseases of grapevine in Ukraine. In: Technologia virastivanija bezvirusnogo posadotchnogo materiala plodovich cultur i vinograda (The technology of production of virus-free planting material of fruit-trees and grapevines), Stiinza, Kishinev, 95—98 (Russ.).

1861. — — , — — and — — , 1977: Strains of grapevine fanleaf virus in Ukrainian vineyards. In: Shtami virusov rastenii (Plant virus strains). Proc. Inst. Biol. and Pedol. Far East Science Centre, Acad. Sci. USSR 46 (149), 254—259 (Russ. with Eng. sum.).

1862. — — , — — and — — , 1979: Some new virus and rickettsialike diseases of grapevine found in Ukraine. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 31—34.
Transmission by graft only; vein necrosis, vein pattern mosaic, intervein chlorosis, and infectious necrosis. Best indicator for vein necrosis was 110 R., and for infectious necrosis was Riparia Gloire. Infectious necrosis apparently a rickettsialike organism.

1863. — — , — — and Tsherevkova, D. S., 1973: The nematode fauna in the Northern Black Sea zone. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 103—106.
A discussion of results of study with tables.

1864. — — , — — and — — , 1975: Nematodes of the genus *Xiphinema* (Longidoridae) in vineyards of South Ukraine. Zoologich. Zhur. USSR 54 (8), 1248—1250 (Russ. with Eng. sum.).
Xiphinema index, X. italiae, X. americanum, X. diversicaudatum and X. vuittenezi. X. index in vineyards with fanleaf and yellow mosaic.

1865. — — and Styts'ko, S. A., 1972: Distribution of photosynthetic assimilates in grapevine infected by infectious chlorosis (yellow mosaic) virus. Vinogradar. i Vinorob. 13, 53—57 (Ukr.).

1866. Mink, G. I. and Parsons, J. L., 1975: Rapid indexing procedure for detecting yellow speckle disease in grapevines. Plant Dis. Reptr. 59 (11), 869—872.
LN-33 indicator plants inoculated with yellow speckle virus expressed no symptoms when cultivated during 4 weeks at 32 °C, but developed typical yellow speckle symptoms 1 to 3 weeks after transfer to 18 to 20 °C.

1867. — — and — — , 1977: Procedures for rapid detection of virus and viruslike diseases of grapevine. Plant Dis. Reptr. 61 (7), 567—571.
Use of growth chambers for rapid symptom expression of grapevine fleck, fanleaf, leafroll and corky bark on Vitis indicators.

1868. Mircetich, S. M., Lowe, S. K., Moller, W. J. and Nyland, G., 1976: Etiology of almound leaf scorch disease and transmission of the causal agent. Phytopathology 66, 17—24.
A bacterium found associated with almond leaf scorch-infested trees was transmitted by Draeculacephala minerva from almond to grape where it produced symptoms of Pierce's disease.

1869. Mollenhauer, H. H. and Hopkins, D. L., 1974: Ultrastructural study of Pierce's disease bacterium in grape xylem tissue. J. Bacteriol. 119 (2), 612—618.

1870. — — and — — , 1976: Xylem morphology of Pierce's disease-infected grapevines with different levels of tolerance. Physiol. Plant Pathol. 9, 95—100.

1871. Mortensen, J. A., 1973: Dog Ridge, a superior grape rootstock for Florida. Proc. 85th Ann. Meeting Florida State Hort. Soc., Miami Beach, USA, 275—279.
Dog Ridge rootstock is resistant to Pierce's disease.

1872. — — , Stover, L. H. and Balerdi, C. F., 1977: Sources of resistance to Pierce's disease in *Vitis*. J. Amer. Soc. Hort. Sci. 102, 695—697.

1873. Moutous, G. et Fos, A., 1972: La lutte contre la Flavescence dorée et les Cicadelles de la Vigne. Rev. Zool. Agric. Pathol. Vég. 71 (1), 55—60.
Good control of the leafhopper Scaphoideus littoralis was obtained with 2 insecticide treatments (carbophenothion + mevinphos), the first at the end of June, the second at the end of July or beginning of August.

1874. — — et — — , 1977: Définitions des symptômes de la «Flavescence dorée» sur les variétés porte-greffes. Rev. Zool. Agric. Pathol. Vég. 76 (3), 90—98.

1875. — —, — — , Besson, J., Joly, E. et Biland, P., 1977: Résultats d'essais ovicides contre *Scaphoideus littoralis* Ball., Cicadelle vectrice de la Flavescence dorée. Rev. Zool. Agric. Pathol. Vég. 76 (2), 37—49.
Good control of Scaphoideus littoralis, vector of the Flavescence dorée, can be obtained by spraying with oleoparathion against the eggs in winter or early spring and again with an insecticide in June against the larvae.

1876. Müllner, L., 1975: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Diffusion du matériel sélectionné. Rapport autrichien. Bull. OIV 48 (532), 519—522.

1877. Mur, G., 1975: Influence de la thermothérapie sur la germination du pollen. Progr. Agric. Vitic. 92 (15—16), 474.

1878. — — , 1975: Thermothérapie du court-noué. Progr. Agric. Vitic. 92 (17), 490—491.
A method for heat treatment. Plants are cultured in tubes supported in hot water bath.

1879. — — and Markovitch, R., 1979: Influence of *in vitro* thermotherapy treatments on the rootings rootstocks (shoots and roots development). Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 349.
In vitro thermotherapy during 3 months at 35 °C increases the vigour of grapevine rootstocks. This increase is greater after 2 successive treatments than after only one, and is still evident 5 years after the treatment.

1880. — — , Valat, C. et Branas, J., 1972: Elimination de la pigmentation anthocyanique tardive (enroulement) par thermothérapie. Progr. Agric. Vitic. 89 (1), 4—7.
Un traitement de 70 jours à 38 °C sur un clone de Syrah a fait disparaître la pigmentation anthocyanique (enroulement) transmissible.

1881. — — , — — et — — , 1972: Effects de thermothérapie. Progr. Agric. Vitic. 89 (6), 125—127.
La thermothérapie, pratiquée sur des boutures herbacées de vigne cultivées en tubes sur un milieu artificiel, entraine certaines modifications concernant la vigueur, la reprise au bouturage, la découpure du limbe, la pubescence de la face inférieure du limbe, la couleur rouge du rameau, la coloration bronzée des jeunes feuilles. Plusieurs hypothèses sont proposées pour expliquer ces phénomènes.

1882. Neagu, M., Oslobeanu, M., Lepadatu, V., Negreanu, E. et Popescu, Gh., 1974: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Diffusion du matériel sélectionné. Rapport roumain. Bull. OIV 47 (525), 867—880.

1883. Nel, A. C. and Engelbrecht, D. J., 1972: Grapevine virus diseases in South Africa and the influence of latent viruses in the nursery. Ann. Phytopathol., No. hors série, 67—74.
Indexing on LN 33 and Rupestris St. George showed the widespread distribution of fleck, leafroll and corky bark in South African wine grape vineyards. Less than 1 % of the vines tested were free from one or more of the diseases.

1884. Nienhaus, F., 1976: Rickettsien, Mykoplasmen und Spiroplasmen als Erreger von Pflanzenkrankheiten. Ber. Dt. Bot. Ges. 89, 531—545.
Review on rickettsia-, mycoplasma- and spiroplasma-like organisms causing diseases in various plants, including grapevine.

1885. — — , 1977: Erste Beobachtungen über Antiviralfaktoren in Reben nach Virusinfektion. Symposium „Moderne Aspekte der Qualitätsweinerzeugung", Staatl. Weinbauinst., Freiburg (Germany), 218—225.
An antiviral factor systemically induced after virus infection of new varieties of grapevines was demonstrated and characterized as a substance of high molecular weight; probably a protein compound acting nonspecifically against viruses.

1886. — — und Babović, M., 1978: Beobachtungen über einen induzierten Antiviralfaktor in Rebenblättern nach Infektion durch das Tomatenringfleckenvirus. Z. Pflanzenkrankh. Pflanzensch. 85, 238—246.
Infection of grapevine seedlings by tomato ringspot virus induces the formation of an antiviral substance that inhibits the development of the inducing virus and also the infection by tobacco mosaic virus.

1887. — — and Rumbos, I., 1979: Rickettsialike organisms in grapevines with yellow disease in Germany. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 223—226.
Symptoms similar to FD; RLO found in ultrathin sections of petioles. During spring RLO observed in phloem and surrounding tissues. Suggests soil-borne nature of RLO's.

1888. — — , — — and Green, S., 1978: Rickettsialike organisms isolated from plants cultivated in chick embryo. 3rd Internat. Congr. Plant Pathol., Munich (Germany), 62 (Abstr.).

1889. — — , — — and Greuel, E., 1978: First results in the cultivation of rickettsia-like organisms of yellows diseased grapevines in chick embryos. Z. Pflanzenkrankh. Pflanzensch. 85, 113—117.

1890. Novak, J. B. and Lanzova, J., 1976: Identification of alfalfa mosaic virus and tomato bushy stunt virus in hop (*Humulus lupulus* L.) and grapevine (*Vitis vinifera*, ssp. *sativa* (DC./Hegi) plants in Czechoslovakia. Biol. Plant. (Prague) 18 (2), 152—154.
Includes EM studies.

1891. Olmo, H. P., 1975: The California grape certification program. I. Semana Internacional del Vino, Jerez, Spain, 378—389.
A review of the California grape certification program.

1892. Osler, R., Fortusini, A. e Belli, G., 1975: Presenza di *Scaphoideus littoralis* in vigneti dell' Oltrepo pavese affetti da una malattia del tipo „Flavescence dorée". Inform. Fitopatol. 25 (6), 13—15.
The disease in vineyards of Oltrepo has symptoms of FD, and the vector leafhopper Scaphoideus littoralis is present. It is suggested that the disease is identical with FD.

1893. Ottenwaelter, M. M., Hévin, M. et Doazan, J. P., 1973: Amélioration du rendement du bouturage des extrémités après thermothérapie sur plantes en pots par l'utilisation de la culture sur milieu nutritif gélosé stérile. Vitis 12, 46—48.
Faible contamination par des champignons ou des bactéries (moins de 3 %), 82 % de plantes utilisables.

1894. — — , — — , Leclair, P., Doazan, J. P. and Rives, M., 1973: Heat-therapy eliminates the ability to transmit the causal agent of "marbrure" in several *V. vinifera* clones and in *V. rupestris* "du Lot" (St. George). Riv. Patol. Veg. Ser. IV, 9 (3), 281—285.
Des plantes atteintes de marbrure, de différents cépages, ont été soumises à la thermothérapie, les unes étant en pots et d'autres en culture aseptique. A l'issue de traitements thermiques de durée variée, les plantes obtenues par bouturage des extrémités ont été indexées: 31 plantes sur 38 ne sont plus capables de transmettre la marbrure à Rupestris du Lot. Il ne paraît pas exister de corrélation entre la durée du traitement et son efficacité.

1895. Over de Linden, A. J. and Chamberlain, E. E., 1970: Production of virus-free grapevines in New Zealand. N.Z. J. Agricult. Res. 13 (4), 991—1000.

1896. Payan, J.-J., 1978: La désinfection des sols de vigne. Vignes et Vins 266, 15—18.

1897. Pejčinovski, F., 1972: On the spread of grapevine virus diseases in the Soc. Rep. of Macedonia. Zasht. Bilja 23 (119/120), 167—174 (Serbo-Cr. with French sum.).

1898. — — , 1972: Panachure virale (grape fanleaf yellow mosaic) sur le cépage Vranec en Macédoine. Proc. 2nd Congr. of Yugoslav Microbiologists with International Participation, Opatija (Yugoslavia), 677—679 (Serbo-Cr. with Eng. sum.).

1899. — — , 1974: Coulure, due à un virus, de la variété Belo zimsko en Macédoine (Virozna rehuljavost grozdova sorte Belo zimsko u Makedoniji). Thèse do doctorat, Univ. de Belgrade, 1—107 (Serbo-Cr.).

1900. — — , 1975: Bois rugueux de la vigne en Macédoine. Note préliminaire. Zasht. Bilja 26 (132), 171—175 (Serbo-Cr. with French sum.).
Wood pitting disease found in vineyards of Macedonia (Yugoslavia).

1901. — — , 1976: Some abnormalities resembling legno riccio (rugose wood) on grapevine in Macedonia. 6th meeting ICVG, Cordoba 1976, Abstr. 28.
Mechanical inoculation to herbaceous plants were negative. Varieties showing symptom when grafted on Rupestris St. George were Belo Zimsko and Afus-Ali. (Not published in the Proceedings).

1902. — — , 1977: Some virus diseases of grapevine in Macedonia. Savjetovanje o ekskoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.). Mostar (Yugoslavia), 165—176 (Serbo-Cr.).

1903. Pena-Iglesias, A., 1974: La selección sanitaria de la vid en España. Jorn. Técn. de Rioja, Vid y Vino (Haro-Logroño), Junio 1972, 166—177.

1904. — — , 1975: La selección sanitaria en España de frutales caducifolios y vid. ITEA No. 16, 34—44.

1905. — — , 1977: Catalogo de virus y microorganismos del tipo micoplasma y rickettsia identificados en plantas cultivadas en España. Catalogos I.N.I.A. No. 7, Minist. de Agricult., Madrid, 119 pp.
Fanleaf, corky bark, leafroll, stem pitting, enation, fleck, vein necrosis have been found in Spanish vineyards.

1906. — — , 1979: Opening lecture. Introduction to the 6th I.C.V.G. Conference. Considerations of the problems of the grapevine viruses. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, ixl-liv.
A historical account of the Council and developments in research.

1907. — — and Ayuso, P., 1973: Further research on the detection of grapevine viruses in Spain. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 28—30.

1908. — — and — — , 1973: A new and accurate way of heat therapy of plants grown "in vitro" applied to the sanitary selection of Spanish grapevine varieties. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 172—174.

1909. — — y Ayuso-Gonzalez, P. A., 1971: Identificacíon de estirpes del virus del entrenudo corto infeccioso (Grapevine fanleaf virus) como causa de tres enfermedades de la vid en España. Anales de INIA. Ser. Protec. Vegetal. 1, 115—137.

1910. — — , Castro, S., Fresno, J. y Carazo, G., 1979: Estudio de la ultraestructura de plantas herbáceas infectadas por varios Nepovirus. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 103—107.
Viruses included GFV, AMV, TobRSV and CLRV (cherry leaf roll virus).

1911. — — y Rubio-Huertos, M., 1971: Ultraestructura de hojas de *Chenopodium quinoa* Willd. infectadas con el virus del entrenudo corto infeccioso de la vid (grapevine fanleaf virus). Microbiología Espanola C.S.I.C. 24 (3), 183—192.

1912. Perry, R. L., Mollenhauer, H. H. and Bowen, H. H., 1974: Electron photomicroscopy verification of Pierce's disease on grape plants from Texas. Plant Dis. Reptr. 58 (9), 780—782.

1913. Pieri, G., 1971: Prove di termoterapia delle virosi della vite. Trattamenti con acqua calda. Riv. Viticolt. Enol. 24, 9—14.
Experiments on heat-treatment of fanleaf-infected grapevines with hot water are reported. Negative results.

1914. Pongracz, D. P., 1974: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Diffusion du matériel sélectionné. Rapport sud-africain. Bull. OIV 47 (520), 461—467.

1915. Pop, I. V., 1972: Studies on viruses and virus diseases of grapevine in Rumania. II. Grapevine vein yellowing. An. Inst. Cercet. Prot. Plant. 8, 81—87 (Rum. with Eng. sum.).

1916. — — , 1973: Studies on viruses and virus diseases of grapevine in Rumania. III. Data on indexing methods, determination of infection levels in various varieties and development of virus-free clones. An. Inst. Cercet. Prot. Plant. 9, 27—39 (Rum. with Eng. sum.).

1917. — — , 1973: Studies on viruses and virus diseases of grapevine in Rumania. IV. Data on the degree of virus infection and the effectiveness of visual selection and selection by indexing in the variety Cardinal. An. Inst. Cercet. Prot. Plant. 9, 41—47 (Rum. with Eng. sum.).

1918. — — , 1973: Grapevine vein mosaic. Riv. Patol. Veg. Ser. IV, 9 (3), 243—250.
Description of symptoms, time of development and transmission tests to indicator plants. Reports light and temperature influence on symptoms.

1919. — — , 1977: Results of studies for the identification of virus diseases of grapevine occurring in Rumania, their frequency and the methodology of their diagnosis in the system of production of virus-free planting material. An. Inst. Cercet. Prot. Plant. 12, 35—45 (Rum. with Engl., Russ. sum.).

1920. Pozdena, J., Filigarová, M. and Vanek, G., 1976: Serological detection of some new viruses of grapevine in Czechoslovakia. Zb. z VI. celoštátnej konferencie o ochrane rostlin, Č. Budějovice, ČSSR, (Proc. VIth Czechosl. Conf. Plant Prot. Č. Budejovice) (Czech.).
Some serologically identified new grapevine viruses in Czechoslovakia.

1921. — — and Vanek, G., 1970: Some virus diseases of grapevine in Czechoslovakia, their purification and diagnosis. Zesz. Probl. Post Nauk. Roln. 111, 159—164.

1922. — — and — — , 1975: The research of the virus diseases of grape vine in CSSR. Mededel. Fac. Landbouwwetenschap. (Gent) 40 (2), 823—827.
Fanleaf, Melnik mosaic, Bratislava mosaic, vein banding, leafroll, rugose wood, fleck and enation diseases have been detected in the Czechoslovakian vineyards. Grapevine necrosis is considered as a rickettsia-disease. The research work done in this field in Czechoslovakia is summarized.

1923. — — , — — and Filigarová, M., 1977: Sowbane mosaic virus in grapevine in the ČSSR. Sb. UVTIZ-Ochr. Rostl. 13, 197—200 (Czech.).

1924. Prota, U., 1970: Distribuzione de *Xiphinema index* in Sardegna e rapporti con la diffusione di alcune virosi della vite. Inform. Fitopatol. 20 (21—22), 6—10.

On populations and differences in X. index and relations between presence of nematode species and virus diseases in Sardinia.

1925. — — , 1970: Sull'influenza di alcune caratteristiche del suolo e dell'età delle viti sulla distribuzione di *Xiphinema index* Thorne et Allen in Sardegna. Studi sass., sez. III Agr., 18, 1—12.
Studies on the influence of type of soil, pH, etc. on presence of *X. index*, with population figures. The nematode is found mostly in vineyard soils.

1926. — — , 1970: Osservazioni e ricerche sulle virosi della vite in Sardegna con particolare riguardo al "mosaico giallo". Studi sass., sez. III Agr. 18, 153—178.
Studies on the presence and spread of fanleaf virus disease and transmission by grafting.

1927. — — , 1975: Notizie sull'attività svolta dall'Istituto di patologia vegetale dell'Università di Sassari, nell'ambito del programma di miglioramento e selezione sanitaria della vite in Sardegna. Coltivatore G. Vinic. Ital. 121 (10), 333—334. (Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. Appl. C.N.R., Torino, 101—104).
Clonal selection in Sardinia.

1928. — — e Garau, R., 1973: Indagini sulla biologia di *Xiphinema index* Thorne et Allen in vigneti sardi. Nematol. Mediter. 1, 36—54.
Population dynamics and life cycle of X. index which lasts from 12 to 14 months, ovulation twice a year spring and fall. Heavy feeding in summer months.

1929. — — and — — , 1979: Enations of grapevine in Sardinia. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 179—189.
Enations observed on a number of varieties. Yields reduced on Italia, Malvasia, Vermentino and Vernaccia.

1930. — — and — — , 1979: An unusual symptomatology of enation disease on grapevine in Sardinia. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 191—195.
Enations on upper surface of leaves, V. vinifera cv. Nasco and Vernaccia. Symptoms on C. quinoa like GFV.

1931. — — , Lamberti, F., Bleve, T. e Martelli, G. P., 1971: I Longidoridae (Nematoda, Dorylaimoidea) dei vigneti sardi. Redia 52, 601—617.
On the occurrence and distribution of species of nematodes of the family of Longidoridae in Sardinia.

1932. Purcell, A. H., 1974: Role of the blue-green sharpshooter, *Hordnia circellata* (Baker), in the epidemiology of Pierce's disease of grapevines. Ph. D. Diss., Univ. of Calif., Davis, 77 pp.
A study of the role of Hordnia circellata in the spread of Pierce's disease in Napa Valley.

1933. — — , 1974: The spatial distribution of Pierce's disease in the Napa Valley. Amer. J. Enol. Viticult. 25, 162—167.
The distribution of Pierce's disease in commercial vineyards in Napa Valley in relation to foci of the blue-green sharpshooter leafhopper.

1934. — — , 1975: Role of the blue-green sharpshooter *Hordnia circellata* in the epidemiology of Pierce's disease of grapevines. Environ. Entomol. 4 (5), 745—752.
The role of the blue-green sharpshooter in spreading Pierce's disease.

1935. — — , 1976: Seasonal changes in host plant preference of the blue-green sharpshooter *Hordnia circellata* Homoptera Cicadellidae. Pan-Pac Entomol. 52 (11), 33—37.
Host preference of the blue-green sharpshooter at different times of the year.

1936. — — , 1977: Cold therapy of Pierce's disease of grapevines. Plant Dis. Reptr. 61 (6), 514—518.
Exposure of grapevines with severe symptoms of Pierce's disease to a temperature of −8 °C to −12 °C caused a temporary remission or a recovery.

1937. — — , Lattore-Guzmán, B. A., Kado, C. I., Goheen, A. C. and Shalla, T. A., 1977: Reinvestigation of the role of a Lactobacillus associated with leafhopper vectors of Pierce's disease of grapevines. Phytopathology 67, 298—301.
Evidence that Lactobacillus associated with blue-green sharpshooter leafhopper is not the causal agent of Pierce's disease.

1938. Quacquarelli, A., Gallitelli, D., Savino, V. and Martelli, G. P., 1976: Properties of grapevine fanleaf virus. J. Gen. Virol. 32, 349—360.
A detailed study of the GFV and the more complete cryptogram.

1939. — — , — — , — — , Piazzolla, P. and Martelli, G. P., 1979: Some properties of grapevine fanleaf and other Nepoviruses infecting the grapevine. Proc. 6th meeting ICVG,

Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 41—49.
Physico-chemical properties of GFV, AMV, TomBRV and GCMV are given.

1940. Raikov, E., 1974: Studies on some virus diseases of the grapevine in Bulgaria. In: Virusni bolesti po rasteniyata (Plant Virus Diseases). The Georgi Dimitrov Agricult. Acad. Sofia, 117—129 (Bulg.).
Studies are on the presence of virus diseases in Bulgaria, on selection of disease free clones and effects of diseases on yield.

1941. Ramsdell, D. C. and Bird, G. W., 1975: Vineyard preparation for nematode and virus disease control. Michigan State Univ. Agric. Ext. Serv. Bull. E 806.
An article of information for the grower on recognition of degeneration problems in vineyards and orchards (peaches), methods of soil treatment and replanting.

1942. — — and Myers, R. L., 1974: Peach rosette mosaic virus, symptomatology and nematodes associated with grapevine 'degeneration' in Michigan. Phytopathology 64, 1174—1178.
PRMV in V. labrusca cv. Concord. Symptoms, methods of transmission, and associated nematodes in root zone.

1943. — — and — — , 1978: Epidemiology of peach rosette mosaic virus in a Concord grape vineyard. Phytopathology 68, 447—450.
The spread of PRMV is slow and mostly to vines adjacent to previously infected vines. Indexing the roots of 16 weed species associated with diseased vines revealed that Curly Dock (Rumex crispus), Carolina Horsenettle (Solanum carolinense) and common dandelion (Taraxacum officinale) were infected. The virus was found to be seedborne in 3.6 % of the dandelion seedlings, and 9.5 % of grapevine seedlings from infected plants.

1944. — — and — — , 1979: The rate of spread of peach rosette mosaic virus in a *Vitis labrusca* L. "Concord" vineyard; some weed hosts and the seed- and pollen-borne nature of the virus. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 77—82.
In addition to grapevines the virus found also in weed hosts; X. americanum found as deep as 1.5 m, populations given.

1945. Raski, D. J., Hart, W. H. and Kasimatis, A. N., 1973: Nematodes and their control in vineyards. Calif. Agricult. Exp. Sta. Ext. Serv., Circular 533 (Revised), 20 pp.
General description of nematodes, species found in California vineyard soils, life history of prevalent species, control measures.

1946. — — , Hewitt, W. B. and Schmitt, R. V., 1971: Controlling fanleaf virus — dagger nematode disease complex in vineyards by soil fumigation. Calif. Agricult. 25 (4), 11—14.
Deep placement with 1,3 dichloropropene at 250 gal/acre and with methyl bromide fumigation.

1947. — — , Maggenti, A. R. and Jones, N. O., 1973: Location of grapevine fanleaf and yellow mosaic virus particles in *Xiphinema index*. J. Nematology 5 (3), 208—211.
Ultrathin section, histology and electronmicroscopy of the fanleaf virus in the vector nematode.

1948. — — and Schmitt, R. V., 1972: Progress in control of nematodes by soil fumigation in nematode-fanleaf infected vineyards. Plant Dis. Reptr. 56, 1031—1035.
Preplanting applications of 1,3-dichloropropene and related C 3 hydrocarbons at high rate and deep-placement controlled X. index and fanleaf for a period of 5 years in replanted vineyards. Methyl bromide under continuous polyethylene sheeting shows promise as a control for X. index and fanleaf virus.

1949. Razzhivin, A. A., Marinesku, V. G. et Bondarchuk, V. V., 1977: Marbrure des feuilles de la vigne. Vestnik Selskokhoz. Nauki Kazak. 20 (1), 55—57. (Inst. Fruitic. Vitic. Kazakhstan USSR) (Russ.).
A latent virus was found only in imported cultivars.

1950. Refatti, E., 1975: Diagnosi differenziale fra virosi e altre fitopatie della vite. Coltivatore G. Vinic. Ital. 121 (8), 214—219. Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. Appl. C.N.R., Torino, 31—44).
Symptoms on grapevine caused by viruses (GFV, GYMV, GLRV) and by the agent of corky bark and analogous symptoms induced by Armillariella mellea, deficiency diseases, cold damages, herbicide damages, leafhopper and red spider.

1951. — — , Granata, G. e Aveni, R., 1975: Casi di screziatura della vite riscontrati in Sicilia. Tecn. Agricola 27, 315—321 (with Eng. sum.).
A small vein mosaic (fleck) in indicator V. rupestris St. George found to be latent in the variety Nerello Mascalese in Sicily.

1952. — —, — — e Grasso, S., 1977: Casi di suberosi corticale della vite osservati in Sicilia. Tecn. Agricola 29, 79—88 (with Eng. sum.).
Several plants affected by corky bark in a new vineyard in Sicily. Diagnosis confirmed by indexing on LN 33.

1953. — —, — — and — —, 1979: On small vein mosaic virus. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 197—201.
Symptoms of (fleck) marbrure and small vein mosaic found in grapevines in Sicily.

1954. — — and Grasso, S., 1973: Grapevine decline phenomena with still an unknown aetiology observed in Sicily. Riv. Patol. Veg. Ser. IV, 9 (3), 259—262.
Discussion of symptoms and probable cause.

1955. — —, Rosciglione, B., Sorce, G., Granata, G. e Cannizzaro, G., 1977: Selezione clonale e sanitaria di vitigni ad uva da vino in Sicilia. In: Martelli, G. P. (Ed.): Utilizzazione dei resultati della selezione della vite da vino. Atti Seminario C.N.R., Bari (Italia), 131—138.
Work in progress on clonal and sanitary selection of grapevine in Sicily.

1956. Renaud-Casanova, J., 1979: Nematodes associated with grape in Venezuela. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 301.
Several genera are reported, Xiphinema spp. associated with virus symptoms in vineyards is discussed.

1957. Rhode, R. A., McElroy, R. D., Stace-Smith, R., Taylor, C. E., Robertson, W. M., Wyss, U. and McGuire, J. M., 1977: Symposium on nematode transmission of viruses. Proc. Amer. Phytopathol. Soc. 4, 1—50.
6 invitational papers, with an introduction by R. A. Rhode, presented at the 69th Annual Meeting of the American Phytopathological Society: Nematodes as vectors of plant viruses, p. 1—10 (R. D. McElroy). Characteristics of nematode-borne plant viruses, p. 11—20 (R. Stace-Smith). Virus vector relationships and mechanics of transmission, p. 20—29 (C. E. Taylor and W. M. Robertson). Feeding processes of virus-transmitting nematodes, p. 30—41 (U. Wyss). Epidemiology of nematode-borne viruses and their vectors, p. 42—49 (J. M. McGuire). Summation and future trends in virus transmission research, p. 49—50 (C. E. Taylor).

1958. Rives, M., 1971: Maladies à virus de la vigne. In: Ribéreau-Gayon, J. et Peynaud, E., Traité d'Ampélologie: Sciences et Techniques de la Vigne, Dunod, Paris, Tome II, 399—430.

1559. — —, 1971: Défense contre les maladies a virus. In: Ribéreau-Gayon, J. et Peynaud, E., Traité d'Ampélologie: Science et Techniques de la Vigne, Dunod, Paris, Tome II, 623—637.

1960. — —, 1972: Séparation de la marbrure et du court-noué (panachure) chez la vigne par thermothérapie. Ann. Phytopathol. No. hors série, 75—77.
Heat treatment freed plants of fanleaf virus but not all plants of marbrure (fleck).

1961. — —, 1974: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Diffusion du matériel sélectionné. Rapport français. Bull. OIV 47 (525), 881—884.

1962. Roca, F. and Lamberti, F., 1979: Longidoridae of Italian vineyards. I. The genus *Xiphinema*. Proc. 6th meeting ICVG, Cordoba. Monografias INIA No. 18, Minist. de Agricult., Madrid, 251—253.

1963. Rochaix, M., Bovey, R. et Simon, J.-L., 1974: Etat actuel des travaux sur la sélection clonale génétique et sanitaire. Méthodes et résultats. Diffusion du matériel sélectionné. Rapport suisse. Bull. OIV 47 (520), 467—475.

1964. Romero, J., Pena-Iglesias, A., Fisac, R., Anton, M. T. y Perez, M. C., 1979: Comparación de propiedades biológicas, biofísicas y bioquímicas de algunas estirpes del virus del entrenudo corto infeccioso de la vid (Grapevine fanleaf virus o GFV). Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 51—58.
Symptoms on herbaceous plants also given.

1965. Rüdel, M., 1970: Vergleichende Untersuchungen über Selektionsmerkmale bei reisigkranken Reben. I. Ergebnisse der Testpflanzenmethode. Z. Pflanzenkrankh. Pflanzensch. 77, 186—195.

1966. — —, 1971: Vorkommen einiger Arten der Gattung *Xiphinema* (Nematoda: Dorylaimidae) in Pfalz und Rheinhessen. Weinberg u. Keller 18, 505—520.

1967. — —, 1972: Wirtspflanzenkreis des Nematoden *Xiphinema vuittenezi*. Jahresber. 1971 des FDW bei der DLG, 30.

1968. — —, 1972: Bodenentseuchung aus heutiger Sicht. Dt. Weinbau 27, 114—116.

1969. — — , 1972: Bekämpfung von Nematoden im Weinbau. Forschung—Schule—Praxis (Neustadt/Wstr.) 20, 16—22.

1970. — — 1972: Bodenentseuchung im Ahr-Weinbaugebiet. Zweijahresber. der LLVA Ahrweiler, 57—61.

1971. — — , 1973: Vergleichende Untersuchungen zur Bewertung der Selektionsmerkmale bei reisigkranken Reben. II. Ausprägung von Krankheitsmerkmalen an Reben. Wein-Wiss. 28, 147—159.

1972. — — , 1973: Vergleichende Untersuchungen zur Bewertung der Selektionsmerkmale bei reisigkranken Reben. III. Vergleich der Beurteilungsmerkmale. Wein-Wiss. 28, 228—247.

1973. — — , 1973: Virusübertragende Nematoden im heimischen Weinbau. Dt. Weinbau-Jahrb. 24, 99—104.

1974. — — , 1973: Vorkommen von *Xiphinema*-Arten in Weinbaugebieten von Pfalz und Rheinhessen. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 107—113.
Nematode species in the Pfalz and Rheinhessen, distribution and relative populations, map and tables.

1975. — — , 1974: Chemische Bodenentseuchung zur Bekämpfung virusübertragender Nematoden im Weinbau. Kali-Briefe, Fachgebiet 12, 1. Folge, 1—10.

1976. — — , 1974: Schadnematoden im Weinbau. Forschung—Schule—Praxis. Festschrift z. 75-jähr. Bestehen der LLFA für Wein- und Gartenbau, Neustadt, 1899—1974, 233—243.

1977. — — , 1974: Wirtspflanzenkreis des Nematoden *Xiphinema vuittenezi* (Abschlußbericht). Jahresber. 1973 des FDW bei der DLG, 21.

1978. — — , 1975: Untersuchungen über den Wirtspflanzenkreis des Nematoden *Xiphinema vuittenezi*. Wein-Wiss. 30, 21—27.

1979. — — , 1975: Schadnematoden im Weinbau. Dt. Weinbau-Jahrb. 26, 159—165.

1980. — — , 1976: Untersuchungen über Möglichkeiten zur Bekämpfung von Vektoren im Weinbau durch Einsatz niedrigdosierter Nematizide in Verbindung mit biologischen Maßnahmen (Kurzbrache, Wahl geeigneter Brachepflanzen und Rebsorten) oder anderer Maßnahmen (Kurzbericht). Jahresber. 1975 des FDW bei der DLG, 23.

1981. — — , 1977: Übertragungen des Tomatenschwarzringflecken-Virus (tomato black ring virus) durch den Nematoden *Longidorus attenuatus* (Nematoda) auf Reben und andere Pflanzenarten. Wein-Wiss. 32, 11—24.

1982. — — , 1977: Bekämpfung virusübertragender Nematoden im Weinbau durch Gründüngung? Dt. Weinbau-Jahrb. 28, 135—139.

1983. — — , 1978: Übertragung des Arabis-Mosaik-Virus (AMV) durch den Nematoden *Xiphinema diversicaudatum* (Micoletzki) Thorne auf Rebensämlinge (Vorläufige Mitteilung). Wein- Wiss. 33, 243—247.
Transmission of Arabis mosaic virus to grapevine seedlings by Xiphinema diversicaudatum.

1984. — — , 1978: Bodenentseuchung zur Nematodenbekämpfung im Weinbau — Wirksamkeit und Rentabilität. Weinberg u. Keller 25, 503—516.
Fumigation with Shell DD (1000 l/ha). The cost of fumigation is balanced after the 4th crop by the increase in yield.

1985. — — , 1978: Bodenentseuchung zur Nematodenbekämpfung im Weinbau. Winzer-Kurier (8).

1986. — — und Brückbauer, H., 1971: Bodenentseuchung im Weinbau und ihre Problematik. Dt. Weinbau 26, 5—11.

1987. — — , Querfurth, G. and Paul, H. L., 1977: Natürliches Vorkommen des „carnation ringspot virus" in *Stellaria media* (L.) Cyrill. aus Weinbergen erstmals nachgewiesen. Nachrichtenbl. Dt. Pflanzenschutzd. 29, 59—60.

1988. Rumbos, I., 1978: Untersuchungen über Rickettsien-ähnliche Organismen in vergilbungskranken Weinreben (*Vitis vinifera* L.). Diss. Univ. Bonn, 146 pp.
Rickettsia-like organisms found in roots of grapevines with yellows disease in german vineyards of the Saar, Mosel and Rhine regions are considered as the causal pathogens of this disease. They can be cultivated on chick embryo. Similar microorganisms are found in nematodes of the species *Xiphinema index* feeding on infected plants. X. index is considered as the probable vector of this disease.

1989. — — , 1978: Rickettsialike organisms and nematode fauna associated with yellows disease of grapevines in Germany, France and Greece. 3rd Internat. Congr. Plant Pathol., Munich (Germany), 64 (Abstr.).

1990. — — und Nienhaus, F., 1977: Rickettsien-ähnliche Organismen in Zusammenhang mit einer Vergilbungskrankheit der Reben an Rhein und Mosel in Deutschland. Mededel. Fac. Landbouwwetenschap. (Gent) 42, 1245—1252.
Rickettsia-like microorganisms found associated with a yellows disease of grapevine, mainly in phloem but some in xylem of roots of diseased plants. RLO found in dividing stages in Xiphinema index associated with disease.

1991. — — , Sikora, R. A. and Nienhaus, F., 1977: Rickettsia-like organisms in *Xiphinema index* Thorne and Allen found associated with yellows disease of grapevines. Z. Pflanzenkrankh. Pflanzensch. 84, 240—243.

1992. Russo, M., 1975: Microscopia elettronica dei virus della vite. Coltivatore G. Vinic. Ital. 121 (9), 270—271. (Vedi anche Atti Tavola Rotonda „Malattie da virus e da micoplasmi dalla vite", Lab. Fitovirol. Appl. C.N.R., Torino, 55—59).
A review of the ultrastructural features of grapevine viruses and the possibility of using the electron microscope in diagnosis.

1993. Samonina, I. N., 1975: Viruses and Virus Diseases of Grape; a bibliography. Acad. Sci., USSR, Far eastern Scientific Center, Biology and Soils Institute, Vladivostok, 1900 entries, 213 pp.

1994. — — , Milkus, B. N., Krylov, A. V. and Krylova, N. V., 1973: A grapevine virus disease in Primorye Territory, USSR. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 68—72.
A "grapevine linear pattern virus" disease in described. Attempts to transmit the virus mechanically to herbaceous plants gave negative results. Some rod-shaped particles were observed in partly purified preparations.

1995. — — , — — , — — and — — , 1975: The virus diseases of grapevine in Primorye territory, USSR. In: Virusnye bolezni rastenii na Dalnem Wostoke (The virus diseases of plants in the Far East), Proc. Inst. Biol. Pedol. Far East Sci. Centre Acad. Sci. USSR 31 (134), 33—36 (Russ. with Eng. sum.).

1996. Šarić, A., 1973: Virus diseases of grapevine. Jugoslov. Vinogradar. i Vinar. 7, 5 (Croat.).

1997. — — and Hranuelli, T., 1977: Investigation of grapevine viruses in the SR Croatia. Savjetovanje o eksoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.), Mostar (Yugoslavia), 149—151 (Croat. with Eng. sum.).
Fanleaf virus is the most widespread virus in this region. Arabis mosaic virus is less frequently isolated, chrome mosaic virus only once. Leafroll and fleck are common in many varieties and rootstocks. Vein mosaic and yellow speckle-like symptoms were found only in imported Rcaziteli.

1998. — — and Vrdoljak, M., 1973: Preliminary report on a virus isolate from grapevine. Riv. Patol. Veg. Ser. IV, 9 (3), 263—265.
Symptoms, transmission to indicator plants, and serological comparisons are given. Virus reaction to tomato ringspot virus antisera preliminary.

1999. — — and Wrischer, M., 1972: Ultrastructural changes in plants infected by grapevine fanleaf virus. Mikrobiologija 9, 197—200 (Croat. with Eng. sum.).

2000. — — and — — , 1975: Fine structure changes in different host plants induced by grapevine fanleaf virus. Phytopathol. Z. 84, 97—104.
Cytopathological changes induced by GFV in locally and systemically infected leaves of Chenopodium amaranticolor and in systemically infected leaves of Nicotiana clevelandii and Petunia hybrida are reported.

2001. Sarooshi, R. A. and Bevington, K. B., 1976: Graft incompatibility in a Gordo blanco rootstock trial. Austral. Grapegrower Winemaker (148), 11—12.
9 Gordo clones were tested on 8 rootstocks. Vines on Salt Creek declined markedly and vines on Rupestris St. George yielded less than on own roots. Stem pitting occurred on St. George apparently legno riccio which must have been transmitted from the Gordo clone.

2002. Savino, V., Gallitelli, D., Jankulova, M. and Rana, G. L., 1976: A comparison of four isolates of Artichoke Italian latent virus (AILV). Phytopathol. Mediter. 16, 41—50.
Comparison of an Italian isolate from artichoke and 3 Bulgarian isolates from sowthistle, grapevine and gladiolus. AILV is a typical Nepovirus of the Tomato black ring sub-group.

2003. — — , Quacquarelli, A., Martelli, G. P. and Khudair, M. M. A., 1975: Occurrence of grapevine fanleaf virus in Jordan. Phytopathol. Mediter. 14, 132—133.
Fanleaf virus was isolated from vines in Jordan showing typical symptoms of fanleaf yellow mosaic and "legno riccio". The Jordanian GFV isolates were serologically and biologically similar to ordinary GFV.

2004. Schaefer, H. und Brückbauer, H., 1973: Untersuchungen über das Vorkommen phenolischer Inhaltsstoffe in gesunden und viruskranken Reben, sowie deren Abhängigkeit von verschiedenen Faktoren. Weinberg u. Keller 20, 515—545.

2005. — — und — — , 1974: Veränderungen des Eiweißstoffwechsels kranker Rebenblätter unter besonderer Berücksichtigung der Rebvirosen. Weinberg u. Keller 21, 305—344.

2006. Schöffling, H., 1979: Observations of Riesling clone 378 grafted on 4 rootstocks with particular reference to virus symptoms. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 109—116.
Virus symptoms vary with year, rootstock, and virus seems not to influence productivity between stock.

2007. — — und Faas, K. H., 1973: Die Erhaltungszüchtung alter *Vitis-vinifera*-Sorten in Deutschland. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 155—164.
Clonal selection of grapevines in Germany, clone-breeder, principles of selection and registration.

2008. Schvester, D., 1972: Cicadelles de la vigne. OEPP/EPPO Bull. 1 (3), 37—42 (French with Eng. sum.).
Biological cycle of Empoasca flavescens F. and Scaphoideus littoralis Ball., control of flavescence dorée by chemical control of its vector S. littoralis.

2009. — — , 1973: Insectes vecteurs de maladies à virus et à mycoplasmes de la vigne. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 90—102.
Il s'agit d'un résumé des travaux réalisés sur le sujet dans la période qui a précédé la réunion de l'ICVG à Salice Terme. L'essentiel concerne le problème des vecteurs de la Flavescence dorée et du Bois noir.

2010. Sequeira, O. A. de and Mendonça, A. de V. E., 1972: Some abnormalities resembling "legno riccio" (rugose wood) on grapevine in Portugal. Agronomia Lusit. 34, 299—304 (Publ. Oct. 1973).

2011. Shterenberg, P. M. and Berezovskaya, E. A., 1971: Symptoms of virus degeneration of grapes on varieties of rootstocks. Vinodel. i Vinogradar. SSSR 31 (6), 36—38 (Russ.).

2012. — — , Milkus, B. N. and Berezovskaya, E. A., 1971: Virus diseases of grapevine. Zashch. Rast. 16 (5), 16 (Russ.).

2013. — — , — — and — — , 1971: The cultivating of virus-free planting material of grapevine. Sadovod. Vinogradar. i Vinodel. Moldavii (Horticulture, viticulture and enology of Moldavia) 26 (8), 37—38 (Russ.).

2014. — — , — — and — — , 1973: Sanitary selection — a necessary condition for high grape productivity. Zachist Roslin 17, 74—80 (Ukr.).

2015. — — , — — and — — , 1973: On the composition, distribution and harmfulness of virus diseases of grapevine in Ukraine. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 23—27.
A discussion of diseases, results of indexing, on Vitis spp., herb plants, presence of trabeculae, check for latent viruses, marbrure, etc., serological tests and distribution of diseases.

2016. — — , — — and — — , 1974: Virus diseases of grapevine in Ukraine. In: Virusy i virusnie bolezni rastenii (Viruses and virus diseases of plants), Naukova Dumka, Kiev (USSR), 262—265 (Russ.).

2017. — — , — — and — — , 1974: Virus diseases of grapevine in Ukraine and steps towards cultivating virus-free planting material. Vinograd. i Vinorob. 17, 92—99 (Ukr.).

2018. Sikora, R. A. and Rumbos, I., 1977: The nematode fauna associated with yellows disease of grapevines and the possible role *Xiphinema index* plays as a vector of rickettsia-like organisms. Mededel. Fac. Landbouwwetenschap. (Gent), 42 (2), 1253—1260.

2019. Singh, S. J., Sastry, K. M. S. and Sastry, K. S., 1975: "Little leaf" disease of grapevine from India. Current Science 44 (1), 26—28.
A suspected mycoplasma disease characterised by little leaf symptoms, transmissible by grafting and budding, but not by sap inoculation. It showed temporary recovery after treatment with oxy-tetracycline.

2020. Stellmach, G., 1970: Arabis mosaic in *Vitis*. In: Frazier, N. W. (Ed.), Virus diseases of small fruits and grapevine (a Handbook). Div. Agricult. Sci. Univ. Calif. (Berkeley), 233—234.

2021. — — , 1970: Tomato black ring in *Vitis*. In: Frazier, N. W. (Ed.), Virus diseases of small fruits and grapevine (a Handbook). Div. Agricult. Sci. Univ. Calif. (Berkeley), 233—236.

2022. — — , 1972: Altes und Neues aus Klonenselektion und Erhaltungszüchtung bei Reben. — Überblick über ein mehrtägiges Symposium in Trier/Mosel. Weinberg u. Keller 19, 84—104.

Report on the First International Symposium on Problems of Clonal Selection in Viticulture, Trier (Mosel, West Germany) 31.8—3.9.1971. Several papers on virological problems are summarized, namely: Brückbauer, H.: Sanitäre Aspekte der Klonenselektion (p. 92); Erkennung und Nachweis der Rebvirosen (p. 93). — Rüdel, M.: Die Bedeutung der Rebvirosen für Klonenselektion und Erhaltungszüchtung (p. 92—93). — Weischer, B.: Nematoden als Überträger von Rebenvirosen und ihre Bekämpfung (p. 93—94). — Bovey, R.: Verfahren zur Herstellung von gesundem Pflanzengut (p. 94—95). — Genetical, virological, and economical problems are discussed.

2023. — — , 1972: Die infektiöse Rollkrankheit im Hinblick auf Selektion und Erhaltungszüchtung von Rebenklonen. Dt. Weinbau 27, 598.
There is no evidence for natural spread of leafroll in Germany. The fact that some rootstock varieties are symptomless carriers of leafroll has led to difficulties in clonal selection. With many varieties in which symptoms are obscure or lacking, only an indexing program will assure disease-free stocks.

2024. — — , 1972: Wie ist die Zuverlässigkeit des Indexing zu erhöhen? Ann. Phytopathol., No. hors série, 79—84.
Subclones produced from single scions growing on the indicator grapes are free of all serious grape virus diseases.

2025. — — , 1973: Sanitäre Probleme beim Anbau von Rebensorten, die gegenüber bodenbürtigen Viruskrankheiten tolerant sind. Dt. Weinbau-Jahrb. 24, 87—93.
A discussion of effects of latent viruses on visual selection and problems that would result from breeding virus tolerant grapevines.

2026. — — , 1973: Notes on a modification in the technique for inactivating NEPO-viruses in grapes by heat treatment. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 165—171.
Heat treatment of green grape shoots is possible under mist.

2027. — — , 1974: Einige aktuelle Aspekte der „Entartung" von Reben. Dt. Weinbau-Jahrb. 25, 45—52.
Degeneration of grapes is a genetical problem but not a virological one. Generally, virus infections may be reversible (by heat treatments) but genetically caused decay of the efficiency not.

2028. — — , 1974: Beobachtungen an rollkranken Pfropfreben im Gewächshaus. (Vorläufige Mitteilung). Weinberg u. Keller 21, 375—376.
Indicator grapes grafted on leafroll-infected stocks, inserted in woody planing chips mixed with peat as the growing medium, show the characteristic leaf symptoms within 8 weeks after inoculation.

2029. — — , 1974: Höhere Anforderungen an die Vermehrungsbestände. Anmerkung zur geänderten Rebenpflanzgutverordnung. Dt. Weinbau 29, 615—616.
Consequences of the new German grape planting material regulations.

2030. — — , 1975: Virusbedingte Rebenkrankheiten: Begriffe und Grundsätze. Dt. Weinbau-Jahrb. 26, 131—142.
Basic conceptions of grape virus diseases expressed in simple formulations.

2031. — — , 1975: Beiträge zur Technologie der Virus-Eliminierung aus Rebenklonen. 1. Kultur und Benutzung krautiger Testpflanzen *(Chenopodium quinoa)* im Freien. Weinberg u. Keller 22, 115—121.
Symptoms of NEPO-virus developed quickly and were distinct in C. quinoa grown outdoors in volcanic ash.

2032. — — , 1976: Ein Archiv für Fragen und Antworten zur Gesundheitsselektion von Reben. Dt. Weinbau-Jahrb. 27, 57—68.
A discussion on the selection and health of grapevines.

2033. — — , 1976: Beiträge zur Technologie der Viruseliminierung aus Rebenklonen. 2. Über die Hitzetoleranz kleiner unverholzter Topfreben in vulkanischer Asche. Weinberg u. Keller 23, 341—348.
Very small green grape cuttings rooted and grown in volcanic ashes survived heat treatments of 90 d on 39—41 °C without essential losses.

2034. — — , 1977: Beiträge zur Technologie der Viruseliminierung aus Rebenklonen. 3. Einfluß hoher Temperaturen auf das Testpflanzenverfahren zum Nachweis saftübertragbarer Rebviren. Weinberg u. Keller 24, 195—204.
Some effects of 30 °C on experimental isolation of virus from „Reisigkrankheit" diseased grapevines. Negative results in tests to C. quinoa.

2035. — — , 1978: Beiträge zur Technologie der Viruseliminierung aus Rebenklonen. 4. Serologische Virus-Tests an Reben-Stecklingen im Winterhalbjahr. Weinberg u. Keller 25, 297—304.
The serological latex test is sufficiently reliable for detecting fanleaf, arabis mosaic, raspberry ringspot and tomato black ring viruses in grapevine shoots grown in winter in a glasshouse from rooted hardwood cuttings.

2036. — — , 1978: Investigations on persistent NEPO-virus infections in grapes. 3rd Internat. Congr. Plant Pathol., Munich (Germany), 60 (Abstr. 082).
Heat treatment of small green shoots or single summer buds rooted under mist. Successful NEPO-virus elimination obtained at temperatures near 30 °C.

2037. — — , 1979: Inoculation techniques to test the behaviour of new grape varieties after leafroll attack. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 205—207.
Two techniques of transmission by grafting are described.

2038. — — , 1979: Cultivation and heat treatment of small green grape cuttings in an open system. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 333—335.

2039. — — und Querfurth, G., 1978: Untersuchungen zur Serologie, Pathologie und Thermo-Labilität mehrerer Reben-Isolate des Himbeerringflecken-Virus (Raspberry ringspot virus). Weinberg u. Keller 25, 128—136.
A virus isolate from Vitis vinifera var. Elbling has been identified as raspberry ringspot virus and compared by agar gel double diffusion and immunoelectrophoresis with other grapevine isolates and with a cherry isolate of this virus. The Vitis hybrid FS 4 is a good indicator. The virus can be easily eliminated by heat treatment.

2040. — — und Weischer, B., 1972: Fremdartig erkrankte Reben, aus denen ein saftübertragbares Virus isoliert wurde. Ann. Phytopathol., No. hors série, 147—154.
Description of the disease (interveinal chlorosis followed by yellowing and burning, symptoms on FS 4 severe) and associated nematodes given.

2041. — — and Wellmann, E., 1979: Attempts to induce reddening in leafroll infected grape leaves by ultra violet irradiation. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 209—211.

2042. Stoyanov, D., 1974: Two species of *Xiphinema* parasitic on vine in in Bulgaria. Rasht. Zasht. 22 (3), 35—38 (Bulg.).
Xiphinema index and X. turcicum were found along with some other genera.

2043. — — et Kostadinov, A., 1975: Dissémination dans les vignes de notre pays de quelques espèces de nématodes de la famille des Longidoridae. Lozar. Vinar. 24 (4), 16—20 (Bulg.).
Reports on nematodes found in vineyards: synonymy in Xiphinema discussed.

2044. Suba, S., 1977: The role of quarantine inspection in the production of propagation material of grapevine. Növényvédelem 13 (8), 311—312 (Hung.).

2045. Šutić, D., 1973: Infectious degeneration and other virus diseases of grapevine. Jugoslov. Vinogradar. i Vinar. 7 (7), 10—13 (Serbo-Cr.).

2046. — — , 1977: Some characteristics of grapevine virus diseases. Savjetovanje o ekskoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.), Mostar (Yugoslavia), 97—105 (Serbo-Cr.).

2047. — — and Tadijanović, Dj., 1974: The use of sanitary and varietal selection in the process of the multiplication of grapevine propagation material. Poljoprivredna 9, 244—269 (Serbo-Cr.).

2048. Tanaka, H., 1976: Indexing grapes in Japan for viruses. Ann. Phytopathol. Soc. Japan 42 (2), 192—196.
Concerns leafroll, corky bark and pathogenicity on grape cultivars.

2049. — — , Hisago, M. and Imada, S., 1975: A study on grape virus diseases, 3rd rep. (Abstr). Ann. Phytopathol. Soc. Japan 41 (1), 98.

2050. — — and Kugoh, T., 1979: Virus diseases showing leaf mottle resembling fanleaf of grapevine in Japan. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 69—76.
Viruses show physiological, morphological and serological relationship to GFV and AMV.

2051. Tanne, E. and Arenstein, Z., 1976: Symptoms and distribution of stem-pitting of grapevines in Israel. Poljopriv. Znan. Smotra — Agriculturae Conspectus Scientificus (Zagreb) 39 (49), 373—375.

2052. — — and Nitzany, F. E., 1973: Virus diseases of grapevine in Israel. Vitis 12, 222—225.
Fanleaf, yellow mosaic, leafroll are widespread in Israel. Flavescence dorée occurs in the North-East of the country. Xiphinema italiae has been found to be a new vector of fanleaf virus.

2053. — — , Sela, I. and Harpaz, I., 1974: Transmission of grapevine leafroll virus to herbaceous plants. Phytopathol. Z. 80, 176—180.

2054. — — , — — , — — and Klein, M., 1979: Further studies of a leafroll-associated virus: Transmission from herbaceous plants, purification and characterization. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 213—215.

2055. — — , — — , — — and Spiegel-Roy, P., 1977: Grapevine leafroll virus. The viral identity, the isolation and characterization of the virus particles, and nutritional studies in diseased grapevines. Pamphlet No. 169, Agricult. Res. Org., Bet Dagan (Israel), 77 pp. (Heb. with Eng. sum.).

2056. — — , — — , Klein, M. and Harpaz, I., 1977: Purification and characterization of a virus associated with the grapevine leafroll disease. Phytopathology 67, 442—447.
The virus is a flexuous rod; transmissible by sap inoculation to herbaceous plants, measures some 13 × 790 nm and is otherwise characterized.

2057. — — and Spiegel-Roy, P., 1973: Mineral content of healthy and leafroll infected leaves of grape (cv. Mission). Riv. Patol. Veg. Ser. IV, 9 (3), 224—234.
K, Ca, P, N levels in leafroll and normal.

2058. Taylor, C. E., 1971: Nematodes as vectors of plant viruses. In: Zuckermann, B. M., Mai, W. F. and Rhode, R. A. (Eds.): Plant parasitic nematodes, Acad. Press, New York and London, Vol. 2, 185—211.

2059. — — , 1972: Nematode transmission of plant viruses. PANS 18, 269—282.

2060. — — and Robertson, W. M., 1970: Sites of virus retention in the alimentary tract of the nematode vectors, *Xiphinema diversicaudatum* (Micol.) and *X. index* (Thorne and Allen). Ann. Appl. Biol. 66 (3), 375—380.
Arabis mosaic and fanleaf viruses are retained as a monolayer of particles adsorbed on to the cuticle lining, the lumina of the odontophore, anterior oesophagous and oesophagal bulb.

2061. — — and — — , 1975: Acquisition, retention and transmission of viruses by nematodes. In: Lamberti, F., Taylor, C. E. and Seinhorst, J. W., (Eds.): Nematode vectors of plant viruses. Plenum Press, London and New York, 253—275.

2062. Taylor, R. H., 1970: Vein banding of *Vitis*. In: Frazier, N. W. (Ed.), Virus diseases of small fruits and grapevine (a Handbook), Div. Agricult. Sci. Univ. Calif. (Berkeley) 230—232.

2063. — — , 1974: Report on overseas study tour. August 11—October 21, 1973. Melbourne Vict. Dept. Agric. 24 p.
Comments on overseas research on grapevine viruses, repositories, and clean stock multiplication schemes.

2064. — — and Woodham, R. C., 1972: Grapevine yellow speckle — a newly recognised graft-transmissible disease of *Vitis*. Austral. J. Agricult. Res. 23, 447—452.
Many grapevines which show leaf symptoms similar to those with strains of fanleaf virus or tomato ringspot virus are infected with an unknown causal agent which is graft-transmissible to healthy vines but has not been transmitted by sap inoculation to herbaceous plants.

2065. — — and — — , 1972: Indexing grapevines for viruses in Australia. Ann. Phytopathol., No. hors série, 85—87.
Discusses methods and vine indicators used to detect fanleaf, leafroll and grapevine yellow speckle.

2066. Tekinel, N., Dolar, M. S., Nas, Z., Bilgin, N., Salih, H. and Salcan, Y., 1971: A study of infectious degeneration (fanleaf) in vineyards of the Mediterranean region. Bitki Koruma Bül. 11 (4), 225—246 (Turk. with Eng. sum.).
Fanleaf disease on grapevines in the Mediterranean region of Turkey and presence of X. index and X. americaneum in vineyards. Enations observed on grapevine in Topçular.

2067. Terlidou, M. C.: 1970: Mechanical transmission of grapevine infectious degeneration on the herbaceous host of the species *Chenopodium quinoa*. Nea Agrotiki Epitheorisis (New Agricult. Review) 1 (277), 6—10. 6 figs.

2068. Thanassoulopoulos, C. C., Mavraganis, S. G. and Thanassoulopoulus, A., 1974: Studies on fanleaf virus disease of grapevine in the island Zanthe for six years. Geoponika 218, 121—128 (Greek with Eng. sum.).
Some work on the soil-borne nature of fanleaf, transmission by X. index and spread.

2069. Thomas, W., 1972: "Virus-free" imports must be re-indexed. Wine Review 9 (4), 51—54.
A popular account of viruses in grapevines and health problems.

2070. — — , 1976: The impact of virus diseases on quality and yield in the vineyard. Wine Review 13 (2), 17—31.

2071. Thomson, S. V., Davis, M. J. and Kloepper, J. W., 1978: Alfalfa dwarf: relationships to the bacterium causing Pierce's disease of grapevines and almond leaf scorch disease. 3rd Internat. Congr. Plant Pathol., Munich (Germany), 65 (Abstr.).

2072. Tobar Jiménez, A. y Pemán Medina, C., 1970: Especies de *Xiphinema* Cobb, 1913 (Nematoda: Dorylaimida) y la „degeneración infecciosa" de los viñedos de Jerez. I. Valoracion de los niveles de población de nematodes. Rev. Iber. Parasit., 30 (1), 25—56.
Xiphinema index appears to be associated with fanleaf virus infection. Distribution of X. index and X. mediterraneum in soils.

2073. Tracy, R. K., 1977: Pierce's disease: Feeding preference of *Hordnia circellata* (Baker) for selected grapevine cultivars and treatment of diseased vines with solar heating. M.S. Diss., Univ. Calif., Davis, 72 pp.
Hordnia circellata preferred SO 4 and Pinot noir and White Riesling and Rupestris St. George in situations where the cultivars were equally available. Starved insects placed on the 4 cvs. and monitored electrically showed the same feeding behavior pattern. Solar heating of vines under plastic tents produced remission in Pierce's disease symptoms for almost 2 years but did not cure vines of the disease.

2074. Triolo, E., 1974: Osservazioni sperimentali su alcune manifestazioni patologiche in viti della cv. „Sangiovese" sottoposte a termoterapia. Riv. Ortoflorofrutticolt. Italiana 58, 121—127.
Observations on some pathological symptoms in "Sangiovese" grapevines after heat treatment. Sap transmission to C. amaranticolor and C. quinoa and reports a relationship between temperature and severity of symptoms.

2075. — — , 1975: La selezione sanitaria della vite da vino in Toscana. Coltivatore G. Vinic. Ital. 121 (10), 335—336.
A report on clonal selection done in Tuscany.

2076. — — , 1976: Selezione sanitaria e termoterapia della vite da vino in Toscana. Ital. Agricola 113 (3), 113—125.
Record of selection, heat treatment and indexing on indicator grapevines and herbaceous hosts.

2077. Ulrychová, M., Vanek, G., Jokeš, M., Klobáska, Z. and Králík, O., 1975: Association of rickettsialike organisms with infectious necrosis of grapevines and remission of symptoms after penicillin treatment. Phytopathol. Z. 82, 254—265.

2078. Uyemoto, J. K., 1970: Symptomatically distinct strains of tomato ringspot virus isolated from grape and elderberry. Phytopathology 60, 1838—1841.
Isolates of TomRSV all of a single serotype from Vitis labrusca, V. vinifera and Sambucus canadensis each caused different symptoms on plants in the same host range. Results point out problems of visual identification on symptoms.

2079. — — , 1973: Grape viruses and virus diseases in New York vineyards. 2nd Internat. Congr. Plant Pathol., 5—12, September, Minneapolis, Minnesota (USA), 0914 (Abstr.).

2080. — — , 1973: The current status of grapevine virus diseases. N. Y. Food and Life Sci. Quart. 6, 3—5 (Oct.—Dec.).
Reports some 5 viruses in vineyards of New York, TRSV and TomRSV most important, and has a table on percent infection in vineyards.

2081. — — , 1974: An association of phloem necrosis and stem pitting symptoms in grapevines infected with tomato ringspot virus. Phytopathology 64, 588 (Abstr.).

2082. — — , 1974: A new disease affecting the grapevine variety DeChaunac. Proc. Amer. Phytopathol. Soc. 1, 146 (Abstr.).
A disease similar in symptoms to Flavescence dorée is described.

2083. — — , 1975: A severe outbreak of virus-induced grapevine decline in Cascade grapevines in New York. Plant Dis. Reptr. 59, 98—101.
The incidence of virus induced decline in 4 vineyards of Seibel 13053 is discussed. Symptoms include wood pitting and grooving. Viruses isolated are tobacco and tomato ringspot viruses. TomRSV reported to be seed-borne in grape.

2084. — —, 1975: Potential grape losses from soil-borne virus diseases. Penna. Fruit News Proc. 54, 47—48.
Types of losses from soil-borne viruses and prevention.

2085. — —, 1977: Viruses, virus-like disorders and nematodes in the vineyard. Proc. 9th Ann. Penna. Wine Conf. December 2—3, 1976, Lancaster, Penna.
On the status and control of virus and virus-like diseases in New York state.

2086. — —, Cummins, J. R. and Abawi, G. S., 1977: Virus and virus-like diseases affecting grapevines in New York vineyards. Amer. J. Enol. Viticult. 28, 131—136.
3 major types of diseases affecting grapevines in New York vineyards: Virus-induced grapevine decline disease, caused by tomato and tobacco ringspot viruses, grapevine dying arm disease caused by the fungus Eutypa armeniacae, and grapevine leaf curl and berry shrivel disease, whose etiology is not known. The symptoms of the third disease mentioned are somewhat similar to those of Flavescence dorée.

2087. — — and Gilmer, R. M., 1972: Spread of tomato ringspot virus in "Baco Noir" grapevines in New York. Plant Dis. Reptr. 56, 1062—1064.
Provides map (scatter diagram) on spread of virus, effect of virus on yield.

2088. — —, Goheen, A. C., Luhn, C. F. and Petersen, L. J., 1976: Use of *Chenopodium quinoa* in indexing for grapevine fanleaf virus. Plant Dis. Reptr. 60 (6), 536—538.
Indexing by mechanical inoculation to C. quinoa with juices from newly formed leaves or young white roots of grapevines under controlled conditions are reported to be as accurate as graft-transmission to V. rupestris St. George.

2089. — —, Martelli, G. P., Woodham, R. C., Goheen, A. C. and Dias, H. F., 1978: Grapevine *(Vitis)* virus and virus-like diseases, Set 1, 29 pages (with 100 slides). In: Barnett, O. W. and Tolin, S. A. (Eds.): Plant virus slide series. Clemson University, Clemson, SC, USA.
Description of the main virus and virus-like diseases of grapevine, with a set of colour slides. Methods for virus detection and identification. 86 ref.

2090. — —, Taschenberg, E. F. and Hummer, D. K., 1977: Isolation and identification of a strain of grapevine Bulgarian latent virus in Concord grapevine in New York State. Plant Dis. Reptr. 61 (11), 949—953.
Given are symptoms, methods of identification and a note on being seed-borne in grape and C. quinoa.

2091. — — and Welsh, M. F., 1974: Viruses threaten vineyards — nursery certification reduces the threat. Proc. N.Y. State Hort. Soc. 119, 180—184.
Discusses 2 newly detected virus diseases and a certification program.

2092. Valat, C., 1972: Note concernant les travaux de sélection sanitaire conduits par l'association nationale technique pour l'amélioration de la viticulture. Ann. Phytopathol., No. hors série, 89—94.
A.N.T.A.V. program of producing virus free grapevines and rootstocks by selection, indexing, heat treatment, and laboratory tests; tables list variety, tests and diseases.

2093. — —, 1973: La sélection de la vigne et l'amélioration du matériel végétal. Vignes et Vins 220, 29—33.

2094. — — et Bonnet, A., 1978: Présence du «corky bark» dans le vignoble corse. Connaiss. Vigne Vin 12, 87—89.
Corky bark has been detected in the variety Nieluccio in Corsica, by indexing on LN 33. This is the first record of this disease in France.

2095. — —, Grenan, S. et Bonnet, A., 1977: Sélection clonale sanitaire de la vigne. Dépistage des virus. Progr. Agric. Vitic. 94 (15/16), 457—463.
Sanitary selection and virus detection.

2096. — — et Mur, G., 1976: Thermothérapie du Cardinal rouge. Progr. Agric. Vitic. 93 (6), 200—202.
2 periods of heat treatment of 3 months at 35 °C are sufficient for eliminating leafroll and fleck.

2097. — — und Nespoulous, J., 1977: Anwendungstechnik der Klonenselektion in Frankreich — Organisation der Selektion und der Vermehrung. Weinberg u. Keller 24, 115—123 (with Engl., French sum.).
Organization of sanitary and genetic selection in France, propagation of healthy material.

2098. — — and Rives, M., 1973: Information and comments on variations induced by thermotherapy. Riv. Patol. Veg. Ser. IV, 9 (3), 291—293.
A discussion of why young grapevines which have had test-tube heat-treatment

may be variously modified and range in transient variations from a juvenile to a mature state.

2099. Valdez, R. B., 1972: Transmission of raspberry ringspot virus by *Longidorus caespiticola, L. leptocephalus* and *Xiphinema diversicaudatum* and of arabis mosaic virus by *L. caespiticola* and *X. diversicaudatum*. Ann. Appl. Biol. 71 (3), 229—234.
Transmission of an English strain of RRV originating from blackberry and of a strain of AMV from strawberry.

2100. Valenzuela, B. J., 1973: „Hoja en abanico" de la vid. Invest. Prog. Agricola 5 (1), 52.
Fanleaf virus disease in grapes.

2101. Vanek, G., 1970: Mechanical transmission of some grapevine viruses to herbaceous differential hosts. Sb. UVTI-Ochr. Rost. 6 (2), 135—142 (Slovak.).

2102. — —, 1970: Rugose wood in grapevine. Vinohrad 8, 171 (Slovak.).

2103. — —, 1971: Distribution of virus diseases in vineyards in Czechoslovakia. Vinohrad 9, 166—167 (Slovak.).

2104. — —, 1972: Virus diseases of grapevine in Czechoslovakia. Ph. Dr. Thesis, Res. Inst. Viticult. Enol., Bratislava (Slovak.).

2105. — —, 1972: Geographical distribution of grapevine virus diseases in the Czechoslovak vineyards. Pol'nohospodárstvo 18 (4), 309—325 (Slovak. with Eng., Russ. sum.).

2106. — —, 1972: Effect of roncet (fanleaf) virus on the quantity and quality of grapevine yield and wine quality. UVTI-Ochr. Rostl. 8 (65), 47—52 (Slovak.).

2107. — —, 1972: The grapevine varieties most infected by virus diseases. Vinohrad 10, 30—31 (Slovak.).

2108. — —, 1972: The harmful effect of grapevine roncet (fanleaf) disease on the grapevine yield. Vinohrad 10, 179—180 (Slovak.).

2109. — —, 1972: New knowledge on virus diseases of grapevine. Vinohrad 10, 233 (Slovak.).

2110. — —, 1973: Therapy of grapevine viruses. Final report, Research Inst. Viticult. Enol., Bratislava (Slovak.).

2111. — —, 1973: Frequency of grapevine virus diseases on the main grapevine varieties in Czechoslovakia. Pol'nohospodárstvo 19 (8), 684—692 (Slovak. with Eng., Russ. sum.).

2112. — —, 1974: Biological diagnosis of virus diseases and determination of virus properties. Grapevine indicators. Final report, Res. Inst. Viticult. Enology, Bratislava (Slovak.).

2113. — —, 1974: The wood grooving virus and dieback of grapevines. Vinohrad 12, 86—87 (Slovak.).

2114. — —, 1974: Therapy of virus-infected grapevine by high temperature. Vinohrad 12, 121—122 (Slovak.).

2115. — —, 1974: The occurrence of nematode vectors of virus diseases in our vineyards. Vinohrad 11, 135—136 (Slovak.).

2116. — —, 1974: Causes of double forks on grapevine offshoots. Vinohrad 12, 240—241 (Slovak.).

2117. — —: 1975: Differentiation of genetically fixed and virus-induced biological and economical properties of selected grapevines. Final report, Res. Inst. Viticult. Enology, Bratislava (Slovak.).

2118. — —, 1975: Vectors of grapevine virus diseases. Final report, Res. Inst. Viticult. Enology, Bratislava (Slovak.).

2119. — —, 1976: Virus diseases and the possibility of their therapy in vineyards. Proc. Conf. for Scientific Development in Viticulture, Stary Smokovec, Czechoslovakia (Slovak.).

2120. — —, 1976: Thermotherapy of grapevine in Czechoslovakia. Publications of the Res. Inst. Viticult. Enology, Bratislava (Slovak.).

2121. — —, 1977: Studies on control methods for virus and rickettsia diseases. Tag. Ber. Akad. Landw. Wiss. DDR, Berlin, 152, 107—110 (Russ.).

2122. — —, 1977: Prospects of producing high quality virus-free material for grapevine multiplication. Vinohrad 15, 103—104 (Slovak.).

2123. — — and Krivanék, V., 1973: Virus as a factor causing the genetic variability — the change of the grapevine genotype. Plant Virol., Proc. 7th Conf. Czechoslov. Plant Virologists, High Tatras 1971, 471—477 (Eng. with Russ., Slovak. sum.).

2124. — — and Pozdena, J., 1970: Serological diagnosis of grapevine virus diseases in Czechoslovakia. Sb. Ved. Prací 3. celost. Conf. Ochr. Rost., Praha 1970, 1. část, 168—174 (Slovak.).

2125. — — et — —, 1975: Rugosité du bois — nouvelle maladie à virus de la vigne en Tchécoslovaquie. Progrès de la recherche viti-vinicole, Veda, Maison d'édition de l'Académie slovaque des sciences (Bratislava) 7, 133—142 (French with Slovak., Russ. sum.).
Wood pitting of grapevine recorded in Czechoslovakia in 1970. Symptoms appear on the rootstock or on the scion.

2126. — — , Sarospataki, G. and Lehoczky, J., 1972: Recent experimental evidence of transmission of grapevine yellow mosaic virus by the nematode *Xiphinema index*. Szölö-és Gyümölcsterm. 7, 253—260 (Hung.).

2127. — — , Šaštinský, J. and Mikušová, A., 1973: Testing grapevine clones on virus diseases. Vinohrad 11, 154—155 (Slovak.).

2128. — — and Ulrychová, M., 1976: Some similarities between grapevine infectious necrosis and hop curl disease in which rickettsialike structure were found. Proc. 8th Conf. Czechoslov. Plant Virologists, Bratislava 1975.

2129. — — and Vaneková, Z., 1977: Ochrana viniča (Grapevine protection). Priroda (Publ.), Bratislava (Czechoslovakia), 362 pp. (Slovak.).
55 pages of this book are devoted to diseases of grapevine caused by viruses, mycoplasma and rickettsia. The text is illustrated by black-white photographs and colour paintings, and by schematic drawings and tables. The book is intended mainly for viticulturists.

2130. van Velsen, R. J. and Niejalke, J. M., 1974: Green budding of grapevines *(Vitis vinifera)*. Agricult. Record 1 (1), 24—25.
A method for indexing grapevines with the indicator cvs. St. George, Mission or LN 33.

2131. Vega, E., 1978: Replantation des vignobles et désinfection du sol en Argentine. Bull. OIV 51 (566), 250—262.

2132. Verderevskaya, T. D. and Marinesku, V. G., 1972: Methods of obtaining virus-free grapevines. Sadovod. Vinogradar. i Vinodel. Moldavii 27 (2), 38—42 (Russ.).

2133. Vetten, H. J., 1977: Virushemmende Prinzipien in der Rebe *(Vitis vinifera* L.) und Versuche zu deren Ausschaltung bei der mechanischen Übertragung von Rebenviren. Diss. Univ. Bonn, 131 pp.
Author identifies inhibitors in grape that interfere with sap inoculation as flavon glucosides and flavolanes. Phenolic compounds inhibit early stages of infection, but primarily they induce aggregations of virus particles. Action of nicotine reduces action of phenols. Improvements in mechanical sap inoculation are discussed.

2134. — — und Nienhaus, F., 1976: Probleme des Virusnachweises aus Reben. Mededel. Fac. Landbouwwetenschap. (Gent) 41, 755—764.
Inhibitors in test plants which interfere with the indexing for grapevine viruses were isolated by chromatography and identified as flavonoids. Methods to remove inhibitors from extracts were exclusion chromatography by Sephadex gel and Controlled Pore Glass, and the application of different chemicals for extraction.

2135. — — und Stellmach, G., 1978: Neue Versuche zur Übertragung von NEPO-Viren auf Reben durch mechanische Inokulation. Wein-Wiss. 33, 179—187 (with Engl. sum.).
No improvement in the mechanical transmission of purified Nepoviruses to grapevine has been obtained.

2136. von der Brelie, D. and Nienhaus, F., 1978: Simple methods for early detection of grapevine leafroll disease. Z. Pflanzenkrankh. Pflanzensch. 85, 745—747.
Staining flavan derivatives in tissues and extracts of grapevine leaves with p-dimethylaminocinnamaldehyde (DMACA) allows the differentiation between healthy and leafroll-diseased vines before symptom development.

2137. Vovlas, N. Inserra, R. e Lamberti, F., 1975: Risanamento di piantoni di Arancio amaro, Olivo e Vite infestati da nematodi. „Atti Giornate Fitopatologiche 1975", Torino, Nov. 1975.
Sanitation of citrus, olive and grapevine stocks infested by plant parasitic nematodes. Results of control trials of Xiphinema index on grapevine rootstocks are reported.

2138. — — e Savino, V., 1976: Il virus dell'arricciamento della vite associato ad una reticolatura fogliare gialla della cv. Corinthiaki in Grecia. Phytopathol. Mediter. 15, 132—134.
An isolate of grapevine fanleaf virus serologically like common isolates was recovered from cv. Corinthiaki from Greece. The vines displayed a very striking yellow netting of the leaf veins, little leaf malformation and no apparent reduction of the yield.

2139. Vuittenez, A., 1970: Méthodes de diagnostic des viroses de la vigne. 4e Conf. Internat. sur les maladies à virus de la vigne OIV-ICVG, Montpellier 19—20 Juin 1970. Bull. OIV 43, 926—943 et Progr. Agric. Vitic. 87 (17), 379—387; (18), 242—251; (20), 305 et erratum 306.

2140. — — , 1971: Present possibilities and limitations of serological methods for diagnosis of viruses in grapevines and other woody perennials. Plant Virology, Proc. 7th Conf. Czechoslov. Plant Virologists, High Tatras 1971, 479—485.

2141. — — , 1971: Recent progress in the study of grapevine virus diseases: diagnosis, thermotherapy, reduction of natural spread by controlling the vectors. In: NEDELCHEV, N. (Ed.): Problems of viticulture. Zemizdat (Publ.) Sofia (Bulgaria), 249—266 (Bulg.).

2142. — — , 1973: Erfahrungen mit dem Einsatz der Serologie bei der Gesundheitsselektion im französischen Weinbau. Weinberg u. Keller 20, 253—264.

2143. — — , 1973: Methods of studying virus diseases of grapevines. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 123—131.

2144. — — , 1974: Tests virologiques et régénération par thermothérapie. Deux voies complémentaires pour la production de plants de vigne sans virus. Colloque international de la multiplication de la Vigne, Dijon 29—30 Janvier 1974. Féd. franç. des syndicats de producteurs de plants de vigne, 34—41.

2145. — — , 1976: Progrès dans les méthodes applicables à la sélection de la vigne pour la lutte contre les viroses et maladies similaires. 2e Symp. Internat. sur la sélection clonale de la Vigne. Le Grau du Roi 10—11 Sept. 1976 (Résumé dactylographié).

2146. — — , 1977: Méthodes de lutte contre les maladies à virus de la vigne. Savjetovanje o ekskoriozi i virusnim bolestima vinove loze (Proc. Conf. on Excoriosis and Virus Diseases of Grapevine). Hepok (Publ.), Mostar (Yugoslavia), 153—164 (Serbo-Cr.).

2147. — — , 1979: Suspected virus diseases of the grapevine. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult. Madrid, 151—160.

2148. — — , BASS, P. et ATTEB, N., 1974: Application de la culture de fragments d'organes *in vitro* pour l'étude des virus chez la vigne et autres plantes hôtes expérimentales ligneuses ou herbacées. Ann. Phytopathol. 6, 498 (Résumé).

2149. — — et KUSZALA, J., 1972: Expérimentation d'améliorations récentes apportées aux techniques de détection des virus, chez la vigne, par des procédés physiques et sérologiques. Ann. Phytopathol., No. hors série, 155—163.

2150. — — et KUSZALA, J., 1975: Améliorations apportées aux techniques de diagnostic sérologique de virus des plantes ligneuses. Ann. Phytopathol. 7, 224—226.

2151. — — , — — , LEGIN, R., STOCKY, G., PEJČINOVSKI, P. et HEYD, C., 1979: Phénomènes d'interaction entre souches de virus NEPO infectant la vigne. Proc. 6th meeting ICVG, Cordoba 1976. Monografias INIA No. 18, Minist. de Agricult., Madrid, 59—68.

2152. — — , — — et PEJČINOVSKI, P., 1974: Etude de phénomènes d'interaction entre divers virus de type «Nepo» transmis expérimentalement par voie mécanique à *Chenopodium quinoa* (WILLD.). Ann. Phytopathol. 6, 485 (Résumé).

2153. — — , LEGIN, R., KUSZALA, J. et CARDIN-MUNCK, M.-C., 1972: Les virus NEPO chez la vigne et leurs nématodes vecteurs. Ann. Phytopathol. 4, 373—392.

2154. — — , — — , — — et — — , 1972: Les virus NEPO chez la vigne et leurs nématodes vecteurs: résultats acquis et recherches en cours. Ann. Phytopathol. 4, 419—420.

2155. WEISCHER, B., 1973: Recent studies on nematodes transmitting grapevine viruses. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 81—89.
Description and discussion of recent research on nematode vectors of viruses infecting grapevines with table on vector and virus.

2156. — — , 1974: *Xiphinema*-Arten europäischer Weinberge. Weinberg u. Keller 21, 61—76.
Morphological characters, ecology and geographical distribution of Xiphinema spp. in European and Mediterranean vineyards.

2157. — — , 1975: Ecology of *Xiphinema* and *Longidorus*, In: LAMBERTI, F., TAYLOR, C. E., and SEINHORST, J. W. (Eds.): Nematode Vectors of Plant Viruses. Plenum Press. London and New York, 291—307.
Review of ecological factors influencing nematodes of the genera Xiphinema and Longidorus.

2158. — — and WYSS, U., 1976: Feeding behaviour and pathogenicity of *Xiphinema index* on grapevine roots. Nematologica 22, 319—325.
Experimental studies on the feeding behaviour of X. index and the biological changes caused by these nematodes on grape roots.

2159. WELLER, H. A., 1975: Virus-indexed production of raspberries and grapes. Comb. Proc. Int. Plant Propag. Soc. 25, 425—428.

2160. WETTER, C., 1975: Metodi sierologici per la diagnosi dei virus della vite. Coltivatore G. Vinic. Ital. 121 (9), 267—269. (Vedi anche Tavola Rotonda „Malattie da virus e da micoplasmi della vite", Lab. Fitovirol. Appl. C.N.R., Torino, 49—53.
Serological methods for the diagnosis of grapevine virus diseases.

2161. WOODHAM, R. C. and KRAKE, L. R., 1978: Incidence of grapevine leafroll disease in Sultana along the Murray Valley. APPS 3rd Nat. Plant Pathol. Conference, Melbourne, May 1978, Abstr. 71.

The mean incidence of leafroll in Sultana vineyards was 98 % in South Australia, 91 % in Sunraysia, 80 % in Mid-Murray and Robinvale.

2162. — — and Taylor, R. H., 1973: Virus and virus-like diseases of grapevines in Southern Australia. 2nd Internat. Congr. Plant Pathol., Minneapolis, Minnesota (USA), 0915 (Abstr.).

2163. — — , — — and Krake, L. R., 1973: Grapevine virus and virus-like diseases in Southern Australia. Riv. Patol. Veg. Ser. IV, 9 (Suppl.), 17—22.
Fanleaf virus strains, leafroll, grapevine yellow speckle, fleck and enation diseases have been detected. Leafroll and yellow speckle are widespread and the others comparatively rare.