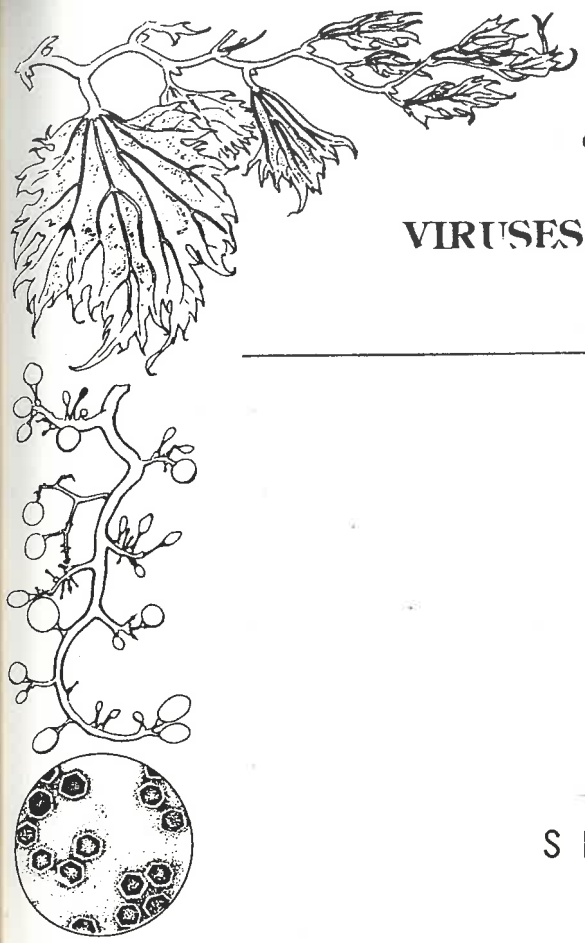

8th MEETING
of the INTERNATIONAL COUNCIL for the study of VIRUSES AND VIRUS DISEASES OF THE GRAPEVINE

BARI and SASSARI, ITALY

SESSION 4

EPIDEMIOLOGY AND VECTORS

TEST RESULTS CONCERNING THE BEHAVIOUR OF THE MISSION CULTIVAR AND OTHER VARIETIES OF GRAPE WINE (VITIS VINIFERA) IN CASE OF LEAFROLL

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The continuous presence and diffusion of leafroll in vine nursery material and in new plantings is evidence that work must be done in two directions by means of discriminant observations in full field and indexing with suitable indicators.
We have given a further proof of Mission's lacking reliability in our environment; in fact, we have demonstrated how some cultivars are uncapable of producing leafroll, even when infected.

LONGIDORIDAE IN THE VINEYARDS OF THE PROVINCE OF TREVISO (NORTH-EAST ITALY)

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A survay of Longidorid nematodes was carried out in 1977-1983 in the vineyards of the province of Treviso (north-east Italy). Of the 725 samples collected, 21% were found positive. The genera Xiphinema Cobb and Longidorus (Micoletzky) Filipjev were found in 17 and 4% respectively of the samples in which numbers of Longidorids were detected. Xiphinema represented by five species was present in 82% and Longidorus in 20% of the positive samples. Specimens of Longidorus were always scarse, 2-3 juveniles per sample; in most cases, therefore, specific identification was possible only when adult females were found, and this occurred only in a few istances for L. juvenilis Dalmasso. Xiphinema pachtaicum (Tulaganov) Kirjanova was the commonest species encountered. It was present, in fact, in 50 samples (33% of those positive for Longidorids). The second commonest species was X. brevicolle Lordello et Da Costa, found in 45 samples (30% of the positive for Longidorids). X. index, Thorne et Allen, the natural vector of Grapevine Fanleaf Virus, was detected in 28 samples (18% of the positive for Longidorus).

Less frequent was the presence of two other species, namely X. diversicaudatum (Micoletzky) Thorne and X. vuittenezi Luc, Lima, Weischer et Flegg found each in 4 and 6 samples respectively only.

REPRODUCTION OF XIPHINEMA INDEX THORNE ET ALLEN ON VARIOUS GRAPEVINE ROOTSTOCKS.

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The reproduction of Xiphinema index Thorne et Allen was tested on 41 grapevine rootstocks in a glasshouse in 20 cm diam. clay pots containing about 3 kg of steam sterilized sandy loam. One year after inoculation of 100 females of the nematode, the highest populations were found in the pots planted with Mourvedre x Rup. 1202 (94,842 nematodes/ 0.5 l of soil). Intense reproduction had occurred also in the rhizosphere of Teleki 8B, 764 Paulsen, 225 Ru, 227-1 Castel and Aramon x Rip. Ganzin where population between 86,158 and 57,367 nematodes/0.5 l of soil were observed. Reproduction rate was much lower on 57 Richter, 2413G, 770 Paulsen and 110 Richter in whose rhizosphere were detected population densities between 8775 and 3608 nematodes/0.5 l of soil. Finally on Riparia des Pailléres, 1045 Paulsen, 26G, SO4, Golia, Teleki 5C and Teleki 5A there was no reproduction of X. index and the few females found were survivals of the inoculation.

REPRODUCTIVE CAPACITY OF SINGLE FEMALES OF THREE POPULATIONS OF XIPHINEMA INDEX THORNE ET ALLEN

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Single females extracted from three populations of Xiphinema index, from Italy, USA and Israel, were deposited on roots of young seedlings of fig (Ficus carica) and tomato (Lycopersicon esculentum) cv Moneymaker in 25 ml. plastic pots containing steam sterilized sandy loam and maintained at 18 ± 2 C in a temperature controlled cabinet. The nematodes from Italy and USA reproduced on both hosts, while those from Israel inexplicably did not multiply on fig. More individuals from Italy and USA survived and produced offspring. However the life cycle was slower on tomato. In fact, the fourth stage juveniles were found after eight weeks on fig, while on tomato third stage juveniles only were detected after the same interval. It is estimated that, on fig, reproductive capacity of both the italian and american populations is about 140-160 individuals per female; while on tomato, reproductive capacity is between 18 and 36 individuals for all the three populations tested. Longevity appeared to be 56-58 and 40-48 weeks on fig and tomato rispectively, but fertility lasted 56 weeks on fig and 24-32 weeks on tomato.

GRAPEVINE DAMAGES INDUCED BY SPECIAL VECTOR-VIRUS COMBINATIONS

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In the Federal Republic of Germany, up to now, five different nepoviruses have been detected in grapevines. All these viruses induce decreased vigour and yield losses, but at a different rate and with diversified leaf symptoms. In the Palatinate, the most frequently occurring and widespread viruses are grapevine fanleaf (GFV), arabis mosaic (AMV) and raspberry ringspot (RRV). Tomato black ring (TBRV) and strawberry latent ringspot (SLRV) viruses seem to be of local importance only. The most frequent vector-virus combinations are: Xiphinema index and X. vuittenezi with GFV; X. diversicaudatum with AMV. Patchy spread of RRV seems to be associated mainly with Siddiqia maxima, whereas Longidorus macrosoma, a recognized vector of RRV is limited to only a few soils. Economic damages, as expressed by yield losses and rate of spread of the disease in the field are highest with GFV-X. index and AMV-X. divesicaudatum combinations. The combination RRV-L.macrosoma also induces severe losses but occurs seldom. In vineyards where S. maxima occurs, RRV is spread at a very high rate but severe damages appear only after some years from disease onset.

FURTHER EVIDENCE THAT MEALYBUGS CAN TRANSMIT GRAPEVINE VIRUS A TO HERBACEOUS HOSTS

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Further transmission trials from grapevines to Nicotiana clevelandii were carried out using three different mealybug species. The donor host/mealybug species combinations were the following: (i) 'Procupac' vines with leafroll symptoms/Pseudococcus longispinus; (ii) field-grown 'Italia' vines of unknown sanitary condition/Pseudococcus ficus; (iii) 'Catarratto' vines which had indexed positive for leafroll only/ Pseudococcus ficus; (iv) 'Inzolia' vines with leafroll and stem pitting/Planococcus citri. In all cases, irrespective of the host/vector combination, N. clevelandii plants on which mealybug crawlers had fed developed symptoms indistinguishable from those induced by the closterovirus grapevine virus A. This virus was detected in all symptomatic herbaceous hosts by immunoelectron microscopy.

RECENT SPREAD OF FLAVESCENCE DORÉE AND OF ITS VECTOR IN VINEYARDS OF NORTHERN ITALY

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Grapevine Flavescence dorée, reported in Italy for the first time in 1973, remained for several years sporadic and confined to the north-west part of the country. In 1982 a new and severe outbreak of the disease was observed in some viticultural districts of the Veneto region (North-eastern Italy), followed by a further spread in 1983. In some vineyards up to 40 % of the grapevines have been affected. Chardonnay and white Pinot resulted to be the most damaged cultivars.

Great numbers of leafhopper vectors (Scaphoideus titanus) have been found in several vineyards of the same area during July and August 1983.

The causes of this recent and severe spread of Flavescence dorée in Northern Italy and possible control measures are discussed.

ATTEMPTS TO TRANSMIT "VEIN YELLOWING LEAFROLL" OF GRAPEVINE TO PERIWINKLE AND BROADBEAN. DETERMINATION OF THE INFECTION PERIOD IN THE CHAMPAGNE REGION

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A graft-transmissible disease characterized by vein yellowing and leafroll (enroulement à nervures jaunes) is expanding in the newly established clonal vineyards of the Champagne region of France. The symptomatology of the disease is similar to that of leafroll but the most severely affected vines show a yellowing of the veins and considerable yield losses late in autumn. The epidemiology resembles that of bois noir yellows disease: infection coming from outside the vineyard, no spread from vine to vine, variability in the severity of symptom expression according to the single vine. Nevertheless, the disease appears to differ from bois noir and leafroll. In the attempt to find herbaceous host plants for the agent of this disease and to determine the time of infection, periwinkle, broad bean and healthy grapevine plants were placed in affected vineyards during the vegetative season. These plants were changed every other week and brought back to the greenhouse. Broad beans did not show any symptom until the end of their life and grapevine until leaf shedding. Many periwinkles began to show severe symptoms in the following winter consisting of: dwarfing of internodes, leaves, flowers and of the whole plant, rolling and dropping of oldest leaves, rosetting of new vegetation, dark flecking of the stem. Investigations are being currently carried out for identifying the symptoms exhibited by periwinkle and grapevine. Out of 15 periwinkle plants exposed to infection in the field from July 5 to 19, ten were infected at random throughout the vineyard, some showing strong, other weak symptoms. On the other hand, plants infected in the last two-week period of exposure in the field, showed only mild symptoms. The epidemiological significance of this finding is discussed.