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CHARACTERISATION OF  
THREE ISOMETRIC VIRUSES  
INFECTING DAPHNE

A thesis presented in partial fulfilment  
of the requirements for the degree of  
Master of Science in Microbiology at  
Massey University

by

Bret Alton Max Morris-Krsinich

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## ERRATA

- p. 16                    Figure 7 : 'recrotic' should read necrotic
- p. 23 & 26            'innoculation' mis-spelt should read inoculation
- p. 27, 62 & 78      The names of families should begin with capital letters e.g. Solanaceae
- p. 29                    mistake associated with the formula 'w = rev/min = 39,000' should read:
- $$w = 2 \pi n \frac{\text{rev/min}}{60}, \text{ rev/min} = 39,000$$
- p. 31                    Table 2. 'HaOH' should read NaOH
- p. 32                    line 15 and 17 'distilled water' should read borate
- p. 34                    line 3 'Lot et al.,' should read Lot et al., 1972;
- p. 44                    Figure 13 in the heading the numbers '45, 235, 165' should read 4S, 23S, 16S
- p. 53                    Sentence begining 'nucleotide base ratios - - -' should not be a new paragraph.
- p. 62                    heading 2.6 'PHYSICAL PROTERTIES' should read PHYSICAL PROPERTIES - - -
- p. 75                    'additional tests' should read additional test

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PREFACE

The poor vigour of many cultivars belonging to the genus Daphne (Thymelaeaceae) has been attributed to viral infection (Chamberlain, 1954) and several viruses including alfalfa mosaic virus and cucumber mosaic virus have been isolated (Chamberlain, 1954; Milbrath & Young, 1956; and Schmelzer, 1968).

Concern about daphne 'virus' problems expressed by nurserymen, has led to several programmes aimed at improving stock plants. Recent survey work on daphne viruses (Forster & Milne, 1975; Sutton & Taylor, 1974; and Sweet & Campbell, 1973) has therefore been prompted by this requirement for high health and virus-free plants.

In a survey of viruses infecting Daphne species and cultivars in New Zealand, Forster and Milne, (1975) isolated four previously described viruses (alfalfa mosaic virus, arabis mosaic virus, cucumber mosaic virus and tobacco ringspot virus) plus seven partially characterised viruses (daphne isometric viruses 1, 2 & 3, daphne-tobacco mosaic virus, daphne virus S, daphne virus X and daphne virus Y). The latter three anisometric viruses (DVS, DVX, DVI) have been further characterised (R.L. Forster & K.S. Milne, pers. comm., 1975), while the remaining isometric viruses (DIV-1, DIV-2, & DIV-3) are the subject of this study.

Several isolates of each of the three isometric viruses were obtained from their respective hosts and extensively characterised. DIV-1, DIV-2 and DIV-3 could be readily differentiated from each other by host range and symptomatology in differential hosts and more detailed study led to their separate identification.

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