

## OBITUARY



### Lillian Ross Fraser 1909–1987

Dr Lillian Ross Fraser D.Sc., formerly citrus pathologist and Chief Biologist of the New South Wales Department of Agriculture, died on 5 October 1987 after a long illness. She was 79 years of age.

After obtaining a B.Sc. (Hons.) in Botany from the University of Sydney in 1930, Dr Fraser carried out post-graduate research from 1931 to 1937 on mycorrhizal and sooty mould fungi and on the ecology of rainforest communities in the Barrington Tops (with Dr J. Vickery). She obtained a D.Sc. (Botany) from the University of Sydney in 1937, then went to Imperial College of Science and Technology, University of London, and to the Imperial Mycological Institute to work on growth substances required for fungal growth and reproduction and fungal taxonomy. In 1939–40, she was Commonwealth Research Fellow, University of Sydney, working on fungal decay of apples in storage.

In 1940 Dr Fraser was appointed assistant plant pathologist, New South Wales Department of Agriculture. Her career was notable for her work on citrus diseases.

**1. *Phytophthora* root rot** In New South Wales, citrus under irrigation had for many years been subject to declining health, often commencing at an early age. From 1935 to 1942 almost half the citrus trees on the Murrumbidgee Irrigation Area died or became unprofitable and it was not possible to re-establish citrus on land where citrus had previously been grown. Dr Fraser showed that this was due to attack by the soil inhabiting fungus *Phytophthora citrophthora*; she tested all available citrus stock for resistance to this fungus and found the rootstock *Poncirus trifoliata* to be highly resistant. From this time this stock has been used exclusively for citrus plantings on the M.I.A. and other areas of New South Wales. Its use has enabled replanting of citrus in old, *Phytophthora*-infested land. Dr Fraser was the first in the world to recognize and describe the root rot disease of citrus caused by *Phytophthora*.

**2. Virus diseases** Dr Fraser investigated the many virus diseases which beset citrus in New South Wales, including scalybutt (exocortis), tristeza stem pitting of grapefruit, psorosis, seedling yellows, woody gall and Australian citrus dieback. The latter three diseases she named and described.

Dwarfing and scalybutt (exocortis), which affected the root rot-resistant rootstock (*Poncirus trifoliata*), was demonstrated by Dr Fraser and others to be due to infection by a 'virus', which was bud transmitted. This discovery resulted in the development of a citrus budwood certification programme in New South Wales, which ensured that only exocortis-free budwood was made available to nurserymen. The scheme was later improved to provide budwood free of all the important major citrus viruses.

Dr Fraser and other members of the New South Wales Citrus Improvement Committee scored a world first in demonstrating that the tristeza stem pitting disease of grapefruit could be controlled by the use of mild strain virus protection. Grapefruit budwood distributed from the New South Wales budwood scheme has carried a mild strain of tristeza virus.

**3. *Septoria* spot** Dr Fraser established the infection and latency periods of the *Septoria* spot disease which had become of importance in inland areas during the 1930s. As a result of her work an effective protective spray programme, which is still in general use, was developed.

For her citrus research, Dr Fraser became the first woman admitted to the Fellowship of the Australian Institute of Agricultural Science.

From 1940 to 1956, Dr Fraser carried out advisory work on diseases of ornamentals. This necessitated the identification of many diseases not previously recorded in New South Wales and formulation of control measures for them. Some of these were yellows and dry rot of gladioli, rose wilt virus and rough graft canker disease, foliar nematode and a number of virus diseases of chrysanthemums. Of particular importance was her demonstration that the root rotting fungus *Phytophthora cinnamomi* was the cause of destruction of a large number of ornamentals, trees and native plants. She recognized and preached the importance of distributing and planting horticultural stock free of this fungus.

Dr Fraser had a particular interest in viral diseases of grapevines. She established that leaf roll was a major factor in the decline of grapevines in New South Wales and introduced a programme of indexing and selecting virus-free clones. She was winner of the 'Your Garden' award of the Australian Nurseryman's Association in 1966 for her outstanding contribution to the field of horticulture.

Dr Fraser was President of the Linnean Society (1948–49, 1956–57), and a foundation member of the International Organisation of Citrus Virologists (1957). In 1960 she became Senior Biologist (the first woman appointed to an administrative position in the New South Wales Department of Agriculture) and in 1968 Chief Biologist of the Biological and Chemical Research Institute, before retiring in 1973.

Dr Fraser was a shy, quietly spoken woman with blue eyes, dark hair and a keen sense of humour. Her hobbies reflected her interest in Botany. She was a keen gardener, established a 'plantsman's garden' of rare beauty, and spent her holidays exploring bush areas for new plant specimens.

P. Barkley