THE SPREAD OF B-BIOTYPE *BEMISIA TABACI* INTO AUSTRALIAN COTTON

Robin Gunning[1] and Emma Cottage[2]
[1]NSW Agriculture, Tamworth Centre for Crop Improvement
[2]Department of Agronomy and Soil Science, University of New England

Introduction

The cotton whitefly *Bemisia tabaci* is a serious pest of fibre, horticultural and ornamental crops world wide. When present in sufficient numbers, it can cause extensive damage through direct feeding, the production of large quantities of honeydew and as a vector of many viruses. Australia has a native strain of *Bemisia tabaci.* but in 1994, recently, a new biotype, known as the B-type or poinsettia strain was found in Australia. Overseas, B-type *B, tabaci* is a primary pest on cotton, vegetable crops (curcubits, tomatoes, rock melons) and ornamentals. This strain is extremely virulent, highly insecticide resistant, adapts to temperate climates and has a host range of over 500 plants. A nation-wide survey has now shown that this whitefly is widely distributed over eastern Queensland and NSW and the Darwin area of the NT .

The spread of this whitefly is expected to result in it becoming a major pest in Australia and a primary pest of cotton. B-biotype *B. tabaci* will effect field crops (such as cotton, maize, lucerne and sunflowers); field grown vegetables (curcubits, cole crops, melons, tomatoes); glasshouse vegetables; fruit crops (grapes) and glasshouse ornamentals (poinsettias, hibiscus, geberas and gloxinia).

Distribution of B-biotype B. tabaci on cotton

As an adjunct to the *Helicoverpa* resistance monitoring program, cotton crops in Queensland and NSW were surveyed for whiteflies from 1996 - 2000. Immature or adult whiteflies found on cotton leaves sent to Tamworth were removed and identified by polyacrylamide gel electrophoresis. The naphthyl esterase banding patterns in individual female, adults whiteflies were characterised after separation of the esterases on 7.5% polyacrylamide gels Following staining with 1-naphthyl butyrate, bands were identified by measuring their electrophoretic mobility relative to the buffer front on the gel. B-biotype *B. tabaci* are indicated by the distinctive esterase at 0.14 Rm (designated as $E_{0.14}$).

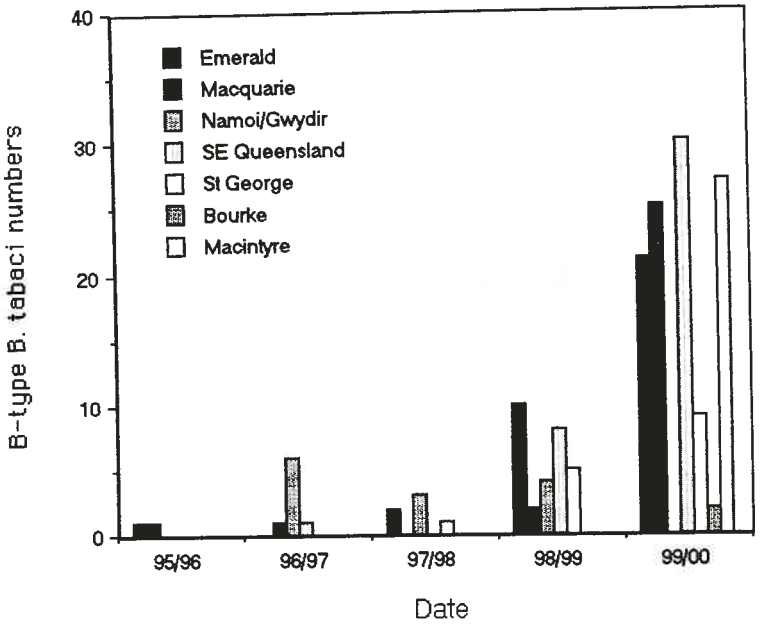
Numbers of B-biotype *B. tabaci* on cotton are plotted in Fig 1. These whiteflies were found in cotton in all cotton growing areas in NSW and Queensland and it is obvious that

numbers of are increasing, season by season, particularly since 1998. By 2000, the number of whiteflies recovered from leaves had increased approximately 30 times from 1996 numbers. During the same period, B-type *B. tabaci* has had explosive population increase in horticultural crops (Ayr, Bowen, Bundaberg and northern coastal NSW) and has assumed major pest status.

Conclusions

While the conditions under which populations of this whitefly forms rapidly increase are not well understood, overseas experience shows that after invasion of a new habitat, the whitefly appears to gradually increase in numbers for several years before a population explosion. Given that B-type *Bemisa tabaci* numbers have steadily increased on cotton it is possible that whitefly numbers may soon reach damaging numbers. It is therefore essential, that whitefly numbers on cotton be closely monitored.

Figure 1
Abundance of B- biotype *Bemisia tabaci* on Australian cotton 1995 - 2000



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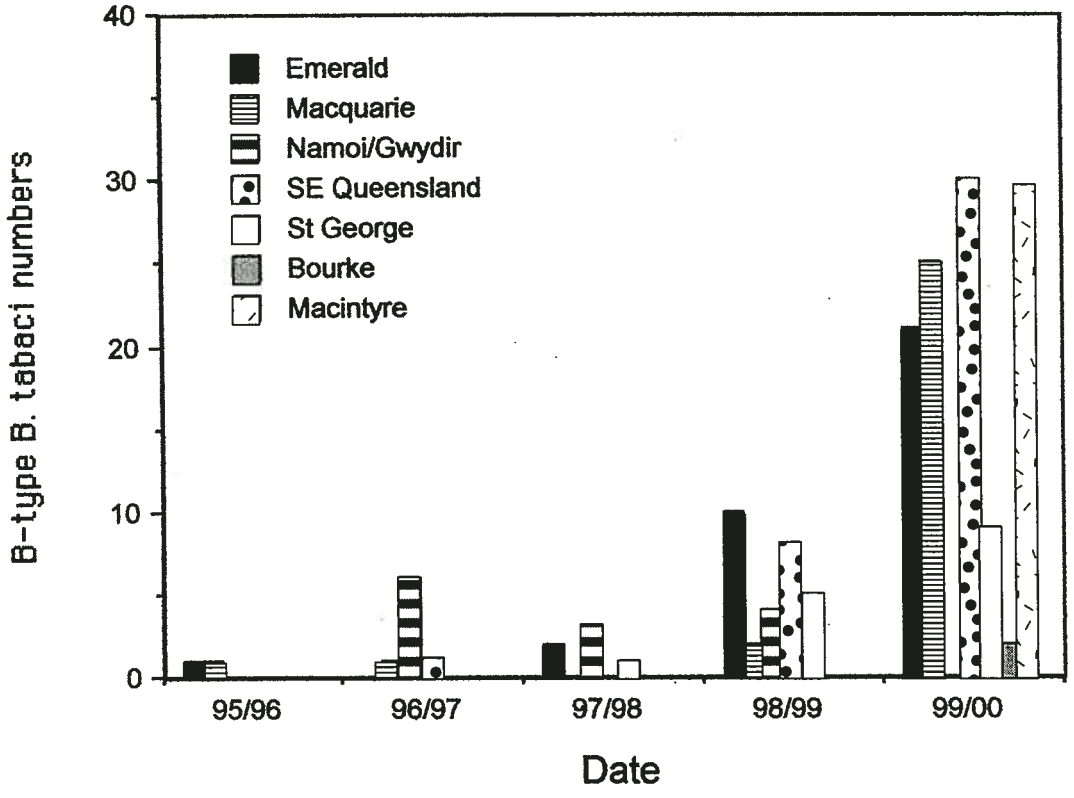
40
30
20
10
0
B-type B. tabaci numbers
Emerald
Macquarie
Namoi/Gwydir
SE Queensland
St George
Bourke
Macintyre
95/96
96/97
97/98
98/99
99/00
Date