Chapter Six
Conclusion

The primary objective of this study was to optimise the production platform for a CMV specific recombinant antibody for use in developing a sensitive and quantitative ELISA for the detection of *Cucumber mosaic virus*.

The study showed that the transgenic plants at both F2 and F3 generations were successful in expressing the desired antibodies. However the levels remained too low for efficient production compared to the prokaryotic system used. More studies and modifications would have to be carried out to ensure that that the system was viable and competitive as an expression platform.

The *E.coli* expression system proved to be more amenable to optimization for downstream extraction and purification of the antibody. The study was able to optimise a protocol that could yield competitive amounts of purified antibody which could be used for further applications. The protocols could also be applied to other scFvs systems. The scFv produced in this system was also shown to be specific and sensitive for detection of the target antigen. An optimal antibody and control antigen concentration was also determined. The assay can now be tested in field tests using infected plant samples and against other related and unrelated viruses. A step further would be to produce a more rapid detection system The stability of the scFv antibody also makes it amenable for use in dip stick type applications which would allow for it to be used directly in field diagnostic kits in the future.

With the advance of biotechnology, antibodies can now be developed and manufactured by recombinant methods in a short period of time as demonstrated in this study. This will allow for the commercial development of competitive diagnostic kits necessary for high throughput diagnosis of plant viruses.