

TOWARDS HIGHLY PARALLEL TESTS FOR PLANT VIRUS DIAGNOSIS

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Current methods for the diagnosis of plant viruses usually employ a specific test for one or more viruses. Therefore, where a novel virus is present, it may not be detected. This is particularly important in biosecurity situations, or where novel exotic pathogens may be present. Microarrays were originally developed to investigate gene expression levels in cells. Recently, there have been several reports of the use of arrays to detect pathogens in plants and animals as well as in environmental samples. We are investigating using this technology for screening plants for the presence of many different virus species (and other disease causing organisms) in a single test. Probes specific for the pathogen of interest are fixed onto a surface such as a glass slide. The probe used can be either a cloned fragment of a pathogen gene (cDNA) or an artificially synthesised oligonucleotide fragment. Oligonucleotide probes are generally 25 to 70 bases long and cDNA probes are 300 to 1200bp long. Experiments were carried out using either immobilised cDNA or oligonucleotide probes for several plant viruses. Current results on optimising microarrays for virus detection in plants are presented and the relative advantages and disadvantages of cDNA and oligonucleotide probes are discussed.