

COMMERCIAL MONITORING OF AVOCADO SUNBLOTCH VIROID



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SUMMARY

A technique for the detection of the avocado sunblotch viroid in nursery trees in South Africa is currently being tested for the first time on a large commercial scale. Out of the various techniques available, the dot blot hybridisation technique has been found to be the most effective for monitoring purposes. Results obtained thus far, indicate that 3% of the trees were positively infected with sunblotch and are therefore symptomless carriers of the disease.

OPSOMMING

'n Tegniek vir die opsporing van die avokadosonvlekvirdid in moederbome van verskillende kwekerye in Suid-Afrika is vir die eerste keer op 'n kommersiële skaal aangewend. Van die verskillende tegnieke wat eers oorweeg en daarna getoets is, was die radioaktiewe peiler kladmetode die geskikste gevind en dus vir die doelgebruik. Resultate dui aan dat 3% van die moederbome tot dusver getoets, besmet was met die sonvlekvirdid en dus siptoomlose draers is.

INTRODUCTION

Avocado sunblotch is an economically important disease, occurring in many of the avocado producing countries of the world. Sunblotch reduces the crop yield and lowers fruit quality. For the nurseryman, sunblotch is probably the most important budwood sanitation problem. Because sunblotch can express itself either by showing the characteristic symptoms or by being present in a symptomless carrier of the viroid, it is of vital importance for nurserymen to know that they are not using symptomless infected trees as budwood or seed source.

Several methods have been described for the detection of the sunblotch viroid (Bar-Joseph, Segev, Buckle, Alper & Rosner, 1985). The routine procedure of diagnosis, using graft transmission to indicator seedlings, is laborious, time consuming and requires considerable glasshouse space. Because of the high number of controls needed (15 seedlings per tree tested), it also restricts the number of avocado samples which can be screened at one time. Furthermore, it can not be considered as conclusive (Allen & Dale 1981, Bar-Joseph *et al.* 1985).

Originally, it was hoped that the PAGE indexing technique for sunblotch could be used for routine indexing (Da Graça & Massin, 1983). However, it failed to live up to expectations when tested

This preliminary presentation reports on progress with the monitoring of results obtained so far, as well as certain problems experienced during the implementation of this technique on a commercial basis. The sunblotch monitoring, referred to as the Interim Plant Improvement Scheme, will form part of the future Avocado Super Plant Scheme.

MATERIALS AND METHODS

During the project a total of 2 500 trees from the following nurseries will be tested twice within a year for the presence of sunblotch:

Westfalia (Duivelskloof)	Allesbeste (Tzaneen)
Agriven (Venda)	Tipperary (Nelspruit)
Springfield (Louis Trichardt)	HL Hall & Sons. (Mataffin)
Twycross (Schagen)	Schagen (Schagen)
Omega (Hazyview)	Greenfarm (White River)
Gamtoos (Patensie)	

Twenty young leaves (and if present, flush or flowers) were collected around each tree by the nurserymen. The samples were carefully marked, placed into plastic bags and kept at $\pm 4^{\circ}\text{C}$. The samples were then transported to the laboratory in coolboxes.

Nucleic acids were extracted from the samples as described by Bar-Joseph *et al.* (1985). Sample extracts were spotted onto nitrocellulose paper and hybridised with ^{32}P labelled synthetic probe (Bar-Joseph *et al.*, 1985). A sunblotch positive sample was included in every batch as a control.

RESULTS

From the 91 5 trees tested to date, 89% were negative, 8% possibly positive or with possible background staining (\pm), and 3% positive.

DISCUSSION

The results obtained thus far are very promising. The biggest problem is the (\pm) trees, which will have to be tested again later in the year. The (\pm) results may possibly be interpreted as being background staining, something that is generally found associated with this technique. It might also indicate a very low concentration of the viroid. The concentration of the viroid fluctuates during the season. This aspect is currently being investigated in order to find the optimum time to take samples. The dot blot hybridisation technique was found to be more reliable than other techniques tried so far. There is, however, room for improvement.

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