THE EFFECT OF SOME MEDIA COMPONENTS ON THE MICRONUTRIENT COMPOSITION OF SOME CONTAINER-GROWN PLANTS.

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of the requirements for the degree of
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at Massey University.

Colin Bruce Christie
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In 1860 Sachs made the following statement:

"I published the results of experiments which demonstrated that land plants are capable of absorbing their nutritive matters out of watery solutions, without the aid of soil, and that it is possible in this way not only to maintain plants alive and growing for a long period of time, as had long been known, but also to bring about a vigorous increase in their organic substance, and even the production of seed capable of germination."

Julius von Sachs
Lectures on the Physiology of Plants
Claredon Press, Oxford, England. 1887

ABSTRACT

Plants were grown in a range of soilless growing media made from peat, perlite and pumice.

Plant samples and media extracts were analysed by atomic absorption spectrophotometry.

All media components used proved to be sufficiently reactive with respect to micronutrients to modify nutrient levels in plant foliage. This is supported by differences in micronutrient extractability and sorption by media components.

The use of fritted trace elements did not prevent the appearance of Fe chlorosis, but did increase the foliar level of some micronutrients.

The results show some nutritional differences between peats from different sources. Differences in mineral uptake associated with perlite and pumice were also observed. These differences may explain why iron chlorosis may be induced in plants grown in perlite based substrates and not in pumice based substrates.

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Introduction

The omission of soil from the growing medium has generally produced a substrate more satisfactory for plant growth with current cultural practices.

However, observant growers have noted that when a range of soilless media are similarly fertilized and compared they will often yield large differences in plant growth response.

Leaving soil out of the medium has reduced many problems of management,but it has introduced some others that require investigation.

Foliar chlorosis and delayed flowering in some plants may be increased when grown in peat-perlite mixtures, this problem occurs less frequently in peat-sand or peat-pumice mixtures.

The addition of a relatively small proportion of soil to the growing media may reduce the variation in plant growth response observed between different media,and may even prove beneficial in some situations.

Experience on growers' properties suggests the media may be altering the availability of some micronutrients.