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ASPECTS OF GROWTH CONTROL IN
KIWIFRUIT AND BLACKCURRANT

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ABSTRACT

This study emphasized the interplay of several types of growth regulator in the control of growth and development in the kiwifruit plant. Hence different parts of the plant are seen to contribute to this control, the plant appearing as a fully-integrated system with the shoots and roots interacting with each other.

The gibberellins were active in the promotion of stem elongation, and it is considered stem growth is dependent on the photosynthate supply, and that this is mediated by the growth regulators. A leaf had a dominant effect on internode growth, and therefore shoot length, at a very early stage of its development - but the effect of an individual leaf was very localised. The plant roots were not clearly shown to be essential for breaking dormancy, bud burst, or early shoot growth. However it was found the roots could be supplying gibberellins as one of the factors required to maintain normal shoot growth. Cytokinins for early bud growth could have been supplied in the bleeding sap either from the roots or the stem tissue. Reservations are expressed about the need for high spring sap flows for plant growth. High sap flows may be a result of a combination of circumstances at the time, and not a necessary pre-requisite to growth.

SADH and maleic hydrazide are effective shoot growth retardants, and may find commercial acceptance, except their apparent effect in enhancing post-harvest fruit respiration must receive further study.

Bud dormancy was greatest before leaf fall, and dormancy was broken by about 700 hours below 7.2°C , although warm temperatures were just as effective in overcoming this dormant condition. Winter dormancy appeared to be basi-

cally the same type of condition as correlative inhibition, and it is suggested that each is, in large part a result of an inability to utilise cytokinins or other growth promoters.

It is considered that the juvenile-like condition in blackcurrant is distinct from true juvenility, and the former did not appear to be the result of proximity to gibberellins from the roots. Further, it could not be shown for true juvenility that it was likely to be due to the production of inhibitory levels of gibberellin by the roots.