

The effects of several growth regulators on the growth and development of selected root crops were examined.

The study was conducted in two phases. In the first, presented in Section I of the thesis, the effects of gibberellic acid (GA_3), benzylamino purine (BAP), indolyl acetic acid (IAA) and chloroethyl-timethyl-ammonium chloride (CCC) on general aspects of growth and development in entire plants and rooted leaves of the sweet potato, entire plants of the tannia and single shoots of the cassava were studied. In order to compare the effects of possible changes in endogenous hormone levels with the effects of exogenous hormone application, the effects of varying daylength on the growth and development of entire plants and rooted leaves of the sweet potato were also examined.

On whole plants the growth regulators acted similarly irrespective of the plant studied. GA_3 promoted top growth and had little influence on root and tuber growth except for a slight and possibly indirect retardation of tuber growth in the sweet potato, while the other growth regulators were more or less without effect. In rooted leaves however, both GA_3 and BAP had significant effects on tuberisation the former being inhibitory and the latter promotive.

In the daylength study long days promoted branch extension and retarded tuber bulking while short days promoted both branch production and tuber bulking in sweet potato plants. Daylength had no effect on

the growth of rooted leaves.

In the tannia GA₃ significantly promoted inflorescence formation.

The second phase of experimentation, presented in Section II of the thesis, involved an indepth investigation of the role of GA₃ on growth and flower promotion in some edible members of the Araceae.

The Aroids studied included cultivars of the genera *Xanthosoma*, (tannia) *Colocasia*, (dasheen and eddoe) *Dracontium* (bowl yam) and *Alocasia* (wild tannia) and an unspecified type, the Barbados nut eddoe, which however has been described as a form of *Xanthosoma*.

As observed in the earlier experiments GA₃ induced extremely early flowering in *Xanthosoma*, within three months of application, except in the case of an imported cultivar *X. caracu*. GA₃ also promoted flowering in *Colocasia*. However in the dasheen the flower promoting effect appeared to be seasonal and marked foliage and floral deformities were also induced by GA₃ treatment. GA₃ also appeared to have a slight flower promoting effect in *Dracontium* but as in *X. caracu*, failed to promote flowering in *Alocasia* sp and in the Barbados nut eddoe.

It is suggested that this flower promoting effect of GA₃ may be of considerable usefulness in the improvement of these crops through breeding as some cultivars show a marked reluctance to flower.