EF PROMALIN ON FL G AND LATERAL BRAN OF YOUNG MANGO TF IN THE NURSERY

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Abstract

Three Promalin® sprays, each at a concentration of 300 ppm (a.i.) and applied weekly intervals, were administered to grafted mango trees in the nursery (cvs Tommy Atkins, Sensation, Zill, Kent, Keitt and Irwin). Lateral branching was not induced, and irrespective of whether Promalin was applied or not, flowering did not occur. These results are discussed in view of the fertilisation schedule and possible reasons for Promalin not inducing lateral shoot development.

INTRODUCTION

Grafted mango trees in the nursery often flower during the period from mid-winter until late spring. This is undesirable since flowering prevents trees from increasing in size. Flower removal is not a solution, since trees respond by re-flowering. Another problem faced by nurserymen is the scarcity of "pathologically clean" scion-wood. This often limits the rate at which trees can be produced.

Gibberellin (GA), applied to mango trees prior to floral induction, inhibits or reduces flowering (Kachru, *et al*, 1972; Rueveni, *et al*, 1982). Promalin,® containing GA_{4+7} and N-(Phenylmethyl)-1H-purine 6-amine, a synthetic cytokinin, is known to induce lateral branching of a number of deciduous fruit trees (Forshey, 1982; Elfving, 1984).

It was envisaged, in the present study, that Promalin sprayed on grafted mango trees in the nursery would inhibit flowering and promote branching of the scion, the latter response rendering the trees a source of shoots for grafting.

MATERIALS AND METHODS

Ten grafted nursery trees of each of the cultivars, Tommy Atkins, Sensation, Zill, Kent, Keitt and Irwin, were arranged in a randomised complete blocks – factorial design in the mango nursery at Constantia Landgoed (north-eastern Transvaal). The factors incorporated were cultivar, and application or omission of Promalin. Single trees served as plots.

Half the trees of each cultivar were sprayed. Three sprays, each at a concentration of 300 ppm (a.i.) and performed weekly, were applied, the first administered on May 30, 1990. Agral® (6 mℓ/100 ℓ) was used as a wetting agent.

At the times of application, the trees were unbranched and their apices inactive. Two scion-flushes were normally present.

The trees had been potted in 6 ℓ, black polyethylene bags (longtom) and were fertilised monthly with Polyfeed® (5 g/tree). The medium (1:1 pine bark, river sand) was saturated with water every second day. Copperoxychloride (60 g/20 ℓ H_2O) and Dithane (40 g/20 ℓ H_2O) were applied alternately every seven days. Trip® (20 mℓ/20 ℓ H_2O) and Bayfidan® (20 mℓ/100 ℓ H_2O) were each sprayed on the trees once, the former to control thrips, and the latter to control mildew.

RESULTS AND DISCUSSION

All but two trees remained vegetative. A relationship between Promalin application and flowering was unapparent, and lateral branching was not induced.

High nitrogen fertilisation was stated to suppress flowering and encourage vegetative growth in mango (Chacko, 1991). It might thus be argued that the level of nitrogen was high enough for flower induction to be inhibited, and that this level arose as a result of the fertilization schedule adopted.

The absence of a branching response might be ascribed to a number of factors, eg, impeded uptake, strong apical dominance, the time of year or insufficient application.

Smit (1991) successfully induced lateral branching in mango by spraying a mixture of 4-chloro-piridyl phenyl urea (10 ppm) and chlorflurenol (100 ppm) to bearing Sabre trees. In the view of the author, future experiments aimed at inducing lateral branching of grafted mango trees in the nursery, should incorporate this chemical combination.

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