FLOWER INDUCTION IN MANGO (*MANGIFERA INDICA* L.) BY 2-CHLORO ETHANE PHOSPHONIC ACID AND ITS POSSIBLE USE IN CONTROL OF BIENNIAL BEARING*

The commercial mango varieties grown in North India such as Langra and Dusheri are biennial bearers. In such varieties one year of heavy fruiting is preceded by an year of vegetative growth which in turn flower and fruit in the following year. Such biennial bearing habit of these varieties is found even under South Indian conditions including Bangalore. Although there has been much research on the Subject no tangible results have so far been obtained in either understanding the cause(s) or control of biennial bearing in these mango varieties[1].

Inspired by the earlier report that smocking or smudging could promote flowering in mango[2], we tried an ethylene releasing compound, namely, 2-chloroethane phosphonic acid (Ethrel) at concentrations ranging from 200 to 2,000 ppm on different branches of a 25-year old Langra tree which was in vegetative condition during the previous year to study its effect on flowering and other growth phenomena. The treatments were given on September 15, 1970 and were repeated after one month. It was observed that Ethrel at all concentrations induced earlier flowering by 15–20 days than the control tree; although there was heavy leaf abscission in branches sprayed with 1,000 and 2,000 ppm Ethrel. There was no difference in the time of flowering between different treatments and even the unsprayed branches in the treated tree flowered along with the treated ones.

During 1971, four 25-year old Langra trees bearing a heavy crop (no. of fruits harvested per tree ranged from 998 to 1,343) were selected for a detailed study using 200 ppm Ethrel. All the trees were fertilised after harvest following the normal recommendations. The branches on the Northern side of two trees were sprayed five times with an aqueous solution of Ethrel starting on September 15, 1971 and later at 15 days interval. The branches on the other sides of the tree were left unsprayed as internal check to study the translocation effect of the chemical and the other two trees served as unsprayed control.

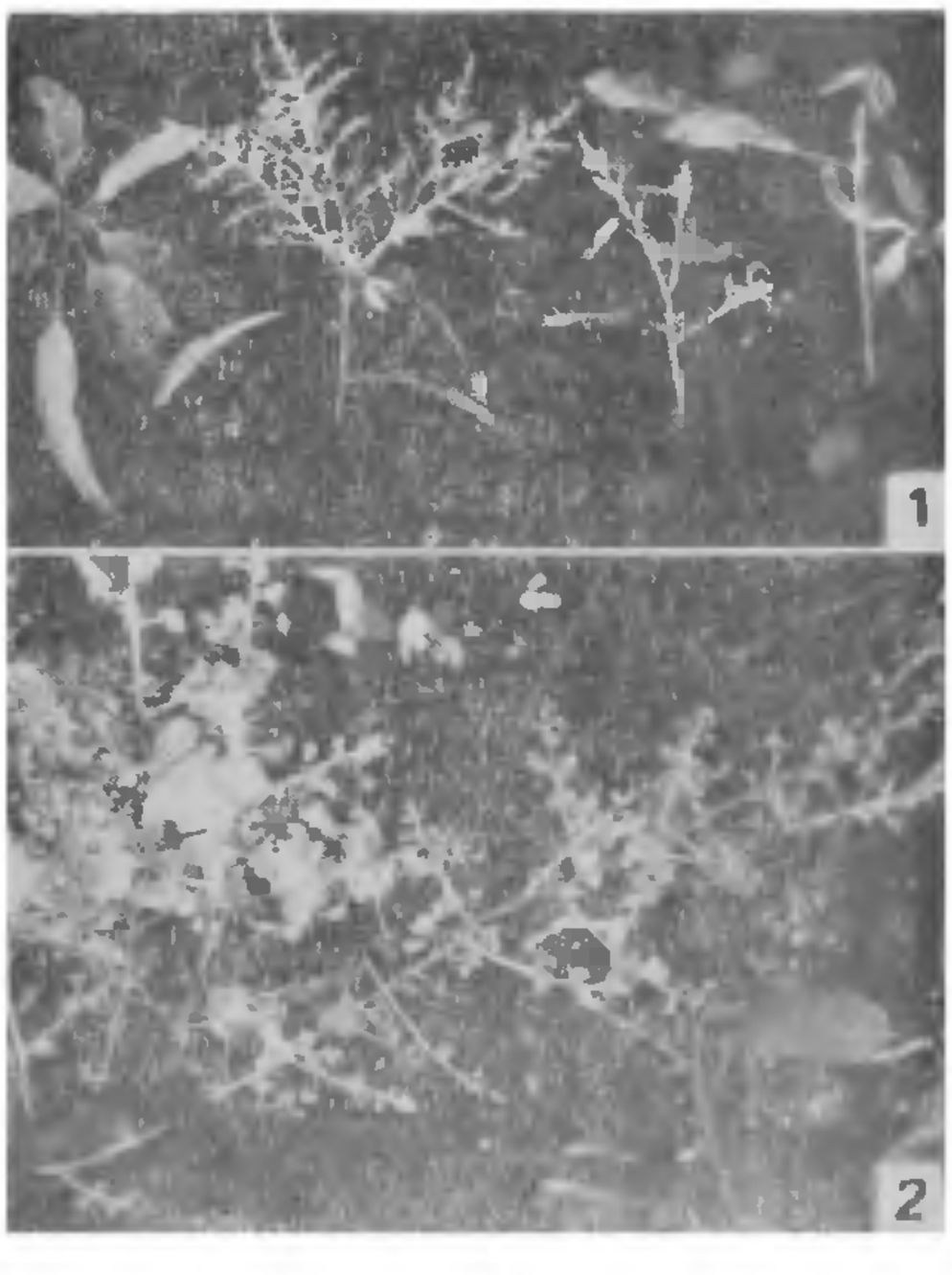
Bursting of flower buds in the Ethrel sprayed branches was observed on January 15, 1972 while there was no indications of even active bud growth in the control trees. By 14th February all the flower panicles in the treated branches developed fully and a few stray panicles were also found developing on the untreated branches on the other sides of the treated trees, indicating the possible mobility of applied Ethrel or the ethylene released by it through the vascular system of the treated trees. The control trees did not flower at all.

Normally, flower bud initiation in Langra trees usually takes place in the terminal buds of new shoots emerging from the previous years fruited shoot. However, besides inducing early and heavy flowering, Ethrel treatment produced the following extreme and abnormal cases of flower bud initiation on large scale.

(*a*) Production of 3-5 axillary panicles directly from last years fruited stumps (Fig. 1).

(*b*) Large number of mixed leafy panicles (Fig. 1).

(c) Emergence of large number of panicles from the dormant buds situated in woody branches (Fig. 2).



FIGS. 1–2. Fig. 1. Production of axillary and leafy panicles induced by Ethrel treatment. Fig. 2. Production of panicles directly in woody branches.

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Bangalore-6,
February 16, 1972.

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* Contribution No. 106 of the Institute of Horticultural Research, Bangalore-6.

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