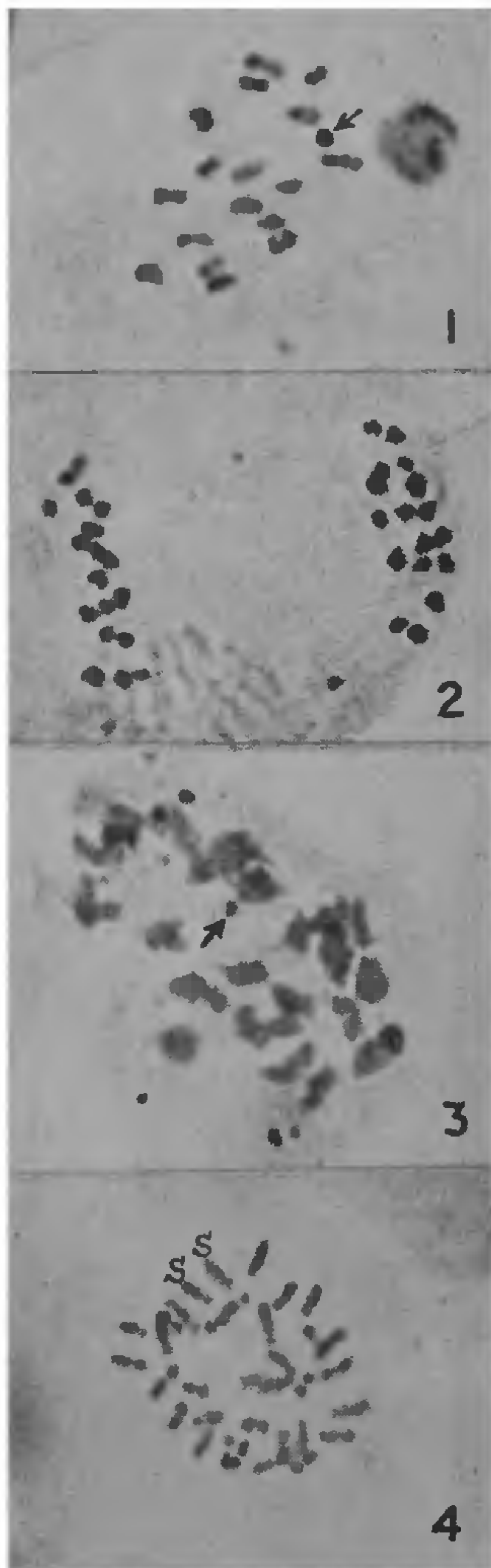


pairs with median, four pairs with submedian and seven pairs with subterminal primary constrictions (Fig. 4). A submedian pair (SS) possesses a secondary constriction situated sub-medially in the long arm.



FIGS. 1-4. Figs. 1-2. *Celosia cristata* yellow var. Fig. 1. M I with  $17_{II} + 1_{I}$ ,  $\times 2,500$ . Fig. 2. A I showing 17/18 distribution of chromosomes,  $\times 1,700$ . Fig. 3. *Gomphrena globosa*: diakinesis with one B-chromosome and  $22_{II}$ ,  $\times 1,700$ . Fig. 4. *Cyathula tomentosa*: mitotic metaphase with 34 chromosomes,  $\times 1,900$ .

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### CONTROL OF FRUIT-CRACKING IN PEAR

FRUITS of Conference variety of pear growing on hard clay, acidic soil with pH 5.8 to 6.1 were observed to be badly damaged due to fruit-cracking at the Government Gardens, Chaubattia. The severe cracking of fruits appeared in the above variety during 1968 but not in 1969 (*vide infra*). The symptoms were mainly noted on fruits and they appeared after fruit had attained some size. The crackings were shallow and deep in nature and formed a net-like structure on the surface of the fruit. The trees showing the fruit-cracking were generally stunted in growth and the fruits were small, hard, severely cracked with very rough skin. The cracking was preceded by browning of the tissue and, usually, depression on the fruits. No such symptoms were observed on the other varieties growing in the orchard.

A review of the literature showed that the main cause of these types of symptoms including blossom blast of flowers and buds in pear is boron deficiency (Bullock and Benson, 1948; Richi, 1958; Yataas, 1969). Bullock and Benson (1948) suggested 2 lb. borax per tree as the control of fruits cracking due to boron deficiency. Crompton (1957) could also check the fruit damage due to boron deficiency in Bartlett pear by the application of  $\frac{1}{2}$  lb. borax or 2 lb. per 100 gallons per tree sprays. Richi (1958) found the sprays of 0.5% borax very effective in checking the effect of boron deficiency in pear. Agrios (1967) suggested drought, nutrient deficiency and/or viruses as possible causes for net-like, ring-cracking in pear. Rom and Morris (1967) showed that application of sodium polyborate increased the yield, sugar, acidity and vitamin C content of apple sprayed with borax beside controlling boron deficiency in the tree,

TABLE I

Effect of borax sprays on fruit-cracking and juice quality in Conference pears

Treatments	Fruit characters (1969)				Chemical composition of fruits (1969)							
	% Cracked fruits	Average weight per fruit in gm.	Yield in kg.	% rise in yield over control	Moisture %	Acidity %	T.S.S. Brix°	Sugars %			True tannin %	Vitamin C mg./100 gm.
								Total	Reducing	Sucrose		
Control	.. 90.00	137.660	5.500	..	81.5	0.353	8.50	5.04	4.80	0.24	0.698	2.740
0.1% borax	.. 43.00	200.000	8.500	54.54	83.0	0.387	9.25	8.30	7.67	0.63	0.712	3.480
0.5% "	.. Nil	263.000	13.750	150.00	84.0	0.450	10.50	8.36	7.80	0.56	0.658	4.480
1.0% "	.. Nil	262.660	13.500	145.45	84.4	0.470	10.60	8.40	7.90	0.50	0.736	4.720

Sprays of different concentrations of borax were, therefore, tried on Conference variety of trees to control fruit-cracking during 1968-69. Foliar sprays of 0.1, 0.5 and 1.0% borax were applied twice after blossom on the affected trees.

Samples of the fruits were analysed before the commencement of the experiment and after spraying of borax. The results are given in Table I.

The cracking was eliminated in treated fruits due to addition of borax which might have accumulated more in the fruits than in leaves and resulted in removing of the malady (Fig. 1).

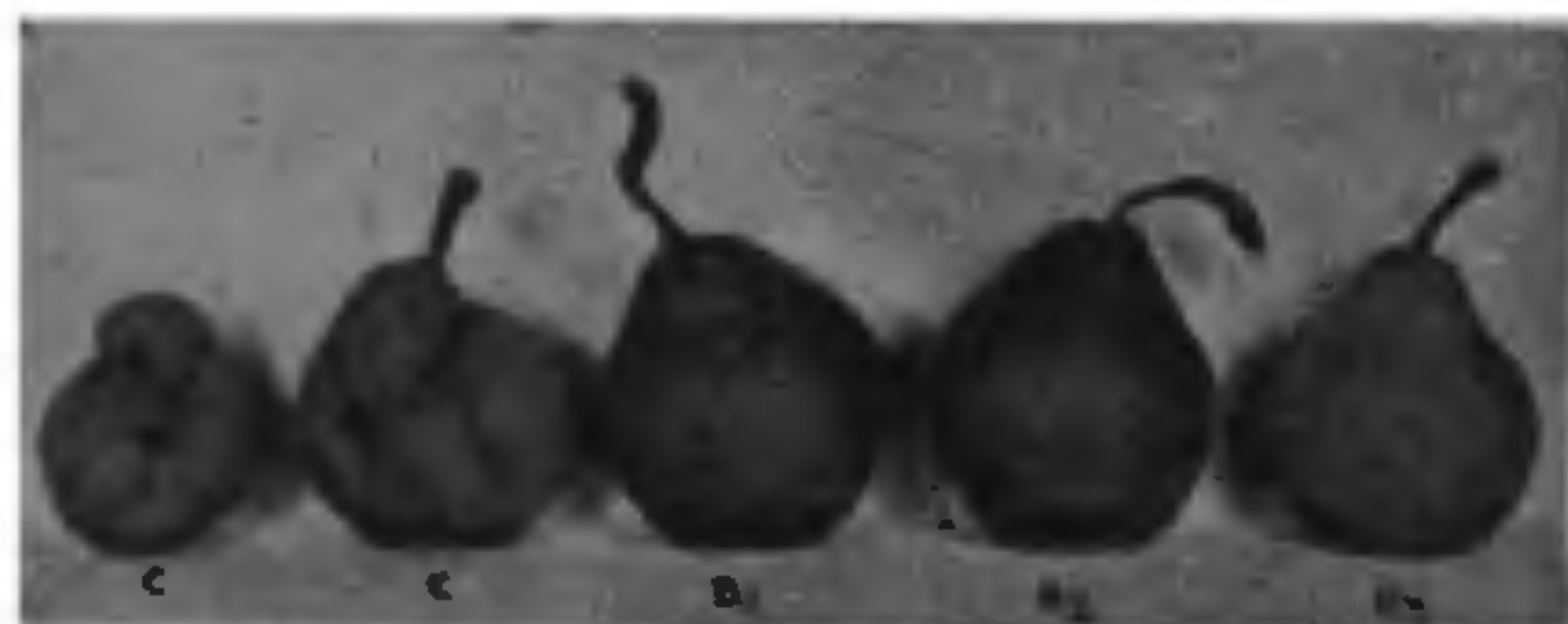


FIG. 1. Effect of borax sprays on the control of fruit-cracking in pear var. Conference. C—Control; B<sub>1</sub>—0.1% borax; B<sub>2</sub>—0.5% borax and B<sub>3</sub>—1.0% borax.

The sprays of 0.5% borax were best among all the concentrations in eliminating the cracking, increasing the quality as well as yield of the fruits. The fruits in 0.5 and 1.0% borax sprays were having higher moisture content, T.S.S., total sugars and vitamin C. The fruits in these treatments were quite normal in appearance. Hence two sprays of borax (0.5%) after blossom are recommended for the control of such cracking in pear.

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