

6. \_\_\_\_\_, and \_\_\_\_\_. 1969. Absorption of phosphorus by *Chrysanthemum morifolium* cuttings propagated under nutrient mist. *J. Amer. Soc. Hort Sci* 94:382-384.
7. Zimmerman, R. H. 1958. Effects of liquid fertilizer on rooting of cuttings. *Proc. Inter. Plant Prop. Soc* 8:162-164.

## DISCUSSION

In reply to questions, John Wott gave the following information: The nutrient misting compound had an analysis of 23:19:17 and was used at a rate of 4 oz./100 gallons of misting water. It was used continuously in a timed misting regime of 12 sec. burst every 2½ minutes. Because of the likelihood of run-off, they had assessed the effect of nutrients to the medium but had found foliar application to be superior.

## SIMPLIFIED METHOD FOR THE PROPAGATION OF PLUM HARDWOOD CUTTINGS IN SYRIA<sup>1</sup>

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Treatments known to influence the rooting of plum rootstock hardwood cuttings when propagated in heated cutting bins in England have been shown to influence the rooting of two local plum cultivars, Ajami Janirek, and Tephahi janirek (*P. cerasifera*), when planted directly into the soil in Syria.

For the greatest level of success, 60 cm long cuttings should be prepared from the proximal portion of the shoot, treated with indolyl butyric acid at 5000 ppm in 50% alcohol to the basal cut surface avoiding, where possible, contact with the epidermis and planted during the months of November, December and January. For a summary of results see Tables 1, 2, 3 and 4.

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<sup>1</sup> **Editor's Note:** As Nazir Nahlawi was not able to be present because of his recent appointment to a position with F A O, Brian Howard summarised the paper. It was not possible to reprint this paper as it was not properly finalised for submission as a scientific contribution and, because of the recent problems in the Middle East, he was unable to obtain data from Damascus to complete the paper. Hence the paper is presented as summarised.

**Table 1.** Final plant size as related to IBA concentration

IBA concentration ppm	Percent establishments Ang.	Total shoot length per plant, cm	Weight per plant, gm
‘Ajami’			
2500	71	332	169
5000	74	440	210
Mean	72	386	189
‘Tephahı’			
2500	59	312	147
5000	64	410	196
Mean	61	361	171

**Table 2.** Percentage established (angular transformation) related to cutting position and IBA application in ‘Tephahı’

Cutting position on the shoot	Area treated within the proximal 2.5 cm zone			Mean
	Cut end only	Cut end plus epidermis	50% ethanol control	
Proximal	67.2	48.5	16.2	43.9
Median	55.8	31.2	17.9	34.9
Distal	38.1	25.5	10.5	24.7
Mean	53.7	35.0	14.8	34.5

SE of means within body of the table  $\pm 2.23$ , comparison between cutting position  $P < 0.05$ , comparison between position of IBA application  $P < 0.01$ ; Interaction  $P = 0.001$

**Table 3.** Establishment as related to position of IBA application (percentage, angular transformation)

Cultivars	Area treated within the proximal 2.5 cm zone			Mean
	Cut end only	Cut end plus epidermis	50% ethanol control	
Ajami janirek	68.8	49.9	27.6	48.7
Tephahı janirek	65.6	45.7	22.4	44.5
Mean	67.2	47.8	25.0	46.6

SE of means within body of the table  $\pm 2.30$ ; comparison between IBA treatment  $P < 0.001$ , comparison between cultivars  $P < 0.01$ , interaction  $P < 0.001$ .

**Table 4.** Establishment (per cent) as related to season of planting for 'Janirek' cuttings

Collection day within each month	Sept	Oct.	Nov	Dec.	Jan.	Feb	Mar.
10th	—	0	40	53	61	35	0
20th	0	12	59	65	66	42	0
30th	0	33	62	63	58	20	0
Mean	0	15	53	60	61	32	0

### Discussion

In reply to Bill Flemer, Brian Howard emphasised that cuttings should be planted 7"-8" deep and not shallowly. The following points were made in reply to questions posed by Donald Cook: (i) that a high concentration of hormone for a short dipping time produced the same effect as a low concentration for a long period dip; (ii) that uptake was affected by the moisture status of the cutting, significantly greater uptake being achieved when moisture tension of the cutting was high (i.e. the cutting had been allowed to dry out slightly) . . . . fresh cuttings needed a higher concentration of hormone than partially dried cuttings; and, (iii) that cuttings should be left to dry partially after treatment so that uptake through the base is enhanced.

Jim Wells enquired about the use of powders. Brian Howard intimated that East Malling has always used liquid formations because of the precision with which they could be used. He had a series of powders under observation but different factors were involved, one of the chief problems being in the cell penetration of the hormone; this could be affected by the use of wetting agents (e.g. alcohol, water, D.M.S.O., etc.) but was also related to the grade of the powder.

## PLANNING A PRODUCTION FLOWLINE

JOHN EDMONDS

*Bransford Nurseries  
Worcester*

Each nursery produces a different product mix. For any particular plant there are several ways of propagation and any one of them can be correct within the disciplines that the layout, resources and skills impose on a particular nursery. So today you are not going to get definite solutions to your own problems —