Further studies are in progress to determine its site of action.

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Photoperiodic Induction of Flowering in Black-Currant

DURING the course of a detailed morphological investigation of flower-initiation in black-currant (*Ribes nigrum*) it was observed that under field conditions flower primordia are normally initiated in the axillary buds following the cessation of active extension growth of the shoot. This observation suggested that possibly flower initiation depends on the cessation of extension-growth and that treatments which bring about the latter might also induce flowering. It is known that this species grows actively under long-days but rapidly becomes dormant under short-days[1], and the following experiments were therefore carried out to test whether short-day treatment promotes flower-initiation.

Plants of the variety Baldwin raised from hardwood cuttings were allowed to grow under natural long-day conditions until they had attained a height of about 50 cm. They were then selected for uniformity and divided into three groups which were exposed to the following photoperiodic conditions, respectively: (1) 8-hr. photoperiods (29 plants); (2) 18-hr. photoperiods (19 plants); and (3) natural day-length conditions (10 plants). The treatments were commenced on June 21 and within 2–3 weeks the plants under short-day conditions were observed to have ceased extension growth. On July 29 (after 5 weeks treatment), 14 of these short-day plants were transferred back to long-days, under which conditions the axillary buds expanded in 2–3 weeks, and a high proportion of the axillaries in the upper part of the shoots produced flowers which set fruit in September. The plants maintained under long-day throughout continued active extension-growth until the experiment was terminated on September 12. At this date many of the axillary buds had elongated into short shoots which were entirely vegetative. The plants maintained under natural day-length conditions ceased extension-growth at the beginning of August and were afterwards found to have initiated flowers in the normal way.

Further experiments with plants decapitated before treatment (as part of another investigation) have confirmed these results and have indicated that a period of exposure to 16 short-days is sufficient to induce flowering, provided that fully expanded leaves are present on the plants. This latter result is directly comparable with the conditions necessary for photoperiodic induction of flowering in herbaceous plants and suggests that short-day treatment may have a direct effect on flower-initiation in black-currant, independently of any effect on extension-growth. This possibility is being further investigated.

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Effect of Number of Sprouts per Set on Yield and Grading of Main-Crop Potatoes

IT is well known that the number of stems formed by a potato plant profoundly affects the size and number of tubers produced[1,2], and that some varieties tend to produce many stems and thus a high proportion of small unsaleable tubers[3]. If sprouted seed of such varieties with only one or two sprouts per set are planted, the resulting crop contains a high proportion of ware (table potatoes)[4].

In 1957 the effect of sprouted seed tubers on stem and tuber production was investigated in respect of four maincrop varieties (King Edward, Majestic, M.A.N.I. Seedling 480/51 and Ulster Supreme) in two seed sizes (mean weights 44 gm. (1½ oz.) and 80 gm. (2¾ oz.)). Three sprout treatments were used: (*a*) all but one sprout removed; (*b*) all but three sprouts removed; (*c*) multiple sprouts as grown. Spacing was standardized at 36 in. apart each way. The plants were lifted by hand and recorded individually (Tables 1 and 2).

Table 1. MEAN NUMBER OF MAIN STEMS AND TUBERS PER PLANT

Variety	Seed size	Mean No. of main stems per plant			Mean No. of tubers per plant		
		a	*b*	*c*	*a*	*b*	*c*
Majestic	*M*	1·0	2·2	2·5	11·0	14·5	17·3
Ulster Supreme	*M*	1·0	2·7	3·7	11·0	17·0	19·4
King Edward	*S*	1·0	2·7	2·9	12·3	19·0	23·4
King Edward	*L*	1·0	3·0	4·6	19·8	23·7	32·2
King Edward	*M*	1·0	2·8	3·7	16·1	21·3	27·8
M.A.N.I. 480/51	*M*	1·0	2·7	9·5	20·5	22·9	45·7

S, Small seed; *L*, large seed; *M*, mean of small and large seed.

Table 2. MEAN NUMBER OF TUBERS PER PLANT IN EACH GRADE IN TREATMENTS *a* and *c*, SEED SIZE AVERAGED

Variety	Treatment	Grade			
		1	2	3	4
Majestic	*a*	2·9	3·5	2·1	2·5
Majestic	*c*	1·5	5·5	5·3	5·0
Ulster Supreme	*a*	5·5	3·2	1·0	1·3
Ulster Supreme	*c*	2·9	7·7	5·7	3·1
King Edward	*a*	1·7	4·8	5·2	4·4
King Edward	*c*	0·7	3·5	10·4	13·2
M.A.N.I. 480/51	*a*	2·1	6·1	5·9	6·4
M.A.N.I. 480/51	*c*	0·3	4·4	11·5	29·5

Grades 1, 342 gm. (12 oz.) and greater outsize; 2, 172–341 gm. (6–12 oz.), large ware; 3, 71–171 gm. (2½–6 oz.), small ware; 4, 2–70 gm., seed and chats.

There was a wide variation in behaviour between varieties in the number of stems and tubers formed[5], and their grading. At one extreme, M.A.N.I. 480/51 formed too many stems and tubers on treatment *c* (multiple sprouts) for satisfactory ware production, yielding a mean of 9·5 stems and 45·7 tubers per plant. Up to 17 stems and 69 tubers were recorded on a single plant, such plants producing little marketable ware. On treatment *a* (single sprouts) these were reduced to 1·0 and 20·5 respectively, when this variety appeared to be a useful cropper of large red ware.