THE SHORT-DAY REACTION OF A FASCIATED RECOMBINANT

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Our high-yielding fasciated pea mutants do not flower under the short-day conditions of Egypt. Brazil, and of climatically different regions of India. The mutants therefore are of litle direct value in those regions. Phytotron trials revealed that this behavior is due to gene fis for long-day requirement. This gene hinders the initiation of flowering in short day. It was found to be present in the genomes of six independently arisen mutants of our collection, and in the commercial fodder pea variety 'Ornamenta' developed by Scheibe using a spontaneously arisen fasciated mutant.

In the F4 of the cross between our fasciated mutant 489C and Blixt's cochleata (WL 5137). recombinant R 792B was selected; it showed the following characters: very long internodes ("long III", a hypostatic gene derived from mutant 489C); pronounced apical stem fasciation, in the fasciated region often bifurcated (from 489C); earlier than 489C (a hypostatic gene from 489C).

The recombinant was grown under short-day phytotron conditions (12 hrs darkness, 1 1 hrs light [preceded and followed by a half-an-hour of "twilight"]; night temperature 15, day temperature 25C). In contrast to the parental fasciated mutant 489C, the plants of R 792B flowered richly under the short-day conditions. They reached an average height of 156 cm (mother variety 95 cm). Moreoever, the following mean values for some other traits were obtained:

Trait	Mean	% mother variety
number of internodes	25.7	107.3
mean internode length	6.1 cm	143.5
dry weight per plant	3.5 g	164.3
number of seeds per plant	10.4	161.4

Thus, the plants exceeded the mother variety both in dry matter and in seed production. Flowering began 52 days after sowing (mother variety: 53 days).

Flowering of the recombinant was possible because the mutant gene fis for long-day requirement was eliminated, enabling them to flower under short days. Because of the long internodes, the recombinant would not be suited for field cultivation. We shall therefore try to replace gene "long III" by a gene for shorter internodes, while maintaining the high seed production and the capability for flowering in short day.