PIGMENT CHANGES DURING THE ONTOGENY OF PLANTS

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Numerous chlorophyll mutants of pea and other species have been described. When the chlorophyll concentration of these mutants is measured, usually the determination is made at a single stage of development. Still, it is known that there are changes in pigment concentration during the ontogeny of plants. Therefore, three chlorophyll mutants were investigated in comparison with the initial line (IL) 'Dippes Gelbe Viktoria' at three stages of ontogeny:

I. Plant with ten leaves
II. Beginning of flowering
III. End of flowering

The pigments were determined in plants grown under field conditions. Variation in chlorophyll concentration of leaves from the four genotypes is shown in Fig. 1. Leaves from the upper nodes had a higher pigment concentration than leaves from the lower nodes but the genotypes showed different rates of increase. The difference in concentration between the mutants and the IL was greatest at node 18, while the leaves at node 5 showed only a slight deviation.

Fig. 2 shows how the pigment concentration changed in the leaves from node 5 and node 8. The chlorophyll content decreased, especially in the IL. Only mutant 29 exhibited an increase in pigments.

The decrease of pigments in the lower leaves was the result of senescence. However, the decline of chlorophyll in different stages was not the same for all genotypes, the mutants showing less reduction than the IL.

Whenever attempts are made to correlate pigment concentration with productivity, due consideration should be given to the variation of pigments during the ontogeny of the plants.

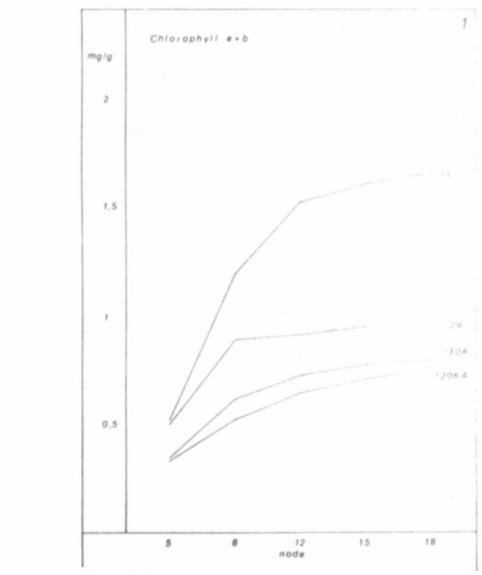

Fig. 1.
Chlorophyll concentration of leaves from nodes 5, 8, 12, 15, and 18 at the end of flowering.

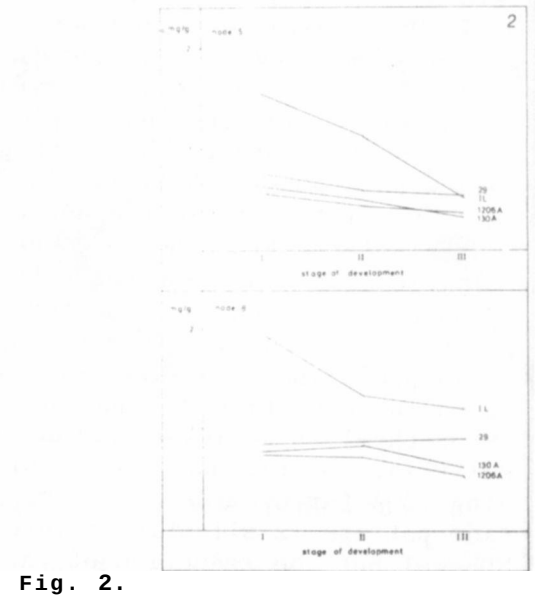

Fig. 2.
Chlorophyll concentration of leaves from node 5 and node 8 in three stages of ontogeny (I, II, and III.) IL - initial line 'Dippes Gelbe Viktoria'; 29-chlorotica mutant; 130A and 1206A-mutants without chlorophyll b.