

A MUTANT CAUSING NECROSIS OF THE LEAFLET MARGINS

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An EMS-induced mutant, marked by necrotic spots on the leaflet margins, is still another of a series of mutants obtained through the kind cooperation of L. G. Cruger. The spots generally appear on leaves borne at the 4th to 7th node of the seedling when the plant is in the 6th to 10th node stage of development. Thus, the disorder progresses acropetally as the seedling develops but there is a lag between the appearance of new leaves and the onset of the symptoms. Initially the spots are small and brown; later they enlarge, coalesce, and turn yellowish brown, then nearly white. The condition strongly resembles some disorders caused by mineral deficiency (Fig. 1). Although affected plants are weaker and less productive than normal, the disorder is not lethal.

The time and node that the symptoms appear is variable and appears conditional upon specific environmental conditions. This conclusion is drawn from having grown the original mutant on at least ten different occasions in the greenhouse and field since 1977. Field conditions are generally more conducive to strong symptom expression than greenhouse conditions, but it is not known what environmental component or combination of components may be responsible for the differences.

The mutant behaves as a recessive but the segregation ratios may be disturbed by a deficiency of recessives (Table 1 a). However, some populations may yield good 3:1 ratios (Table 1 b). The populations in which fewer than expected mutant segregants were recovered were grown in the greenhouse. Attempts to determine the linkage relations have not yet succeeded. The original designation by Cruger, "leaf edge necrosis", seems appropriate as a name and I shall provisionally suggest the symbol len for this mutant.

It would seem that len could be of interest in physiological studies, especially if the variability in symptom expression turned out to be a function of mineral nutrition. Allelism tests showed that len and bulf (see page 47) are separate mutants.

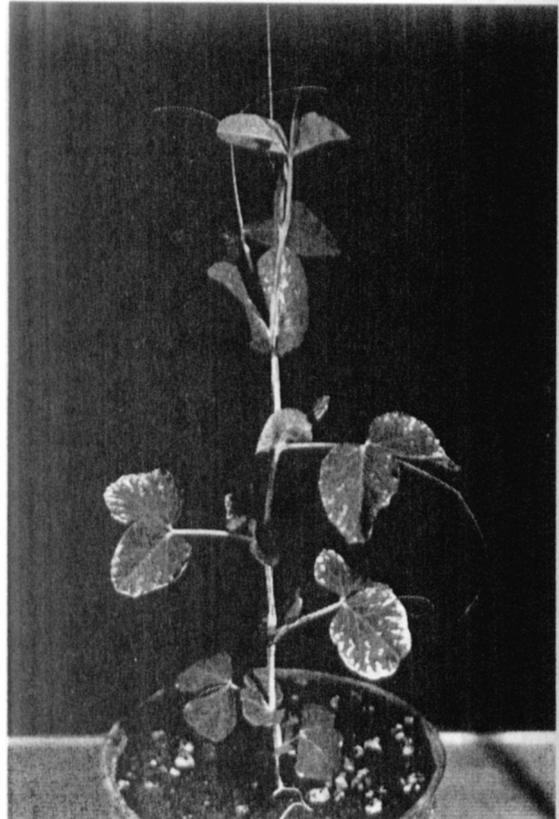


Fig. 1. Seedling showing necrotic leaflet margins caused by the mutant len.

Table 1. Segregation for a mutant (len) causing necrosis of leaflet margins in populations grown in the greenhouse (a) and in the field (b).

| | Len | len | Total | |
|---------------------------|------------|-----------|------------|-------------------------------|
| a. Greenhouse populations | | | | |
| C278-131 | 66 | 14 | 80 | |
| 132 | 61 | 12 | 73 | |
| 133 | 82 | 11 | 93 | |
| 134 | 14 | 13 | 53 | |
| 28 | 40 | 5 | 19 | |
| | <u>263</u> | <u>55</u> | <u>318</u> | |
| | | | | $\chi^2_{(3:1)} = 10.07^{**}$ |
| b. Field populations | | | | |
| B279-366-382 | 77 | 26 | 103 | |
| 378-385 | 67 | 23 | 90 | |
| | <u>144</u> | <u>49</u> | <u>193</u> | |
| | | | | $\chi^2_{(3:1)} = 0.02^{ns}$ |