THE MAP DISTANCE BETWEEN THE e AND wlo LOCI

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The presence of locus e_ on chromosome 6 was first indicated by linkage between e and p (2). Subsequently, testcross data involving genes e, p and pl revealed the gene order to be e-p-pl (4) The observed crossover value of 28% between e_ and p placed the e locus at the upper extremity of chromosome 6 above the existing uppermost marker, wlo. The joint segregation data in Table 1 indicate a distance of 26 units between e and wlo. The map of chromosome 6 as drawn by Blixt (1) is therefore extended by that amount. The data in Table 1 were obtained by crossing line 60 (lf E Sn hr Wlo) to segregates with the genotype lf e Sn hr wlo in the F_3 of cross 256 (L31 x L58).

Table 1. Joint segregation data for genes e and wlo (coupling phase) obtained from cross 284 F_2.

Phenotype				Total	Joint seg. χ^2_1	CrO% ± S.E.
E Wlo	E wlo	e Wlo	e wlo			
62	10	14	15	101	17.19***	26.3 ± 5.3

Although the position of the e locus is now established, the locus itself has certain disadvantages as a marker. Firstly, the E/e segregation is only apparent with certain combinations of the major flowering genes, e.g. it is obscured by the epistatic action of the genes Lf and Lf^d (2,5). These higher alleles in the lf series are in fact very common. Secondly, the variable penetrance of Sn(with respect to flowering node) means that with certain polygenic backgrounds genotype lf e Sn hr can flower at a low node and may therefore be confused with lf E- Sn hr (2). Thirdly, a single dose of E is sometimes insufficient to overcome the latening action of Sn and segregates of genotype lf Ee Sn hr may flower at a high node and thus be confused with the penetrant lf e Sn hr plants (5). The last two situations can often be resolved by growing F 3 . Such was the case in Cross 284 where, fortunately, the penetrance of Sn was very close to one but about 25% of Ee heterozygotes escaped from the early class. These escapes were readily identified in F_3. Finally, as with the other flowering genes, observation of an E/e segregation is facilitated by the use of controlled environment conditions. However, special conditions are not necessarily obligatory (3).

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