

2. The effect of oxygen tension on the radiosensitivity of chromosomes.

Experiments conducted on the irradiation of pollen in different atmospheres revealed that there is a 3.2-fold decrease in chromosome aberrations when the exposures are made in 100% nitrogen as compared with exposure in air. The A_1-Sh_2 region was used in this study. $A_1 Sh_2$ pollen was irradiated and used to pollinate $a_1 a_1 sh_2 sh_2$ tester plants. Aberrations were detected in the endosperm as entire losses of the dominant characters and as mosaics. Irradiation in nitrogen decreased the frequency of entire losses by a factor of 2.7 while the mosaics were decreased by a factor of 9.9. This difference is statistically significant and strongly suggests that the effect of oxygen tension during irradiation is on the recovery process of broken ends rather than on the initial breakage mechanism as had previously been postulated.

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