INHERITANCE OF REDUCED LATERAL SPIKELET APPENDAGES IN THE NUDIHAXTONI VARIETY OF BARLEY

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THE inheritance of reduced lateral spikelet appendages in varieties of barley classified in the Hordeum intermedium species offers a problem of considerable interest.

Harlan (6) has recognized four species of cultivated barley on the basis of the fertility of the lateral spikelets, namely, H. vulgare, H. intermedium, H. distichon, and H. deficiens. The species H. intermedium is one in which at least some of the lateral spikelets are fertile. The lemmas of these spikelets bear neither awns nor hoods. Some varieties of this species breed true for fully fertile lateral spikelets, while others are homozygous for only partial fertility of these spikelets. Nudihaxtoni is a variety with all spikelets fertile, but with awnless lateral spikelets.

The results of a study on the relation of fertility of the lateral spikelets to reduced appendages (awns or hoods) on these spikelets are presented in this paper.

LITERATURE REVIEW

Fertility of the lateral spikelets in relation to awn development was investigated in India by Bose, et al. (1). They crossed Pusa Type 21, a 6-rowed variety (H. vulgare var. pallidum), and Pusa Type 1, a 2-rowed variety (H. distichon). The F1 was intermediate in fertility and awn development. The cross was carried through the F3 generation. These workers concluded that "fertility of the lateral florets and development of awns on their outer palea have been observed to be perfectly linked and their inheritance has been found to depend on the interaction of the same genetic factors." The segregation in F2 for fertility of the lateral spikelets and of awn development on the lemmas of the lateral florets gave a good fit to a 1:2:1 ratio, that is, 2-rowed, intermediate, and 6-rowed forms. The lemmas of the lateral spikelets were fully awned on the 6-rowed, awn-tipped on the intermediate type, and with no awn tips on the 2-rowed.

The inheritance of the awnless condition of the lateral spikelets was studied by Miyake and Imai (9). Some varieties entirely lack awns on the lateral spikelets. When these were crossed with normal ones (presumably normal 6-rowed), the growth of the awns of the lateral spikelets was found to be imperfect or intermediate in character in the F1 generation. In the next generation, Miyake and Imai observed a 1:2:1 segregation for perfect awns, intermediate awns, and...