

5. The origin and possible evolution of sub-tassel ears in maize.

It has been suggested by Mangelsdorf (unpub.) that a sub-tassel ear, with its little parcel of grain, may have attracted man to domesticate an otherwise earless form of primitive wild maize. The discovery of a series of types ranging from a small adnate spathe subtending the lowermost tassel branch to a well developed leaf or pair of leaves subtending a small sub-tassel ear has increased the plausibility of this theory. This adnate or vestigial spathe with its axillary branch and their derivations were found in over 70 per cent of a population of 1000 tassels from North, Central and South America. The present variability in development of this sub-tassel ear or its rudiments might be attributed to its presence in only one or a few of several geographical races of wild maize. It may also have been variable in its expression in wild maize, perhaps dependent on growing conditions.

In many tassel specimens the auricles on either side of an otherwise adnate spathe may elongate to monstrous proportions. The spathe may become acentric in regard to the branch with the result that a part of the spathe becomes highly developed to one side and reduced on the other side. Various configurations of twisting may distort the spathe, rachis, and peduncle as the branch tends to become opposite rather than adjacent to its associated spathe. A pair of leaves may develop at this node although distortion may cause them to appear as being separated by a short and twisted internode. In extreme cases of spathe development, a single spikelet or tassel branch as a whole may be modified to form a small shank terminated by a small ear. The morphological change from either a spikelet or tassel branch to a many ranked ear involves a change from bilateral to radial symmetry. Such a transformation is common in maize. Depauperate ears frequently exhibit reductions from a radial to a bilateral condition. One might expect that if there were a reduction during evolution of a leaf terminal to the culm, then there might also be a corresponding reduction of its axillary ear to a bilateral tassel branch.

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