

THE TAXONOMY OF ZEA MAYS (GRAMINEAE)

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The origin of maize has long been disputed. Of the various theories, the oldest postulates its direct origin by ancient human selection from a wild grass of the genus Euchlaena, the "Teosinte" of Mexico and Guatemala; i.e. maize is simply regarded as a highly domesticated and variable cultivar of Euchlaena. The morphological steps, first clearly outlined by G.N. Collins (J. Agr. Res. 17: 127-135. 1919), were discussed but not accepted by P.C. Mangelsdorf (Bot. Mus. Leaflet. Harvard Univ. 12: 33-75. 1945) and amplified by W.C. Galinat (An. Rev. Gen. 5: 447-478. 1971) and myself (H.H. Iltis The Maize Mystique. 5 pp. mimeo MS. 1970; cf. Galinat, loc. cit. pp. 450, 462). The genetic reasons were first outlined by G. Beadle (J. Hered. 30: 245-247. 1939).

The close relationship of Euchlaena to Zea was taxonomically formalized by Reeves and Mangelsdorf (Am. J. Bot. 29: 815-817. 1942), who transferred its two accepted species to Zea. Of these, the perennial tetraploid Z. perennis is the most primitive and distinctive in the genus. The diploid annual Z. mexicana sensu lato, however, contains two major elements: the Tripsacum-like, more primitive "Florida" Teosinte (E. luxurians) from Guatemala, which does not cross as readily with maize and other Teosinte forms, and which deserves separate subspecific status (see below); and the remaining races (cf. H.G. Wilkes, Teosinte: the closest relative of Maize. Bussey Inst. Harvard. 158 pp. 1967) which cross with close to 100% fertility with maize, and are best considered, for the time being, under but one subspecies, conspecific with maize as suggested by C.D. Darlington (Chromosome Botany. Allen and Unwin, London. pp. 130-131. 1956):

"The breeding and chromosome evidence ... agree in requiring that Euchlaena mexicana and Zea mays should be described as one species, the wild grass being today an authentic and scarcely changed representative of what the ancestor of Zea mays must have been."

The new combination, made informally by Iltis (loc. cit.), was validly published in Galinat (loc. cit. p. 450), who, however, neglected to cite the basonym date and place of publication, an oversight rectified below. Further study may in addition demand separate subspecific recognition of other Zea mays

ances, especially the "Rio Balsas" and "Chalco" populations. (cf. Wilkes, loc. cit.).

Synopsis of Zea

1. Zea mays L. ssp. mays
2. Zea mays L. ssp. mexicana (Schrad.) Iltis, in Galinat, An. Rev. Gen. 5: 450. 1971.
(based on Euchlaena mexicana Schrader, Index Sem. Hort. Goett. 1832; Linnaea 8: 25. 1833).
3. Zea mays L. ssp. luxurians (Durieu) Iltis, stat. et comb. nov.
(based on Euchlaena luxurians Durieu, Bull. Soc. d'Acclimat. 19: 581. 1872).
4. Zea perennis (Hitchcock) Reeves et Mangelsdorf.
(based on Euchlaena perennis Hitchcock).



Iltis, Hugh H. 1972. "The taxonomy of *Zea mays* (Gramineae)." *Phytologia* 23, 248–249. <https://doi.org/10.5962/bhl.part.19878>.

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