

1. Primitive prehistoric maize.

From La Perra Cave in the state of Tamaulipas in Mexico, excavated by Dr. Richard MacNeish of the National Museum of Canada, we have found primitive cobs (dated by radiocarbon determinations of associated remains at circa 2500 B.C.) which represent a prototype of a race of maize, Nal-Tel, still grown by the Indians of Yucatan and Campeche. This prehistoric form of Nal-Tel is characterized by small eight-rowed ears with relatively long glumes and extremely hairy cupules, all characteristics of modern Nal-Tel in somewhat accentuated form.

The husks of this maize are relatively long, several times as long as the cobs, and show little evidence of having been distended by the ears which they once contained. The shanks are quite slender and short indicating (according to Galinat's data on Argentine pop) that the ear was borne high on the stalk.

The Nal-Tell [sic] race of today is distinctive among Mexican races in its early maturity, short stalks, small number of leaves and small ears borne relatively high upon the stalk. If we can assume that in ancient Nal-Tel these characteristics, like the characteristics of the cob, were accentuated, then we may conclude that this primitive maize was short in stature, early maturing and bore small ears enclosed in long husks immediately below the tassel.

The second expedition to Bat Cave in New Mexico, led by Mr. Herbert Dick, then of the Colorado State Museum, has turned up some maize cobs which are even more primitive than those described by Mangelsdorf and Smith (1949) from the first expedition.

These cobs are scarcely larger than a one-cent piece. Although dated at 5600-5900 years by radiocarbon determinations of associated charcoal, some of them are remarkably well preserved. These primitive cobs are characterized by very slender rachises, long soft glumes and lemmas and paleas, and very long rachillae. The ears bore about fifty kernels and the remains of two of these suggest that they were about the size of small kernels of Lady Finger pop. A well developed abscission layer at the point of attachment of the kernel to the rachilla suggests that in this early maize the ears were capable of shedding their kernels at maturity.

The cupules of the Bat Cave corn are almost completely glabrous and are quite different in size, shape and other characteristics from the La Perra corn. This suggests the possibility that the domestication of maize may have involved at least two different geographical races of wild maize, one in the highlands and another in the lowlands.

The husks of the early Bat Cave maize, like those of the La Perra maize, are much longer than the ears, and one specimen suggests that the husks flared open at maturity exposing the ears. Small sub-tassel ears of pod corn occurring in our experimental cultures have had this same characteristic.

Among the Bat Cave specimens is a fragment of the basal part of a tassel, bearing pistillate spikelets and indicating that at least some of the maize was tassel-seeded.

All of these facts combine to suggest that the earliest maize was a form of pod corn, but perhaps not the extreme form represented by the Tu gene. As previously reported in the News Letter there are several alleles at the Tu locus.

There is no way of determining whether this maize was growing wild in New Mexico, but certainly in its characteristics it is not far removed from a grass capable of perpetuating itself in the wild.

On the basis of the characteristics so far studied in both the Bat Cave and LaPerra maize we have made a tentative reconstruction of the wild maize plant. The stalk was short and slender. The tassel was sometimes, if not always, unbranched and bore pistillate spikelets at the base. The ear, borne at the first node below the tassel, was no larger than an average-sized strawberry. At silking time the ear was completely enclosed in relatively long husks, but these flared open at maturity to expose it. The freely-tillering habit of some of the modern small-eared popcorn varieties suggests that wild maize, like many other grasses, may have had the ability to produce tillers. But we suspect that in competition with other vegetation tiller production was a latent characteristic and that wild maize often produced only a single stalk.

It is almost certain that this reconstruction will be modified in some details as additional prehistoric material is studied. It merely illustrates our tentative conclusions based upon the evidence now available. We are, however, reasonably certain that the ancestor of maize was maize and that it was a form of maize not basically different except in size from modern cultivated maize.

Paul C. Mangelsdorf and
Walton C. Galinat