The impact of the diffusion of maize to the Southwestern United States

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An international group of anthropologists offers a new theory about the diffusion of maize to the Southwestern United States and the impact it had.

Published the week of Dec. 7 in the Proceedings of the National Academy of Sciences, the study, co-authored by Gayle Fritz, Ph.D., professor of anthropology in Arts & Sciences at Washington University in St. Louis, and colleagues, suggests that maize was passed from group to group of Southwestern hunter-gatherers.

These people took advantage of improved moisture conditions by integrating a storable and potentially high-yielding crop into their broad-spectrum subsistence strategy.

"For decades, there have been two competing scenarios for the spread of maize and other crops into what is now the U.S. Southwest," Fritz said.

According to the first, groups of farmers migrated northward from central Mexico into northwest Mexico and from there into the Southwest, bringing their crops and associated lifeways with them.

In the second scenario, maize moved northward from central Mexico to be Southwest by being passed from one hunter-gatherer band to the next, who incorporated the crop into their subsistence economies and eventually became farmers themselves.

"The case for long-distance northward migration of Mexican farming societies received a boost about 12 years ago when British archaeologist Peter Bellwood, joined a few years later by geographer Jared Diamond and linguist Jane Hill, included the Southwest in a grand global model in which long-distance migration of agriculturalists explains the spread of many of the world's major language families," Fritz said. "In the Southwest case, Uto-Aztecan-speaking peoples, ancestors of people who speak modern languages, like Comanche and Hopi, would have been responsible for the diffusion."

In this paper, the researchers summarize the most recent archaeological evidence, and integrate what is currently known about early maize in the Southwest with genetic, paleoecological, and historical linguistic studies.

Corn from five sites in Arizona and New Mexico now predates 2,000 B.C., which makes it too early to be explained by diffusion of settled Mexican villagers, said Fritz.

"No artifacts or features of any type point to in-migrating Mesoamerican farmers; in fact, continuity of local traditions is manifested, with independent invention of low-fired ceramics and with the construction

of irrigation features in the Tucson Basin dating earlier than any known south of the border," she said. "We interpret the linguistic evidence as favoring a very early (beginning shortly after 7,000 B.C.), north-to-south movement of Proto-Uto-Aztecan hunter-gatherers and subsequent division into northern and southern Uto-Aztecan-speaking groups. "

These two groups do not share words and meanings for maize because, according to the researchers' scenario, farming post-dates their separation.

"We think the Southwest stands as a region in which indigenous foragers adopted crops and made the transition to agriculture locally rather than having been joined or displaced by in-migrating farming societies," Fritz said. "Peter Bellwood may well be correct that long-distance movements account for some examples of the expansion of languages and farming technologies, but cases like that of the Southwest are very important in demonstrating that this pattern did not apply universally."

More information: Full text of the study is available at www.pnas.org/content/early/2009/12/03/0906075106

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