Study: For earliest farmers, agriculture was a step backward

A new study by the economist Samuel Bowles of the Santa Fe Institute suggests that the agricultural revolution that saw the advent of farming and herding 12,000 years ago was a step backward technologically. The conventional view is that hunter-gatherers took up cultivation because it was simply a better way to make a living, Bowles says. Like the bow and arrow, the steam engine, or the computer, in this widely held economic model of technical change, cultivating plants rather than foraging wild species is believed to have raised the productivity of human labor, encouraging adoption of the new technology and allowing farming populations to expand. Bowles, using archaeological evidence and data about hunting and gathering technologies and primitive farming, estimated the calories produced by an hour of work in both pre-historic farming and foraging. He found that foragers were about 50 percent more productive than farmers. "It certainly wasn't a better mouse trap," said Bowles. "Farming did not take off because it lessened the toil of subsistence. Rather, its early success probably had more to do with its social, military, and demographic advantages." The paper, forthcoming the *Proceedings of the National Academy of Sciences*, is posted online (embargoed until 3pm ET March 7, 2011) at http://www.pnas.org/papbyrecent.shtml.

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The cultivation of cereals by the first farmers was not more productive than foraging

Abstract: Did foragers become farmers because cultivation of crops was simply a better way to make a living? If so what is arguably the greatest revolution in human livelihoods ever is readily explained. To answer the question I estimate the caloric returns per hour of labor devoted to foraging wild species and cultivating the cereals exploited by the first farmers using data on foragers and land-abundant hand-tool farmers in the ethnographic and historical record, as well as archaeological evidence. A convincing answer must account not only for the work of foraging and cultivation but also for storage, processing and other indirect labor, and for the costs associated with the delayed nature of agricultural

production and the greater exposure to risk of those whose livelihoods depended on a few cultivars rather than a larger number of wild species. Notwithstanding the considerable uncertainty to which these estimates inevitably are subject, the evidence is inconsistent with the hypothesis that the productivity of the first farmers' exceeded that of early Holocen foragers. Social and demographic aspects of farming, rather than its productivity, may have been essential to its emergence and spread. Prominent among these may hve been the contribution of farming to population growth and to military prowess, both promoting the spread of farming as a livelihood.