

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

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**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 Holocene foragers. Social and demographic aspects of farming, rather than its productivity, may have been essential to its emergence and spread. Prominent among these may have been the contribution of farming to population growth and to military prowess, both promoting the spread of farming as a livelihood.**