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ARCHAEOLOGY



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Why Northern Europe resisted the agricultural revolution

The ancient inhabitants of Northern Europe had an economic model based on hunting and gathering rather than agriculture. A groundbreaking study from the University of Girona reveals why the thrust of the Neolithic Revolution_ the shift to an agricultural economy_ was lower to conquer the north of the old continent

STAFF | FEBRUARY 21ST, 2011

The prehistoric inhabitants of the territory now corresponding to Denmark, Belgium and part of Germany resisted the process of change from an economy based on hunting and gathering to an economy based on agriculture, according to a groundbreaking study by Neus Isern and Joaquim Fort, physicists at the [University of Girona \(UdG\)](#) , published in the *New Journal of Physics*.



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During human evolution, the passage from the **Mesolithic** (an economy based on hunting and gathering) to the **Neolithic** (an agricultural-based economy) was a momentous social and economic revolution. This change began in the Middle East and from there, about 10,000 years ago, farming made the jump to Europe, arriving first to the Balkan Peninsula. Little by little, farming moved through the rest of the European continent until its rate of expansion slowed at the gateways of the north.

In recent years, historians proposed several theories about the reasons for Northern Europe's resistance to farming, but so far none had been verified scientifically. This new study, which is part of the European project **Fepre** (The Formation of Europe: Prehistoric Population Dynamics and the Roots of Socio-Cultural Diversity), used an innovative model to confirm the hypothesis that the Neolithic Revolution slowed as it moved northward.

About 10,000 years ago, farming made the jump to Europe through the Balkans



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The study's principal author, Isern, and co-author, Fort, both from the UdG's [Complex Systems Research Group](#), developed a reaction-diffusion mathematical model that provides a possible explanation for the slowdown in the rate of expansion of agriculture to the north of Europe, as indicated by archaeological data.

The key reasons for the North's resistance to agriculture were that hunter-gather communities were well established in the areas that the newcomers, with their farming methods, tried to settle, and that the density of hunter-gatherers living in northern Europe was higher than in the south. The same model could be applied to many other examples of invasion fronts in which the indigenous and invading populations compete for space, both in natural habitats in microbiological environments.

Reference article:

"Anisotropic dispersion, space competition and the slowdown of the Neolithic transition" Neus Isern and Joaquim Fort 2010 *New Journal of Physics* 12 123002 doi: [10.1088/1367-2630/12/12/123002](https://doi.org/10.1088/1367-2630/12/12/123002)

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