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# BREAKING GROUND

## Plant Domestication in the Neolithic Levant: The “Core–Area One–Event” Model

Avi Gopher, Simcha Lev-Yadun and Shahal Abbo

Plant domestication in the Neolithic period, some 10,500 years ago, was a component of the Agricultural Revolution—an immense transformation in human ideology/perception and behavior that changed humanity forever. The Levant is among the world’s oldest primary Neolithic domestication centers, and indeed, domesticated Levantine crops (wheat, barley, pea, lentil, chickpea, faba and flax) currently feed billions of people and are indispensable drivers of global economy. In this book the authors unfurl their claims mainly regarding two aspects of plant domestication—the how and the where. They present a unique model pointing out that plant domestication unfolded as a single, rapid, conscious and knowledge-based episode and that it originated in the northern Levant—and more specifically, in southeastern Turkey and the Middle Euphrates of northern Syria. The “core-area one-event” model advanced here is coherent, shows high parsimony, is based on a minimal number of assumptions and is supported by multiple lines of archaeological-cultural, archaeobotanical, geobotanical, agronomic and genetic evidence.

Plant domestication and the beginning of agriculture were the starting point of a new state of mind, a new human perception of the natural world, and a full divorce from the primordial hunter-gatherer ethos of sharing and egalitarianism, setting the stage for modern civilizations. Humans became manipulative producers, enslaved by perpetual economic intensification and growth, eventually tracked to specialized and differentiated-ranked societies based on wealth. Many of us believe, in a very modern way of thinking, that we are doomed to endlessly grow, and that a standstill or a retreat are economically and politically disastrous, and may result in a restless world—perhaps leading to the end of modernity as we know it. Notwithstanding the above, the fact that the most basic component of our life here and now—our food—is still, to this very day, based on the uniquely wise crop choices made by our Neolithic forefathers in the Levant and in other domestication centers worldwide merits no less than admiration and modesty on our part.

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## Authors

### **Avi Gopher**

Professor Avi Gopher is an archaeologist at Tel Aviv University, Israel. Educated in Israel, he has had years of experience directing archaeological excavations of Pre-Pottery Neolithic, Pottery Neolithic and Paleolithic (early and late) sites in Israel. Focusing on lithic analysis (knapped flint industries and ground stone tools), Professor Gopher has delved into time-space systematics, e.g., seriation analyses reconstructing both the chronology and the pace of diffusion of Neolithic cultural elements in the interaction sphere of the Pre-Pottery Neolithic in the Levant. Professor Gopher is a member of a research group on plant domestication in the Levant and focuses on the archaeological aspects.

### **Simcha Lev-Yadun**

Professor Simcha Lev-Yadun is both a botanist and an archaeologist at the Tivon branch of Haifa University, Israel. Trained first as a biologist with the focus on botany (development, anatomy, ecology, evolution, reproduction, physiology, geobotany of the Near East, genetic resources of crops, plant-animal interactions—mainly visual and mechanical defense from herbivory), with postdoctoral training in molecular genetics, but also investigating pure zoology. In addition to his studies in biology, Professor Lev-Yadun holds an M.A. degree in archaeology, studying various types of botanical remains from archaeological excavations, the impact of human activity on the environment, plants and human culture, plant domestication, and the origin of Near Eastern agriculture. He has participated in dozens of excavations of various periods spanning from the Middle Paleolithic to the 19th century CE.

### **Shahal Abbo**

Professor Shahal Abbo is an agronomist and plant geneticist at the Hebrew University of Jerusalem, Israel. He has more than 30 years of field experience with wild and domesticated grain legumes. Through comparative studies of grain legumes and cereals (both domesticated and wild) across Mediterranean agro-eco-systems, Professor Abbo developed several new practical and conceptual tools pertaining to plant domestication and crop evolution under domestication. These have important implications for the utilization of wild germplasm for crop improvement, and likewise enable a finer resolution and more deeply nuanced understanding of the cultural and genetic processes that underlie ancient Near Eastern plant domestication.

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