

In Memoriam, Dr. Nili Liphshitz (1944–2019)



Dr. Nili Liphshitz, botanist and founder of the Laboratory of Archaeobotany of the Sonia and Marco Nadler Institute of Archaeology of Tel Aviv University, passed away on August 1, 2019 from severe medical complications of the lungs.

Nili was gifted with an exceedingly bright mind and excellent technical skills. She began studying biology at Tel Aviv University in the original Abu-Kabir campus before she was 17, and was awarded a Ph.D. before the age of 26. She accomplished this despite a personal tragedy that affected the course of her life: While doing research for her doctorate her mother was brutally murdered and the crime was never solved.

Nili studied for her Master's degree under Tova Arzee and Yoav Waisel. Her initial research was on cork formation, and plant anatomy ultimately became the backbone of her career. During her Ph.D. research, also under Waisel, she studied wood formation and the influence of water regime and salinity on the growth-ring structure of *Populus euphratica* (Euphrates poplar).

In her botanical studies Nili contributed significantly to illuminating the ecology and evolution of wood and bark formation in Mediterranean trees and shrubs. With Waisel, she conducted tree-ring investigations of old *Juniperus* and *Pistacia* trees from the mountains of Sinai, and of trees from Iran, Turkey and Cyprus. At the same time, with the support of Yohanan Aharoni, she began archaeobotanical studies at the Institute of Archaeology of Tel Aviv University.

Nili continued to develop as a botanist, and contributed significantly in the arena of the development and physiology of salt glands in grasses, a characteristic that allows this plant group, important for human and wildlife existence, to exploit saline water and to thrive in arid regions. Another subject to which Nili contributed as a classic botanist was the anatomical responses of pine and cypress trees to pathogens.

In the mid-1980s Nili left the Department of Botany and joined the Institute of Archaeology. She focused her research on botanical archaeology and related subjects, such as the history of afforestation in Israel, which had begun decades before the foundation of the State of Israel. Her major contribution in archaeobotany was her massive output in

identifying wood remains from archaeological excavations. She also identified the types and origins of wood from numerous historical buildings, especially from the 19th century CE, a broad study that she conducted with Gideon Biger of the Department of Geography of Tel Aviv University.

Archaeological wood remains from most archaeological excavations in Israel are small, charred fragments, several millimetres to several centimetres in size. Non-charred wood can also be found in its waterlogged state at underwater sites, and in the desert as dry wood. Nili studied all three types of wood remains, but developed an impregnation method that enabled the preparation of quality anatomical sections from charred wood.

Thousands of archaeological wood charcoal samples from countless archaeological excavations spanning from the Paleolithic to the Ottoman periods passed through Nili's skilled hands. Her finds clearly indicated that with some fluctuations, and some turnover of various tree species, the landscape of Israel was in essence Mediterranean throughout the Late Pleistocene and the Holocene. Nili's finds also showed that through to ca. the last 2,500 years, the dominant oak species on the Israeli Coastal Plain was *Quercus calliprinos* (Kermes oak) and not *Q. ithaburensis* (Mount Tabor oak) as was previously believed. In addition to the reconstruction of past landscapes, Nili's studies illuminated a timber trade from far off regions as early as the Early Bronze Age, of species such as *Cedrus libani* (Cedar of Lebanon). Nili also identified the woody species that were used for the production of furniture and household items, as well as coffins and timber used for the Roman siege at Masada.

The fact that Nili's activities in archaeobotany became standard in the excavations of Tel Aviv's Institute of Archaeology influenced other universities and field projects to follow suit.

Nili published several books, usually co-authored, on botany, including botanical microtechnique and the history of afforestation in Israel. In addition, she published numerous papers on classic botany and archaeobotany. The Archaeobotany Laboratory that Nili established continued to operate after her retirement, and is now headed by Dafna Langgut.

Nili's many publications, the Laboratory of Archaeobotany that she established and the continuation of her scholarly legacy by her student Simcha Lev-Yadun are an excellent memorial for her scientific contributions, which will have an impact on the field for years to come.

Simcha Lev-Yadun, University of Haifa
Dafna Langgut, Tel Aviv University