Plants undoubtedly play an important role in human life. They have always been a source of food, medicine, building material, animal feed, and some of them are attributed with magical properties and exceptional meaning. By inhabiting different geographic and climatic zones, people benefit from the surrounding environment. However, this exchange often works both ways and some plant species appear on man-modified land. The science that seeks answers to questions about diet, agricultural practices undertaken by farmers in the past, as well as the formation and formation of synanthropic vegetation (inhabiting places close to human habitation, habitats transformed by humans and farm animals) is archaeobotany. It deals with the study of plant remains obtained during excavations at archaeological sites. Archaeobotanical material can be divided into two main groups:

• macroscopic remains, i.e. visible to the naked eye or with a slight magnification (e.g. fruit, seeds and wood),

• microscopic remains, i.e. those that require the use of a microscope to see: sporomorphs (pollen grains of flowering plants and spores of spore plants) and phytoliths (silica casts of cells formed in the tissues of higher plants).

The project involves archaeobotanical analyses, including macroscopic and microscopic studies of plant remains, as well as stable isotope studies, and physicochemical analyses of soil samples from archaeological sites related to the settlement of the first farmers (5400/5200 BC) in the middle and lower Vistula basin. Thanks to 14C dating, the results of the analyses will be embedded in the timeline, which will allow interpretation and point out potential changes in the preserved cultural groups. The archaeological cultural units covered by the following project are the Linear Pottery culture circle (5400-4200 BC), the Lengyel and Polgár cultural complex (4900/4800-4400 BC) and the Funnel Beaker culture (4200/3900-2900/2700 BC). Currently, it is believed that the groups of people presented above were characterized by different ways of farming, harvesting and preparing the soil for sowing. One of the main assumptions of the presented project is the verification of this hypothesis. The following research will help find answers to issues in the field of:

- Plant macroremains: occurrence of the particular taxa at the site, forest management, reconstruction of the agriculture calendar, methods of harvest, type of cultivation soils. Plant macro rest will also provide materials for further studies of stable isotopes and AMS dating.
- Pollen analyses: reconstruction of local environmental condition
- Phytoliths analyses: plants present, processed and consumed at the site
- Physico-chemical studies of soil: classification and determination of soil origins and transformations in time.
- Stable isotopes: manuring, water accessibility, and possible changes in cultivation methods between different periods

So far, such comprehensive analyses for early Neolithic materials from the discussed area have not been carried out, so the research will undoubtedly expand our knowledge and enable the development of the discipline. The results of the research will allow to create a compendium of knowledge on the economy of the first farming communities in the middle and lower Vistula river basin. The data that will be obtained will allow us to verify and, above all, expand our existing knowledge about: plant species cultivated and eaten by the first farmers, harvesting methods, types of soils and likely fertilization of agricultural soils, used gifts of forests, water availability, changes in the method of preparation soil for sowing.