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Plants and People – A Shared History, a Shared Future

"The world is a garden, and we are all its gardeners"
Professor Daniel Janzen, University of Pennsylvania, 1965

The relationship between humans and plants is truly unique. As researchers have pointed out, hominids evolved alongside plants. *Australopithecus africanus*, living in forests three million years ago, adapted to a diet based on hard nuts and roots, which left clear marks on the shape of its skull and digestive system. Later, *Homo erectus*, inhabiting the savanna, had a lighter skull and shorter intestines, reflecting a shift toward more nutritious and easily digestible grass seeds.

One of the most important events in human history was the domestication of plants. It made possible the transition from a nomadic lifestyle to permanent settlements and the emergence not only of villages and cities, but also of writing, science, and religion. By selecting plants with desirable traits, humans created cultivated species that often could not survive on their own in nature. Plants reshaped not only our diets but also the landscapes we live in. Cultivation led to the rise of irrigation systems, farming techniques, and urban planning. It influenced migrations, conflicts, and socio-economic development. Archaeobotany shows how deeply plants have shaped the world around us. Beyond their nutritional role, plants have also been – and still are – indispensable in medicine. A large share of modern drugs contains plant-derived compounds such as morphine (from poppy), vinblastine and vincristine (from periwinkle), taxol (from yew), or artemisinin (from sweet wormwood).

As the global population increases and environmental challenges deepen, the future of human–plant relations is becoming one of the key issues of the 21st century. Concepts such as "functional foods," "nutraceuticals," and "botanical medicines" are gaining attention in both the

food and pharmaceutical industries. Providing safe, nutritious, and sustainable food requires not only higher yields but also the discovery of new crop species. Out of about 20,000 potentially edible plants, only around 30 are widely cultivated today. This shows the enormous unexplored potential. On the other hand, the rapid expansion of industrial agriculture, urbanization, and climate change are driving an unprecedented loss of plant biodiversity. It is estimated that more than 20% of vascular plant species may be at risk of extinction. Safeguarding wild relatives of crops, genetic resources, and traditional ethnobotanical knowledge is therefore becoming crucial for the future of agriculture and medicine. Modern farming must also minimize the use of water and agrochemicals while adapting to climate change and emerging plant pathogens.

Our relationship with plants is not only about history, but also about the future. Can we use scientific advances to produce food and medicine without destroying the ecosystems we depend on? Will the development of plant biotechnology go hand in hand with protecting genetic resources and ensuring access for all who need them? Today's science offers tools that can support sustainable development. Understanding this deep interdependence is essential as we face climate change, global food insecurity, biodiversity loss, and the growing demand for new medicines and biological resources.

The set of articles presented in this issue, introduced by this text, covers a broad spectrum of topics related to plants and their importance for humans and the environment. The authors highlight actions undertaken to protect biodiversity at both global and local scales. They present plants as a source of bioactive substances with great therapeutic potential, as well as innovative and eco-friendly materials. A significant part of this issue is devoted to modern directions in precision agriculture and plant biotechnology. The studies published here are a fine example of linking basic and applied research, which is vital for the further development of sustainable farming. Readers will also find articles addressing the cultural and societal presence of plants, as well as the growing involvement of citizens in scientific research and nature conservation. Together, these contributions convey a message we hope will resonate: plants are not merely resources or commodities, but partners – with whom we share both our history and the future of human civilization.

As the editor responsible for this issue of Kosmos, I would like to thank all the Authors whose articles form part of it, as well as the Reviewers for their valuable assessments. I also wish to thank the Editorial Team of the journal, who organized the entire publishing process, for their excellent cooperation. Our gratitude goes to the former Editor-in-Chief, Professor Krystyna Skwarło-Sońta, to the current Editor-in-Chief, Professor Patrycja Golińska, and to the Editorial Secretary, Professor Joanna Wyszkowska. Without their support and continuous assistance, this issue of Kosmos would not have flourished as it has!