

Opening lecture

**UNDERSTANDING PLANT STRATEGIES AND VULNERABILITIES
DEMANDS A BROADER VIEW FOR ALLELOPATHY SCIENTISTS**

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Plants are at the base of ecosystems and represent the most important natural producers of food, wood, fibers, oils and medicinal drugs for mankind. Since antiquity, they have influenced the fundamental aspects of man's life: social, economic and political. Ancient civilizations arose with the achievements of agriculture which began about 10,000 years ago, as a gradual process in different parts of the world. The birth of agriculture initiated a long standing adaptive coevolution between man and plants. There was a tendency to concentrate on the species that were most productive and most rewarding in terms of labor and capital invested, such as cereals and pulses whose agronomic compensation and dietary complementation were appreciated. However, as a result, the food supply of man nowadays depends on the success of a small number of species and many uses of edible wild plants have been forgotten. Thus, agriculture is now the complex process of scientific knowledge, methods and practices to obtain useful materials from the small set of species we call crops. Weeds comprise the “other set” of plant species found in agroecosystems. Although they are not intentionally sown, weed species are well adapted to environments dominated by humans and have always been associated with crop domestication.

Agriculture in developed countries currently depends upon high inputs of inorganic fertilizers and synthetic chemicals for pest control and tends towards monoculture of cash crop varieties. Besides, the percentage of people engaged in agricultural production has declined drastically to 2-3%. The smaller the figure, the greater the industrialization. Therefore, concerns over environmental and human health impacts of pesticides, herbicide resistance in weeds, and rising costs of crop production and protection have led agricultural producers and scientists in many countries to seek strategies that take greater advantage of ecological and biotechnological processes. Although, the question of paradigm in the science of allelopathy is under scrutiny in the latest years, there is increasing evidence that the study of plant chemical interactions, offers a real promise to solve many of the problems involved in the control of weeds and plant diseases. This lecture deals with plant strategies and vulnerabilities with the aims to conceptualize allelopathy complexity for weed control.