NEW PERSPECTIVES ON THE BIOLOGY OF NECTARIES AND NECTARS

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PUBLISHED IN: Frontiers in Plant Science

frontiers Research Topics

frontiers

ISSN 1664-8714
ISBN 978-2-88945-996-4
DOI 10.3389/978-2-88945-996-4

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NEW PERSPECTIVES ON THE BIOLOGY OF NECTARIES AND NECTARS

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Image: Massimo Nepi

The number of currently known, described and accepted plant species is ca 374,000, of which approximately 295,00 (79%) are angiosperms. Almost 90% of this huge number of flowering plants is pollinated by animals (mostly insects) via nectar-mediated interactions. Notably, three-fourths of the leading global crop plants produce nectar and are animal pollinated, which is estimated to account for one-third of human food resources. Nectar can also be produced on tissues outside of flowers, by so-called extrafloral nectaries, and commonly mediate interactions with 'body-guard' ants and other pugnacious insects that defend the plant from herbivores. Extrafloral nectar is present in almost 4,000 plant species, a majority of them in the angiosperms. This brief summary on the occurrence of nectar in the plant kingdom is just to highlight that nectar has a fundamental role in two basal functions that allow the maintenance of our ecosystems: sexual plant reproduction and protection of plants from herbivory. Despite playing essential ecological and evolutionary functions, our current knowledge about nectar is largely incomplete;

however, new research directions and perspectives on nectaries and nectars have arisen in recent years.

In the last two decades, there were only a few 'moments' in which nectar was the main character in international meetings or in published books. In 2002, the first (and only) international meeting "Nectar and nectary: from biology to biotechnology" dedicated exclusively to nectar and nectaries was held in Italy (Montalcino, Siena) and in 2003 the proceedings were published in a special volume of Plant Systematics and Evolution (238, issue 1-4). In 2007, the book Nectar and Nectaries was published (Springer) with most of the contributions provided by authors that attended the meeting in Italy. Another book dedicated to nectar was published in 2015 (Nectar: Production, Chemical Composition and Benefits to Animals and Plants, Nova Science Publishers) covering aspects mainly related to nectar chemical composition and plant-pollinator interactions. Similarly, symposia focused on nectar have been organized within the International Botanical Congress in 2011 and 2017.

Considering that the last few years has yielded essential developments in the understanding of nectar biology, we thought now is the moment to further stimulate research on this important topic. This aim has been met through 18 papers published in our Research Topic New Perspectives on the Biology of Nectaries and Nectars, with subjects spanning evolution and ecology to nectar chemistry and nectary structure.

Citation: Carter, C., Thornburg, R. W., Nepi, M., eds. (2019). New Perspectives on the Biology of Nectaries and Nectars. Lausanne: Frontiers Media.
doi: 10.3389/978-2-88945-996-4

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