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**D. X. VIEGAS**  
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# FLORA, NODULATION CAPACITY AND REPRODUCTIVE BIOLOGY OF LEGUMINOSAE IN BURNED *PINUS HALEPENSIS* FORESTS OF ATTICA, GREECE

S. PAPA VASSILIOU and M. ARIANOUTSOU

Department of Ecology and Systematics, Faculty of Biology, University of Athens,  
Athens 15784, Greece

## ABSTRACT

The Leguminosae family, although it comprises a variety of members of distinct characteristics, has been reported - mainly in population terms - as being very abundant during the early post-fire stages (2-3 years), whereas it declines remarkably (in floral richness and in individual density) as the succession process progresses.

In order to enlighten the role of Leguminosae and with emphasis on the fire-prone Mediterranean *Pinus halepensis* forests, the population dynamics, the flora and the nodulation capacity of the respective plant group was followed for two and three consecutive post-fire years, in three different sites of Attica, Greece. Permanent plots of 40 m<sup>2</sup> in total per site were visited monthly in Avlona, Kapandriti and Agios Stefanos, for measurements and collection of soil and plant samples.

A very rich flora comprising a mean number of 30 taxa per site - some of them different among sites - was recorded and was maintained until the end of the study. The majority of the observed legumes were herbaceous annuals, regenerating through seed germination following the autumn rains. During the first year after the fire incident, the measured population density did not exceed 20-25 individuals / m<sup>2</sup>, whereas in the second and third post-fire years the density showed a remarkable increase, counting 200 and 1000 individuals / m<sup>2</sup> respectively. The seed output even of the first growth season (thousands of seeds / m<sup>2</sup>) was considerable, leading to the initiation of the soil seed bank formation, as only a fraction (approximately 10%) of the produced seeds germinated the following year.

In the studied sites, the amount of ammonium and nitrate ions found in the soil ranged mainly from 1-6 mg / 100 g of dry soil, fluctuating differently among the sites during the period of the study.

The nodulation capacity of the most abundant legume representatives in each site was determined using gel electrophoresis for the bacteroids and the cytoplasm. All species studied nodulated at least during the first two post-fire years in all sites. Active nodules required a minimal growth of the saplings in order to be formed (almost 3 months after germination) and last until the beginning of flowering.