

3rd SYMPOSIUM
ON WEED PROBLEMS
IN THE MEDITERRANEAN AREA

*3ème SYMPOSIUM
SUR LES MAUVAISES HERBES
ET LE DESHERBAGE DANS LE
BASSIN MEDITERRANEEN*

**3.º SIMPÓSIO
MEDITERRÂNEO
DE HERBOLOGIA**



PROCEEDINGS

COMPTE RENDU

ACTAS

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Allelopathy in some spontaneous and cultivated species

A. SOVERAL DIAS and L. SILVA DIAS*

Centro Botânica Aplicada Agricultura. Instituto Superior de Agronomia. Lisboa, Portugal

Summary: Cucumber growth, as expressed by radicle and hypocotyl length and number of lateral roots, was inhibited by volatile and water soluble compounds occurring in leaves of *Cistus salvifolius*, *Foeniculum vulgare*, *Myrtus communis* and *Rosmarinus officinalis*, but germination was never affected. *R. officinalis* shows some evidence of being the strongest inhibitor with both water soluble & volatile components while *F. vulgare* seems to contain more volatile-compounds. It is suggested that water soluble compounds are more inhibitory than volatiles and can play an important role in dry climates strengthening volatile activity when seed emergence is stimulated by rainfall.

Open air experiments with pots in sand or soil involving perennial ryegrass, lucerne, subterranean clover (as donors and receivers) and *Oxalis pes-caprae* (only as donor), showed no sign of allelopathic activity by root exudates between young plants of these species. In laboratory experiments carried out simultaneously, some evidence was found of a change in the nature of root exudates.

INTRODUCTION

Allelopathy, inhibitory or stimulatory effects of one plant upon another by means of compounds released to the environment, has been found in high number of species, involving both several classes of metabolites and ways of release (RICE, 1974, 1979). Many mediterranean species seem to be allelopathic to various degrees according to their phytosociological relevance (DELEUIL, 1951). The leaves of *Cistus ladanifer* L., having well developed secretory tissues, inhibit germination and growth of tomato and subterranean clover as well as eucalyptus, occasionally cultivated in areas previously occupied by *C. ladanifer* (ROSA, 1979; AGRA-COELHO et al, 1980).

Experimental work showing greater production of volatiles compared with water soluble inhibitors in species of arid areas and the opposite in species of humid areas (MORAL and CATES, 1971) suggests connection between allelochemical production and climate (WHITTAKER, 1970). However leaves appear as the most important source of allelochemicals, allelopathic activity has been observed in root exudates of several crop and specially non-crop species (RICE, 1974); in eight species widespread in natural grassland in Britain, root exudates of plants too young to have important quantities of material sloughed off from roots seem to be allelopathic, with the experimental results fitting very well with field patterns (NEWMAN and ROVIRA, 1975).

* Actual address: Universidade de Évora - 7000 Évora.

Pedidos de cópia desta publicação para Luís Silva Dias, Departamento de Biologia, Universidade de Évora, Ap. 94, 7002-554 Évora, Portugal ou, de preferência, para lsdias@uevora.pt.

Reprint requests to Luís Silva Dias, Departamento de Biologia, Universidade de Évora, Ap. 94, 7002-554 Évora, Portugal or preferably to lsdias@uevora.pt.