

## Nitrogen fixation and yield of grain legumes in saline mediterranean zones

Fysame strengthened the links between basic investigations in SNF (Symbiotic Nitrogen Fixation) and finalised agronomic research in adverse conditions in the Mediterranean basin

### OBJECTIVE

**Fysame** aimed at improving grain-legume SNF (particularly under salinized environment) and at increasing the mean yield

### A multidisciplinary approach

Fysame relies on an interdisciplinary approach of agronomists, microbiologists, molecular biologists, plant breeders, agro-physiologists and agriculture practitioners of the FABAMED (Fixation d'Azote dans le BAssin ME-Diterranéen) cooperative networking of partners from Algeria, Egypt, Morocco, Tunisia, France, Germany, Italy and Spain. It has the following tasks :

- at the agronomic level, to survey saline zones for prospection of macrosymbiotic lines and microsymbiotic strains, and to assess selected symbioses through multilocal-plurinual field trials ;
- at the biodiversity level, to screen macrosymbionts for SNF tolerance to salinity, and for intraspecificity with microsymbiots, through cross inocula-

tion trials with and without salinity ;

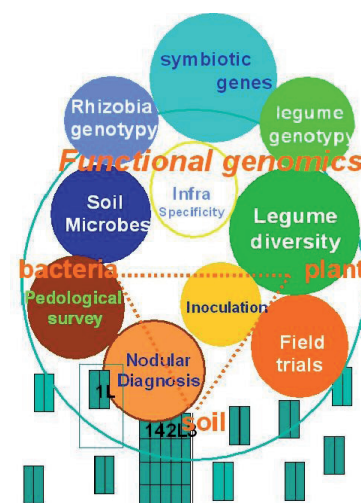
- at the physiological level, to define optimal procedures for the above screenings, and to investigate SNF structures and functions associated with salt tolerance ;

- at the genetic level, to utilise molecular biology tools to characterise the genetic diversity of symbiotic partners, and tag the genetic determinants of SNF tolerance to NaCl.

### A contribution to food security and global change adaptation

Fysame is contributing to the challenges of food security and global change adaptation by:

- contributing to the new interest for rotation or inter-cropping of legumes with cereals ;
- linking basic investigations and agro-ecosystems engineering in the Mediterranean basin ;
- increasing from 0.7 to 1 t/ha the mean yield of grain legumes.



*Integrating multidisciplinary to improve symbiotic nitrogen fixation and yield of grain-legumes in Mediterranean agro-ecosystems.*



*Effect of P deficiency on N<sub>2</sub>-dependent growth of common-bean in glass house hydroaeronic culture.*

THE PARTNERS IN THE PROJECT Nitrogen fixation and yield of grain legumes in Mediterranean agro-ecosystems (Fysame) - 1996/2000: ENSAA Alger, INRAA (Algérie) ; INRAT, INA, CDRC (Tunisie) ; INRAM, IAV Rabat, Université de Marrakech (Maroc) ; Université d'Oran et de Constantine ; ARC, NRC (Egypte) ; CNR (Italie) ; CSIC, Universitat de Séville et Pampelone (Espagne) ; Universitäts de Francfort et de Göttingen (Allemagne)

