

1989 *Lotus* spp. Expedition in Morocco

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This summer I was part of a germplasm collection team in Morocco 26 May through 7 July 1989. This report outlines the preparation and results of what I consider to have been a highly successful exploration. The participants in the exploration were:

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Mr. W. Graves, Univ. of California-Riverside, San Diego, CA, USA
Dr. J. Kirkbride, USDA/ARS, Beltsville, MD, USA
Dr. C. Roberts, Univ. of Missouri, Columbia, MO, USA
Dr. S. Christiansen, MIAC, Settat, Morocco
Dr. M. Derkouri, INRA, Settat, Morocco
Mr. A. Lahlou, INRA, Rabat, Morocco

This plant exploration was the product of cooperative planning I initiated in 1987 with Drs. Mohamed Derkouri (INRA) and Scott Christiansen (MIAC) to collect and preserve the indigenous species of *Lotus* in Morocco. The proposal to collect *Lotus* spp. in Morocco was submitted to NC-7 in 1988 and it was reviewed and approved; funding was made available in October 1988. The U.S. based participants funded through the approved proposal were myself, and Walter Graves (UCR). Dr. Joseph Kirkbride (USDA-ARS) was funded through USDA-ARS sources, while Dr. Craig Roberts (UMC) was funded by the University of Missouri.

The US team arrived 29 May at INRA- MIAC, Aridoculture Center, Settat. The collection team traveled 7795 km and collected 14 species of *Lotus* comprising 76 accessions, 8 species of *Medicago* (36 accessions), 9 accessions of *T. subterraneum*, 14 accessions of other native legumes, and 3 species of *Festuca* (16 accessions). Nodules containing *Rhizobium* spp. bacteria were collected for each *Lotus* accession when available. Passport data was collected per INRA format. Each accession is represented by a herbarium voucher. Additional herbarium vouchers were prepared for all legume flora encountered and represents 30 genera, and includes an additional 6 species of *Medicago* and 12 species of *Trifolium* to those prepared for the germplasm accessions. There was a bilateral exchange of all germplasm, *Rhizobium*, herbarium vouchers, and passport data with INRA-MIAC. The germplasm is being studied to authenticate field identification of the collection and evaluate their agronomic potential, and their growout for seed increase has been initiated.

The germplasm collected on this expedition serves two purposes important to U.S. agriculture: it collects and preserves threatened genetic resources, and it provides the germplasm needed by plant breeders and geneticists to develop more efficient forage cultivars. Our extensive travels allowed us to simultaneously evaluate Morocco's native forage legume resource. Morocco has considerable changes in topography and climate which can enhance genetic variation; the result is a rich flora of legume species. Still, population increases have generated tremendous pressure on this legume resource through commercial and urban development, increased hectareage of land in tillage, and greater animal numbers grazing fewer hectares. These pressures present a real threat to the genetic diversity of Morocco's legume flora.

We are confident that our efforts have helped to document and preserve part of Morocco's heritage, but greater attention to the preservation of germplasm *in situ* is needed and encouraged; many of the sites we collected deserve protection for their value as *in situ* germplasm banks. This can only come from the recognition that the loss of genetic materials is occurring and that the resource is limited.