INTRODUCTION

Over the last thirty years, the increasing use of commercial grain legumes as much as the modern agricultural technologies had caused the disappearance of many local cultivated varieties, less productive than the commercial ones.

At the Misión Biológica the Galicia of the Higher Council of Scientific Research (MBG-CSIC) the grain legume group works mainly with two crops: bean and pea. With regard to pea (Pisum sativum), which is an important and traditional crop in the Northwest of Spain, landraces are still maintained by a few farmers using traditional methods, the production being mainly for personnel consumption. These landraces, that are mixtures of pure lines, could be a reserve of resistance genes against pests and diseases, so they are useful to select lines well suited to environmental conditions in the geographic area.

PREVIOUS WORK

A programme of pea landraces germplasm prospection started in 1987 at the MBG-CSIC. More than 200 accesions are now maintained in the collection, including those supplied by other institutions.

The first step of the grain legume group was the evaluation of 146 pea accesions, with the following purposes:

1. To determine the amount of diversity in these landraces to decided whether or not this diversity is enough to justify an additional collection in the area.

2. To make a classification according to the possible uses of the landraces in future breeding programs.

The pea landraces displayed a wide diversity and, using agronomic characters, they were classify into six groups each including the closer populations. The groups avoid us to have morphological and physiological description according to the possible use of each one: consumption of the grain, of the immature pod or for animal feeding.

In collaboration with the University of Santiago de Compostela, the legumes group have developed new proyects, first starting in 1993, to select pure lines
from the populations, suitable for animal feeding with high protein content and adapted to rustic conditions, namely low fertile soils and low temperatures.

After three years of evaluation and selection, 12 lines adapted to rustic conditions with high protein content, some upper 26%, were obtained in 1996.

CURRENT PROGRAMMES

Today the group works in four aspects related to the improvement of pea:

1) Selection of freezing resistant lines: the 12 lines with high protein content are being evaluated to test their freezing tolerance. The measured parameters are sugar and chlorophyll content, photosynthesis rate and electrolyte leakage.

2) Evaluation of the remainder accessions in the germplasm bank of the MBG-CSIC, based upon characters of agronomic value, physical quality of pod and grain, and nutritious quality of grain.

3) Study the effectiveness of the symbiosis Rhizobium leguminosarum - Pisum sativum in the landraces: the capacity of nodulation and fixation of Nitrogen are being tested in field, measuring the number and weight (fresh and dry) of nodules per plant in each local populations.

4) Determination of isozyme variation into and among landraces in order to evaluate genetic variability for an effective use of this germplasm in future improvement programs and to make a classification based upon biochemical characters, which would complete the agronomical classification.

FUTURE PROSPECTS

The nearest future objective is to characterize and evaluate all the accessions of the germplasm pea collection. This material will be the basis for future breeding programs. Another one being the production of commercial varieties with high protein content and freezing tolerance to be cultivated in some depressed areas in the North of Spain.