



## **III SIRGEALC**

**Simpósio de Recursos Genéticos para a América Latina e Caribe**

**19 – 22 de Novembro de 2001**

**EVENTOS SIMULTÂNEOS**

**III Reunião Latino Americana de Especialistas em *Arachis***

**III Reunião Latino Americana de Especialistas em Recursos Genéticos Florestais**

# **ANAIS**

## COLLECTING COMMON BEAN (*PHASEOLUS VULGARIS* L.) GERMPLASM IN THE STATE OF SANTA CATARINA, BRAZIL

Vieira, E. H. N.<sup>1</sup>; Fonseca, J. R.<sup>1</sup>

<sup>1</sup> Embrapa Arroz e Feijão, Caixa Postal 179, CEP 75375-000, Santo Antônio de Goiás, GO, Brasil; e-mail: edson@cnpaf.embrapa.br

Beans are an important source of protein in the diet of the Brazilian population and are farmed in an array of cropping systems, in areas ranging from less than one hectare to hundreds, under rainfed conditions or irrigated, providing three major harvests per year (Yokoyama et al. 2000.). To support these so diversified cropping systems, a coordinated net of trials has been conducted on a national basis to provide improved varieties to comprise with regional and local requirements (Costa & Zimmermann, 1988). In order to preserve genetic diversity and make it readily available to researchers, collection, conservation and evaluation of germplasm have been practiced in the country for many years. About one hundred years ago scientists and agronomists from public institutions started to collect and import seeds to support crop production and cattle raising in Brazil. The value of conserving genetic resources for breeding purposes has been recognized for at least 60 years .

With the establishment of Embrapa (Brazilian Enterprise for Agricultural Research), followed the organization of the Genetic Resources Center and the network of active gene banks for several crops. As a result, collecting, preservation and evaluation of the available genetic variability started being practiced as a routine basis by the scientific community dedicated to crop improvement. Later on, in 1974, the National Rice and Beans Research Center was created and in 1975 its Active Gene Bank started to store germplasm from many sources. By 1980 a program was then initiated to collect germplasm in several Brazilian regions to enrich the available genetic diversity for crop improvement .

Owing to the long history of bean cultivation in Northwest of the State of Sta. Catarina, as well as to the significance and representativeness of this region for dry beans, it is considered to be a valued source of adapted common beans germplasm (Nadal, 1992).

This expedition was organized to explore regional common bean types cropped in the State of Sta. Catarina and to obtain a representative collection of landraces farmed in Southern Brazil. It was also emphasized the collecting of some ethnic, botanical and economical information, to determine the extent of possible genetic erosion in the region.

According to Giacometti (1987), there are five types of species that can be recollected, depending on the objectives of the research involved. In this work two types of material were selected for recollection: (1) old cultivars from varieties obtained through genetic breeding; and (2) primitive cultivars or landraces traditionally cropped by small farmers.

### Identification of sites

To avoid erratic and unsuccessful journeys, contacts were made with experimental stations in the area, which, in turn, contacted local extension offices in each county. Similar procedure was adopted by Fonseca et al. (1986) in previous expeditions. The extension office informed the planting season and time of harvest, helping the collecting team to select the proper time schedule and the farms to be visited. That procedure avoided waste of time and provided precise samplings in specific sites where farmers had been growing old cultivars for more than 20 years, with some properties actually growing them for more than 40 years.

### Sampling strategy

The sampling procedure was directed preferably to sample seeds from the farmer's own stocks kept in cellars, conditioned in bags, boxes or any other container. Cereal brokers and small roadside markets were also visited. A small sample of a newly released variety was offered in exchange for the local seed material (Fonseca 1998).

Data collected for each sample was recorded in a logbook at the moment of the sampling, considering several parameters: the county; the local variety name; the period of time the variety was being utilized; its

origin, if known; and any other information provided by the farmers such as market opportunity or the dishes he usually made with that type of beans (Fonseca & Freire, 1998).

#### **The target area**

At the Embrapa Rice and Beans genebank a review of information and literature on regions with traditional bean farms was performed (Fonseca & Vieira, 1986). The available documentation on previous expeditions in the last 25 years was extensively examined and a decision was made. The target collecting area chosen was in the Northwest region of the State of Sta. Catarina in Southern Brazil. The altitude ranges from 600 to 800 m, with a subtropical climate, where cropping systems are present in the valleys of hilly landscapes.

The climate is characterized by frosts in the winter and mild temperatures in the summer with higher temperatures ranging from 20 to 30 C and moderate rainfall (1950 mm/year). Some snow may fall in the highest places in some years (Brasil, 1992). Low temperature and frosts limit bean growth in the winter. Beans are grown in two cropping seasons, one starting in September – October and the other in January, when some farmers intercrop it with corn (Flesch, 1992).

#### **Economic and social aspects**

The landscape of most of the region had already been deforested; almost all native pine (*Araucaria angustifolia*) and hardwood was used for lumber or fuel. Most of the highlands are now being used for pasture and agriculture is practiced in the valleys. Poultry and hog raising are part of the economy of most of the farmers and corn is the main crop that after marketed returns as a component of feed for hogs and chickens. Orange for juice is being introduced and the Official Agency for Farming Development is starting a reforestation program in the region.

The majority of the population is of European ancestry, who migrated to the region in the 19<sup>th</sup> century. They are mostly Germans, Italians and Poles, very fond of traditional values. Their conservative life style has largely contributed to the preservation of traditional varieties for so many years. A number of farmers has some difficulty in expressing themselves in Portuguese. There still exist, among family members one or more individuals that communicate only in the language of their ancestors.

Eighty two samples of *Phaseolus vulgaris* were collected in July 2000, in 13 localities. This total was composed of the following types: 37.8% of the samples were small black tegument beans; 25.6% large seed types (white, colored and mottled); 12.1% small red; 3.6% yellow; 2.4% carioca (small, buff color seeds with brown stripes); 1.2% roxinho (small purple); 6% small brown; and 10.9% mixed (Table 1). Genetic diversity is well preserved in the region, because farmers market the commercial enhanced varieties, but keep on cultivating the old ones for self consumption.

Table 1. Common bean germplasm collected in the State of Santa Catarina

Bean type	No. of samples
Small black	31
Small red	10
Large seed types (various colors)	21
Small brown	05
Carioca (buff color with brown stripes)	02
Small yellow	03
Roxinho (small, purple)	01
Other types	09
Total	82

Financial support: Embrapa Arroz e Feijão

#### REFERENCES

- BRASIL. Ministério da Agricultura e Reforma Agrária. Secretaria Nacional de Irrigação. Departamento Nacional de Meteorologia. Normais Climatológicas: 1961 – 1990. Brasília, 1992.
- COSTA, J.G.C.; ZIMMERMANN, M.J.O. Melhoramento genético. In: Zimmermann, M.J.; Rocha, M.; Yamada, T. (eds.). Cultura do feijoeiro: fatores que afetam a produtividade. Potafos. Piracicaba, 1988, 229 - 245.

- FLESCH, R.D. O cultivo associado do feijoeiro. In: Flesch, R. D.(ed.). A cultura do feijão em Santa Catarina. Empresa de Pesquisa Agropecuária e Difusão de Tecnologia de Santa Catarina. Florianópolis, 1992. 227 - 260.
- FONSECA, J. R.; VIEIRA R.F. Algumas características dos feijões plantados nas microrregiões homogêneas 189 e 193 (Zona da Mata, Minas Gerais). Revista CERES 33: 449–445, 1986.
- FONSECA J.R. Algumas características dos feijões plantados na Região Sul de Minas Gerais. Revista Ceres 45: 203 – 209, 1998.
- FONSECA J.R.; FREIRE, M.S. Coleta de germoplasma de arroz, feijão e caupi no Brasil. Goiânia. EMBRAPA – CNPAF, 1986 b. Doc. 62. 3p.
- FONSECA J. R.; SARTORATTO, A.; RAVA, C.A.; COSTA, J.G.C.; FREIRE, M.S.; ANTUNES, I.F.; TEIXEIRA, M.G.; SILVA, J.G. Características botânicas, agronômicas e fenológicas de cultivares regionais de feijão coletadas na região do recôncavo bahiano. Goiânia. EMBRAPA – CNPAF, 1986. Boletim de Pesquisa No.4. 27p.
- GIACOMETTI, D. Conservación de recursos fitogenéticos. In: Simposio de Recursos Fitogenéticos, Valdivia, 1984. Anais. UACH – IBPGR, 1987. 167 –172.
- NADAL, R. Aspectos econômicos da cultura do feijão. In: Flesch, R. D.(ed.). A cultura do feijão em Santa Catarina. Empresa de Pesquisa Agropecuária e Difusão de Tecnologia de Santa Catarina. Florianópolis, 1992. 25 - 35.
- YOKOYAMA, L. P.; WETZEL, C.T.; VIEIRA, E.H.N.; PEREIRA, G.V. Sementes de feijão: produção, uso e comercialização. In: Vieira, E.H.N.; Rava C.A. (eds.). A semente de feijão: produção e tecnologia. Embrapa Arroz e Feijão 2000. 249 - 270.