

Participatory collection of forage species in Uruguay

M. Rebuffo, F. Condon and M.J. Cuitiño

INIA, National Institute of Agricultural Research, La Estanzuela, Colonia, Uruguay, Email: rebuffo@inia.org.uy

Keywords: germplasm collection, *Lotus*, lucerne, clover

Introduction Local landraces are potential valuable gene sources with benefits for local agriculture. However, their *in situ* conservation depends on the personal motivation of farmers and the permanence of traditional farming methods (Negri, 2003). There is the latent risk of losing landraces and site-specific naturalized germplasm due to rapid socio-economic changes in Uruguayan agriculture. Participatory conservation can provide the necessary synergy between farmers, extension services, geneticists and genebank to achieve the goal of conserving these genetic resources. Although farmers' involvement in germplasm collection is common, particularly for vegetable crops, most forage collections had been done from fields or sideroad areas, therefore lacking passport information in relation to cultural practices. This work outlines the farmers' presence in *ex situ* germplasm conservation and explores current and past uses of crops.

Materials and methods Having defined the collection scope, we delineated the participatory procedures, using historic information on seed marketing. The objective was to ensure a representative sampling for each forage species, yet remain within manageable sample sizes. Collection of exhaustive passport data, including site, cultivar origin, period of on-farm multiplication, grazing management and cultural practices, was a main priority. Collection began in 1999, with the support of PROCISUR and the participation of 21 farmers' associations.

Results The geographical range included virtually all cultivated regions. We identified 132 farmers that multiplied their own seed through the cooperation of Extension Services, representing over a 70% of the total contacted farmers. Of these, 25% provided at least 2 species with 73% of the accessions being perennial legumes, reflecting their importance in the crop-pasture rotation use in Uruguay. The prevalent species were birdsfoot trefoil (*Lotus corniculatus* L.), red clover (*Trifolium pratense* L.) and lucerne (*Medicago sativa* L.), with 99, 33 and 22 accessions, respectively. *Lotus* (27%) and clover (17%) had been multiplied for more than 10 years, this increased to 43% for lucerne, reflecting the prevalence of traditional farming for the latter (Table 1a). Accessions of unknown genetic origin represented 20, 22 and 28% for lucerne, *Lotus* and clover, respectively. The collection stands out in its representation of old public varieties. 73% of *Lotus* accessions were originally cv. San Gabriel; Estanzuela 116 and Estanzuela Chaná represented 72% and 65% of clover and lucerne, respectively. The collection reflected the relevance of seed production within each farming system. Traditional farming and on-farm seed multiplication was more frequent for farmers involved in beef production (Table 1b). Daily grazing is routinely used with lucerne and clover, whereas non-bloating *Lotus* is grazed in a more relaxed schedule (Table 1c). Forage oats characterization has already shown the collection value in traits related to adaptation under grazing (Vilaró *et al*, in press).

Conclusions The collection accomplished the task of reaching a broad spectrum of farming production systems and management, integrating farmers, extension services and researchers to elaborate detailed information of each accession. *In situ* on-farm conservation sustains the evolutionary avenue through which genetic variability is generated, but *ex situ* conservation protects landraces vulnerability from extreme climatic changes, as with the drought of 2000. Detailed passport information on cultural practices will be a key feature for future utilization of the collection, as well as the analysis of current and future threats to genetic erosion.

References

- Negri V. (2003). Landraces in Central Italy: where and why they are conserved and perspectives for heir on-farm conservation. *Genetic Resources and Crop Evolution*, 50, 871-885.
- Vilaró M, C. Miranda, C. Pritsch, M. Rebuffo & T. Abadie. Morphological characterization of *Avena sativa* L. collection in Uruguay. *Plant Genetic Resources Newsletter* (in press)

Table 1 Accessions categorized by:

a) on-farm multiplication (% within each species)			
Years	<i>Lotus</i>	Red Clover	Lucerne
Less than 3	2	14	5
3 to 10	71	69	52
10 to 20	20	17	43
over 20	7	0	0

b) farm production (% within each species)			
System	<i>Lotus</i>	Red Clover	Lucerne
Dairy	19	36	45
Beef	55	49	52
Sheep	15	18	14
Agriculture	33	23	15

c) grazing management (% within each species)			
System	<i>Lotus</i>	Red Clover	Lucerne
Daily	37	61	73
Weekly	39	15	18
Monthly	9	12	5
Continuous	14	11	4