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Genetic resources and agropastoral systems in Chile

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Three *Lotus* species known as high value forage plants are present in Chile, *L. corniculatus* (Lc), *L. glaber* (Lg) and *L. uliginosus* (Lu). There is no record of the date of their introduction in the country but it would have happened in the first half of the twentieth century. Today these species are naturalized in specific environments between 32° and 38° S latitude. Lc is cultivated, but its spontaneous propagation is limited. Lg and Lu are broadly distributed in mediterranean and southern humid climates, on neutral to moderately acidic and acidic soils, respectively. One Lc cv. originated in Chile is available, Quimey. During recent years the performance of 12 cvs., from north and south-America and Australia, has been evaluated in Chile compared to Quimey (Acuña *et al.*,2002a). A naturalized germplasm collection of Lg (11 accessions) and Lu (21 accessions) was characterized for agronomic trait in different environments within the distribution area of each species is available (Acuña *et al.*, 2002b). The Lg accessions differ in plant hight, phytomass production and N-fixation rate but show similar concentrations of condensed tannins (CT) in herbage (lower than Lc and Lu). The Lu germplasm is in general of postrate growth habit contrasting with the semierect New Zealand cv. Maku, but there are differences in plant hight among accessions. They differ in fitomass production, N-fixation rate and CT concentration in most of the environments. The Lg and Lu germplasm concentrate the herbage production in spring more than Lc, but both species have accessions with an acceptable equilibrium between the spring and summer production. These species are well adapted to soil with limitations as texture, depth, acidity or Al toxicity and deficiencies of P, K, S and other elements, as well as to water deficit caused by water shortage for irrigation or low rain condition. When the Lg and Lc are the pasture´s (natural or sown) basic legumes, which improves N plant nutrition and forage quality, they are mainly used in beef cattle production systems. This occurs in rice crop areas where lotus use the land for two or three years in rotation with the cereal, and in volcanic soil areas with irrigation water restrictions and in sandy soil areas with water table near surface, all of them located in the Central –South zone of the country (potential: 500.000 ha). In the humid zone of Southern Chile there are extensive areas of acidic soils with high levels of Al saturation and P deficiencies where Lu is broadly distributed and plays an important role in beef cattle production (potential: 1000.000 ha). On average, these kind of pastures produce 8 to 10 tons of DM per ha/year and the live weight yield is around 350 to 500 kg per ha /year, depending on the zone and the production phase – growing or finishing.

References

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