

Research backs grass pea exports by small Chilean farmers

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A three-year project on grass pea (*Lathyrus sativus* L.) is being initiated in southern Chile, involving research and technology transfer activities directed mainly to small farmers that have begun to export grain to Europe. The research will examine plant population and spacing, fertiliser and weed control studies, in soil types ranging from ultisols to andisols, which are prevalent soil types in southern Chile.

Grass pea has received very little attention so far, since it is a minor crop grown traditionally by small farmers who produce it in limited amounts. It is cultivated with low inputs and technology, and seed yields are usually between 1000 and 1400 kg.ha⁻¹. The grain is used mainly for animal feeding and also for occasional human consumption. It has been so, probably since the introduction of grass pea by the Spaniards two centuries ago.

Exports to Europe, with an attractive price, are rapidly changing the scenario. The Chilean grass pea has a large seed size and most of the seed is clear white, two of the requisites imposed by the European market. These two characters show a scope for improvement due to ample variation. In fact, the size of the grain currently produced is so heterogeneous, that export is not possible without seed sorting. Fortunately, there are markets for grass pea in South America, for which grain size does not matter, within certain limits, although clear white grain colour is demanded.

A composite of 1388 plants, formed originally by combining samples of equal size from 41 farmers who export grass pea (located near Lumaco, ~150 km NW of Temuco), had a seed weight mean of 270 mg.seed⁻¹ (Fig. 1). The range was 114-455 mg.seed⁻¹ on an individual plant basis, and was normally distributed. This mean weight is higher than the 176 mg.seed⁻¹ observed by Tay *et al.* (this issue) among grass pea accessions collected in the central-south zone.

Seed weight appears to be a reasonably good estimator of seed diameter. A correlation of $r = 0.853$ was found after individually measuring 1640 seeds for seed weight and greatest diameter. This association was expected to be lower than for seeds with nearly spherical shape, such as peas or soybeans, due to the irregular wedge shape of large-seeded grass peas. Nevertheless, the association found is adequate and will allow further evaluation for either character.

Indeed, a three-year project is not enough to make much progress in the improvement of seed size or colour, but selections will be made that will be the base for breeding work if further support is obtained. In the meantime, a large-seeded variety already available, Jumbo-INIA, obtained by J. Tay from a selection among grass pea landraces from the central-south zone, will be evaluated under southern environments. If it performs well compared to the Lumaco landrace, seed of this variety will be increased and distributed to farmers as soon as possible.

Seed colour has been observed to vary from very white to ivory, in material harvested at the same time and a sun tanning effect cannot be discounted. ODAP content in Chilean landraces of grass pea has been found to range between 0.175 and 0.516% (Tay *et al.*, this issue), however, the European market does not discriminate for this factor, apparently because grass pea is used to prepare traditional dishes only consumed occasionally. Consequently, this project is not concerned with the level of neurotoxins.

Fertiliser studies include levels of phosphorus, potassium and sulphur, and response to magnesium, calcium and microelements (B, Zn, Cu). Nodulation by *Rhizobium* will be checked and strains collected for further studies. Two groups of herbicides will be evaluated in pre-emergence and post-emergence application. Also, the response of grass pea to direct sowing and the possibility of small farmers adopting this practice with home-made, lower-cost, machinery will be explored. Use of improved practices is expected to increase yields substantially, while keeping investment low. Benefits should also come from the better price obtained for larger seed and from the increased use of a legume crop in rotations, which are presently heavily based on cereals.

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