

# Genetic and Genomic Resources of Grain Legume Improvement: 11. Grass Pea

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Genetic and Genomic Resources of Grain Legume Improvement: 11. Grass Pea Shiv Kumar, Priyanka Gupta, Surendra Barpete, A. Sarker, Ahmed Amri, P.N. Mathur, Michael Baum Grass pea (Lathyrus sativus L.) is an important cool-season legume species with wide genetic diversity spread across the continents. With the climate change scenario it has emerged as a viable crop option for fragile agro-ecosystems, where successful cultivation of major crop species is apparently not difficult. However, grass pea seeds are known to have a neurotoxin known as  $\beta$ -N-oxalyl-l- $\alpha$ ,  $\beta$ -diaminopropionic acid ( $\beta$ -ODAP). Its overconsumption as a staple food in an unbalanced diet for an extended period of 3–4 months can cause spastic paraparesis of the legs in human beings. Therefore, β-ODAP needs to be reduced through genetic means to a safe level for human consumption. Unfortunately, a paucity of efforts towards development of genetic and genomic resources for this species has hampered the progress in breeding low ODAP varieties in the past. Some progress has been made in recent years for collection, conservation, characterization, evaluation and utilization of Lathyrus genetic resources at the national and international levels, resulting in large ex situ collections in various gene banks of the world. These resources need to be systematically characterized and evaluated for genetic improvement through conventional and contemporary approaches. In spite of a large number of wild relatives with useful traits, no significant efforts have been made for alien gene transfer in grass pea. This chapter reviews the present status of genetic and genomic resources of Lathyrus and their use in current breeding programmes.

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