

Asparagus racemosus Willd for Enhanced Medicinal Properties

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Abstract : India is bestowed with an extremely high population of plant species with medicinal value and even has two biodiversity hotspots. Indian systems of medicine including Ayurveda, Siddha and Unani have historically been serving humankind across the world since time immemorial. About 1500 plant species have well been documented in Ayurvedic Nighantus as official medicinal plants. Additionally, several hundred species of plants are being routinely used as medicines by local people especially tribes living in and around forests. The natural resources for medicinal plants have unscientifically been over-exploited forcing rapid depletion in their genetic diversity. Moreover, renewed global interest in herbal medicines may even lead to additional depletion of medicinal plant wealth of the country, as about 95% collection of medicinal plants for pharmaceutical preparation is being carried out from natural forests. On the other hand, huge export market of medicinal and aromatic plants needs to be seriously tapped for enhancing inflow of foreign currency. *Asparagus racemosus* Willd., a member of family Liliaceae, is one of thirty-two plant species that have been identified as priority species for cultivation and conservation by the National Medicinal Plant Board (NMPB), Government of India. Though attention is being focused on standardization of agro-techniques and extraction methods, little has been designed on genetic improvement and selection of desired types with higher root production and saponin content, a basic ingredient of medicinal value. The saponin not only improves defense mechanisms and controls diabetes but the roots of this species promote secretion of breast milk, improved lost body weight and considered as an aphrodisiac. There is ample scope for genetic improvement of this species for enhancing productivity substantially, qualitatively and quantitatively. It is emphasized to select desired genotypes with sufficient genetic diversity for important economic traits. Hybridization between two genetically divergent genotypes could result in the synthesis of new F1 hybrids consisting of useful traits of both the parents. The evaluation of twenty seed sources of *Asparagus racemosus* assembled different geographical locations of India revealed high degree of variability for traits of economic importance. The maximum genotypic and phenotypic variance was observed for shoot height among shoot related traits and for root length among root related traits. The shoot height, genotypic variance, phenotypic variance, genotypic coefficient of variance, the phenotypic coefficient of variance was recorded to be 231.80, 3924.80, 61.26 and 1037.32, respectively, where those of the root length were 9.55, 16.80, 23.46 and 41.27, respectively. The maximum genetic advance and genetic gain were obtained for shoot height among shoot-related traits and root length among root-related traits. Index values were developed for all seed sources based on the four most important traits, and Panthnagar (Uttarakhand), Jodhpur (Rajasthan), Dehradun (Uttarakhand), Chandigarh (Punjab), Jammu (Jammu & Kashmir) and Solan (Himachal Pradesh) were found to be promising seed sources.

Keywords : asparagus, genetic, genotypes, variance

Conference Title : ICMPNP 2018 : International Conference on Medicinal Plants and Natural Products

Conference Location : Paris, France

Conference Dates : July 19-20, 2018