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# Assessment of genetic diversity in selected delicious group of apple cultivars in west Himalaya, India

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The cultivars of apple, which forms major temperate tree crop exhibit great variation in quality and production of fruits. This variation, among other, is attributed to genetic makeup. In this context, three apple cultivars (Royal delicious, Golden delicious and Red delicious) were investigated for genetic diversity patterns. Leaf samples, collected from six distantly located orchards at different altitudes between 1771-2780 m asl in west Himalaya, India, were subjected to ISSR (Inter Simple Sequence Repeat) analysis. A total of 45 ISSR primers were screened, of which 14 produced 111 clear and reproducible fragments. Variations in different genetic diversity parameters revealed that Red delicious (Pp=51.35%, He=0.18) and Royal delicious (Pp=52.25%, He=0.18), collected from Khabrar area (2200 m asl) exhibited higher diversity. Lower diversity was respectively recorded in Mukhwa [(2780 m asl) (Red delicious - Pp=25.23%, He=0.11)] and Naugaoun 1771 m asl (Royal delicious - Pp=9.01%, He=0.03). In case of Golden delicious (Pp= 64.86%, He= 0.23), Chaubatiya (2040 m asl) samples revealed considerably higher genetic diversity as compared to other locations. Analysis of molecular variance revealed 57% to 73% variance within location and 27% to 57% among locations. Although not universal, evidences suggest increasing varietal diversity can lead to greater yield, and decreased pathogen damage. Results of higher diversity at mid altitude locations is therefore indicative that cultivars like Red Delicious, Royal Delicious at locations like Khabrar (2400 m asl) and Golden Delicious at Chaubaitya (2040 m asl) may succeed in endure the adverse effects of changing climate, pathogen attack, and decrease in quantum of yield. Hence, the material obtained from such location for respective cultivars can gainfully be utilized for the mass multiplication.

## Biography

Praveen Dhyani has completed his post-graduation in Biotechnology from H.N.B. Garhwal University, Uttarakhand, India. During post graduation he worked on thesis entitled “Characterization and molecular diversity of Bacillus thuringiensis isolated from different locations of Uttarakhand”. He is pursuing his PhD in Biotechnology on “Morphological, biochemical and genetic diversity of some promising delicious group of Apple cultivars in Uttarakhand, West Himalaya”. To his credit, he has published three research papers in international peer reviewed journals and six abstracts in different conference souvenirs.

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