Molecular Nucleotide Polymorphisms in Short-Duration Barley and Their Relationship to the Chloroplast Genome


Abstract: Molecular nucleotide polymorphisms were examined in a set of 10 short-duration barley (Hordeum vulgare L.) cultivars using two highly polymorphic amplified fragment length polymorphism (AFLP) markers, Enzyme Digestion Point (EDP) and EDP alkaline phosphatase (AP). The AFLP markers were used to determine the degree of genetic diversity within the set and to identify polymorphic bands that could be used as molecular markers in future studies. The EDP and EDP AP markers were used to identify polymorphic bands that could be used as molecular markers in future studies. The results showed that the set of short-duration barley cultivars was highly polymorphic, with a total of 83 polymorphic bands detected among the 10 cultivars. The cultivars were grouped into three distinct clusters based on the similarity matrix generated from the AFLP and EDP AP marker data. The first cluster contained the cultivars 'Prestige', 'Dakota', and 'Cumin', while the second cluster contained 'Hermes', 'Finger', and 'Reid'. The third cluster contained the cultivars 'Kosmo', 'Molino', and 'El Dorado'.

Conclusion: The results of this study demonstrate the potential of molecular nucleotide polymorphisms as a tool for genetic diversity analysis in short-duration barley cultivars. The EDP and EDP AP markers proved to be highly informative and could be used as molecular markers in future studies.

Keywords: Molecular nucleotide polymorphisms, short-duration barley, AFLP markers, EDP markers.