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Analysis of peroxidase isozymes in eight *Populus* cultivars

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Key words : *Populus* ,peroxidase isozymes ,polyacrylamide gel electrophoresis ,hereditary identification ,cluster analysis

Introduction In recent years isozymes have been widely used for classification and hereditary analysis of plants such as crops , vegetables ,herbs , and trees . It is a simple method with high sensitivity and reproducibility ; results are easy to observe and record . This technique has been adopted to analyse peroxidase isozyme patterns in eight *Populus* cultivars using polyacrylamide gel electrophoresis . The analysis of isozyme patterns and their hereditary differences provides the basis for developing new varieties of *Populus* .

Material and methods Plant material was collected from the botanical garden of the Inner Mongolia Forestry Science Research Academy (Table 1) . Polyacrylamide gel electrophoresis has been used to separate isozymes .

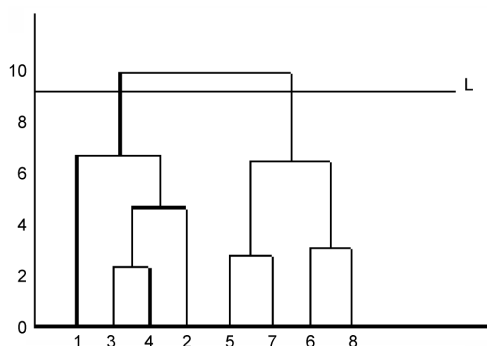


Figure 1 Dendrogram of cluster analysis based on isozyme data for *Populus* germplasm .

Table 1 Plant material and their origin .

code	cultivars	original
1	Eur-American107	Beijing Forestry Department
2	Zhonglin 46	China Forestry Science Academy
3	172	China Forestry Science Academy
4	8858-64	China Forestry Science Academy
5	Qun zhongyang	Inner Mongolia Forestry Science Academy
6	153	Inner Mongolia Forestry Science Academy
7	Faku 1	Tongliao , Inner Mongolia
8	Zhelin 4	Tongliao , Inner Mongolia

Results analysis According to the POD isozyme patterns , the eight cultivars were divided into two main clusters : of the seven peroxidase isozymes present in *Populus* , the second , third , and sixth band was present in zhonglin 46 ,172 ,107 and 8858-64 , which were clustered into cluster one . The other four cultivars , Qun zhongyang , Zhelin 4 ,153 , and Faku 1 lacked the second and the third band but had the fourth band , were clustered into cluster two .

In cluster one Zhonglin 172 and 8858-64 clustered closely together , whereas Eur-America 107 and Zhonglin 46 were farther apart . In cluster two Qun zhongyang and Faku 1 , and 153 and Zhelin 4 , respectively , clustered closely together .

Conclusions POD isozyme analysis of *Populus* shows the presence of up to seven different bands (isoforms) . The difference in isozyme patterns allows the classification of *Populus* cultivars into distinct clusters . Cluster analysis gives information on the relationship between cultivars and can be used for hereditary classification .