To Identify Alfalfa Cultivars Based on RAPD Markers Using Bulked and Individual DNA

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Key words : alfalfa , cultivar , bulked DNA , individual DNA , RAPD

Introduction The genetic relationship and distance among alfalfa cultivars is of great interest for breeding programmers as well as for cultivar identification . However , cultivated alfalfa (*Medicago sativa* L .) is tetraploidy out-breeding species with a self-incompatibility system , which causes a high degree of genetic variation among individuals within populations . The aim of this study was to identify alfalfa cultivars based on RAPD markers using bulked and individual DNA , respectively .

Materials and methods Sixteen alfalfa cultivars were used in this study . Genomic DNA was isolated using CTAB method . 20 , 40 and 60 individual plants per population and bulked DNA were analyzed , respectively . A total of 10 RAPD primers were used for routine screening . The bands visualized on the gels were scored manually and each band in the RAPD profile was considered as 0 (absent) or 1 (presence) .

Results and discussion Using bulked genomic DNA samples , four out of 10 primers detected the specific bands belong to 5 cultivars respectively , which could be used to identify among alfalfa varieties . Figure 1 (a) showed the patterns of a bulked genomic DNA samples from 20 individuals per population using RAPD primer OPEL-6 , two specific bands of cultivar Longdong" (780 bp) and Jindera" (950 bp) were appeared , and there were 60% individuals of cultivar Longdong" to have this specific band . The polymorphic bands did not increase with the numbers of the individuals bulked , which indicated that 20 was enough to identify Longdong" and Jindera" from other cultivars . To identify alfalfa cultivars using individual genomic DNA with 10 , 20 , 40 and 60 plants per population , we found that it was difficult for the high variation within each population (Figure 1 , b) . According to the results of this study , data based on RAPD markers were useful in identifying alfalfa cultivar varieties using bulked genomic DNA samples from 20 plants per population .

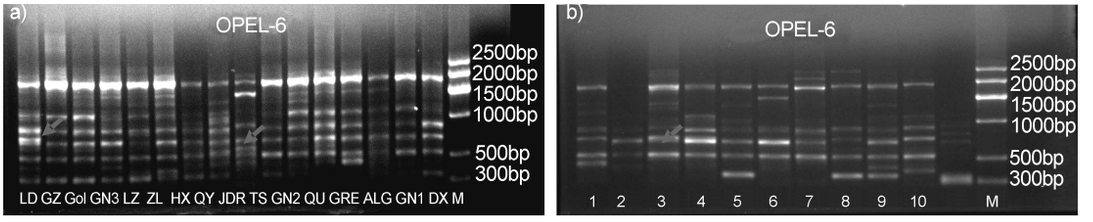

Figure 1 *RAPD patterns obtained from bulked genomic DNA samples of 16 cultivars (a) and from 10 individual genomic DNA samples of cultivar Longdong" (b) with primer OPEL-6 .*

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