

Specific RAPD Markers of *Imperata cylindrica*

Populations in Taiwan

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摘要

Abstract

Imperata cylindrica L. Beauv, a common C4 grass, is widely distributed in various habitats in Taiwan. Among 55 populations in various habitats, six sites were selected for the study. These sites are namely, Chuwei (an estuary mangrove forest area with high salinity), Sarlun (in coastal saline area), Kengting (at south tip with dry season in winter), Penghu (an islet about 100 km from west coast and is dry in most seasons), and Nankang and Hoshe (both in inland with mild weather as control sites). The total DNA was extracted from leaves of *I. cylindrica* collected from the six sites. The DNA was then analyzed by means of a random amplified polymorphic DNA (RAPD) technique. Forty primers were used for the RAPD analysis, and only four primers, namely OPA-16, OPA-20, OPV-03, and OPV-13, were successful in obtaining genetic markers for the populations at the sites. Five markers, namely A162, A163, V32, V33, and V131 were obtained. Of them, markers 162 and 163 were generated from primer OPA-16. Marker A162 was found in populations of Nankang, Penghu and Sarlun; however, it was very specific to population Penghu. Marker A163 was only found in population Sarlun. Markers V32 and V33 were generated from primer OPV-03; the former was present in all populations except population Chuwei, while the later was only found in the Chuwei population. Marker V131 was generated from primer OPV-13 and marker A163 was from OPA-16. The marker V131 was specific to the Chuwei population. Regarding the length of the markers, marker V32 has 1198 bp, marker V33 possesses 1173 bp, and marker V131 reveals 1166 bp. Comparing the DNA sequence of markers V32 and V33, they exhibited 64% homology. All of these population-specific markers are repetitive sequences as revealed from the RFLP analysis. It is concluded that the aforementioned markers are specific to either inter- or intra-specific population of *I. cylindrica*. It is also suggested that the unique ecotype formation of Chuwei population is a result of adaptation to stressful environment, such as anaerobic and saline habitat.