



Genetic Diversity in Zoysiagrass Ecotypes Based on Morphological Characteristics and SSR Markers

M. Hashiguchi
University of Miyazaki, Japan

S. Tsuruta
University of Miyazaki, Japan

T. Matsuo
University of Miyazaki, Japan

M. Ebina
Okinawa Prefectural Livestock Experimental Station, Japan

M. Kobayashi
National Institute of Livestock & Grassland Science, Japan

See next page for additional authors

Follow this and additional works at: <https://uknowledge.uky.edu/igc>



Part of the [Agricultural Science Commons](#), [Agronomy and Crop Sciences Commons](#), [Plant Biology Commons](#), [Plant Pathology Commons](#), [Soil Science Commons](#), and the [Weed Science Commons](#)

This document is available at <https://uknowledge.uky.edu/igc/20/satellitesymposium5/110>

The XX International Grassland Congress took place in Ireland and the UK in June-July 2005.

The main congress took place in Dublin from 26 June to 1 July and was followed by post congress satellite workshops in Aberystwyth, Belfast, Cork, Glasgow and Oxford. The meeting was hosted by the Irish Grassland Association and the British Grassland Society.

Proceedings Editor: D. A. McGilloway

Publisher: Wageningen Academic Publishers, The Netherlands

© Wageningen Academic Publishers, The Netherlands, 2005

The copyright holder has granted the permission for posting the proceedings here.

Presenter Information

M. Hashiguchi, S. Tsuruta, T. Matsuo, M. Ebina, M. Kobayashi, H. Akamine, and Ryo Akashi

Genetic diversity in zoysiagrass ecotypes based on morphological characteristics and SSR markers

M. Hashiguchi¹, S. Tsuruta¹, T. Matsuo¹, M. Ebina², M. Kobayashi³, H. Akamine⁴ and R. Akashi¹

¹Faculty of Agriculture, University of Miyazaki, Miyazaki 889-2192, Japan, ²Okinawa Prefectural Livestock Experimental Station, Okinawa 905-0426, Japan, ³National Institute of Livestock & Grassland Science, Tochigi 329-2793, Japan, ⁴Faculty of Agriculture, Ryukyu University, Okinawa 903-0213, Japan
E-mail: mashiguchi@miyazaki-u.ac.jp

Keywords: zoysiagrass, genetic resource, genetic diversity, morphological characteristics, SSR markers

Introduction Zoysiagrass consists of a number of interfertile species, some of which are important grasses for turfgrass and grazing pasture in Japan. Recently, we developed simple sequence repeats (SSRs) markers from *Zoysia japonica* “Asagake” genomic DNA by enriched genomic library method (Yamamoto *et al.*, 2002). Here we identify genetic diversity in 38 ecotypes of zoysiagrass (*Z. matrella* and *Z. tenuifolia*) from a group of southwest islands of Japan based on morphological characteristics and SSR markers.

Materials and methods Thirty-eight zoysiagrass ecotypes and 3 cultivars were used in this study. These accessions were screened for 7 morphological characteristics and 13 SSR markers, which could produce 1 or 2 discrete amplified fragments in all ecotypes and cultivars.

Results Thirty-eight zoysiagrass ecotypes, except “Tanegashima 2”, were classified into 2 groups based on 7 morphological characteristics. Cluster I consists of *Z. matrella* and 2 cultivars (Emerald and Tottori-kourai). On the other hand, cluster II contained *Z. tenuifolia* except “Minatogawa 2”. Thirteen SSR markers were polymorphic in 38 ecotypes of zoysiagrass within 2 to 22 alleles per locus. 157 putative alleles were obtained, with an average of 12. Cluster analysis based on the 157 SSR bands revealed that the 38 ecotypes of zoysiagrass were classified into 6 groups.

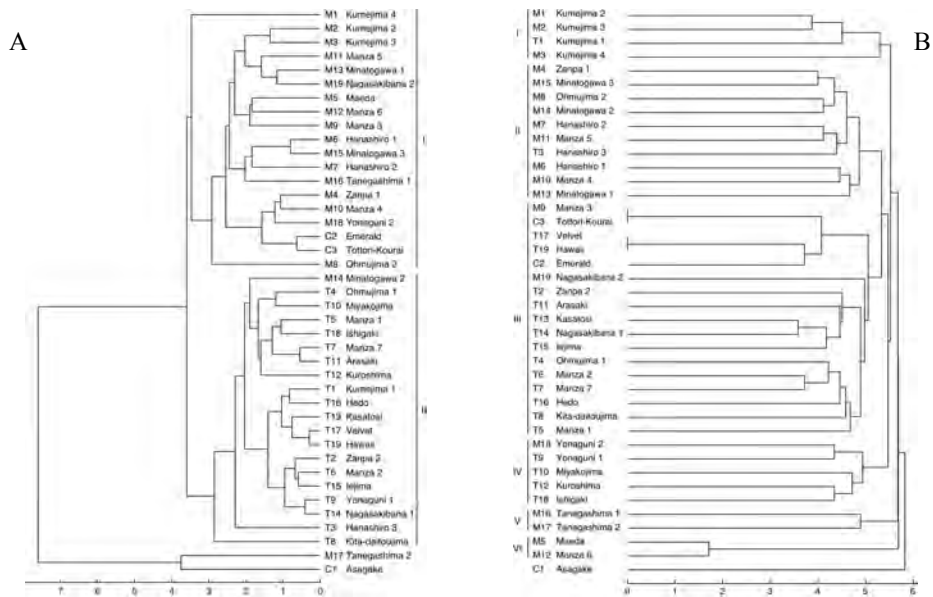


Figure 1 Phenogram of 38 ecotypes and 3 cultivars of zoysiagrass generated from morphological characteristics (A) and SSR markers (B) using UPGMA method. Scale on bottom indicates dissimilarity index

Conclusions Thirty-eight ecotypes of zoysiagrass were identified with morphological and SSR marker. Because of a high correlation between leaf width and other morphological characters, these accessions were classified into *Z. matrella* and *Z. tenuifolia* by 7 morphological characteristics. On the other hand, they could not be classified into two species using SSR markers. However, that classification tends to follow geographical origins. These SSR markers could be a useful tool to investigate genetic diversity of ecotypes of zoysiagrass as well as to identification and construction of genetic linkage map of agronomically and commercially important traits.

References Yamamoto *et al.* (2002) Mol. Eco. Notes, 2:14-16