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Genetic diversity of seven Xinjiang bermudagrass—isozyme electrophoretic patterns

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Key words Xinjiang bermudagrass genetic diversity, isozyme electrophoretic patterns

Introduction Bermudagrass (*Cynodon* spp.) is one kind of major warm turfgrass, has high regrowth ability, density, and stress resistance. It has popular use in public parks, golf courses and sport fields. The morphological characteristics, isozyme electrophoretic patterns (Zhen Yuhong, 2003; Wang Zan, 2004), DNA typing of some Bermudagrass variety (Fu Lingling, 2003) have already been studied. Xinjiang bermudagrass resources have excellent cold resistance; the morphological characteristics have been studied (Abulaiti, 1998). For the new varieties of breeding, the genetic diversity of isozyme and DNA level of Xinjiang bermudagrass is need to be studied in more details.

Material and method Seven materials, including *Cynodon dactylon* L. pers cv. Xingnong No. 1 (C1), *Cynodon dactylon* L. pers cv. Xingnong No. 2 (C2), *Cynodon dactylon* L. pers cv. kashi (C3), Bermudagrass line C4, C5, C6, C7 from Xinjiang Agricultural University, were used in this study. Three pots of each material were maintained in the greenhouse; healthy young leaves were collected, placed on ice, and taken to the laboratory. Homogenates were prepared according to method (Guo Raojun, 2001) from 0.2 g tissue placed in a chilled mortar containing 700 μ l extract, then that were transferred into centrifuge tube, 9000r/min, 4°C centrifuged for 15min, the supernatant adding the same volume loading buffer (20% sucrose + 0.1% bromphenol blue) evenly mixed, stored 4°C for using. Electrophoresis was conducted in 4°C refrigerator, Peroxidase, esterase, Acid phosphatase, superoxide dismutase staining were carried out according to the method (He Zhongxiao, 1999; Wang Zhongren, 1996). All differences reported are based upon the presence, intensity and absence of isoenzyme bands, the genetic similarity coefficient was calculate, the polymorphism of electrophoretic patterns was studied, cluster analysis was done with DPS v2.00.

Table 1 Polymorphic of isozyme of Xinjiang bermudagrass.

isozyme	total number of belt	polymorphic belts	Polymorphic rate
peroxidase	6	4	66.7
esterases	7	6	85.7
Acid phosphatase	5	4	80.0
superoxide dismutases	4	2	50.0
total	22	16	72.7

Result and analysis Sample amounts, gel concentration influenced experiment result, the optimal condition of isozyme electrophoresis was established, 30 μ l sample and 10% gel was suitable for isozyme electrophoresis of Xinjiang Bermudagrass. Polymorphism analysis of isozyme is showed in Table 1. The electrophoresis patterns of the four enzyme existed high polymorphism among the materials, the average polymorphic rate was 72.7%. Among the four kinds of isozymes, the esterase produced the most belt, moreover polymorphic rate was the highest. however the belt of superoxide dismutases was the least.

As far as the four isozyme patterns were concerned, the belt quantity (Table 2), intensity (picture not showed) had difference among the seven Xinjiang bermudagrass. The unique band existed for several materials, but no single isozyme could be used to distinguish the seven materials. By cluster analysis (Figure 1), the seven materials were divided into three kinds. Type I including Xinnong NO. 2, Xinjiang C2, Xinjiang C4 and kashi bermudagrass. Type II including Xinjiang C3, Xinjiang C5. Type III including Xinnong NO. 1.

Table 2 The analysis on isozyme pattern characteristic.

material	peroxidase	esterase	Acid phosphatase	superoxide dismutase
C1	2	4	2	2
C2	5	2	3	3
C3	4	4	1	3
C4	4	3	2	2
C5	3	2	2	2
C6	4	3	2	3
C7	3	1	2	3

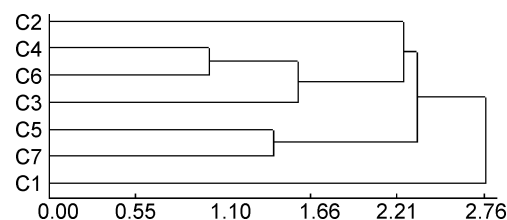


Figure 1 Cluster analysis on isozyme electrophoretic patterns of seven Xinjiang bermudagrass.

Reference

ZHENG Yuhong, LIU Jianxiu, CHEN Shuyua. Study on Diversity of Germplasm of *Cynodon dactylon* in China—I. Analysis of Electrophoretic Isozyme[J]. *Grassland of China*, 2003(5): 52~27.