



University of Kentucky  
UKnowledge

---

International Grassland Congress Proceedings

XXI International Grassland Congress / VIII  
International Rangeland Congress

---

## ISSR Analysis on Genetic Diversity of Wild *Agrostis stolonifera* L. Germplasm Resources

Xiaoli Wang

*Guizhou Institute of Prataculture, China*

Chengbin Tang

*Guizhou Institute of Prataculture, China*

Li Zhong

*Guizhou Institute of Prataculture, China*

Wei Chen

*Guizhou Institute of Prataculture, China*

Jiahai Wu

*Guizhou Institute of Prataculture, China*

*See next page for additional authors*

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



Part of the [Plant Sciences Commons](#), and the [Soil Science Commons](#)

This document is available at <https://uknowledge.uky.edu/igc/21/12-2/15>

The XXI International Grassland Congress / VIII International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

---

This Event is brought to you for free and open access by the Plant and Soil Sciences at UKnowledge. It has been accepted for inclusion in International Grassland Congress Proceedings by an authorized administrator of UKnowledge. For more information, please contact [UKnowledge@lsv.uky.edu](mailto:UKnowledge@lsv.uky.edu).

---

**Presenter Information**

Xiaoli Wang, Chengbin Tang, Li Zhong, Wei Chen, Jiahai Wu, Qun Mu, and Xiaoxia Liu

## ISSR analysis on genetic diversity of wild *Agrostis stolonifera* L. Germplasm resources

Wang Xiao-Li, Tang Cheng-Bin, Zhong Li, Chen Wei, Wu Jia-Hai, Mu Qun, Liu Xiao-Xia  
Guizhou Institute of prataculture, Dushan, 558200, China;  
TEL: 0854-3231250; E-mail wangxiaolizhenyuan@126.com

**Key words:** *Agrostis stolonifera* L. genetic diversity, genetic structure, ISSR, germplasm resources

**Introduction** *Agrostis stolonifera* L. is a major cool season turf grass in China. ISSR (Zietkiewicz E, 1994) molecular markers were used to detect the genetic diversity among three populations of wild and one of cultivated *Agrostis stolonifera* L. collected from Guizhou.

### Materials and methods

**Plant material** The plants used in this study were sampled from three natural populations and one cultivated population of *Agrostis stolonifera* L. located in Guizhou. Each populations had several subpopulations with the exception of the cultivated population KROMI. The locations of sampled populations shown in Table 1.

**Table 1** Natural and cultivated populations of *Agrostis stolonifera* L. used in this study.

Name of populations		origins	No. of subpopulations
Natural populations	BSE	Southeastern of Biji	6
	BNW	Northwestern of Biji	7
	LPS	Liu Panshui	5
Cultivated population	KROMI	Dushan	1

**DNA extraction and ISSR amplification** Fifteen individuals were selected from each subpopulation for extraction of mixed DNA. PCR amplifications were then performed in a final volume of 25 $\mu$ L containing 50ng DNA templates, 1 $\mu$ L (2mmol/L) dNTPs, 2 $\mu$ L 10 $\times$  PCR buffer, 2 $\mu$ L (25mmol/L) Mg<sup>2+</sup>, 0.4U (2.5U/L) Taq polymerase, 1 $\mu$ L Primer (10pmol). Reactions were carried out under the following regime: 94 $^{\circ}$ C for 7 min; Followed by 35 cycles of for 30s, 50 $^{\circ}$ C for 45s, 72 $^{\circ}$ C for 1min, and ended with 72 $^{\circ}$ C for 7min.

### Results and discussion

**Genetic diversity** Nine primer pairs produced 66 polymorphic bands, the average percentage of polymorphic bands was 81.48. At population level, the percentage of polymorphic bands ranged from 43.21 to 59.26, with an average of 50.21. The Nei's gene diversity index was 0.2414 and Shannon diversity index was 0.3719. These results suggested a rich genetic diversity among the natural populations of *Agrostis stolonifera* L.

**Amova** The genetic differentiation coefficient was 0.492 and the gene flow was 0.5164 among three wild populations, It revealed a significant genetic differentiation.

**Genetic relatives** The Nei's genetic similarity coefficient of the sub-populations ranged from 0.4074 to 0.9123, with three cluster groups. Moreover, the findings implied a correlation among the populations. A significantly high correlation between geographical and genetic distance was observed ( $r=0.494, 0.05 > P > 0.01$ ). Further analysis on genetic relationship suggested relatively high genetic similarity among populations, ranging from 0.7003 to 0.9409.

**Conclusion** There was a rich genetic diversity and significant genetic differentiation among the natural populations of *Agrostis stolonifera* L. and the cultivated populations showed a significant genetic difference from natural populations.

### Reference

Zietkiewicz E, Rafalaki A, Labuda D, 1994. Genome fingerprinting by simple sequence repeat (SSR) — anchored polymerase chain reaction amplification. *Genomics Journal*, 20, 176~183.