



University of Kentucky
UKnowledge

International Grassland Congress Proceedings

21st International Grassland Congress / 8th
International Rangeland Congress

Study on Photoperiod Sensitivity and Hereditary Potentiality Maize Inbred Lines

Zhengmei Zhu
South China Agriculture University, China

Feng Tang
South China Agriculture University, China

Xiaoliang Lu
South China Agriculture University, China

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/21/1-6/23>

The 21st International Grassland Congress / 8th 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.

Study on photoperiod sensitivity and hereditary potentiality maize inbred lines

Zhu-Zhengmei , Tang-Feng , Lu-Xiaoliang
South China Agriculture University , 510642 ; E-mail :xiaolianglu@x263.cn

Key words : maize ,SSR , heterosis , photoperiod sensitivity , diallel cross

Introduction In our country , forage breeding has been severely restricted because of significant shortage of special forage maize varieties suitable to plant in different latitudes(Mugo-S . , Zhang-Fenglu ,2001) . It is significant to select high quality and yield forage maize breeds which were suitable to the maize-farm-belt of China . The study compared the photoperiod sensitivity(PS) of different latitudes maize inbred lines(MIL) and clustered heterosis populations of the MIL hereditary potentiality ,finally was forward to providing theory for forage maize breeding .

Materials and methods The material included 17 tropical and subtropical MIL(provided by the Academy of Agriculture Science of China) and 20 temperate-zone MIL (provided by HeNan Agriculture University) ,adopting clustering analysis of MIL agonomic traits(UPGMA) , SSR analysis and diallel cross of MIL(Goodman MM . , Murphy JP . , Senior ML .et al . ,1998) . The MIL and their hybrid progenies were planted in spring and winter in 2006 . The trial was planted with three treatments (two with artificial light 16h or 10h , respectively ; another with nature light) . Each treatment was replicated three times .

Results and discussion The sensitivity to light of MIL was variable , with the PS of most of the tropical and subtropical MIL more sensitive than the temperate-zone ; 31SSR primers detected MIL , total 135 polymorphism . For the direct yield traits : fresh weight of plant and dry weight of bract , the variability of the addition , domination and them respectively interacting with environment were remarkable , especial the domination \times environment was terribly remarkable to 80% .

The clustering results of some MIL were variant from the maize family tree , maybe because of the abundance heredity diversity of the maize . The study showed that using the combining of heterosis and moderate PS would come into being high quality and yield forage maize breed .

Conclusions 1 .The 37MIL had been assorted to 11 populations by the resemble rate 0 .77 ,the clustering results also basically matched with the relatives of the MIL and the hybrid yield . 2 . From results ,the potential of using the combining of heterosis and environment (PS) was strong .

References

- Zhang-Fenglu ,Mugo-S . ,(2001) .Preliminary study of the response to photoperiod of the different maizes hybrid .*Maize . Sci Journal* 9(4) ,54-56 .
Senior ML . ,Murphy JP . ,Goodman MM . .et al . ,(1998) .Utility of SSR for determining genetic similarities and relationships in maize using an agarose gel system *Crop Sci Journal* 38(6) ,1088-1098 .