



University of Kentucky
UKnowledge

International Grassland Congress Proceedings

XXI International Grassland Congress / VIII
International Rangeland Congress

Effects of Different Nitrogen Supply Forms on the Growth and Quality of Seashore Paspalum (*Paspalum vaginatum* Sw.)

Herong Guo
South China Agricultural University, China

J. J. Wang
South China Agricultural University, China

X. L. Lu
South China Agricultural 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/21/11-1/25>

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.

Effects of different Nitrogen supply forms on the growth and quality of seashore paspalum (*Paspalum vaginatum* Sw.)

H.R. Guo, J.J. Wang, X.L. Lu

College of Agronomy, South China Agricultural University, Guangzhou, China, E-mail: guoherong@scau.edu.cn

Key words nitrate nitrogen, ammonium nitrogen, amide nitrogen, turfgrass coverage, shoot density

Introduction In South China, the major form of nitrogen fertilizer applied to golf courses is nitrate nitrogen. Legg and Meisinger (1982) found that nitrate nitrogen loss was higher than ammonium nitrogen because of leaching. In this paper, the effects of different forms of nitrogen fertilizer and their mixture on the growth of seashore paspalum, which is mainly planted at golf courses in South China, was studied in the sand culture system. The nitrogen concentrations in plant tissue and nitrogen losses of different nitrogen formulas with different nitrogen forms were determined.

Materials and Methods A greenhouse study of seashore paspalum was conducted using a solution/sand culture system with three forms nitrogen at South China Agricultural University from 12 July to 29 Oct. 2006. Turfgrass coverage, leaf chlorophyll content, and the total nitrogen concentration was measured. All data were statistically analyzed using the program of the Statistical Analysis System (SAS) software (SAS, 2003).

Results The results suggest that ammonium nitrogen was used instead of nitrate nitrogen will not influence lateral regrowth of seashore paspalum and maybe prevent nitrate nitrogen leaching as we expected (Table 1). No significant difference in this study in chlorophyll content of grasses was observed within seashore paspalum which cultivated with difference nitrogen forms (Figure 1). Figure 2 showed that nitrogen concentrations of seashore paspalum fertilized with 100% amide nitrogen was significantly higher than that of any other treatments.

Table 1 Turfgrass coverage (%)

Treatment	29 Aug.	29 Sep.	29 Oct.
T1	56.47a	100.00a	100.00a
T2	63.90a	100.00a	100.00a
T3	56.93a	100.00a	100.00a
T4	52.30a	100.00a	100.00a
T5	51.83a	100.00a	100.00a
T6	50.03a	100.00a	100.00a

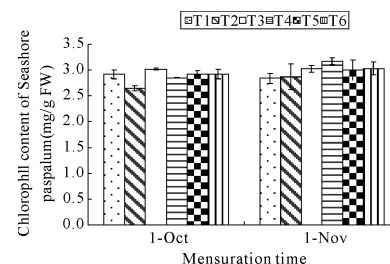


Figure 2 Chlorophyll content.

Conclusions The results of this study suggest that using 25% and 50% ammonium nitrogen instead of nitrate nitrogen significant increased turfgrass growth. This results is coincided with other crop tests (Dai et al., 2000). In addition, using 25% and 50% ammonium nitrogen instead of nitrate nitrogen did not decrease turfgrass quality, and may be reduced nitrate nitrogen leaching that will be tested in next experiments. The similar results of same experiment in *Zoysia japonica* cv. Lanyin No. 3 have been observed. Using amide nitrogen in golf course may cause a great loss of nitrogen with frequent mowing.

References

Legg, J.O., Meisinger J.J. 1982. Soil nitrogen budgets in stevenson. Nitrogen in agricultural soil. *Agron Monogr.* 22:503-556.

SAS institute. 2003. SAS/STAT user's guide. Version 9.1. SAS Inst., Cary, NC.

Dai J.B., Cao W.X. and Sun C.F. 2000. Responses of different wheat varieties to mixed NH_4^+ / NO_3^- nutrition at early stage. *J. of NanJing Agr. Univ.* 23:14-18.

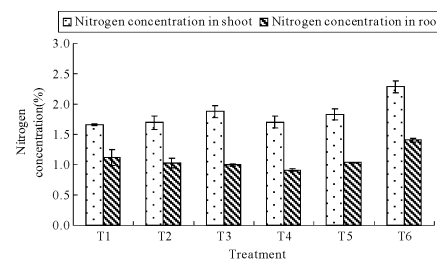


Figure 3 Nitrogen concentration.