



University of Kentucky
UKnowledge

International Grassland Congress Proceedings

XXI International Grassland Congress / VIII
International Rangeland Congress

Turf Performance of 19 Tall Fescue Varieties during Summer Stress

Zhiming Yang
Nanjing Agricultural University, China

Zihua Li
Nanjing 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/21/11-1/19>

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.

Turf performance of 19 tall fescue varieties during summer stress

Yang Zhimin¹, Li Zhihua²

¹Turf Engineering and Technology Center of Nanjing Agricultural University, 210095, Nanjing, E-mail: nauyzm@njau.edu.cn, ²Animal Science and Technology College of Nanjing Agricultural University, 210095, Nanjing

Key words: turf grass, tall fescue, leaf width, growth rate, turf quality

Introduction Tall fescue (*Festuca arundinacea*) is the most important grass in the transitional climate zone of China, but there are serious concerns due to the poor heat tolerance and turf performance of most varieties (He Yali, et al, 1997; Yang Zhimin, 2006). The objective of this study was to select better varieties by evaluating characteristic of 19 tall fescue varieties during the period of summer stress in Nanjing.

Materials and methods The site was on the farm of the Nanjing Agricultural University (119°11'E, 32°08'N). Annual mean temperature is 15.4°C, with a range of 43-14°C. The mean temperature of the hottest month is 28.1°C. The soil is a sandy loam. Sprinkler irrigation is normally applied during periods of water stress.

From Sep 2004 to Nov 2007, 19 tall fescue varieties were planted in a randomized complete block design with 3 replicates. The varieties came from China as well as foreign countries. The area of every plot was 1.3×2.0m². The varieties were sown on Nov 11th, 2004, at a rate of 40g/m². The turf character indexes including leaf width, growth rate, green degree, and turf apparent quality were measured from May to Oct 2005-2007.

Results and Conclusions Leaf width of TF12 was significantly wider than that of TF05, TF07, TF09, TF14 and TF17 ($P < 0.05$). The growth rate appeared the following trend: Sep > Aug > Jun > Jul, The growth rate in May and Oct was significantly faster than that in June and July ($P < 0.05$). The growth rate of TF03 was the highest (11.68 cm/month), TF15 was the slowest (7.48 cm/month), but differences among the other varieties were not significant. SPAD value of TF06 was significantly higher than that of TF03, TF09, TF11, TF13 and TF16, but compared with other varieties there were not significant differences. SPAD value of TF03 was the minimum, and there were not significant differences between TF03 and TF11 (Table 1). Seventeen varieties except TF18 and TF02 were acceptable for mean turf quality during the high temperature season, but TF01 and TF17 were better (Figure 1).

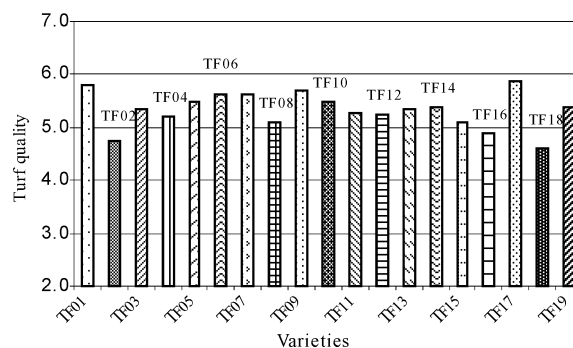


Figure 1 Mean turf quality from May to Nov of 19 tall fescue varieties.

Table 1 Growth characteristic of 19 tall fescue varieties.

Varieties	Leaf widths(mm)	Growth rate(cm/month)	SPAD values
TF01	4.24±0.10ab	9.33±1.29ab	43.54±1.07abc
TF02	4.50±0.17ab	9.50±1.15ab	45.73±0.86ab
TF03	4.53±0.19ab	11.68±1.29a	38.99±0.61e
TF04	4.41±0.13ab	8.51±1.31ab	43.71±0.87abc
TF05	4.08±0.19b	8.92±1.08ab	44.43±0.87abc
TF06	4.20±0.12ab	9.43±1.14ab	45.97±0.57a
TF07	4.11±0.21b	8.73±0.98ab	44.63±0.68abc
TF08	4.43±0.14ab	8.05±0.98ab	45.30±1.00ab
TF09	4.00±0.23b	9.16±1.26ab	42.48±1.21bcd
TF10	4.34±0.19ab	9.06±1.12ab	43.85±1.13abc
TF11	4.25±0.14ab	10.04±1.15ab	39.89±1.14de
TF12	4.69±0.17a	11.10±1.31ab	43.68±0.85abc
TF13	4.22±0.15ab	9.35±1.23ab	42.59±1.26bcd
TF14	4.00±0.16b	9.33±1.26ab	43.36±0.92abc
TF15	4.30±0.17ab	7.48±0.87b	44.09±1.38abc
TF16	4.22±0.13ab	9.95±1.22ab	41.89±0.78cd
TF17	4.02±0.14b	8.06±1.02ab	43.78±0.93abc
TF18	4.31±0.16ab	9.00±0.99ab	44.29±1.01abc
TF19	4.35±0.14ab	8.45±1.00ab	45.05±1.03abc

References

He Yali, Hu Xuehua, Zhang Aiming, Xu Rong, Qi Jun, 1997. A study on field experiment of introduced varieties of cool season turf grass [J]. *Journal of Shanghai Jiaotong University (Agricultural Science)*, 15(4): 276-282.