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Characteristics and turf quality traits of native *Poa pratensis* in humid subtropical Sichuan

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Key words : growth characteristics , turf quality , *poa pratensis* , subtropical humid area

Introduction *Poa pratensis* L (Kentucky bluegrass) is a widely used cool-season turfgrass because of its beautiful , lush , and finely texture and appearance . It is primarily distributed in the north and southwest of China , mainly occurring in alpine and sub-alpine grassland (Peng et al . , 2005) .

Materials and methods Thirteen accessions collected were 05p01 , 05p02 , 05p03 , 05p04 , 05p05 , 05p06 , 05p07 , 05p08 from Ganzi and 05p10 , 05p13 , 05p14 , 05p15 from A ba in Sichuan , and 05p16 from Gansu in China , respectively , commercial varieties Midnight and Baron were used as controls . The experiment was conducted from 2005~2007 at the Experimental Station of Sichuan Agricultural University representing a sub-tropical humid climate , rich in rainfall and acid purple soil of good fertility . A randomized complete block design was employed with three replications in 2 m × 1m plots for 200 single plants transplanted at a density of 10 cm × 10 cm for each plot . Traits investigated included growth rate , tillers , and numbers , length and diameter of rhizomes . Turfgrass performance was estimated by establishment rate , color , density , texture , uniformity , green duration , rust disease resistance and heat resistance once per month all the year .

Results (1) After transplanted , all accessions had a 90% survival rate . (2) In growing period the highest growth rate of aboveground culm was 3.98mm/d of 05p13 , whereas the lowest was 0.12 mm/d only with 05p06 ; the total tillers of per plant ranged from 38 to 161.33 in different materials , with an average of 82.62 . (3) The rhizome number ranged from 15.33 to 58.00 per plant , diameter from 0.38 mm to 1.29 mm , averaged 0.89 mm , and length from 3.27 cm to 8.27 cm , averaged 5.93 cm respectively . Based on the rhizome characteristics , the 15 materials were divided into three types . The first group included 05P01 , 05P06 , 05P08 , 05P10 , 05P13 , 05P15 and 05P16 , which had the most , the longest and strong rhizome , the rhizome number , rhizome length , rhizome diameter averaged 44.33 , 6.70cm and 1.14mm respectively ; the second group consisted of 05P03 , 05P04 , 05P05 , 05P07 , 05P14 , CK1 and CK2 , averaged 41.67 , 5.53 cm and 0.72 mm respectively ; the third one was composed of 05p02 only , which had the least values 15.33 , 3.72 cm and 0.38 mm respectively . (4) The establishing rates were from 58d to 81d . (5) The results of comprehensive evaluation for different materials indicated that CK1 and 05P04 had the highest score , which were blue-green , high density , good uniformity , good rust disease and heat resistance ; 05P03 and 05P06 were in second rank ; The moderate was 05P01 , 05P10 , 05P13 , 05P14 and 05P15 ; 05P02 and 05P07 were the worst because of their rust disease susceptibility and low heat resistance .

Conclusions According to growth characteristics and turfgrass performance , 05P04 and CK1 were more adapted to subtropical humid areas than other materials . By the relationships of turf quality , occurrence of rust disease and environment indices , it is concluded that due to high temperature and humidity in summer rust disease was an important factor which resulted in poor turf quality of native *P. pratensis* .

Reference

Peng , Y . , Zhang , X . Q . , Zhou , S . R . 2005 . Advances in researches of turfgrass germplasm resources in China . *Acta Horticulturae Sinica* , 32 : 359~364 .