# Study on Zoysiagrass (*Zoysia japonica* Steud.) Seed Production Technology

Chunhui Ma
*Tarim University, China*

Jianguo Han
*China Agricultural University, China*

Peng Li
*China Agricultural University, China*



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# Study on zoysiagrass (*Zoysia japonica* Steud .) seed production technology

*MA Chun-hui*[1] *HAN Jian-guo*[2] *Li Peng*[2]
[1] *College of Animal Science and Technology , Tarim University , Alar , Xinjiang 843300 , chunhuima@126 .com ;* [2] *Institute of Grassland Science , China Agricultural University , Beijing 100094 , grasslab@public3 .bta .net .cn*

**Key words :** Zoysiagrass (*Zoysia japonica*) ,nitrogen fertilizer ,seed ,seed production ,seed yield

**Introduction** Zoysiagrass (*Zoysia japonica*) is a perennial grass indigenous to the Orient . Zoysiagrass is well known for its winter-hardiness , drought resistant , trample hardiness and high temperature tolerance . Zoysiagrass has been popular because of its excellent performance also . Zoysiagrass seed yield in natural grassland is less than 150kg/hm$^2$ . Therefore the study on seed production of zoysiagrass is needed .

**Material and methods** The experiment was conducted in Qingdao , Shandong province with longitude of 119°46′E , latitude of 36° 10′N and altitude of 50 m above sea level . The experiment material was Zoysia japonica Steud cv . Qingdao registered in 1990 . The trial plots were seeded (sowing rate at 50kg / hm$^2$) with 20cm row spacing on August 15 , 2001 . The field planting consisted of 15 plots with 55 m$^2$ (22m×5 .5m) per plot . The fertilization experiment was three replicates included for the five treatment(Autumn/Spring)(0/0 ,20/10 ,40/20 ,60/30 ,20/40 kg N/ hm$^2$) .

**Results** The seed yields of zoysiagrass with the fertilization treatments in 2003 and 2004 were significantly higher than that of control ($P \leqslant 0.01$) . The highest seed yields (844 .5 kg/hm$^2$ and 789 .8 kg/hm$^2$ in 2003 and in 2004 respectively) were attained at a fertilization rate of 20 kg N ha$^{-1}$ and 10 kg N ha$^{-1}$ in autumn and spring (30 kg N ha$^{-1}$ in total) . With the seeds maturing , the percentage of shriveled seed and seed moisture content(SMC) decreased gradually . The equation of the changing percentage of shriveled seed was : $Y = 0.3761x^2 - 4.6325x + 23.67$ ($R^2 = 0.9742$, x :SMC) . As the zoysiagrass seed developed , the seed dry weight and yield were increased gradually . The seed yield of 30 kg N ha$^{-1}$ (20/10) application treatment on the 36$^{th}$ day after peak anthesis was the highest , and its SMC and percentage of shriveled seed were 26 .69% and 9 .68% , respectively .

**Conclusions** The seed yield was improved at a suitable N-fertilizer rate . The highest seed yields were harvested at a fertilizer rate of 20 kg N ha$^{-1}$ and 10 kg N ha$^{-1}$ in autumn and spring (30 kg N ha$^{-1}$ in total) . The optimum time for harvesting zoysiagrass was the 36$^{th}$ day after peak anthesis (about June 15) in the trial , with seed moisture content being 26-28% .

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