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前植物生产层

干旱和灌溉条件下少花蒺藜草分株生物量分配特征

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摘要:

调查了生长在科尔沁沙地干旱、灌溉2个条件下的少花蒺藜草 (*Cenchrus pauciflorus*) 分蘖丛。对分株高度、分株生物量以及根、茎、叶、穗、叶鞘等构件生物量进行了定量统计分析。结果显示, 灌溉条件下, 植株高度为41.2 cm, 明显高于干旱条件的33.7 cm。灌溉条件下果穗生物量是干旱环境下的1.8倍。2种条件下, 根生物量、茎生物量、叶片生物量、叶鞘生物量均与分株生物量呈极显著的正相关( $P < 0.01$ ), 并符合 $y = axb^x$ 幂函数的变化规律; 根生物量、茎生物量、叶片生物量、叶鞘生物量之间呈显著的正相关( $P < 0.05$ ), 并符合 $y = ax + b$ 线性函数的变化规律。随着分株生物量的增加, 灌溉条件下各构件的生物量增长速度均高于干旱条件下的。分析认为, 在生物量分配上干旱条件下少花蒺藜草表现出存活对策, 灌溉条件下表现出竞争和繁殖生长对策。

关键词: 少花蒺藜草; 分株; 异速增长; 生物量分配; 生长可塑性

Characteristics of biomass allocation of *Cenchrus pauciflorus* under arid and irrigated habitats

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Abstract:

Characteristics of biomass allocation of *Cenchrus pauciflorus* were investigated in arid and irrigated habitats in Korqin sandy land. Ramet height and biomass, biomass of root, stem, leave, spikes and sheath were measured respectively. The study showed that ramet height of *C. pauciflorus* in the wet condition was 41.2 cm, which was significantly taller than that in the arid condition, 33.7 cm. In the irrigated habitat, the biomass of spikes was 1.8 times of that in arid habitat. Within the two habitats, the biomass of root, stem, leave and sheath were positively significantly correlated with ramet biomass ( $P < 0.01$ ) and marked a regular pattern of power function of  $y = axb^x$ ; the biomass of root, stem, leave and sheath were also positively significantly correlated with each other ( $P < 0.05$ ), which accords with the linear rule of  $y = ax + b$ . In the wet condition, the growth rate of module biomass is higher than that in the arid condition with the increasing of ramet biomass. The analysis concluded that *C. pauciflorus* took the strategy of survival in the arid habitat, and the countermeasure of competition and breeding growth in the wet habitat.

Keywords: *Cenchrus pauciflorus* ramet allometry biomass allocation growth plasticity

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