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Storage and output of bud banks on rhizomes of different age classes of reed population in the dry land habitat in alkalized meadow in the Songnen Plains of China

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Key words: reed, rhizome, age class, bud bank, alkalized meadow, dry land habitat

Introduction Reed (*Phragmites communis*), a rhizome clonal grass, has extensive ecological adaptability and distributes broadly worldwide (Ekstan, 1995). Regeneration and renewal of wild reed populations mainly depend on vegetative propagation. Reed is a fine foraging grass and its protein content is higher than that of other grasses in dry land habitats at vegetative growth stage. However, reed usually exists as a accompanying species into different patches of communities on alkalized meadow in the Songnen Plains of China.

Materials and methods The rhizomes of single dominant reed community were all sampled three times, in July, August and September, respectively. All rhizomes within the 1 m^3 space which was 1 m wide and 1 m deep to reach the deepest rhizomes of reed were dug every time. The color of reed rhizomes became darker with ageing. Furthermore, the combining with else characteristics, the age of each rhizome could be judged (Yang et al., 1998). According to the current state of the rhizome node buds, both dormant and bourgeoned buds were counted. The relative ratios of the dormant and bourgeoned buds were counted in term of age classes and statistics analysis was regarded, respectively.

Results The changing trends of dormant bud ratio and bourgeoned bud ratio were obviously contrary to each other in bud banks of 6 age class rhizomes at the three growth stages. The buds in different age classes all had an output course of accumulated bourgeons. Further statistic analysis showed that the dormant bud ratios and bourgeoned bud ratios were both linearly correlated with age classes at extremely significant level at three growth stages. Their simulated equations as well as significance tests were in figure 1. The a value of dormant bud ratio in equations decreased gradually with the change of growing season, but that of bourgeoned bud ratio increased gradually. These results indicated that in the late growing season, some dormant buds of 1st age class rhizome bourgeoned and outputted one after the other. Although the parameter b did not show regular seasonal changes, the absolute values that were b value of dormant bud ratio decreased or b value of bourgeoned bud ratio increased with age class remained the same on the whole. This indicated that both decrease of dormant bud ratio and increase of bourgeoned bud ratio had great consistency.

Conclusions Reed rhizomes usually live for 6 years and distribute in depths along the one meter range below soil surface in dry land habitat in the alkalized meadow. The storage of bud banks of the rhizomes every age class was a steady output course of accumulated bourgeons. The dormant bud ratios decreased and bourgeoned bud ratios increased gradually with the age classes. The quantitative relationships were all linear equations between ratios both the dormancy buds and the bourgeoned buds and age classes in the reed rhizomes at three growth stages.

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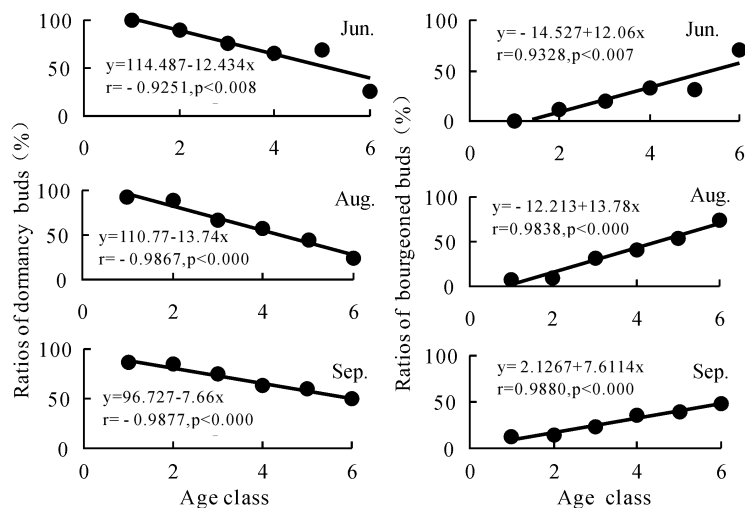


Figure 1 Simulated linear equations and significance tests on relationships between bud ratios (y) both dormancy and bourgeoned and age classes (x) in the bud banks of reed rhizomes.