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Studies on seedling characteristic and establishing technque of *Ceratoides arborescens*

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Key words :*Ceratoides arborescens* ,anti-stress ability ,membrane-covering planting ,seedling transplanting

Establishing technique *Ceratoides arborescens* ,a species in *Ceratoides* is a kind of semi-shrub living in drought habitat . It not only has strong anti-wind , sand-fixing , and water and soil conserving ability , but also possesses relatively high nutrition value . At present , the lack of research on the seedling technology has limited its production and popularization . The seedling growth dynamics of its population , its germination , and the seedlings' anti-drought and salt-tolerant ability were investigated and the field experiments were conducted to evaluate the effects of various factors , such as temperature , sowing depth , membrane covering , fertilization and water on seedlings growth when it was established in desert grassland . Key techniques on seedlings mechanism , membrane-covering planting , and seedling transplanting of *Ceratoides arborescens* were emphasized in the paper .

Results

1 *Ceratoides arborescens* reproduces itself by seeds . Its seeds with long feather are small and light and easy to spread with wind , and there is no dormancy phenomenon by themselves . During the whole year , the survival number of seedlings had a tendency of decreasing . Drought is the main factor limiting the establishing of seedlings .

2 The seedlings of *Ceratoides arborescens* have relatively high anti-stress ability . The seedlings responded to the drought stress mainly by decreasing their aboveground growth , and extending their roots system *Ceratoides* had higher anti-drought ability than *Agropyron cristatum* L ,and is generally as same as *Caragana* . Moreover , it was tolerant to low concentration of salt .

3 The germination of seed needs enough heat time accumulation . In the desert grassland of western Inner Mongolia , the heat time accumulation is 22℃ . Membrane-covering treatment effectively improved survival and maintained an adequate supply of seedlings . It is best to be planted in the mid and late May , and the sowing depth of 1-2cm is the best . The percentage of dry matter of different parts of *Ceratoides arborescens* was ranked as stem＞root＞leaf＞flower .

4 Irrigation and fertilization are the two important factors that determine the establishing of seedling and the plant production . Single spray irrigation increased production by 16 .64% than check . With grass production , flood irrigation is better than spray irrigation of many times , which is better than single spray irrigation . Root system grew best in the treatment by spray irrigation for one time . Moderate drought promoted the vertical growth of its roots . fertilization of urea＋ Phosphoric acid two ammonium) , increased grass production from 847 .59 to 1347 .84 kg/hm2 . Topdressing fertilizer of phosphoric acid two ammonium urea , phosphoric acid two ammonium and urea ＋ phosphoric acid two ammonium in seedling stage increased production 45 .61% ,67 .49% and 92 .36% respectively and increased 12 .37% 、19 .53% ,26 .27% respectively in the next year compared with check .

5 Seedling transplanting of *Ceratoides arborescens* in desert region was an effective way to improve establishing survival rate . There was no big difference between seedlings of 7 months old and that of 12 months old . Survival rate of transplanting was higher in autumn ,(90 .3%) , than that in spring , (72 .6%) .