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| **中文摘要:** | |
| 单叶蔓荆(*Vitex trifolia*var.*simplicifoli*)是一种耐盐、耐旱固沙地被植物。依据海滨沙地自然沙埋特点对单叶蔓荆匍匐茎进行了不同厚度(半埋和全埋)和不同长度交叉沙埋处理,研究探讨了单叶蔓荆沙埋适应生长对策, 为其开发利用、科学管理和海滨环境修复提供指导。结果表明,正常情况下,单叶蔓荆匍匐茎基部和中部生长缓慢,顶部生长快。轻度(沙埋匍匐茎基部)和中度(沙埋匍匐茎基部和中部)半埋和全埋使匍匐茎顶部生长加速,茎长增长量较对照高出1.5到3.1倍;但重度(沙埋整个匍匐茎)半埋和全埋使匍匐茎顶部净增长量减少12% 和13%。在20d沙埋中,对照整个匍匐茎各段均无不定根长出,但不同程度半埋和全埋沙埋处理下沙下匍匐茎上均长出不定根,重度半埋使不定根生长受抑;同时匍匐茎上各段茎生物量上升,枝叶生物量下降, 且随着沙埋程度的增加而增减幅度提高,在重度半埋和全埋达到最大。在轻度和中度半埋和全埋下,匍匐茎上未沙埋部位枝条生长加速。研究表明,在自然环境中,单叶蔓荆匍匐茎顶端是一个对环境变化反应敏感的部位,并与沙埋后单叶蔓荆茎延伸生长和植株能否生存密切相关。当匍匐茎顶部没被沙埋时,沙埋促进沙埋部位匍匐茎和枝叶中物质转移,加速匍匐茎顶部快速生长和物质积累以弥补沙埋带来的损伤维持物质和能量的代谢平衡。沙埋后,单叶蔓荆以茎顶端快速生长、形成不定根、枝条生长维持茎水分平衡和能量和物质代谢平衡, 以快速生长摆脱沙埋影响的生长方式为其对沙埋环境的重要适应对策。因此,在海岸沙地单叶蔓荆种群管理和维护中,在强风移沙引起的重度沙埋后, 及时剥离匍匐茎顶部沙子对维护单叶蔓荆种群的延续生存和扩散均有重要作用。 |  |
| **English Summary:** | |
| *Vitex trifolia*var.*simplicifolia*is a good ground cover plant and sand binder for coastal sandy land; it has a high tolerance for salt and drought and, in its natural environment of sand dunes, it is often buried by blowing sand. In these experiments, basis on the stolon length of *V. trifolia*, the four level of sand burial treatments were set up as no-sand burial, light sand burial (1/3 stolon length), moderate sand burial (2/3 stolon length) and severe sand burial (3/3 stolon). The different lengths of stolon were buried to two different depth, to half the plant height or to the full plant height, to show how the plant maintained growth under different levels of sand burial. Plant height, lengths of stolon and adventitious roots, the ratio of stolon dry weight (DW) to total DW, and the ratio of shoot and leaf DW to total DW were recorded. Normally, stoloniferous base and middle section of *V. trifolia*grow slowly, the top of the stolon grew fast . The results showed that during 20d treatments, there was little difference in the growth of stolon from the basal area to the middle section of the stolon between the control (4.1cm) and light and moderate sand burial groups (4.5 cm). However, there was larger difference in the growth of top of the stolon between control and half and full of the light and moderate sand burial groups. At top of the stolon, the stolon was longer 1.5 to 3.1 times in plant under half and full of the light and moderate sand burial groups than that in the control. While length of top of the stolon under half and full of severe sand burial was shorter by 12% and 13% than that in the control, because apical section were covered. In 20d, many adventitious roots were observed in the stolon under half and fall light and moderate sand burial but not in the control; adventitious roots were also limited in plants under half and full severe sand burial. At the same time, the ratio of stolon DW to total DW increased, peaking at half and full severe sand burial; the ratio of shoot and leaf DW to total DW decreased with increasing of sand burial level. This study indicates that the apex of the stolon of*V. trifolia*is important to growth and plant survival under sand burial. When sand burial did not include the apex of the stolon, adventitious roots were produced along the stolon under half and full light and moderate sand burial. Those new adventitious roots helped plants to absorb more water and nutrients from soil to maintain water balance of shoot, and to support the shoot growing up. Growth fast of top of the stolon and produced adventitious roots maybe a key for *V.trifolia* to avoid being further covered by sand. When the full plant was covered with sand under half and full sever sand burial, the strategy of the plant in adapting to sand burial was that leaves under sand died and the material in the leaves | |