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Studies on the salt tolerance compensatory growth characteristics of *Elytrigia elongata*

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Key words: *Elytrigia elongata* seed, seedling vigor, salt tolerance, compensatory growth

Introduction *Elytrigia elongata* (Host) Nevski is a species with high tolerance to salt. Former researchers showed that there was salt tolerance compensatory growth (STCG) characteristics in this species, but the STCG range and the limits have not been defined. The purpose of this experiment is to determine the differences of STCG character between varieties of the species, Alker and Tyrell, under mono-salt stress and complex-salts stresses. The study on it is of great importance for evaluating and selecting salt tolerant plant materials.

Materials and methods The test materials were seeds of the Alker and Tyrell varieties of *Elytrigia elongata*. The seeds were dipped in the mono-salt (NaCl) and complex-salts (NaCl 71%, CaCl₂ 3%, MgSO₄ 4%, K₂SO₄ 22%) solution of different concentration for 24h. Each treatment had 4 repetition, each contained 50 seeds. The concentration of both salt solutions ranged 0.0% - 2.0%, the gradient interval was 0.2%. The germination test was conducted with natural lighting at 15°C. The germination percentage and length of seedling were measured after 15 days, and then we calculated germinating index (GI) and vitality index (VI). The salt concentration range, in which the seeds VI was higher than the seeds VI at 0.0% salt concentration, was the STCG range of the plant. The highest salt concentration in this range was the STCG point.

Results Figure 1 shows the results of the test with mono-salt stress. Both of the materials showed the STCG. The Alker's point of the STCG was at 0.8%, and the Tyrell's was at 0.2%. The range of the STCG of two varieties was from 0.2% to 2.0%. The STCG was not obvious when the salt concentration was above 1.0%. Figure 2 shows the results of the test under complex-salt stress. Alker didn't show the STCG. The STCG of Tyrell was not obvious, and the point was at 0.6%. The STCG of two varieties under complex-salts stress was not as obvious as that under mono-salt stress.

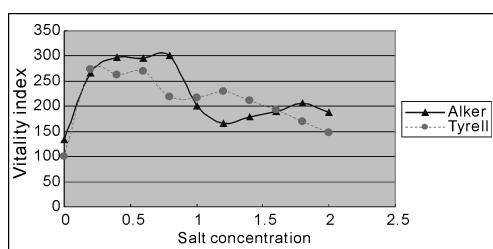


Figure 1 Curves of the seeds' VI of two varieties under Mono-salt stress.

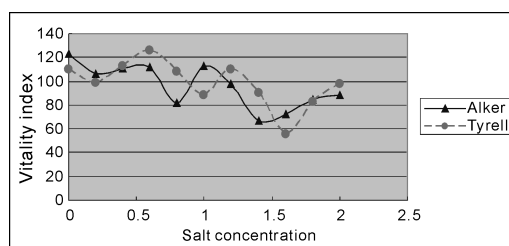


Figure 2 Curves of the seeds' VI of two varieties under complex-salts stress.

Conclusions The results showed that the character of STCG of two varieties was more distinct under mono-salt stress than that under complex-salts stress. There were differences on the characteristic of STCG between the two varieties. The point of STCG of Alker was higher than the point of Tyrell with mono-salt stress. The character of STCG of Tyrell was more distinct than that of Alker with complex-salt stress.

References

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