

**B205****Patterns of Mineral Ion and Nitrogen Metabolism and Growth response of 4 Legume Plants under Saline Condition.**

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To ascertain whether N-fixing legume plants have species-specific ion and N metabolism under saline conditions, we selected 4 well-known legume plants (*Glycine max.*, *Phaseolus angularis.*, *Cassia tora.*, *Albizia julibrissin*), treated them with 0, 10, 40 and 100 mM NaCl at the presence of N supply (0 and 2.5 mM  $\text{NH}_4\text{NO}_3$ ), and measured quantitatively inorganic ions, amino acids and total N. *G. max*, *P. angularis* and *A. julibrissin* showed remarkable growth reduction above 40 mM NaCl treatments, but *C. tora* did not exhibit any visible injury symptom up to 100 mM NaCl treatments.  $\text{Na}^+$  and  $\text{Cl}^-$  contents of *G. max*, *P. angularis* and *A. julibrissin* progressively increased with increasing external salinity and thus represented low  $\text{K}^+/\text{Na}^+$  ratios in leaves, while *C. tora* which does not form root nodules excluded  $\text{Na}^+$  more efficiently and maintained rather constant ionic contents. With a few exception, these 4 legume plants exhibited better growth by the external N supply rather than the full N fixation. Total N contents of *G. max* and *P. angularis* decreased by high salinity level but their amino acid contents increased with the increase of salt gradients, thereby indicated high soluble-/insoluble-N ratios. In contrast to *G. max* and *P. angularis*, *C. tora* and *A. julibrissin* contained little amino acids but their total N (esp. insoluble N fraction) increased with increasing salt levels in medium. Asn is the main amino acid especially in *G. max* and *P. angularis* and can be seen as potential N-storage form in this plants. Meanwhile, to investigate what kinds of N sources are effective for overcoming salt stress, various N forms ( $\text{NH}_4\text{NO}_3\text{-N}$ ,  $\text{NO}_3\text{-N}$ ,  $\text{NH}_4\text{-N}$ ; 2.5 mM & 5 mM, respectively) were additionally supplied to the salt gradient medium. Soybeans treated with  $\text{NH}_4\text{NO}_3\text{-N}$  showed the best growth up to 40mM NaCl and  $\text{NO}_3\text{-N}$ -fed plants indicated well growth even at 80mM NaCl treatments, while  $\text{NH}_4\text{-N}$ -fed plants showed remarkable growth reduction and died at 40 and 80 mM NaCl treatment after 15 days : In conclusion, salt excluding and resistant capacities of soybean plants under NaCl treatments are increased in order of  $\text{NH}_4\text{-N}$ ,  $\text{NO}_3\text{-N}$  and  $\text{NH}_4\text{NO}_3\text{-N}$ , depending on N concentration except  $\text{NH}_4\text{-N}$  treatments.

**B206****Studies on the Growth Analysis for Species of *Bidens* along the Environmental Gradient**

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The response to the gradients of soil moisture, light intensity and soil nutrient of native plants, *B. tripartita*, *B. bipinnata*, and of naturalized plants, *B. frondosa*, *B. pilosa* var. *minor* was examined. Growth analysis was carried out on data obtained from two harvests during the growing season. In total dry weight, naturalized plants demonstrated generally higher than native plants in gradients, light intensity, and soil moisture showed that the more gradient increased, the more total dry weight did. Net assimilation rate(NAR) of *B. bipinnata* and *B. pilosa* var. *minor* had a great velocity in line with increasing of the light intensity and moisture. Relative growth rate(RGR) of *B. tripartita*, *B. bipinnata*, *B. frondosa*, and *B. pilosa* var. *minor* with increasing light intensity in order diminished, and in the response to the gradient of soil moisture, *B. bipinnata* and *B. pilosa* var. *minor* had rather a increased trend. But in the response to the gradient of soil nutrient, it of *B. pilosa* var. *minor* and *B. tripartita* had a diminishing trend. Shoot/root ratio had no significant change among species on environmental factors but *B. tripartita*, native plant, it showed a significant reduction on them. In the response to the gradient of light intensity and soil moisture, Niche breadth of *B. bipinnata* had the widest range of 0.875, 0.845 and it of soil nutrient, *B. pilosa* var. *minor* had 0.933, widely.