



Salinity effects on tiller and leaf number, leaf appearance rate and leaf duration in irrigated rice



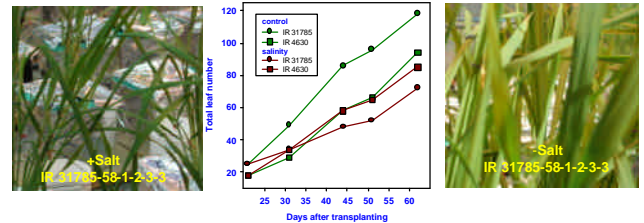
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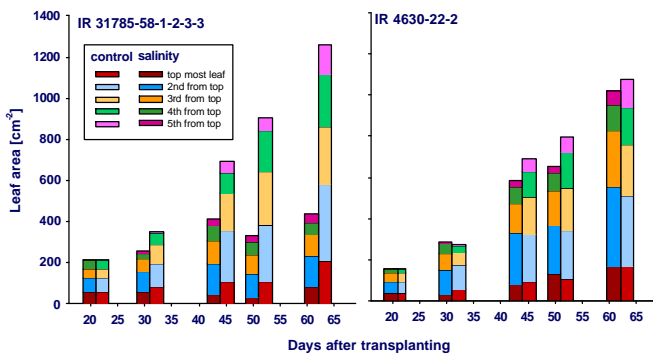
Introduction

- Salinity is a major constraint to irrigated rice production in semi-arid and arid climates.
- Salinity affects rice at or above 3.0 mS cm⁻¹
- Salt stressed rice plants have fewer tillers and shorter, thinner, chlorotic leaves.
- Salinity increases the senescence rate and shortens the physiologically active period of individual leaves.

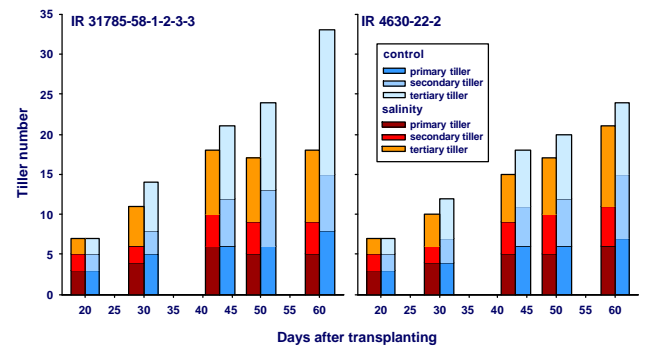
Results - Summary



Salinity reduced tiller and leaf numbers and changed the tillering pattern.

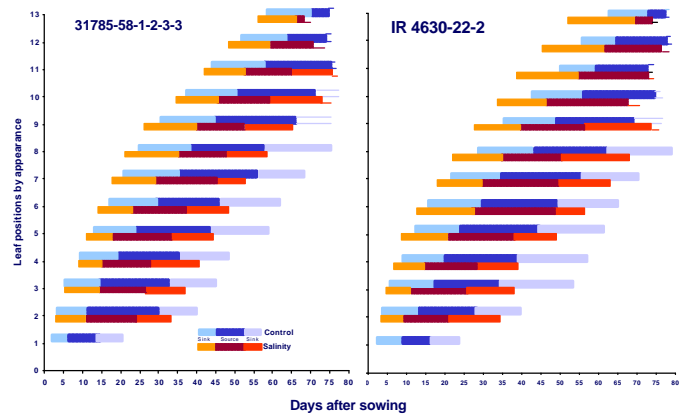


Leaf area was reduced by salinity in the sensitive cultivar.



Conclusions

- Leaf initiation was earlier in salt stressed plants.
- Leaf duration and source period were shorter in salt stressed IR 31785 due to early senescence of leaves.
- Salinity had little effect on leaf duration of IR 4630.
- Genotypes differed in salinity effects on tiller and leaf number.
- Secondary and tertiary tillers were highly reduced.



Leaf senescence rate was increased and the leaf's physiologically active period was shortened under salinity. Salinity increased leaf initiation rate and reduced leaf duration.

Materials & Methods



- The experiment was carried out in green house of institute of plant nutrition, Uni- Bonn. Plants were grown in two hydroponics systems (HS) used separately. In HS I all pots were connected in system and solution was circulated from buffer tank containing 60L of respective treatment solution. In HSII seedlings were transplanted in individual pots not connected in system.
- Two treatments- Yoshida solution (YS) with 0 and 60 mmol NaCl. The plants were replicated three times and grown under treatments after three weeks of transplanting with 50% YS for first three weeks, 80% for next three weeks and 100% onwards. Two varieties IR 4630-22-2 & IR 31785-58-1-2-3-3 were used. Weekly change of solution/Refilling pots with 25% YS. pH was maintained at 5. Data were recorded twice a week up to 50 days after transplanting.
- Observation consists of the identification of leaf number and position, tillering pattern, counting tiller and leaf number and scoring the leaf rolling and leaf senescence. Leaf length and leaf extension was also recorded.

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