

114. 植物의 saline stress 아래에서의 光合成 및 呼吸의 開北 研究

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Studies on the photosynthesis and respiration of plants under
saline stress.

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Saline stress(鹽害) 아래에서의 光合作用을 解明하고 이를 应用한 耐性耕作
技術과 基礎理論을 提供함으로서 干拓地適用方案을 樹立하여 實驗고지함.

材料及 方法: a. 供試材料: 禾本科作物 tall fescue, orchard grass, 蓿科作物 alfalfa
white clover 等 4 種은 供試用임.

b. pot(莖부는 直徑 8cm, 뿌리는 直徑 10cm, 높이 10cm) 体積 600cc
의 供試作物은 50 颗의 播種하여 45日間 生育시킨 材料는 供試用임, pot는 日本国
製取(矢野社) 砂丘土 及其의 Zeolite는 两者 2種의 pot 試驗용 用임.

c. 塩分濃度는 海水를 使用하지 않고 必要な 塩分濃度를 調節使用하
임.

d. 調查項目는 蒸發散量, 光合散量, 根呼吸量等은 測定用임.

; 實驗結果는 要約述明 하임.

1. 溫度差異에 따른 相對蒸發散量과 相對光合散量의 处理後 4日間의 日變化의 伸長
反應의 相異部位와 供試作物 4種 关系 低溫区(11℃)의 高溫区(22℃) 關係 有無 並加以
註記.

2. 相對蒸發散量과 根呼吸量의 相異部位와 orchard grass는 $r=0.996^{**}$, alfalfa는 $r=0.878^*$,
white clover는 $r=0.963^{**}$ 은 4種에 따른 tall fescue는 相異部位는 認定此 今 未
相異部位樣狀元 並表記.

3. OED(葉酸抑制剤) 处理의 附著 蒸發散速度와 根呼吸量은 並吸 全供試作物의
海水注入과 水道水注入에 根呼吸與 蒸發散量의 差異有, OED 处理의 附著
是生化, Zeolite와 sand의 附著有.

4. 海水處理의 附著 根部의 被害狀態는 象徵鏡觀察의 結果 orchard grass와 tall fescue
의 附著 根部의 皮層의 納受土壤이 alfalfa와 white clover는 附著部分의 水分浸透의
關係 附著은 4種皆有.

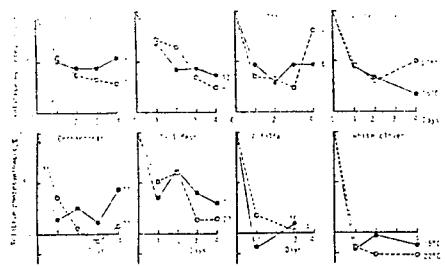


Fig. 2. The relationship between relative concentration and relative plant growth rates as related to sea water irrigation. The point values are percentage of zero treatment (0%).

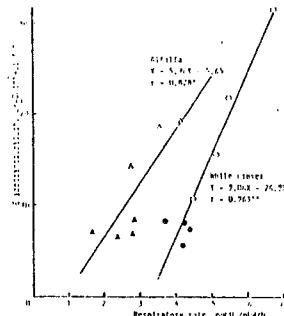


Fig. 3. Relationship between respiration rate of alfalfa and white clover, in fresh water and sea water-irrigation, plotted against respiration rate of control. (Open and solid symbols show fresh water and sea water, respectively, measured 8 days after sea water treatment.)

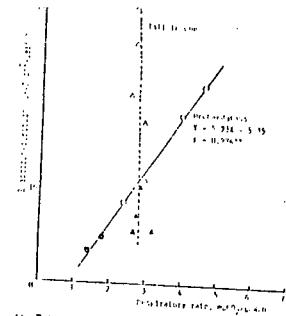


Fig. 4. Relationship between respiration rate of alfalfa and white clover, in fresh water and sea water-irrigation, plotted against respiration rate of control. (Open and solid symbols show fresh water and sea water, respectively, measured 8 days after sea water treatment.)

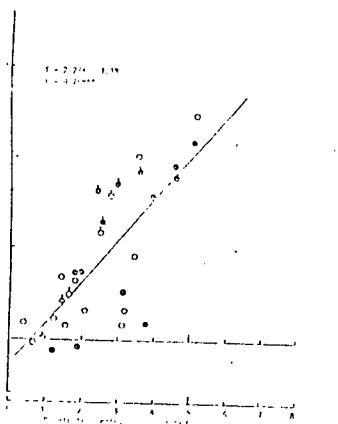


Fig. 5. Relationship between respiration rate of alfalfa and relative concentration of sea water during the period from 8 days to 10 days after irrigation. Key symbol and solid symbol show fresh and sea water, respectively. Dashed symbol shows control culture.

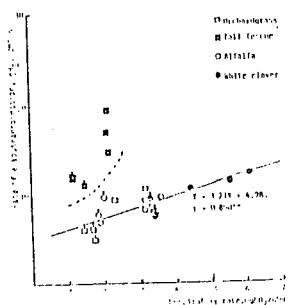


Fig. 6. Relationship between respiration rate of roots at the age of 10 days after sea water treatment and mean rate of evapotranspiration during the 10 days before uptake of sea water culture.

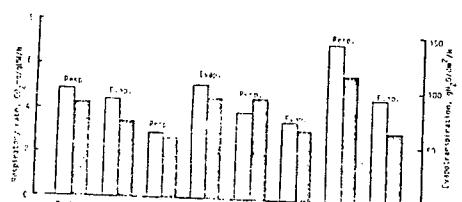


Fig. 7. Relationship between relative concentration of sea water and relative respiration rate of roots in alfalfa plants 10 days after irrigation.

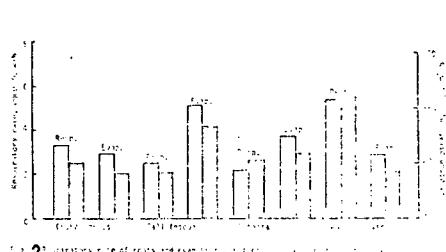


Fig. 8. Relationship between relative concentration of sea water and relative respiration rate of roots in white clover plants 10 days after irrigation.

Treatment	Relative concentration of sea water		Relative respiration rate of roots		Relative respiration rate of control
	0.5	1.0	0.5	1.0	
Fresh water	0.95	0.95	0.95	0.95	0.95
Tall fescue	0.95	0.95	0.95	0.95	0.95
Perennial ryegrass	0.95	0.95	0.95	0.95	0.95
White clover	0.95	0.95	0.95	0.95	0.95