

AGRICULTURAL EXTENSION SERVICE
UNIVERSITY OF CALIFORNIA

REPORT OF SOIL ANALYSIS

SALINITY & ALKALI

SP Saturation Percentage - Grams of water required to saturate
100 grams of soil. Related to soil texture:

Below 20	Sand or loamy sand
20 - 35	Sandy loam
35 - 50	Loam or silt loam
50 - 65	Clay loam
65 - 135	Clay (some clays 90 up to 150)
Above 135	Usually organic (peat or muck)

The water holding capacity of a field soil when irrigated and allowed to drain is approximately half the SP. About half the water holding capacity is available for crop use.

pH Degree of Acidity or Alkalinity - Determined in a soil paste wet to the saturation percentage.

Below 4.2	Too acid for most crops to do well
4.2 - 5.5	Adapted to growth of acid tolerant crops
5.5 - 8.4	Adapted to growth of most crops
Above 8.4	Indicates a probable sodium problem, however, sodium problems can occur at pH's lower than 8.4

ECe Electrical Conductivity of the saturation extract expressed as millimhos per centimeter at 25°C. An index of the salt content. Salt will restrict crop growth about as follows:

Below 2	No salinity problem
2 - 4	Restricts growth of very salt sensitive crops
4 - 8	Restricts growth of many crops
8 - 16	Restricts growth of all but salt tolerant crops
Above 16	Only a few very salt tolerant crops make satisfactory yields

ECe* The asterisk indicates gypsum is present, therefore, effective salinity levels may not be as serious as indicated. Up to 2 ECe units may be subtracted from the measured ECe before using the above table.

- B Boron expressed as ppm in the saturation extract.
- | | |
|-----------|---|
| Below 0.5 | Satisfactory for all crops |
| 1 | Sensitive crops may show visible injury |
| 5 | Semi-tolerant crops may show visible injury |
| 10 | Tolerant crops may show visible injury |
- Ca+Mg Calcium plus Magnesium in the saturation extract expressed as milliequivalents per liter. Used in estimating the exchangeable sodium percentage of the soil [ESP(est)].
- Na Sodium in the saturation extract expressed as milliequivalents per liter. Used in estimating exchangeable sodium percentage [ESP(est)].
- ESP(est) Exchangeable Sodium Percentage, estimated - A close approximation of the degree the soil exchange complex is saturated with sodium. Exchangeable sodium has two effects, (1) permeability, (2) toxicity to sensitive crops.
- | | |
|----------|---|
| Below 10 | Generally no permeability problem due to sodium. However, <u>sodium sensitive crops</u> may show leaf burn at ESP below 10. |
| 10 - 15 | Possible permeability problems with clay loams and clays. (SP above 50). |
| Above 15 | Permeability problems are likely on all mineral soils with possible exceptions of sands and loamy sands (SP below 20). |
- GR Gypsum Requirement is the amount of gypsum or its equivalent to furnish calcium needed to correct a permeability problem due to sodium. GR is expressed as tons of 100% gypsum per acre for a 6-inch depth of soil. Will be run on samples with ESP 10.
- GR** Gypsum Requirement of a Soil Containing Lime. The double asterisks indicate presence of lime, and acid forming amendments such as sulfur or sulfuric acid may be used in place of gypsum.

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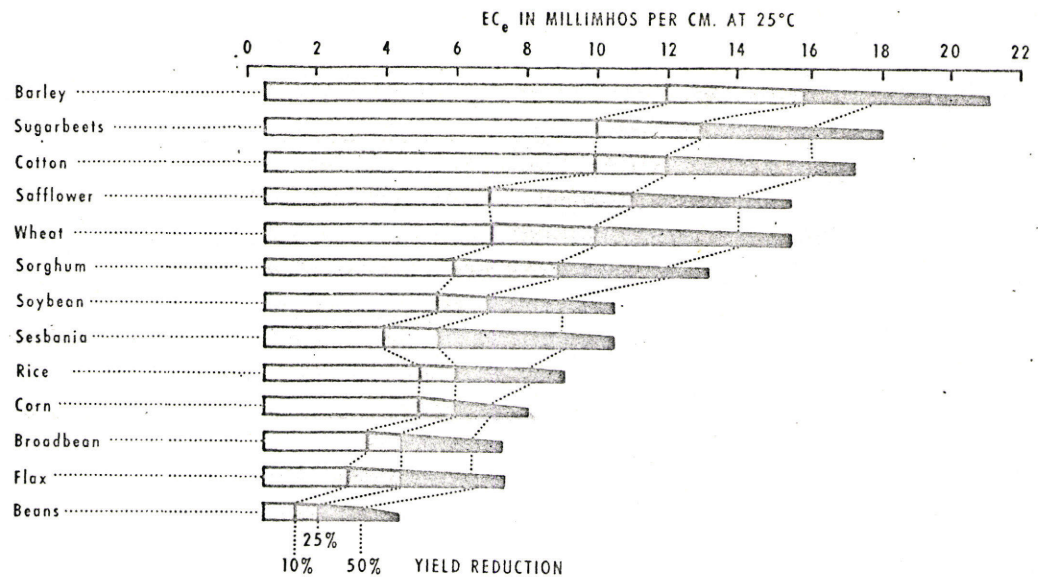
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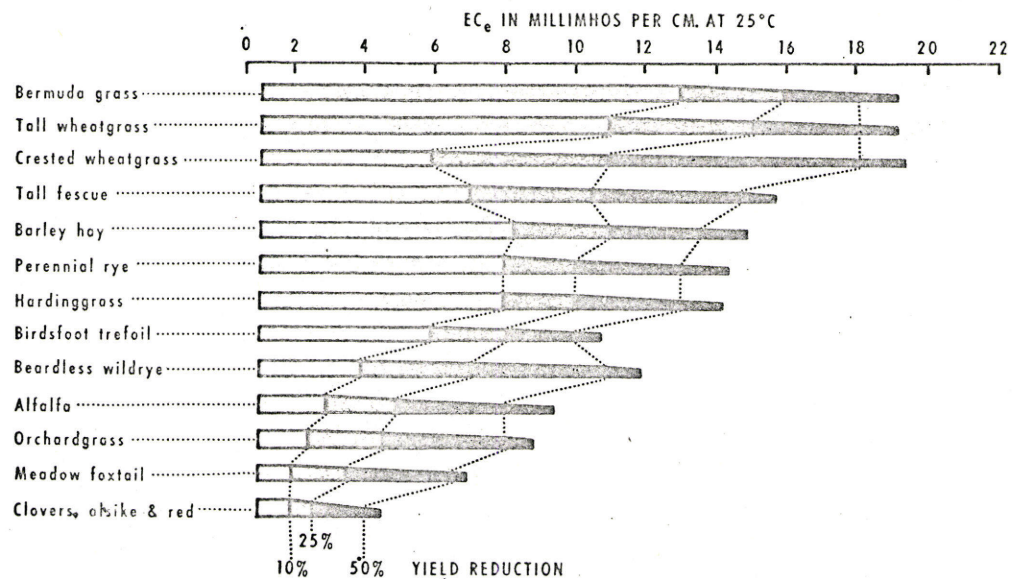
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SALT TOLERANCE OF CROPS

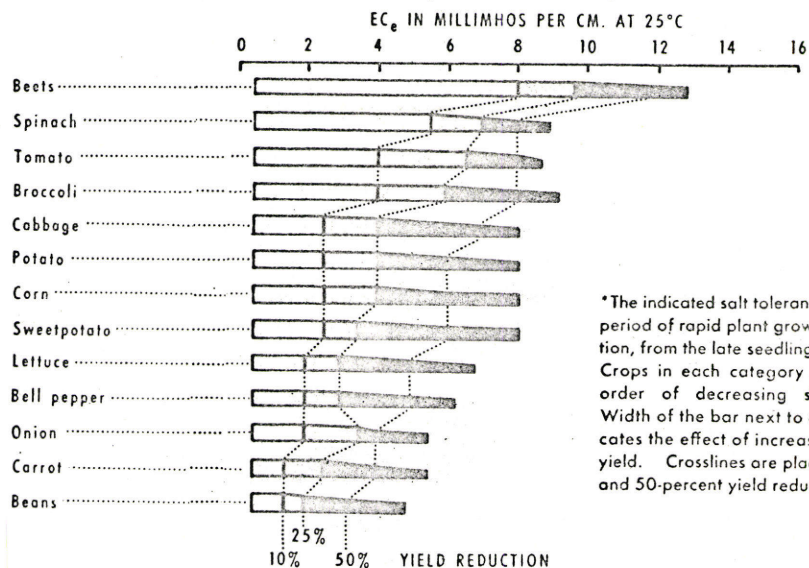
FIELD CROPS*



FORAGE CROPS*



VEGETABLE CROPS*



*The indicated salt tolerances apply to the period of rapid plant growth and maturation, from the late seedling stage onward. Crops in each category are ranked in order of decreasing salt tolerance. Width of the bar next to each crop indicates the effect of increasing salinity on yield. Crosslines are placed at 10-, 25-, and 50-percent yield reductions.