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May, 1984



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SOIL TEST NOTES

NOTE 8: Interpretation of the Soluble Salts Test

The soluble salts test is used primarily for greenhouse, nursery, and home garden situations where very high application rates of fertilizer, manure, or snow and ice melting compounds may have led to a build-up of soluble salts in the soil or potting medium. Use of irrigation water containing excessive amounts of salts can also lead to this condition. Poor drainage by itself will not cause excessive salt levels but it will tend to aggravate a high-salt condition and make correction of the problem more difficult.

Excessive soluble salt levels can result in poor germination and seedling development. In extreme cases germination may be prevented entirely. Established plants will wilt and show symptoms typical of drought, and burn at leaf edges. Plants are often dwarfed and crop failure may result.

Excessive salt levels in field crop situations are relatively rare unless banded fertilizer has been placed too close to the seed. When this occurs, plants will exhibit the symptoms described above. To check the soluble salt level in the root zone, a soil sample should be taken by taking cores right in the seed row to a depth of about 6 inches.

INTERPRETATION OF CONDUCTIVITY READINGS

Soluble salts are determined by measuring the electrical conductivity (EC) of the solution after extracting the soil with water. The results are reported as the EC in mmhos/cm.

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The interpretation of EC values is given in the following table. Please note that these values apply only to determinations made on a 1:2 soil:water extract where the results are reported as mmhos/cm. Laboratories other than the University of Delaware Soil Testing Lab may use both different procedures and reporting systems, and the interpretation provided here will not apply.

EC in mmhos/cm			
Inorganic Soils	Organic Soils*	Relative Level	Plant Response
0-0.2	0-0.5	Low	May be too low. Check soil test for adequacy of nutrient levels.
0.2-0.5	0.5-1.0	Medium	Satisfactory range for most plants.
0.5-0.8	1.0-1.5	High	Germinating seeds or seedlings may be injured. Suggests possible excess if soil becomes dry.
0.8-1.0	1.5-2.0	Very High	Some burning to most plants. Germination reduced and seedlings damaged.
1.0+	2.0+	Excessive	Prevents normal growth of most plants.

*Plants can tolerate higher salt levels in organic soils, including non-soil, peat-based potting media. Organic soils include all soils containing greater than 10% organic matter.

CORRECTION OF EXCESSIVE SOLUBLE SALTS

Excessive soluble salts can usually be corrected by leaching out the salts with liberal applications of salt-free water if the soil is well-drained. This will usually require the application of 2 to 4 inches of water on sandy soils or 4 to 6 inches on finer-textured soils. If drainage is restricted this must first be corrected.

Greenhouse soils and potted plants should be saturated with water, allowed to stand for one hour, and

then leached with plenty of water.

Excessive soluble salts in fields or gardens on well-drained soils will usually be corrected by normal rainfall over the fall, winter and spring months if no further fertilizer applications are made.

Additions of materials such as gypsum to increase salt solubility or movement of water through the soil are of little or no value on Delaware soils and may aggravate the excessive salt condition.

ADDITIONAL INFORMATION

Additional information may be obtained from University of Delaware Cooperative Extension Service offices in Newark, Dover, and Georgetown.