

The Grass Grows Greener when Planted in Healthy Soil

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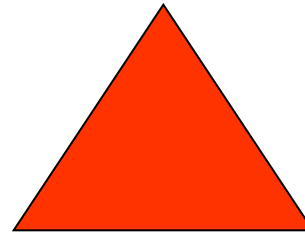








**Physical/
De-compaction**



**Chemical/
Fertilization**

**Biological/
Organic Matter**

**SOIL HEALTH requires all three fundamental &
interrelated properties**

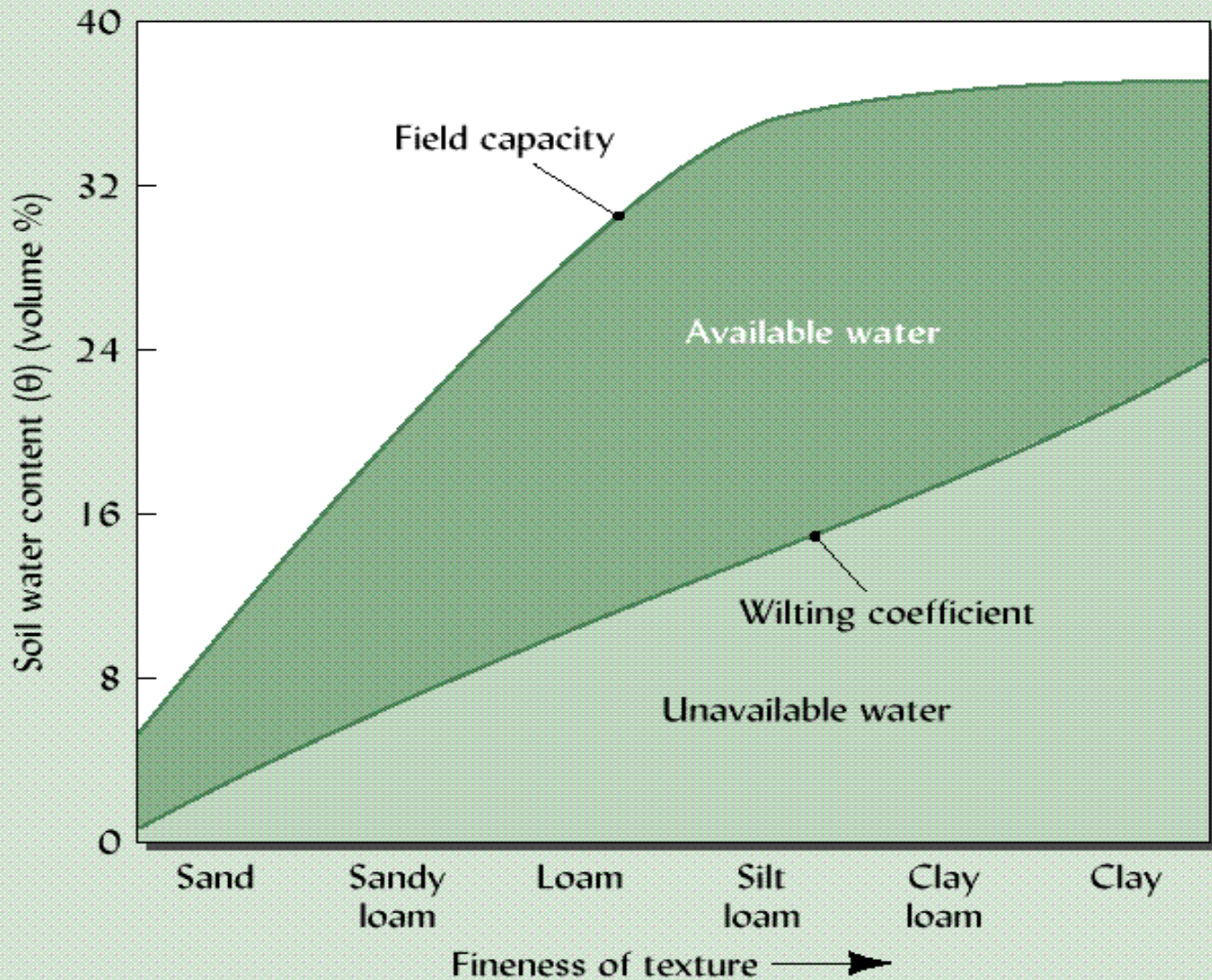
Irrigation

- Compacted or shallow topsoil stores less water
- Improve soil tilth with tillage (de-compaction) and add organic matter to improve water storage
- Compacted or shallow soil requires considerable effort and time to improve

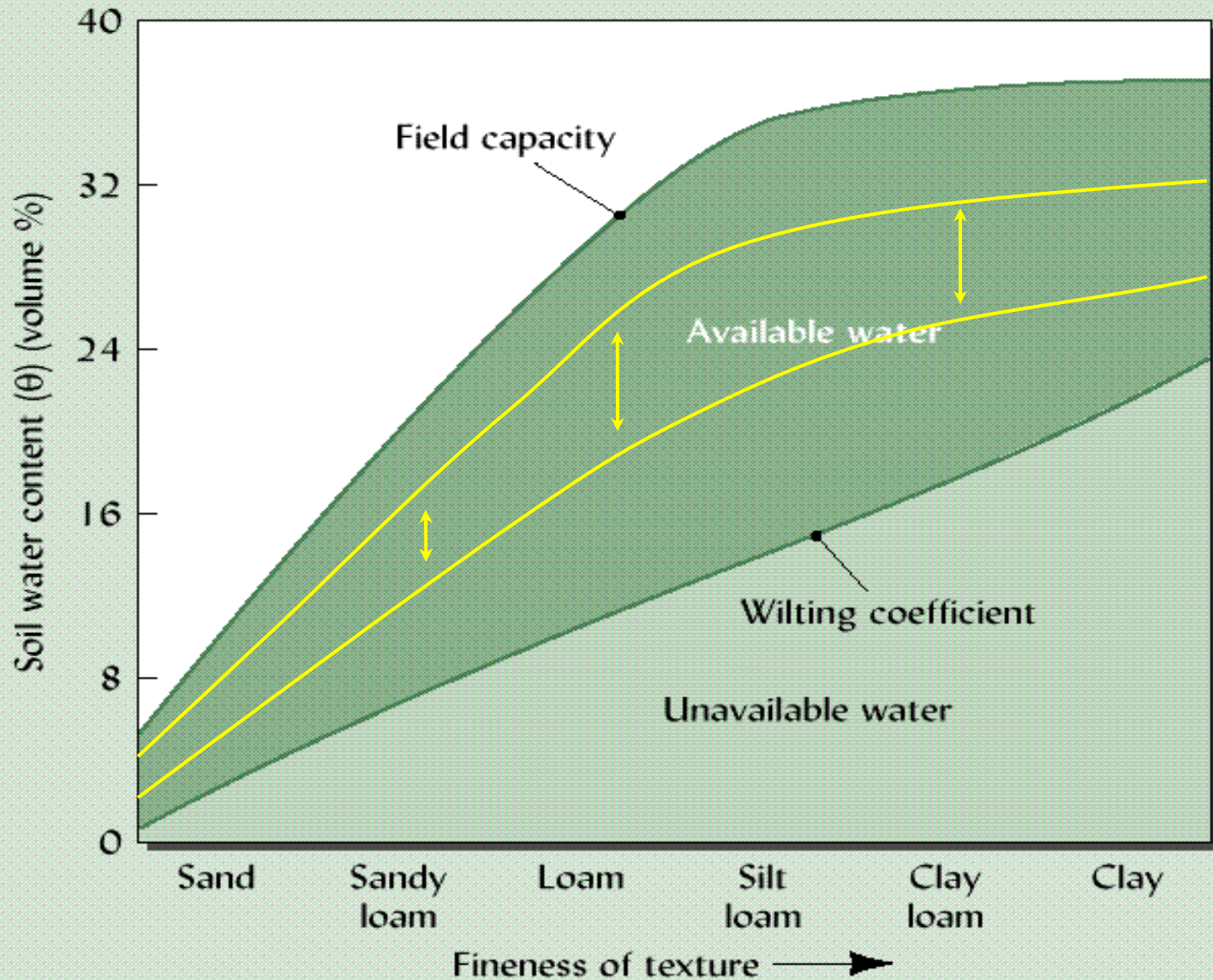


General relationship between soil texture and soil water characteristics.

Brady & Weil, 1999



Storage of available water reduced by compaction and loss of soil structure







How do you know whether
the soil is compacted?

It is when you cannot push
a probe deep into the soil!



Cultivation Tools for Shallow Compaction



Deep soil compaction needs specialized machines to correct.



**Deep
Slicing
Machine**



Common Tillage Tool for Turf

Brand Names

Rotadairon

Blecavator



Beneficial Compost Response



Avoid 'Bad' Composts



Amount of Organic Matter (OM) in Soil with a 1% OM Content (by weight)

Soil Depth

Amount of Organic Matter[†]

foot

pounds / 1,000 ft²

¼

200 to 250

½

400 to 500

1

800 to 1,000

[†] Assumes a soil bulk density of 1.5 g cm⁻³ or 2,000,000 pounds per acre (6 inches deep).

Amount of Compost Amendment needed to Increase Soil OM 1% (by weight)[†]

Soil Depth	Lawn Area		
	1,000-ft ²	5- x 5-ft	5- x 5-ft
foot	----- pounds -----		# 40-lb Bags
¼	400 to 500	10 to 12.5	⅕ to ¼
½	800 to 1,000	20 to 25	½ to ⅔

[†] Assumes that the compost is 50% organic matter and 50% mineral matter (by weight).







Ideal compost properties and how to test.

Compost Property	Optimum	How to Test
Organic Matter Content	More than 45%	Have organic matter content tested by a soil lab.
C:N ratio	10-25:1	Have C:N ratio tested by a soil lab.
pH	6.0-8.0	Have pH tested by a soil lab.
Soluble Salts	Less than 1.0 dS/m	Have soluble salts tested by a soil lab.
Phytotoxic Compounds	So few as to allow greater than 50% germination	Plant ten seeds in a small pot and observe germination.
Weed Seed Content	No or few weed seeds	Keep compost moist and observe and weed growth.

Technical Tests for Compost :

pH

electrical conductivity

available nitrogen (nitrate and ammonium)

total Kjeldahl nitrogen

organic matter content

C:N ratio

maturity index

water content

coarse/inert fragment content

Cost: \$125 per sample



More Info on Composts



<http://www.compostingcouncil.org/>

Seal of Testing Assurance

<http://www.compostingcouncil.org/programs/sta/>



**Summary: chemical and biological
amendments will be far less effective
if the soil health is compromised by
COMPACTION!**



Soil degradation (erosion) and reduced water quality are REAL risks on neglected landscapes: loss of vegetative cover AND soil health!

Thanks for Your Attention

