



Water productivity in agri/horticulture

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CV

- Plant physiologist Ph.D.
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- BU-manager WUR-Greenhouse horticulture
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Soil for life



Focus on Water Use Efficiency and what buttons to turn..

- Water use efficiency

*One almond: 4,2 l.
One grape: 1 l.
One lettuce: 13,2 l.*

*Cotton ca. 1 kg/m³
Maize ca. 2,5 kg/m³
Wheat ca. 2,8 kg/m³
Potato ca. 4 kg/m³*

*Tomato ...open field
1 kg California 110 l.
1 kg Spain 80 l.*

1 X

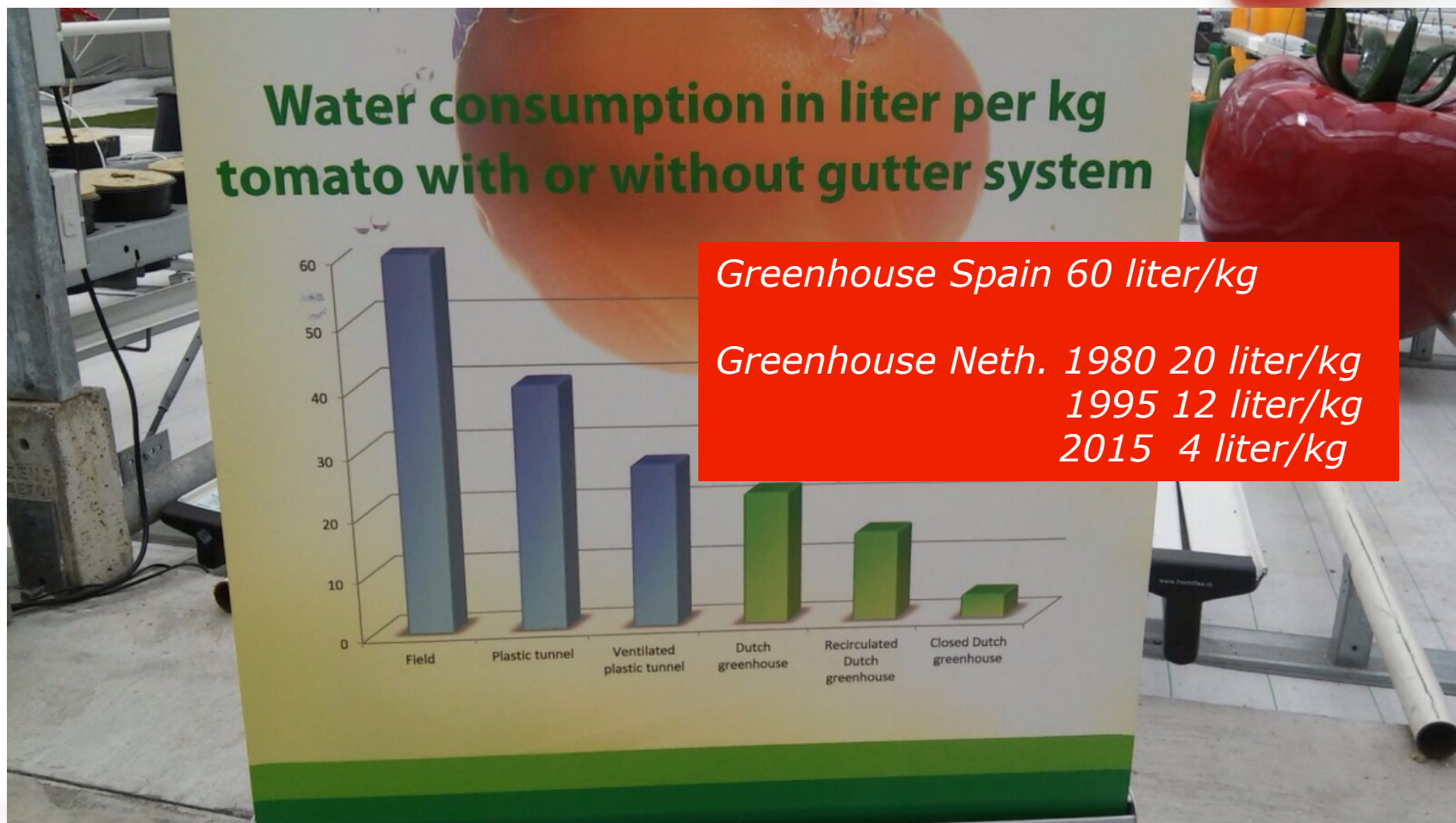


7 X



Improvements

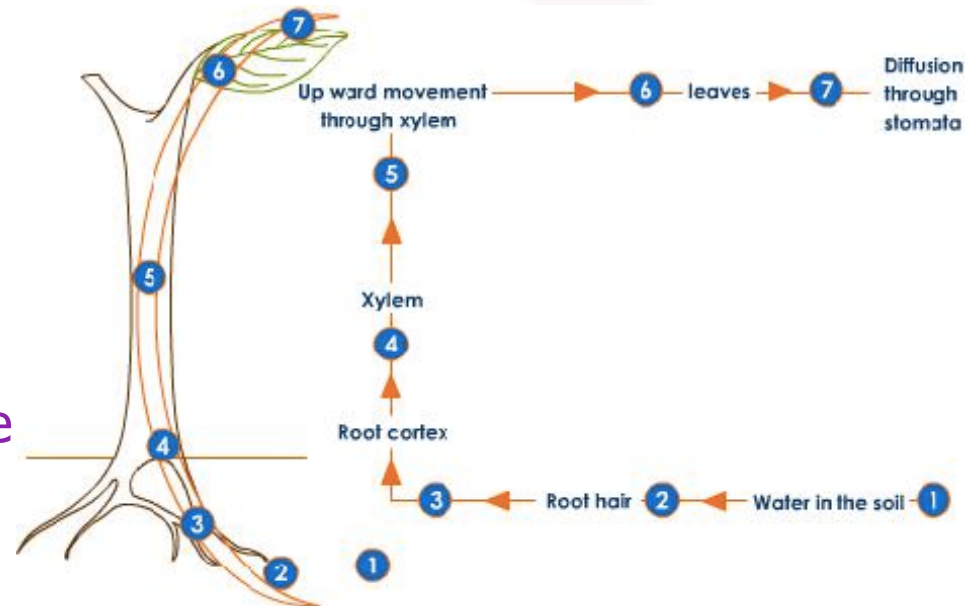
Tomato improvement



How does this work?

Need to know-1; plant

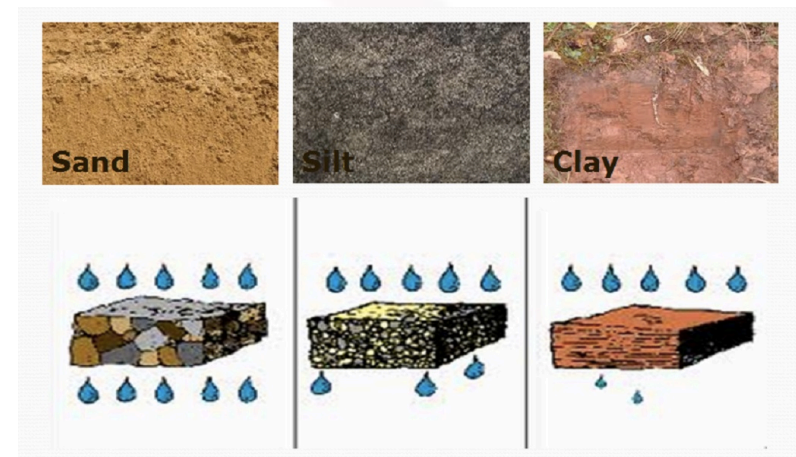
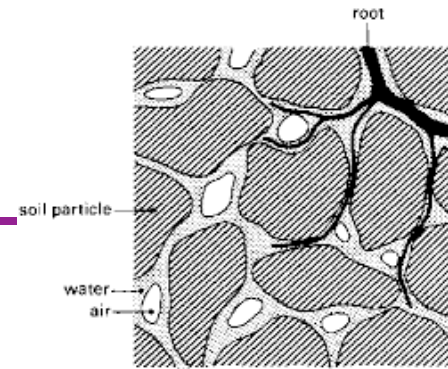
- Water content plant tissue
- Transpiration takes.....
- Leaves the plant with.....
- Why is that.....
 - Cooling
 - Growth
- Regulation of water..
 - Uptake
 - Division
 - Transpiration
 - Continuous system/embolie
- Photosynthesis and...



and the Soil.....

Need to know-2; soil

- Water holding capacity...
- Soil structure.....
- Organic matter.....
 - Quantity
 - Quality
 - Turnover
- Compaction.....
- Rhizosphere..
 - What, where and why
 - Benefits
 - Preconditions



Soil is no blackbox

Changing the soil

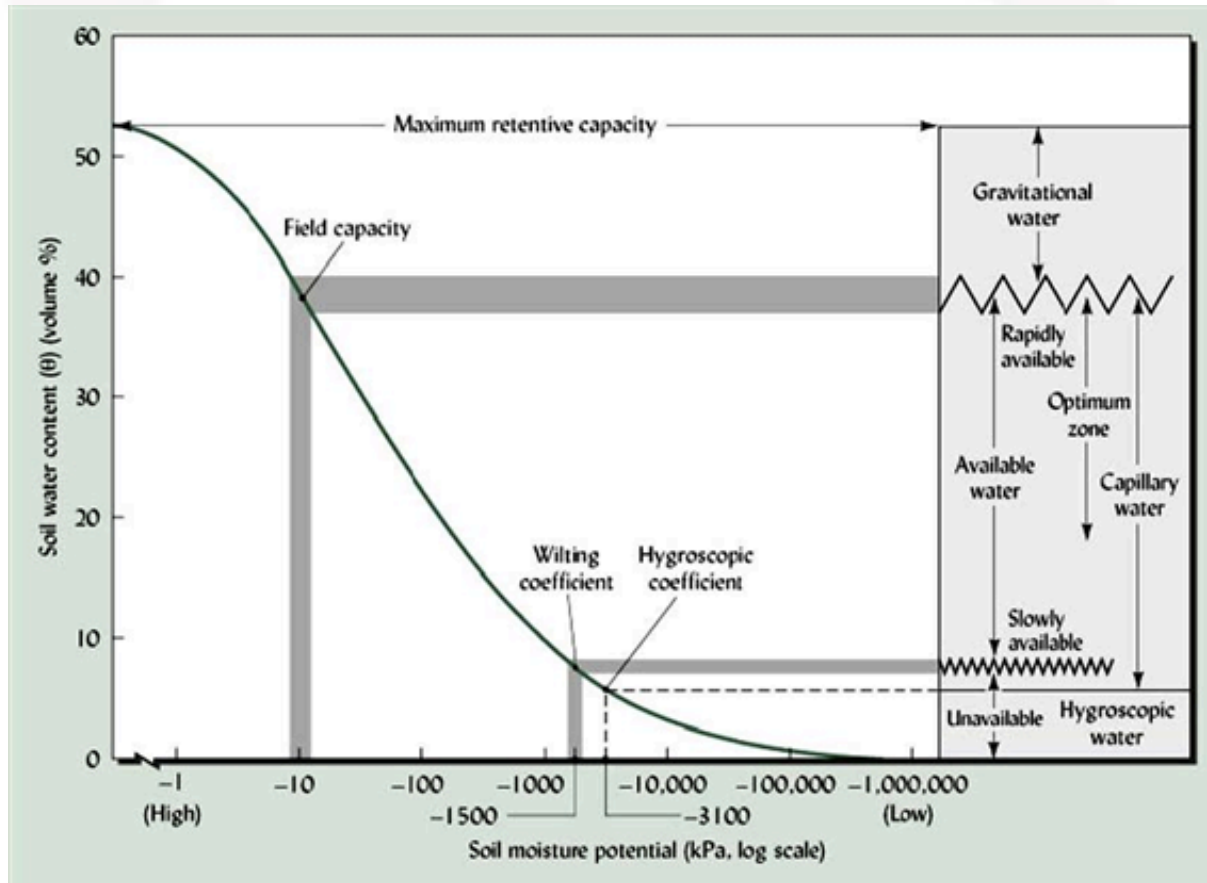


- Strategic.....slow as a snail
- Tactic.....clever and smart
- Technology:
 - Transplantation
 - Inoculation
 - Innovative mixing



Front line research

Water: maneuvering space soil



Water:

maneuvering space application

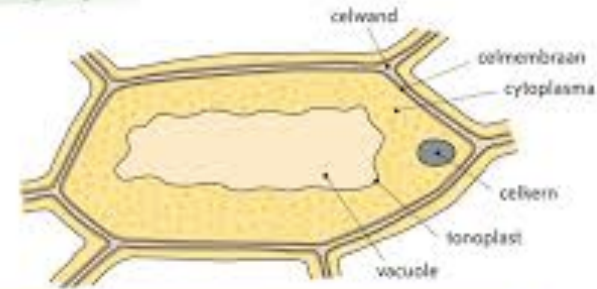
- Increase lateral **water** movement
- Avoid “rain shadowing”
- Focus on “underground” irrigation
- Use algoritmes based on meteo info, crop growth and actual soil info
 - Micro-climate
 - Growth rythmes



Water:

maneuvering space plant

- Shortage is better than too much
- Overcapacity for absorption
- Decrease transpiration
- In the diurnal rhythm of the plant
- Use its adaptability
- Breeding 2.0
- Co-development



Plant met watertekort → cellen niet turgescen



?/!



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