

FertOrgaNic

FertOrgaNic Improve water and nitrogen use efficiency with a combination of organic fertilization and fertigation through drip lines in potatos.

Modelling • Analyze effect of treatment.

- Help develop DSR.
 - Daisy as a DSS.
- Improve Daisy.
 - New potato model.

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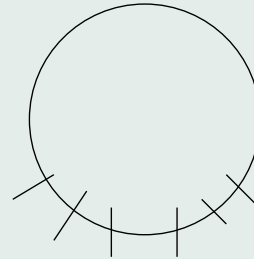
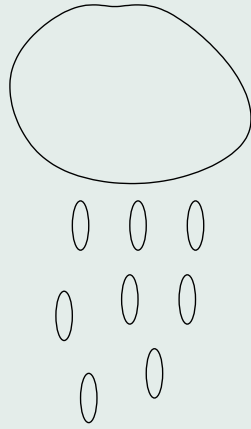
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Daisy



H₂O

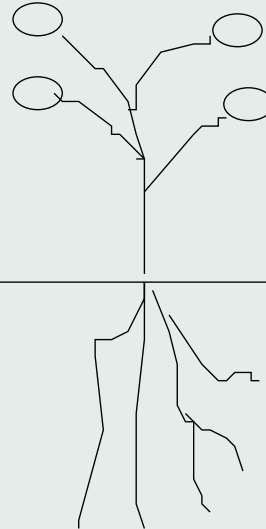
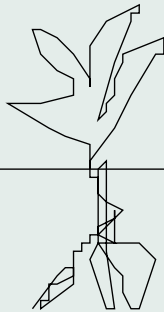
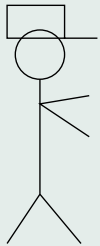
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Energi

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Organization

WP0 Organization

WP1 + WP2 Experiments (field and lysimeter)

WP3 + WP4 Decision Support System (irrigation and fertilization)

WP5 Modelling

WP6 Economics

WP7 Dissemination

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Treatments

	Irrigation	Organic F.	Fertigation
T1			
T2		X	
T3	X	X	
T4	X	X	X
T5	X	X	X
T6	X		

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Sites

Denmark Field and lysimeter (DJF), modelling and economics (KVL). Organization (DJF).

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Italy Field and lysimeter, DSS rules, modelling.

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Czech Field, dissemination, modelling.

Slovakia Field, modelling.



Poland Field, modelling.



Portugal Field, modelling / Lab experiments.

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Measurements

Soil (static) texture, initial content of C, N and water, root zone.

Weather Precipitation, temperature, global radiation, wind, humidity.

Soil (dynamic) Water and mineral nitrogen content.

Crop Phenology emergence, tuberization.

Crop LAI

Crop DM Stem, leafs and tuber.

Crop N Stem, leafs and tuber.

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Modelling

1. Database.
2. Initial Daisy setup.
3. Soil calibration.
4. Crop calibration.

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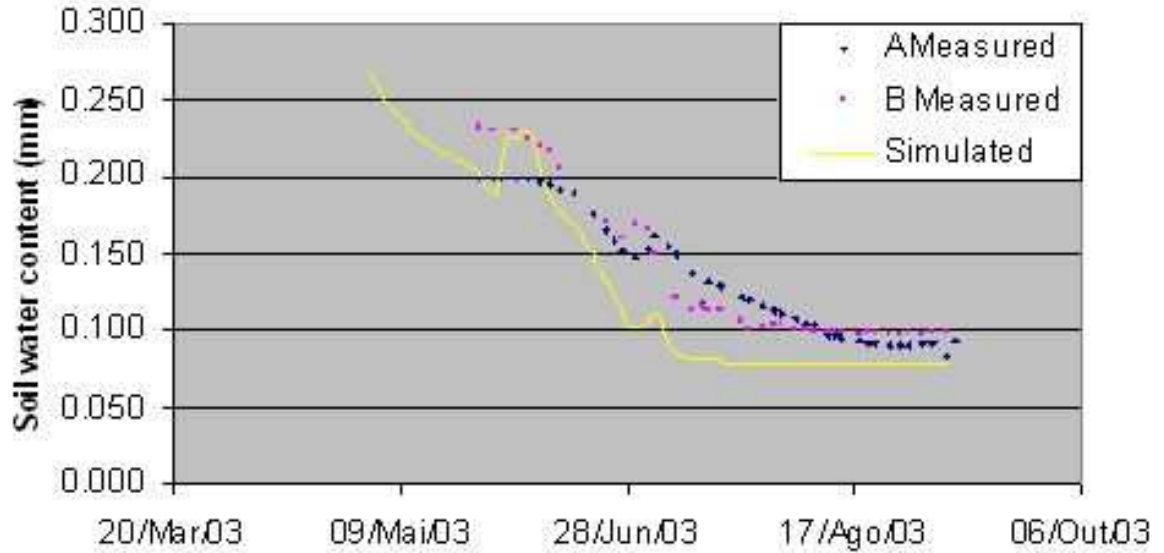
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Soil calibration

Treatment 1 - Soil Water Content (30cm)



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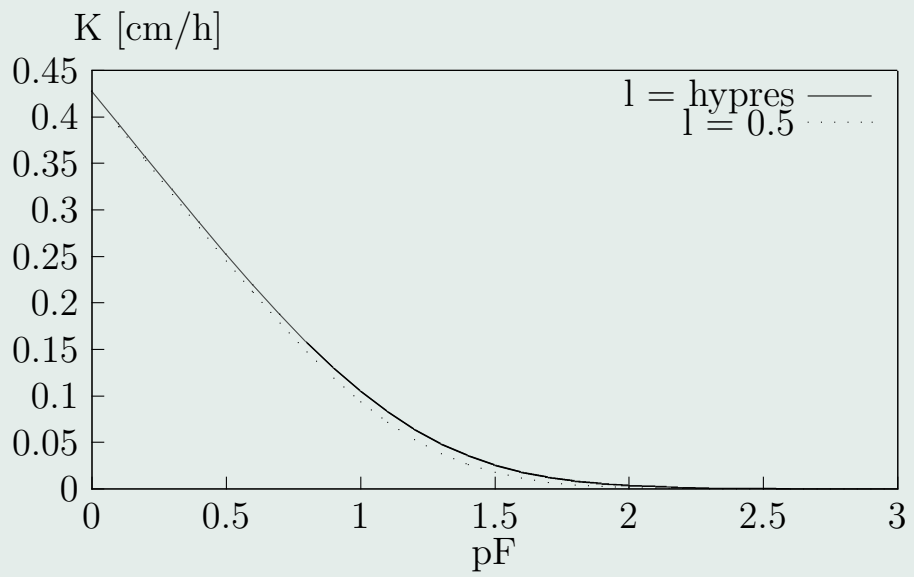
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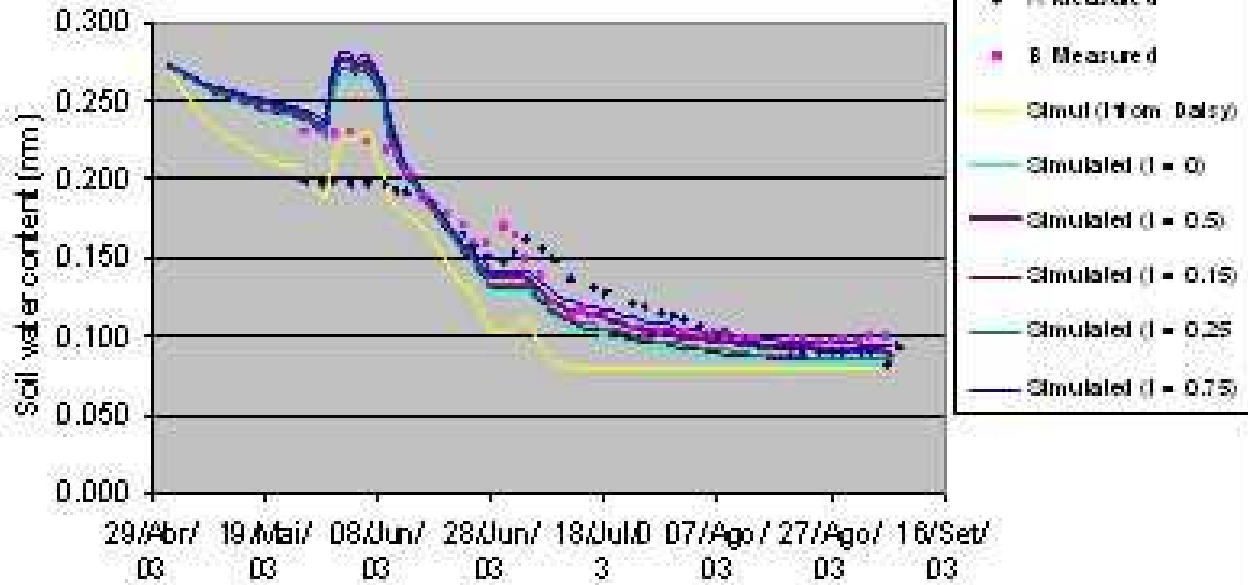
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Treatment 1 - Soil Water Content (30cm)



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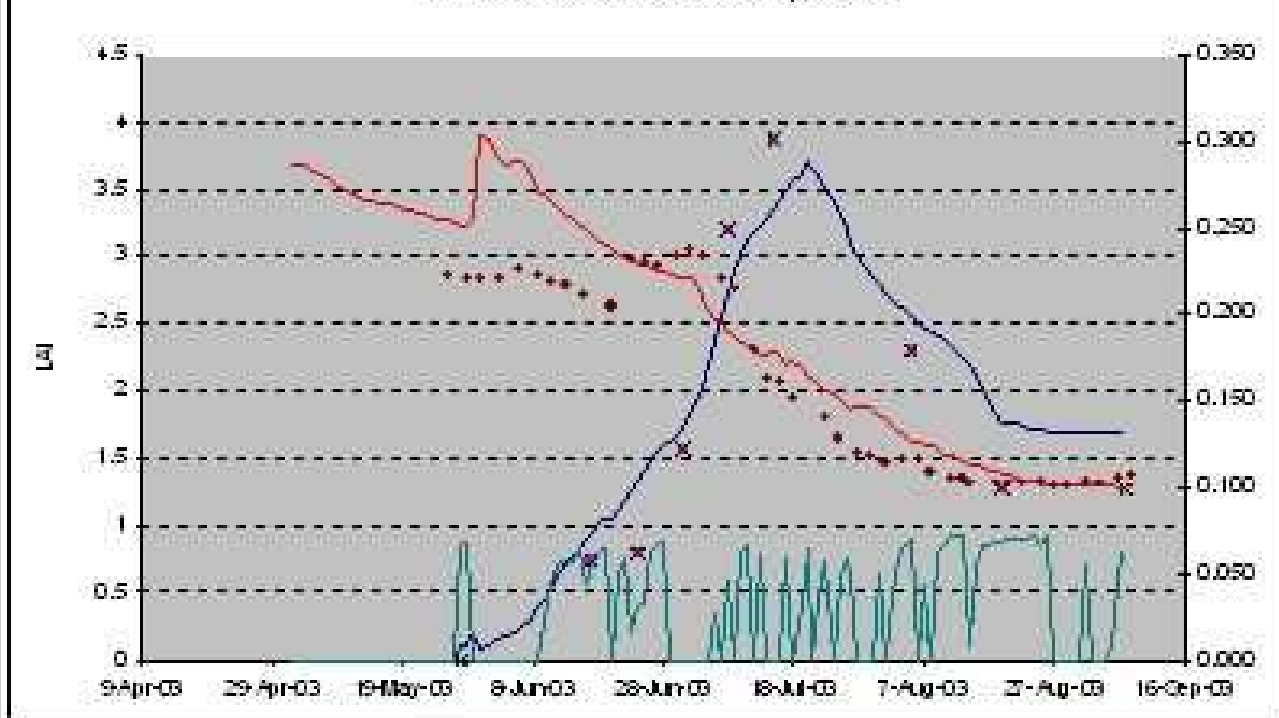
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Crop calibration

LA land Soil Water Content Comparisons



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Water balance

Precipitation = 899.9 mm

Irrigation = 1.7 mm

Total input = 901.6 mm

Actual evapotranspiration = 604.8 mm

Matrix percolation = 161.6 mm

Macropore percolation = 0.0 mm

Drain flow = 0.0 mm

Runoff = 0.0 mm

Total output = 766.4 mm

Soil water increase = 135.1 mm

Surface water increase = 0.2 mm

Total increase in content = 135.2 mm

Balance (= In - Out - Increase) = 0.0 mm

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Nitrogen balance

Fertilized	=	163.467	kg N/ha
Deposition	=	11.033	kg N/ha
Leak-Matrix	=	-8.085	kg N/ha
Leak-Macro	=	-0.000	kg N/ha
Drain	=	-0.000	kg N/ha
Denitrification	=	-0.386	kg N/ha
ΔN_{\min}	=	9.044	kg N/ha
Fixated	=	0.000	kg N/ha
Seed	=	6.000	kg N/ha
Harvest	=	-152.743	kg N/ha
Δ SOM	=	13.605	kg N/ha
Δ Crop	=	-73.504	kg N/ha

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Use

Hidden information

- N leaching
- Water usage
- Water and nitrogen stress

Test of strategies

- Decision support
- Economics

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