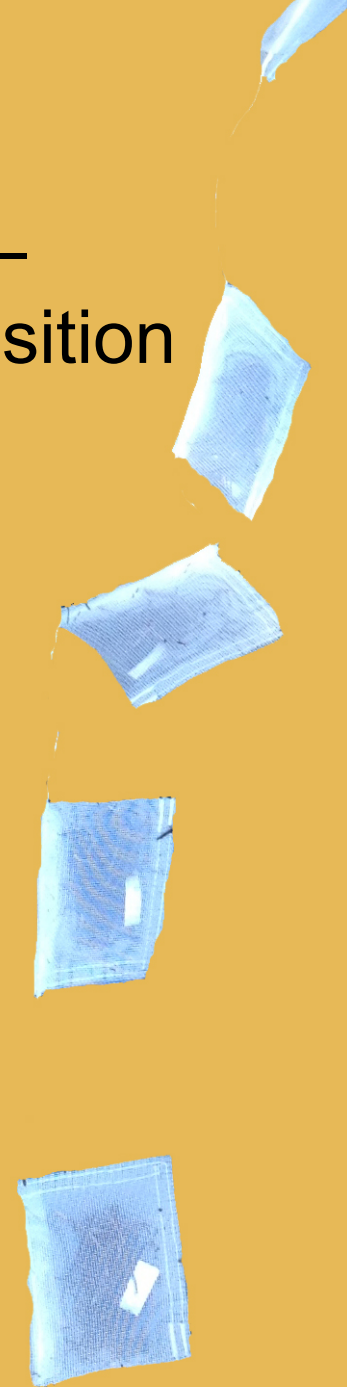


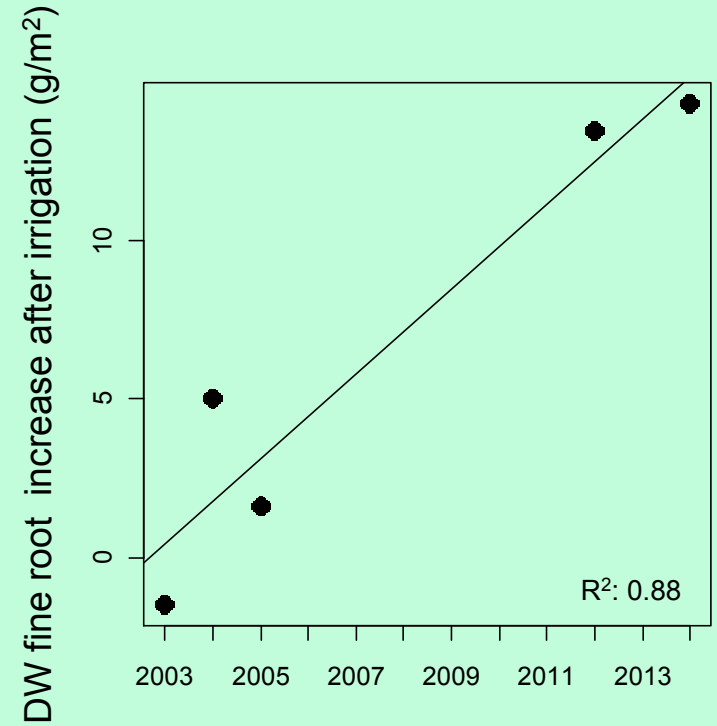
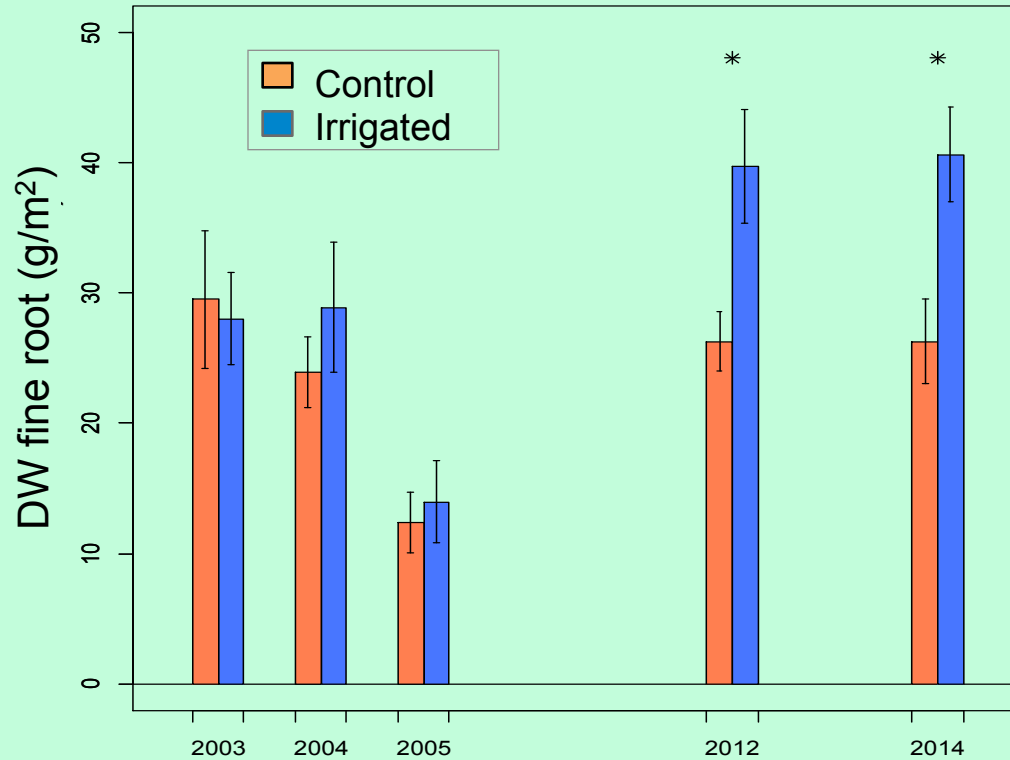


Pfynwald workshop – Root Growth & Decomposition

Claude Herzog und Ivano Brunner

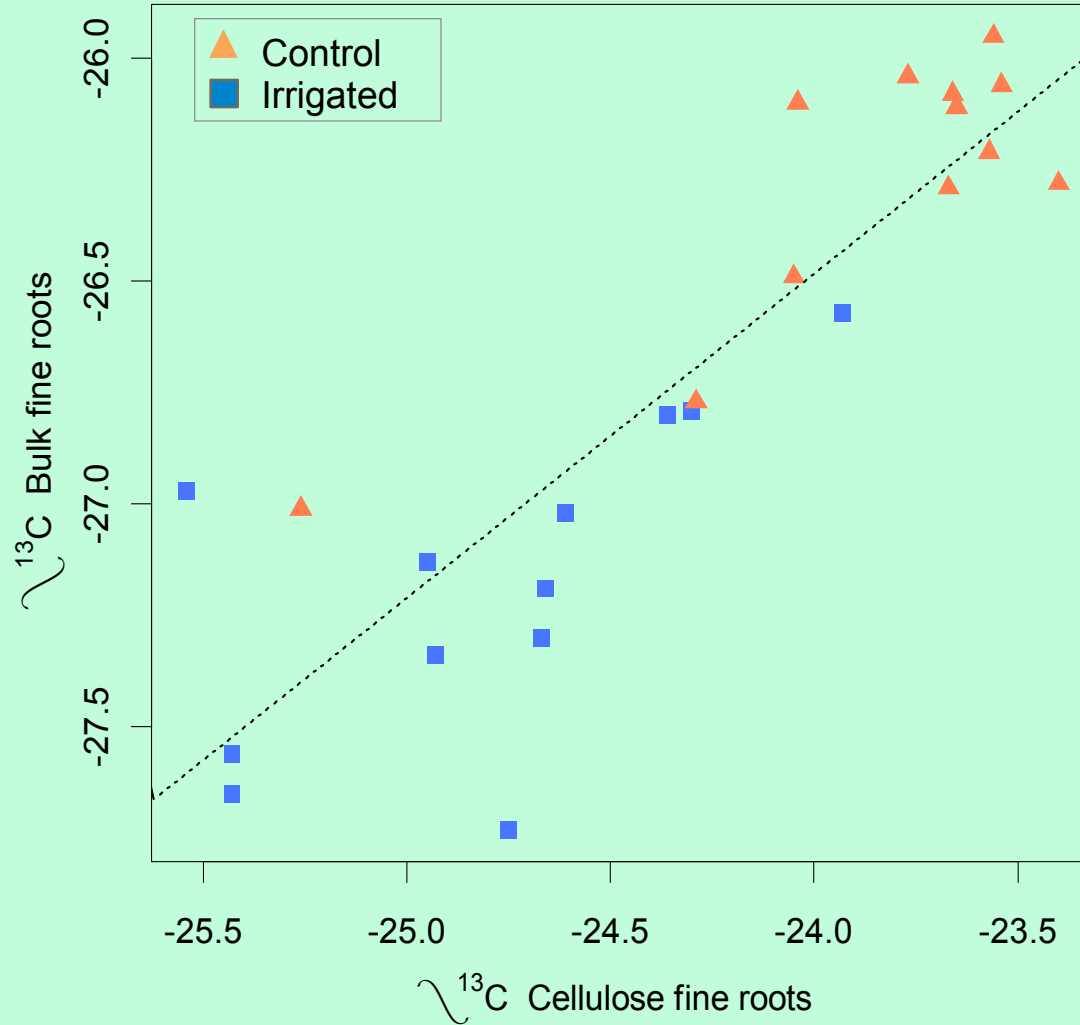


Root growth



Herzog C, Steffen J, Pannatier E G, Hajdas I & Brunner I.(2014) *Nine years of irrigation cause vegetation and fine root shifts in a water-limited pine forest, Plos One, 9, e96321.*

Root growth



Herzog C, Steffen J, Pannatier E G, Hajdas I & Brunner I.(2014) *Nine years of irrigation cause vegetation and fine root shifts in a water-limited pine forest, Plos One, 9, e96321.*

Decomposition rate of fine roots and coarse roots in buried litterbags (5cm depth)

8 Plots

4 Control
4 Irrigated

5 Replicates per plot

6 time points

2014: April; July; October
2015: April; October
2016: April

2 root types

Fine roots
< 2mm

Coars roots
2-5mm
(only T₀, T₃, T₅)



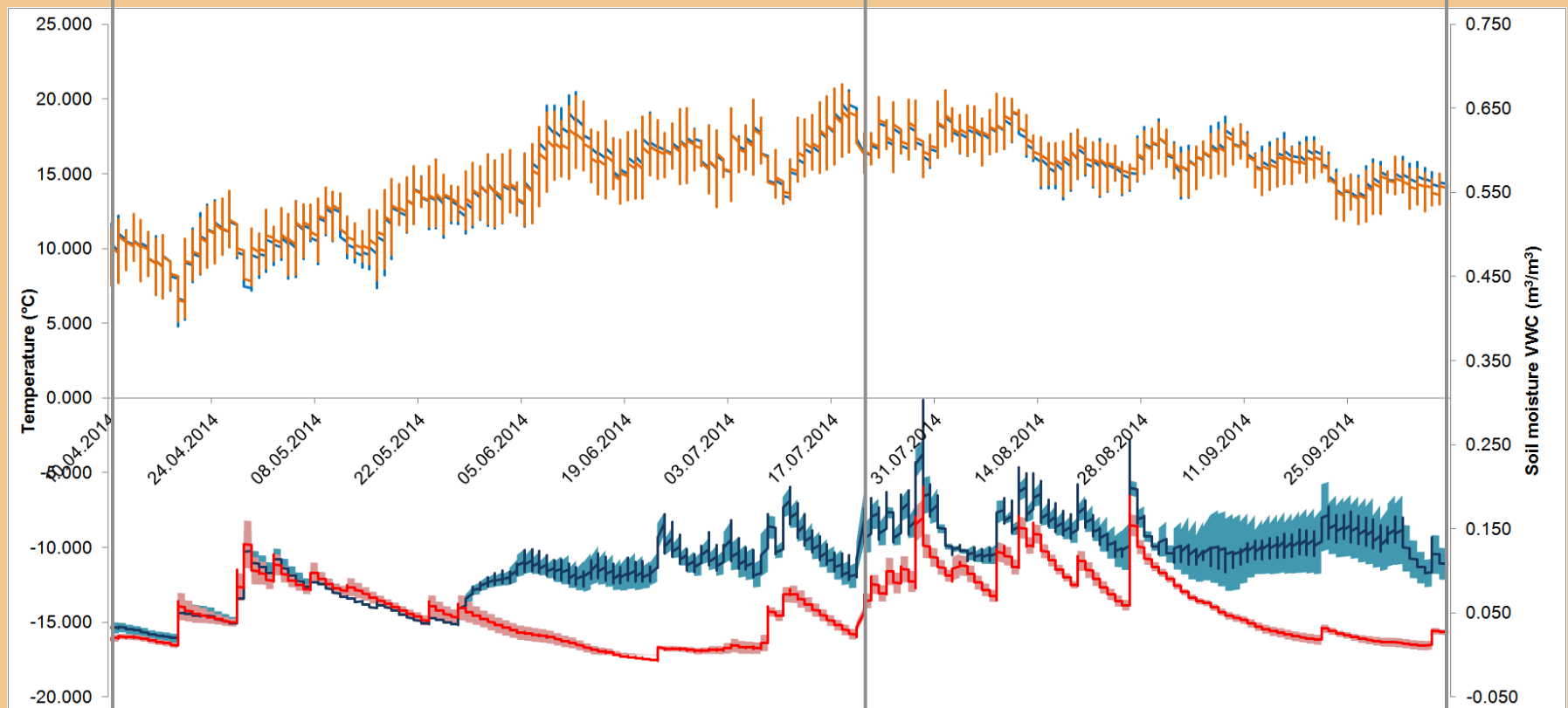
Soil moisture and temperature at 5 cm soil depth

Control Temp mean (14.5°C) Irrigated Temp mean (14.5°C) Control Soil moisture mean with SE (0.053%) Irrigated Soil moisture mean with SE (0.112%)

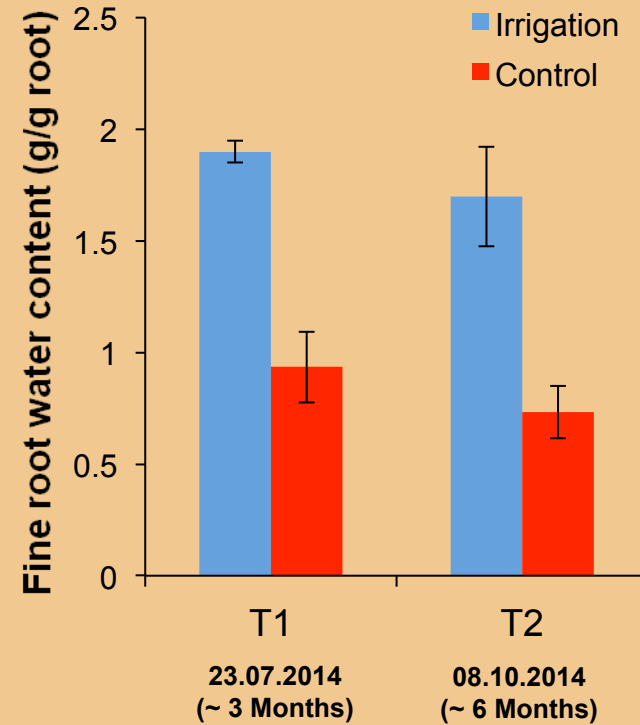
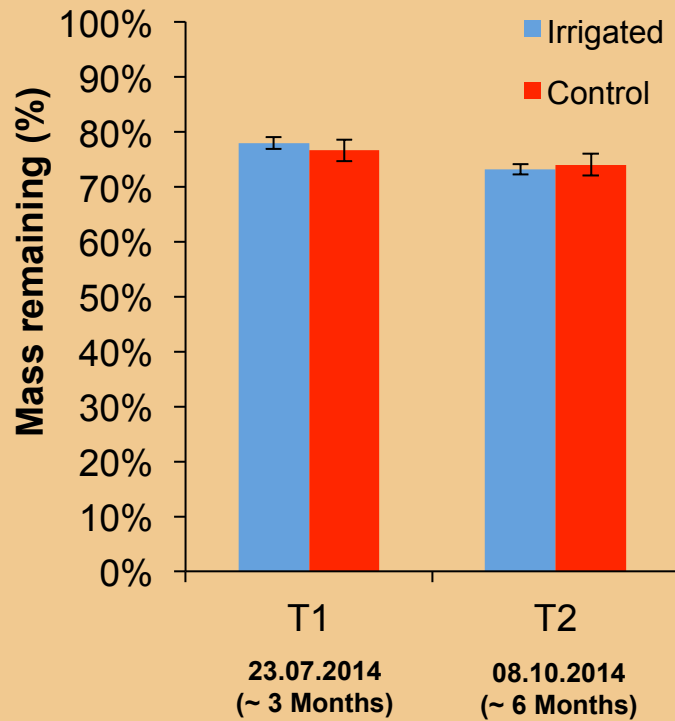
T0: 10.04.2014

T1: 23.07.2014

T2: 08.10.2014

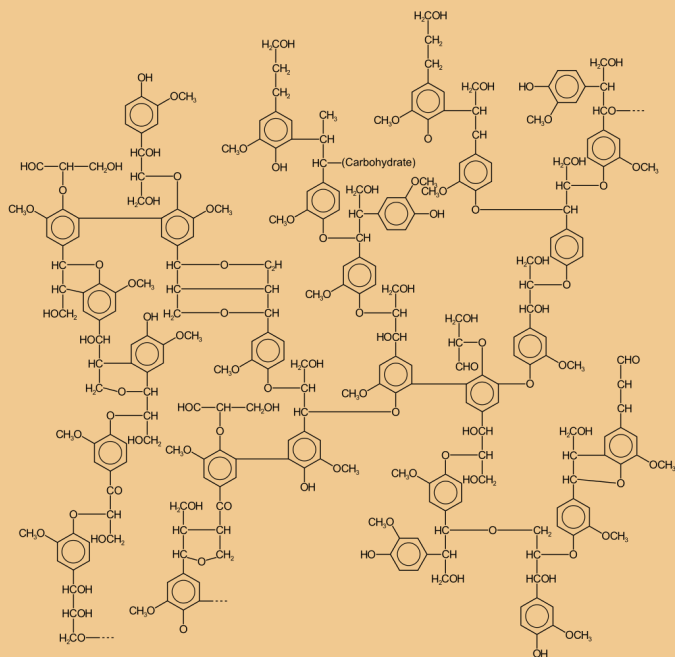


Decomposition rate of fine roots and coars roots in burried litterbags (5cm depth)

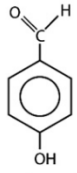
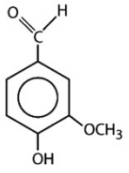
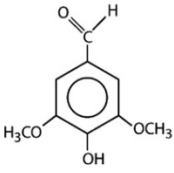
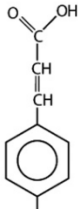
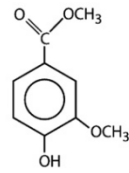
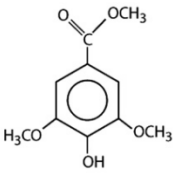
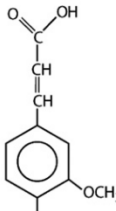
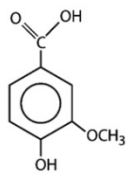
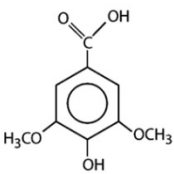


Decomposition of root component (lignin “fingerprint”)

Possible lignin structure:



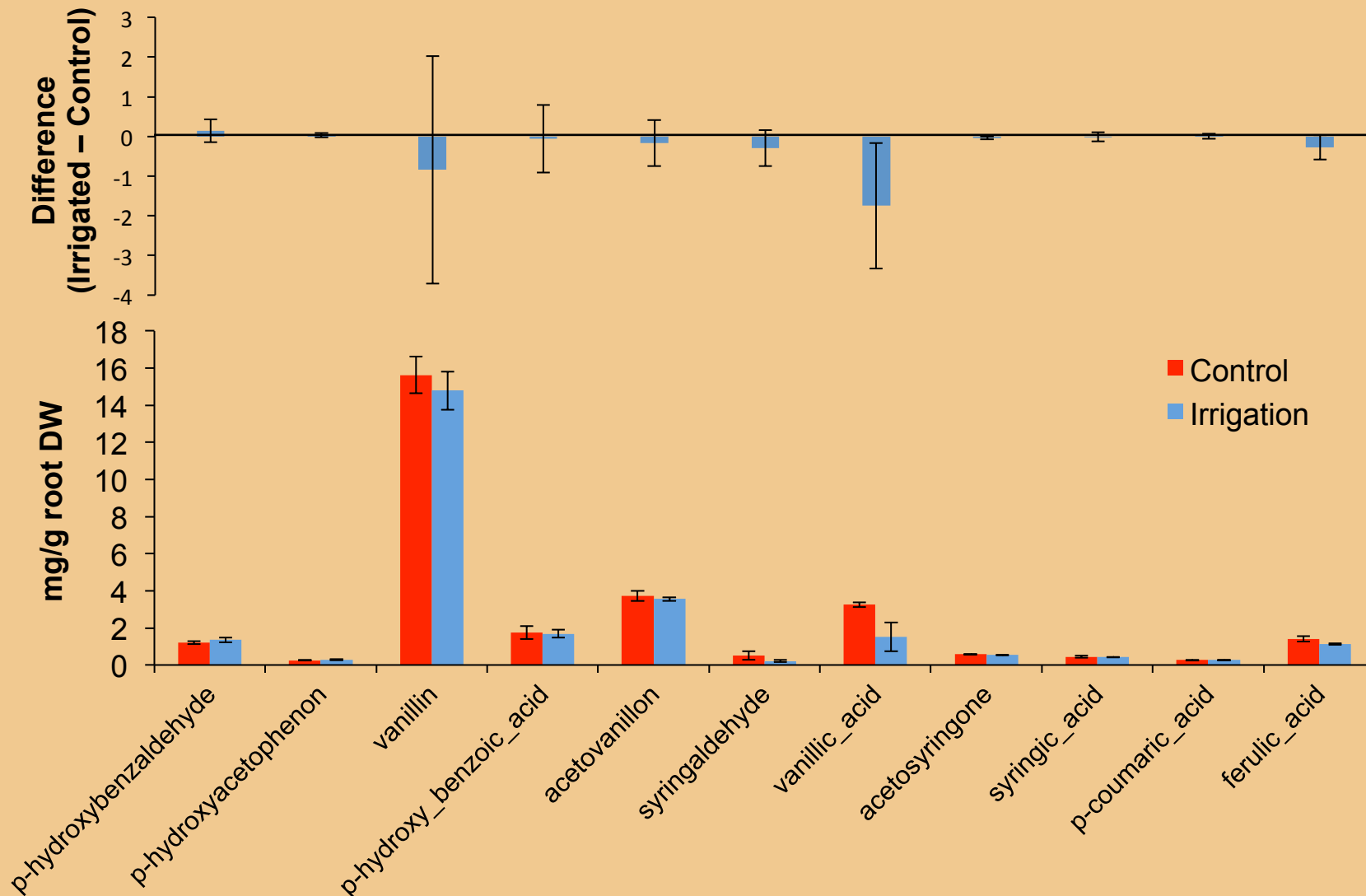
Lignin monomer after CuO extraction :

	<i>p</i> -Hydroxyl phenols	Vanillyl phenols	Syringyl phenols	Cinnamyl phenols
Aldehydes	 <i>p</i>-Hydroxybenzaldehyde	 Vanillin	 Syringaldehyde	 <i>p</i>-Coumaric acid
Ketones	 <i>p</i>-Hydroxyacetophenone	 Acetovanillone	 Acetosyringone	 Ferulic acid
Acids	 <i>p</i>-Hydroxybenzoic acid	 Vanillic acid	 Syringic acid	

Thevenolt et al. 2010

Decomposition of root component (lignin “fingerprint”)

First lignin monomer data before decomposition (T0) after CuO-extraction measured with GC-MS



OUTLOOK: Decomposition of roots (Microbial “fingerprint”)

measured with Next Generation Sequencing (NGS; Illumina)

