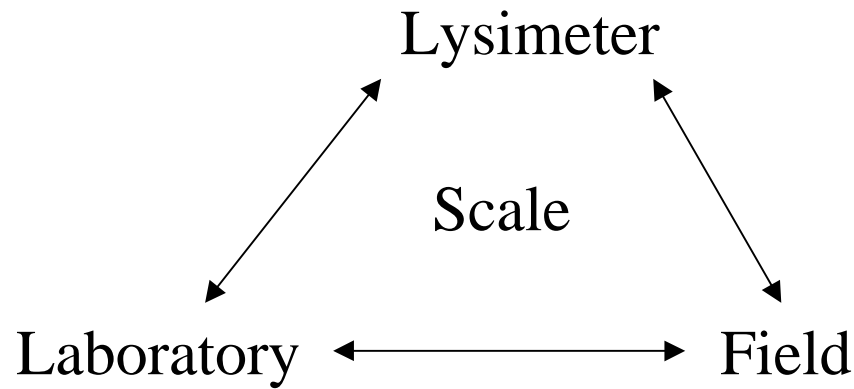


The SLFA Lysimeter-Field data set

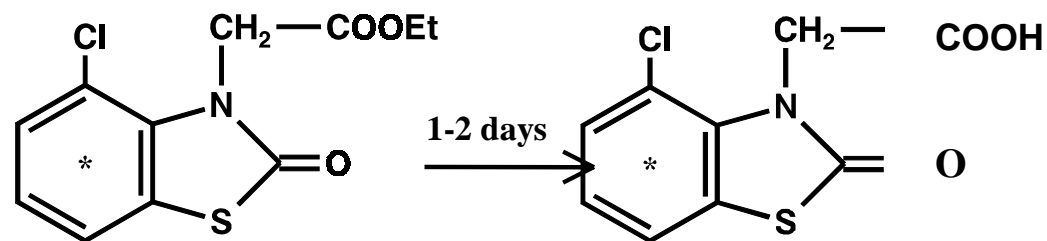
Experiments on the:



The SLFA Lysimeter-Field data set

Test substance: benazolin-ethyl

benazolin (-acid)



Physico-chemical properties of benazolin (-acid):

Molecular weight:	243.7 g mol ⁻¹
Vapor pressure:	100 nPa(20 °C)
Aqueous solubility:	500 mg l ⁻¹
pK _a :	3.04 (20 m°C)
K _{oc} :	<100 mL g ⁻¹
DT ₅₀ :	2-4 weeks

The SLFA Lysimeter-Field data set

Soil: Birkenheide loamy sand (FAO: Luvic arenosol)

Horizon	Depth [cm]	Sand [%]	Silt [%]	Clay [%]	pH	Bulk density [g mL ⁻¹]	OC [%]
A _p I	0-10	70	22	8	6	1.4	0.7
A _p II	10-30	69	23	8	5.2	1.5	0.6
B _{tw}	30-94	72	22	6	6	1.6	0.2
IIB _t	94-130	68	20	12	8	1.8	0.1

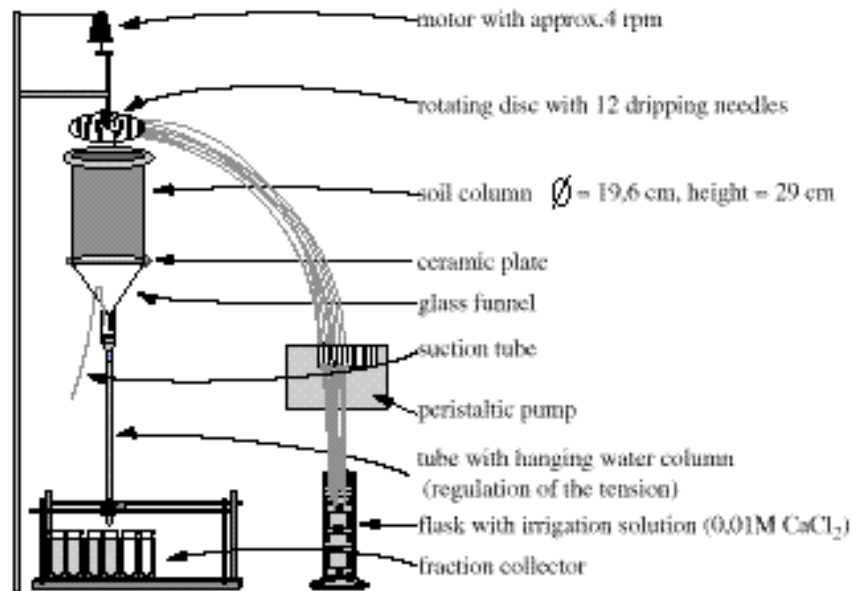
Hydraulic parameters (MvG) were determined for two horizons with the multistep outflow technique

The SLFA Lysimeter-Field data set

Laboratory experiments:

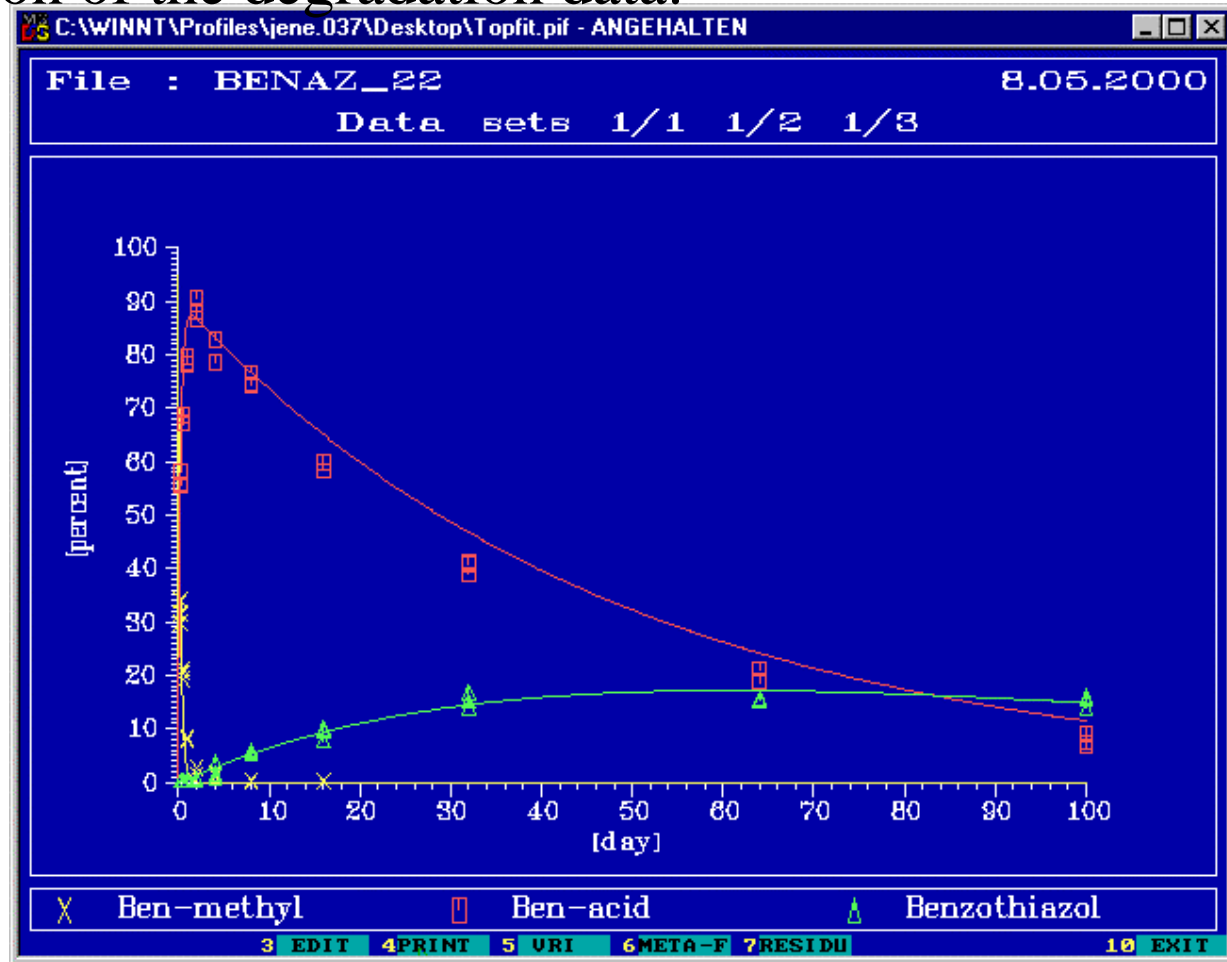
- Sorption:
 - Adsorption-desorption batch-equilibrium (OECD 106)
 - Column leaching study (BBA IV 4-2, OECD draft, SETAC)
 - Microlysimeter (20 cm i.d., 30 cm length)
- Degradation:
 - Following BBA IV 4-1
 - Topsoil and subsoil
 - 20 °C and 10 °C

The SLFA Lysimeter-Field data set



The SLFA Lysimeter-Field data set

Kinetic evaluation of the degradation data:



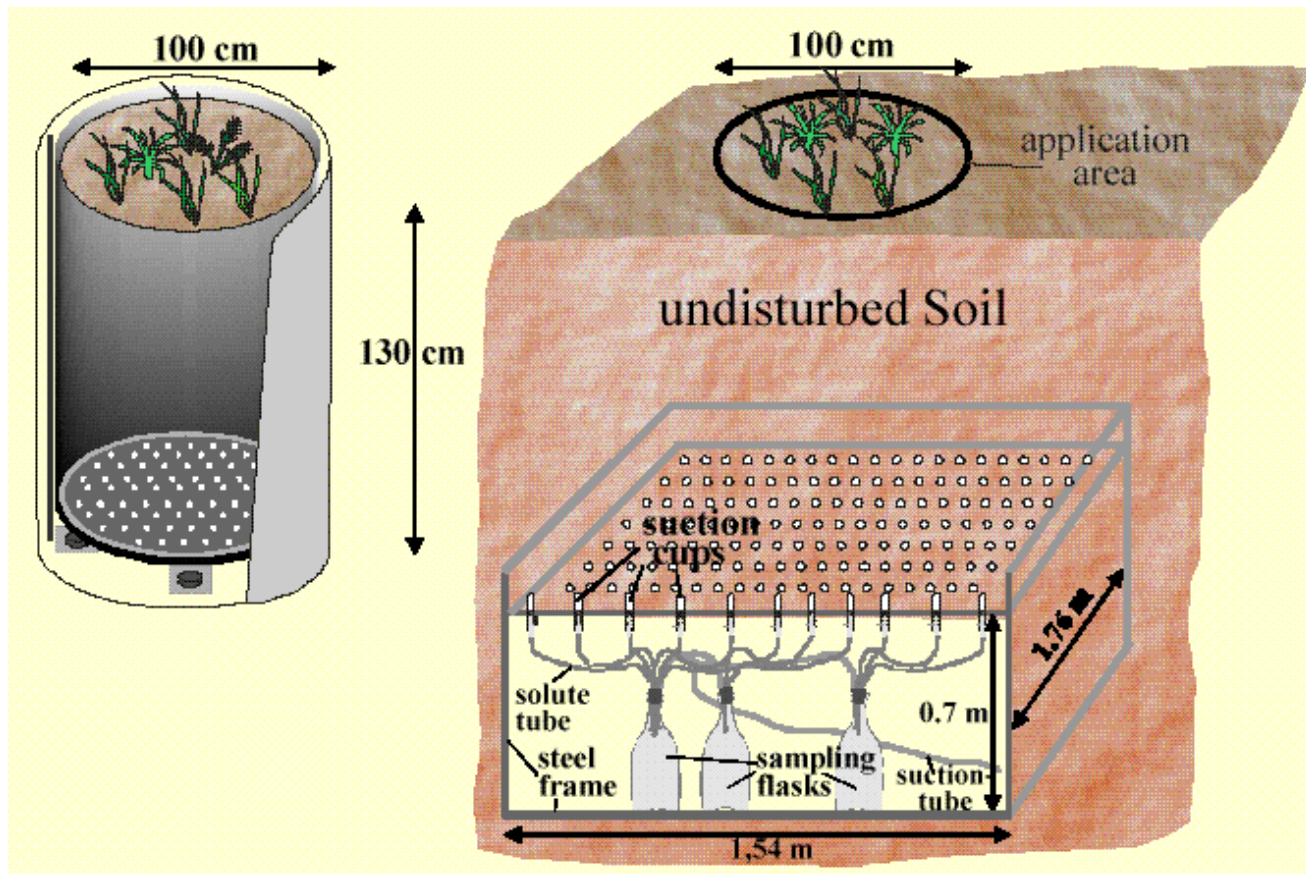
The SLFA Lysimeter-Field data set

Lysimeter scale experiments:

- Zero-tension lysimeters (3 replicates):
 - 1.3 m height, 1 m i.d.
 - Undisturbed monoliths
 - With weighing device
 - Following BBA IV 4-3
- Suction bases (3 replicates):
 - Experimental device in the undisturbed field (measuring tunnel)
 - Application area according to lysimeters
 - Sampling cross section at 1.3 depth (1.5 x 1.8 m)
 - Realistic lower boundary tension (following tensiometer measurements)

The SLFA Lysimeter-Field data set

Experimental setup at the lysimeter scale



The SLFA Lysimeter-Field data set

Important cornerstones of the lysimeter scale experiment:

Application: - Date: 22-11-1994
 - Substances: • Bromide (30 g m⁻²)
 • Benazolin-ethyl (45 mg m⁻²)

Experimental period: 2.5 years

Crops: - Spring rape
 - Spring wheat

Sampling: - Weekly during drainage period

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Meteorological measurements (lysimeter *and* field station):

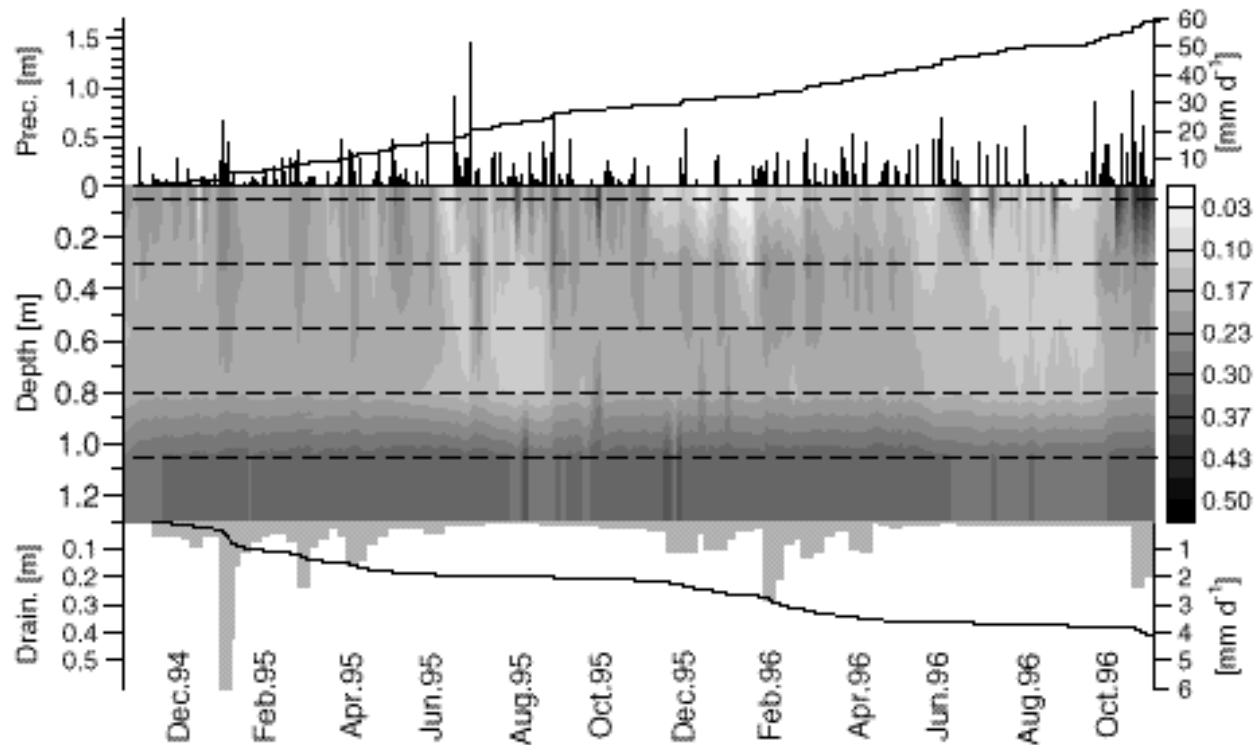
- Precipitation *hourly*
- Air temperature *hourly*
- Rel. humidity *hourly*
- Wind speed *hourly*

Water balance measurements:

- Lysimeters (SLFA):
 - Deviation of the total water content of the lysimeters(weight) *hourly* -> Calculation of $E_{t_{act}}$ for different lime intervals (Summer) possible
 - Soil temperature and soil tension in reference lysimeter
- Birkenheide field station:
 - Water content (TDR) *every 2-3 days*: In the Birkenheide profile at 5 depths
 - Soil tension at the lower boundary (1.3m depth)
 - Soil temperature at 5 depths

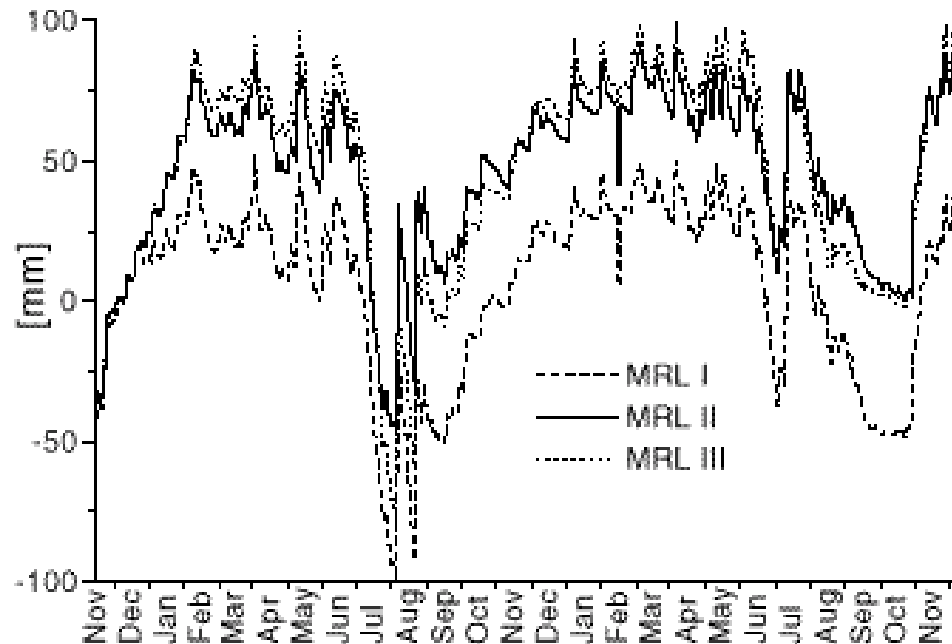
The SLFA Lysimeter-Field data set

Water content in the Birkenheide soil profile



The SLFA Lysimeter-Field data set

Water balance changes of the lysimeters



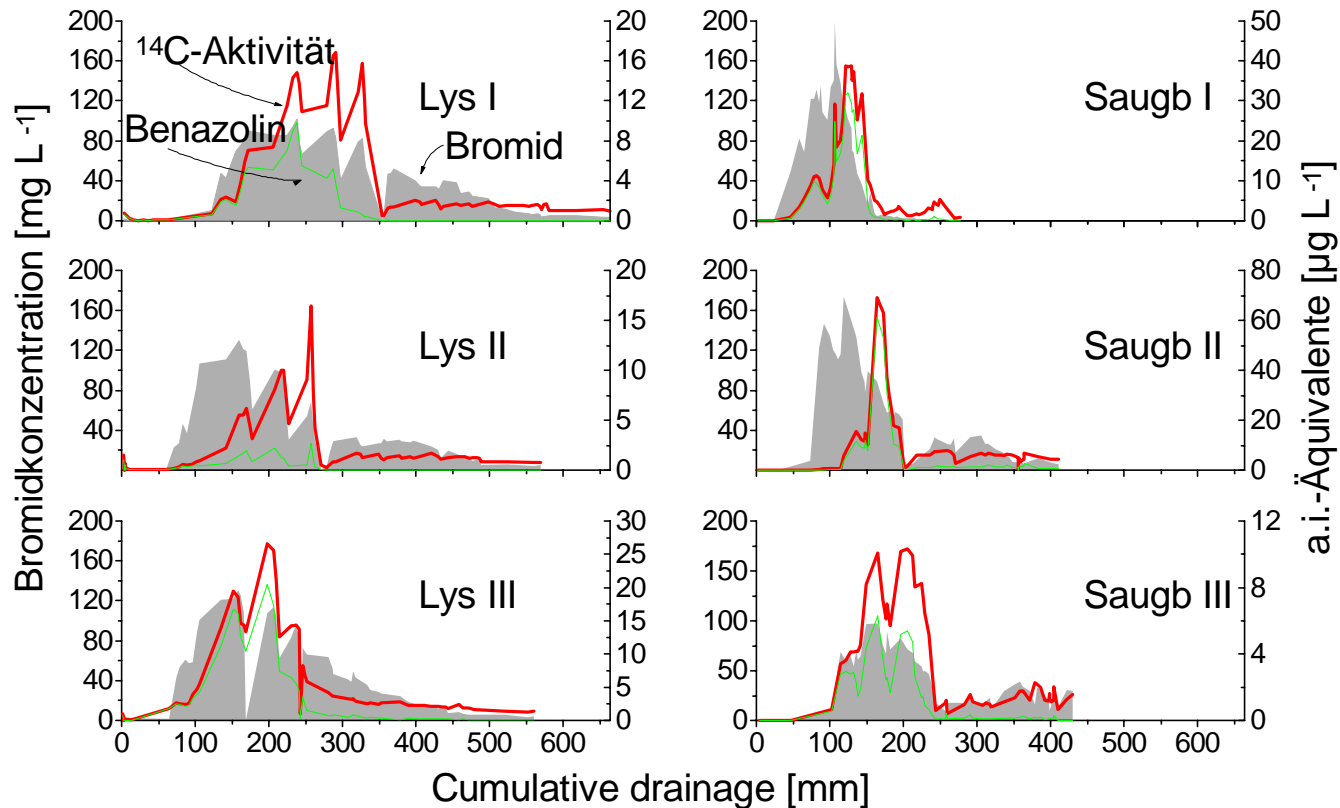
The SLFA Lysimeter-Field data set

Measured quantities of the lysimeter scale experiment
(lysimeters + suction bases):

- Water flux (in Birkenheide also spatial resolution) *weekly*
- Water content (TDR) *every 2-3 days*: In the Birkenheide profile at 5 depths
- Solute concentration (-> solute flux) *weekly*:
 - bromide
 - ^{14}C -activity
 - benazolin
 - benzothiazolinon
 - NIR
 - $^{14}\text{CO}_2$

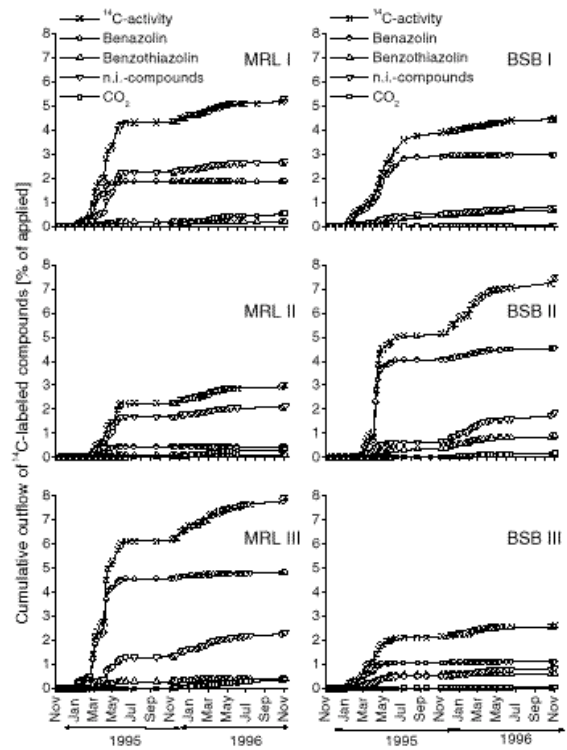
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Breakthrough curves of the lysimeters and suction bases



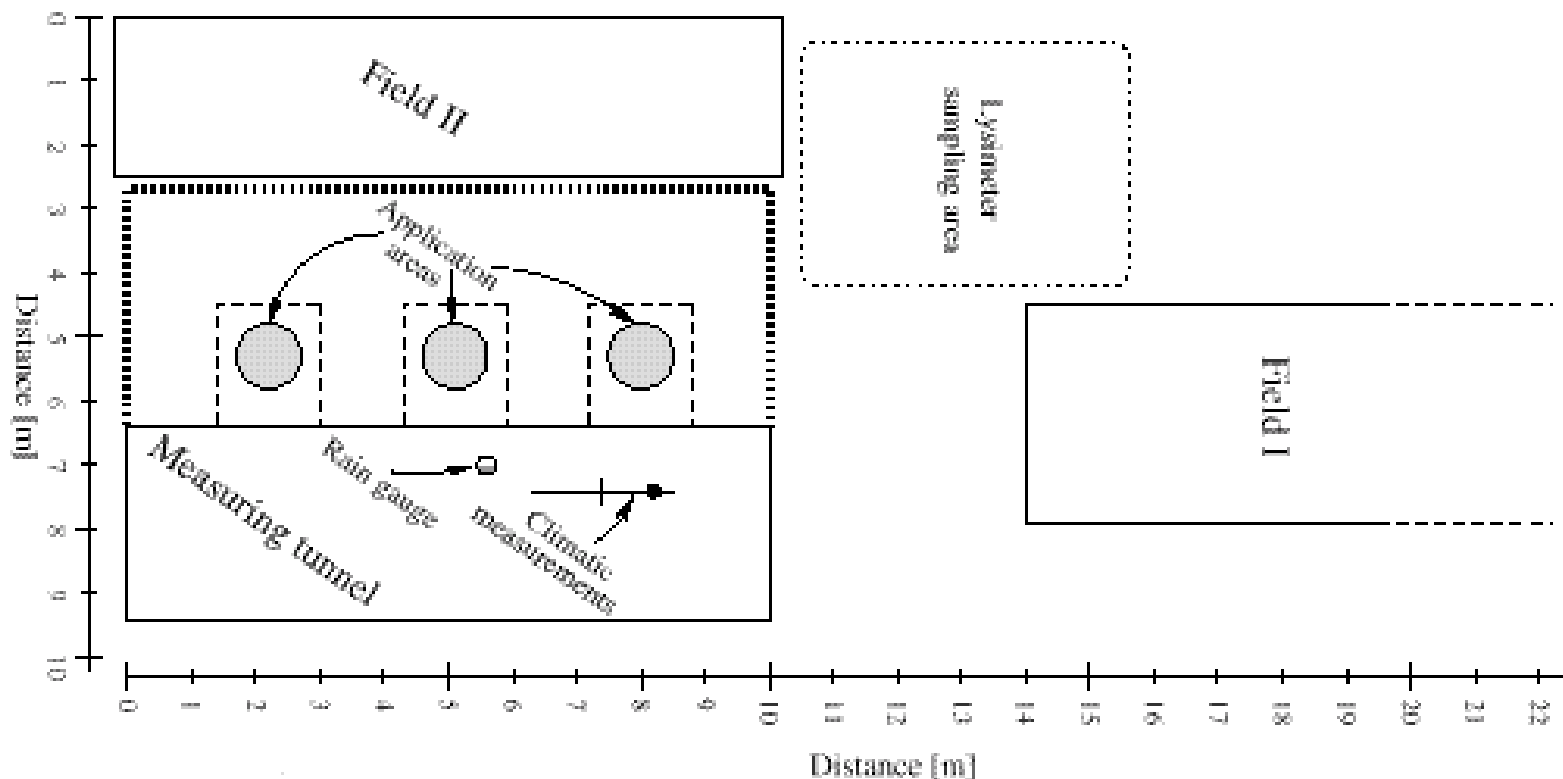
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Cumulative outflow of the radio-labelled substances:



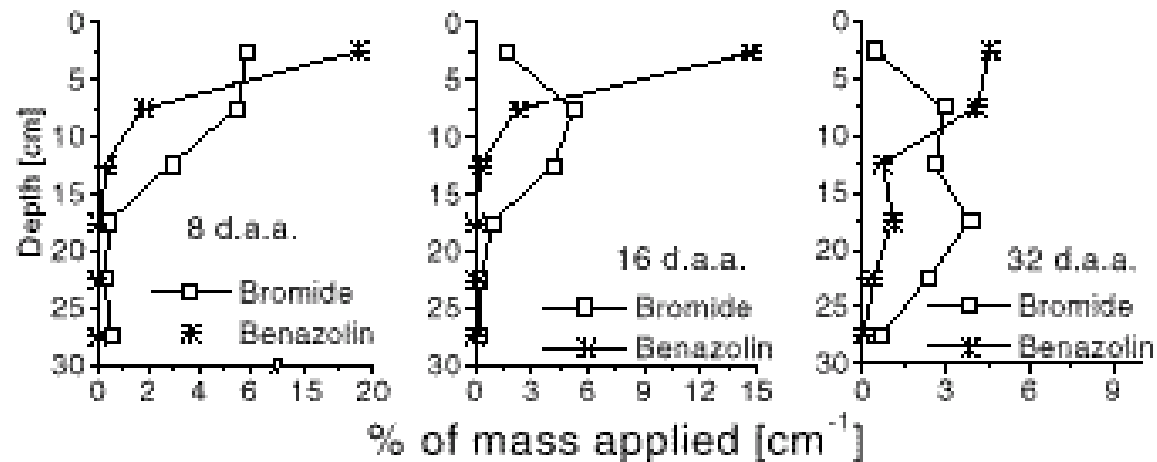
The SLFA Lysimeter-Field data set

The Birkenheide field station



The SLFA Lysimeter-Field data set

Benazolin and bromide profile (0-30 cm) in 5-cm increments



The SLFA Lysimeter-Field data set

Bromide depth profiles (0-130 cm) of the field experiment:

