

Deriving WQS for pesticides in Norway

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Previous Norwegian WQS

- Previous WQS (Miljøfarlighetsindeks, MFI) based on EPPO's "Uniform Principles" –TER-triggers for intermittent exposure:
 - $MFI = LC_{50}/100$ (*Daphnia*, fish), $EC_{50}/10$ (algae)
- Advantage:
 - Conforms with criteria used for national approval of pesticides
- Disadvantage:
 - Not protective enough for prolonged exposure?
 - Does not conform with other international criteria (Water Framework QS, "riktvärden"-Sweden)

Criteria for revised Norwegian WQS

Based on principles for calculation of
 $PNEC_{\text{chronic}}$ according to TGD and

Proposed Quality Standards (QS) in Water
Framework Directive

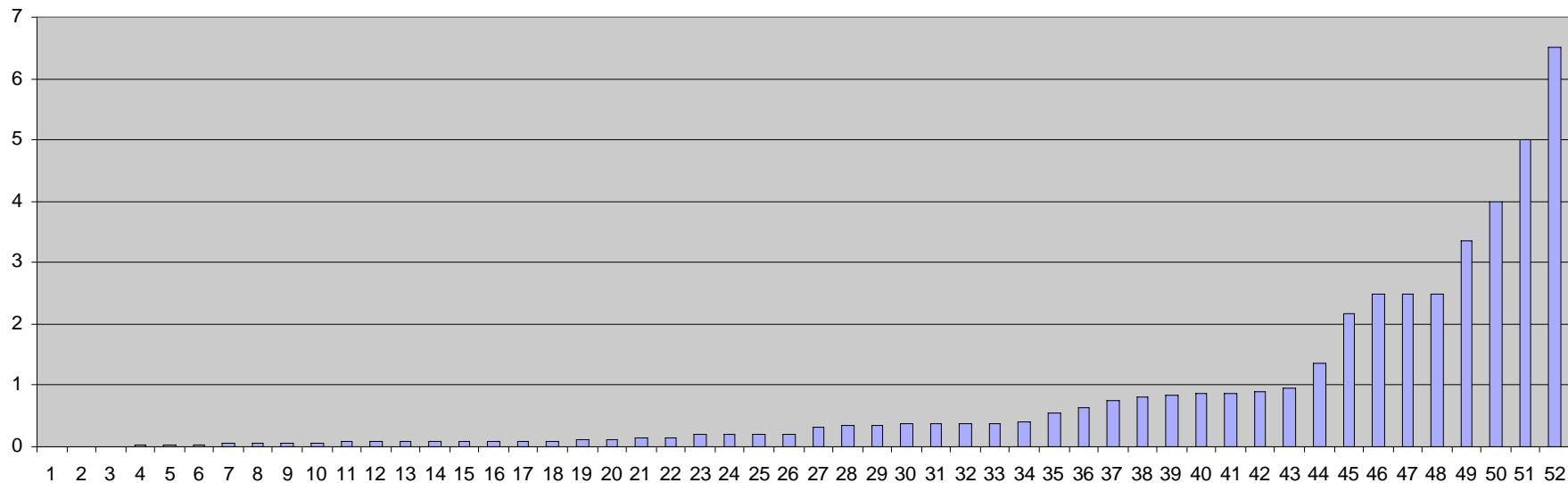
1. Lowest NOEC (algae, invertebrate, fish) $AF = 10$
2. Lowest LEC_{50} (algae, invertebrate, fish), $AF = 1000$

Comparison of MFI values

Stoff	Old MFI $\mu\text{g / l}$	Organism	New MFI $\mu\text{g/l}$	Organism	Swedish RV
aklonifen	0.67	alge	0.25	algae	0.25
aldrin					
AMPA (se glyfosat)	-	-	452	algae	452
alfacypermetrin	0.003	Daphnia	0.001	insekt	0.001
atrazin, atrazin-desetyl, atrazin-desisopropyl	4.3	algae	0.43	algae	
azinfosmetyl	0.01	Daphnia	0.025	Daphnia	0.002
azoksystrobin	2.6	Daphnia	0.9	Daphnia	0.9
bentazon	540	aq plant	27	aq plant	36
cyprodinil	0.33	Daphnia	0.18	Daphnia	0.18

Effect of changed MFI criteria

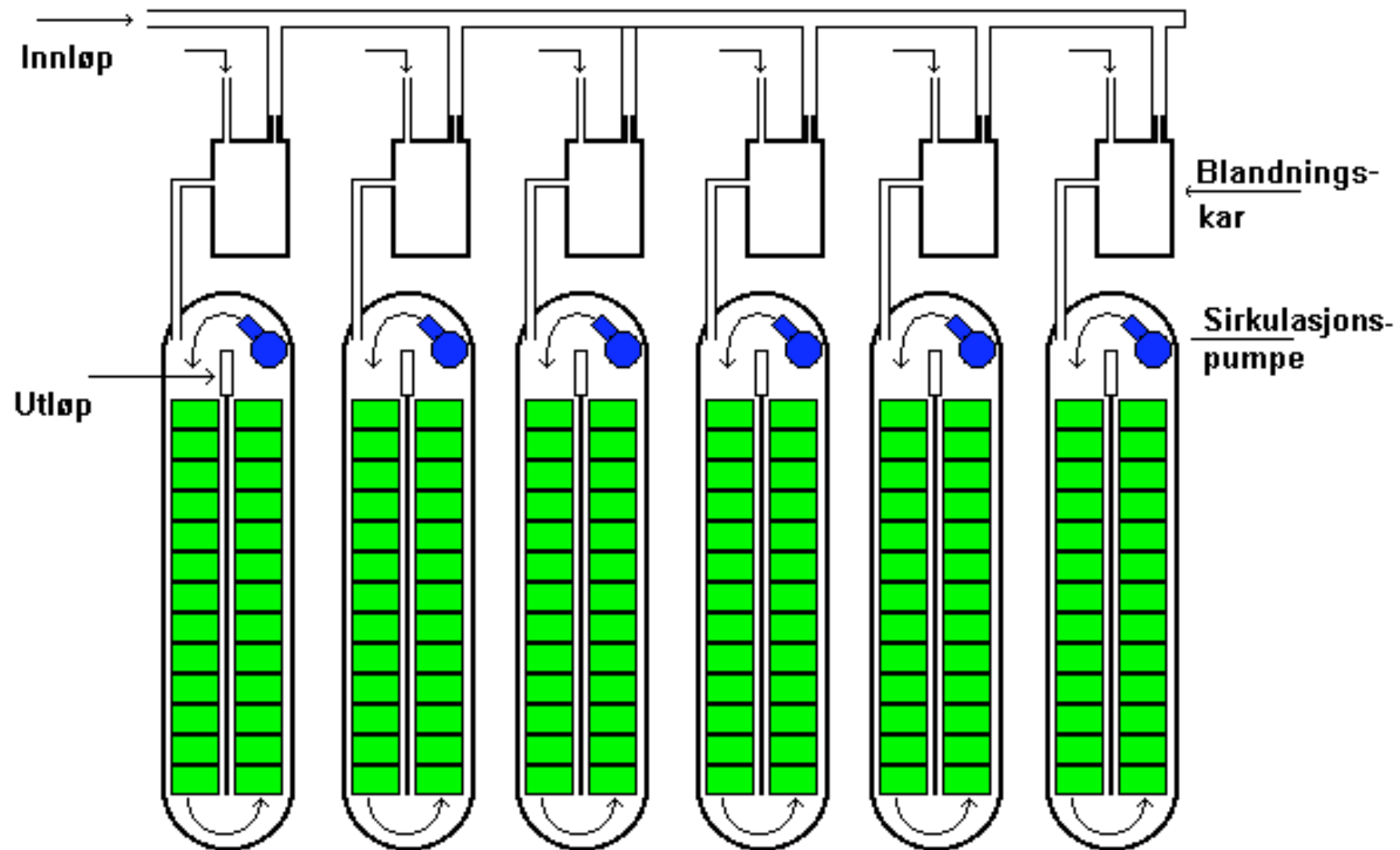
- New MFIs on average a factor 2.3 lower than old
- MFI for fenpropimorph reduced from 17 (acute-algae) to 0.016 (chronic-fish)



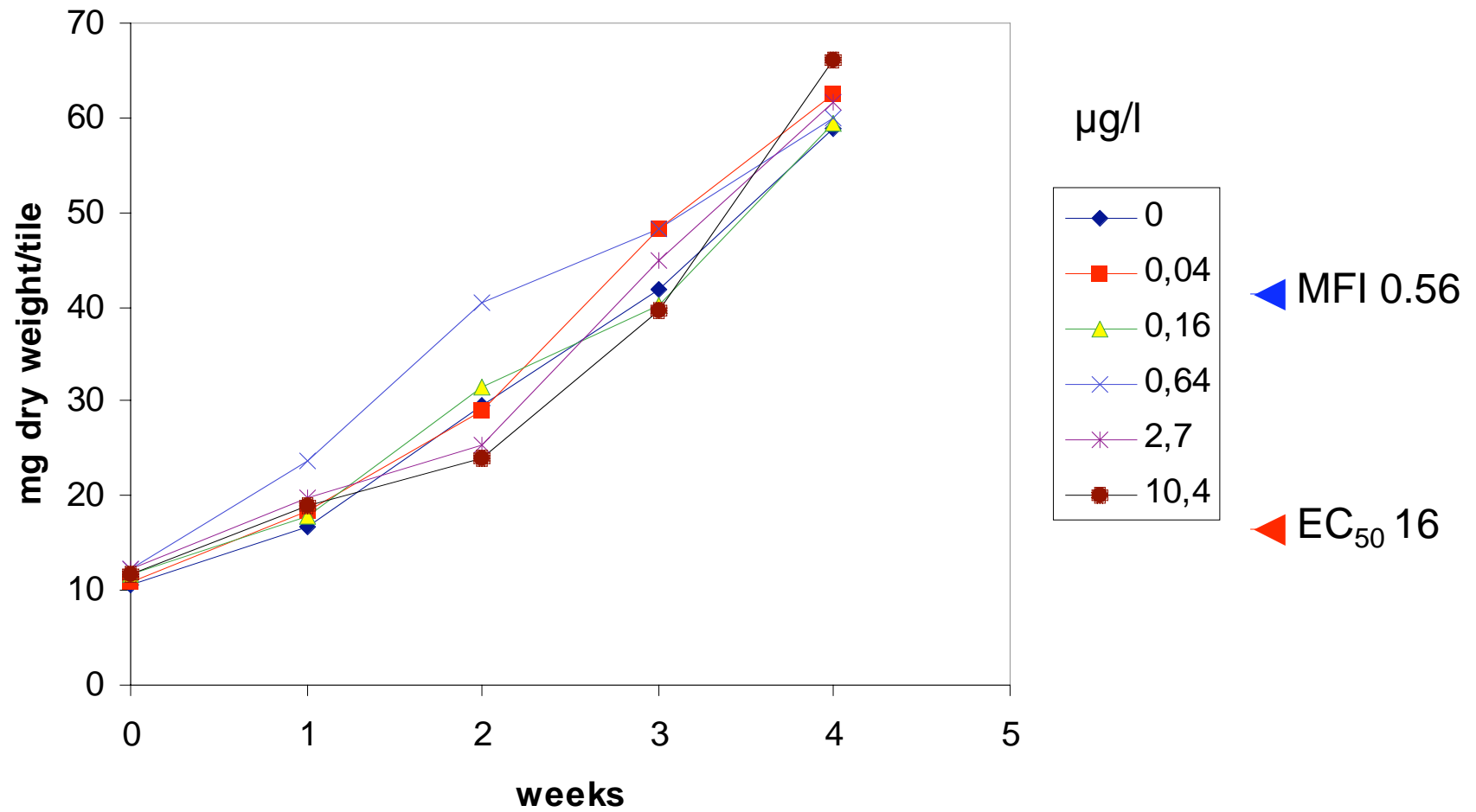
Application of WQS

- What type of monitoring data should Quality standards be related to?
 - The WFD QS refer to annual average concentrations
 - Our monitoring data are based on grab samples or 14 days average samples
- Should they be applied on all types of aquatic environments?
- Is the level of protection appropriate?

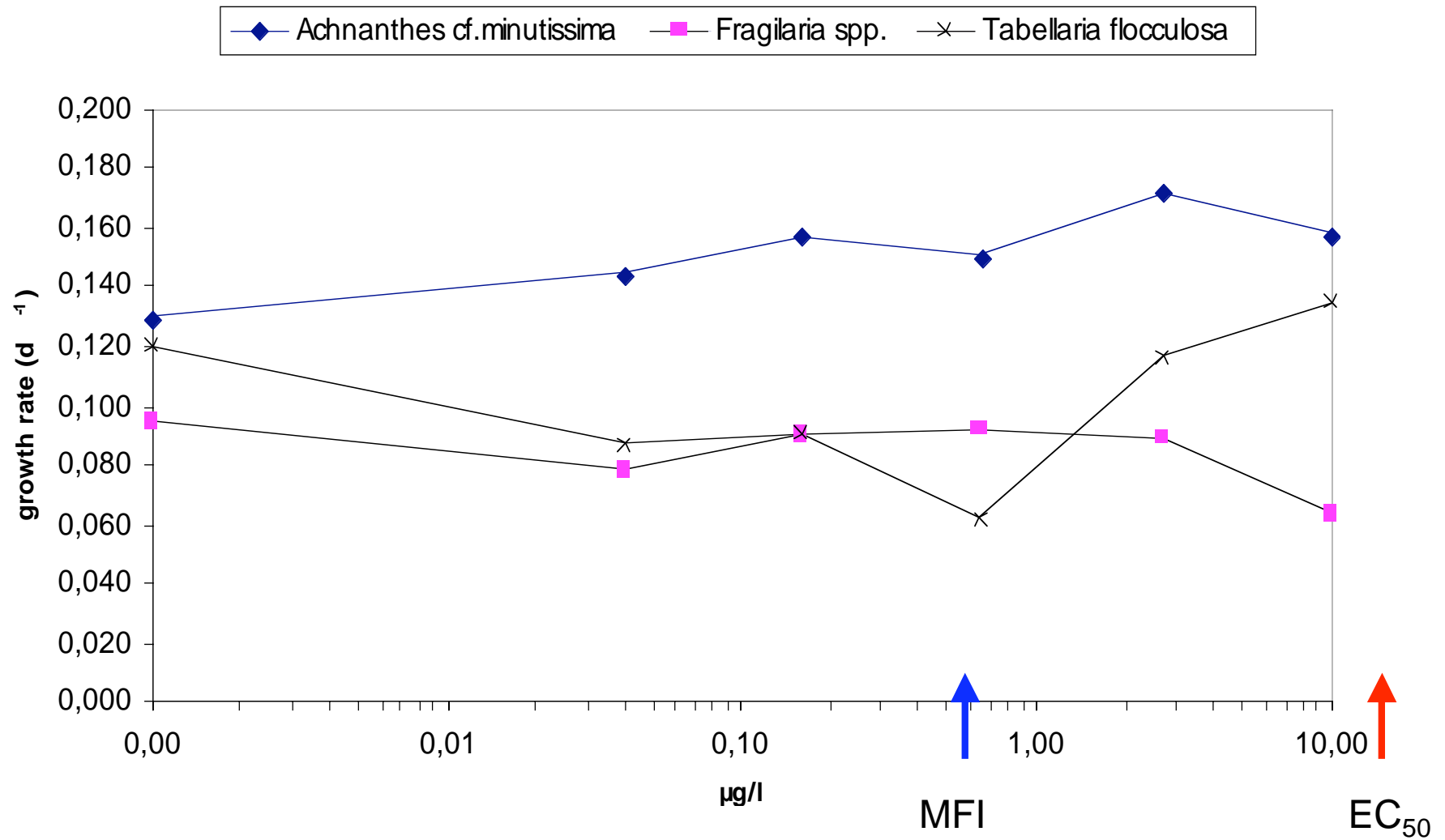
Effects of pesticides on periphyton algae in experimental channels



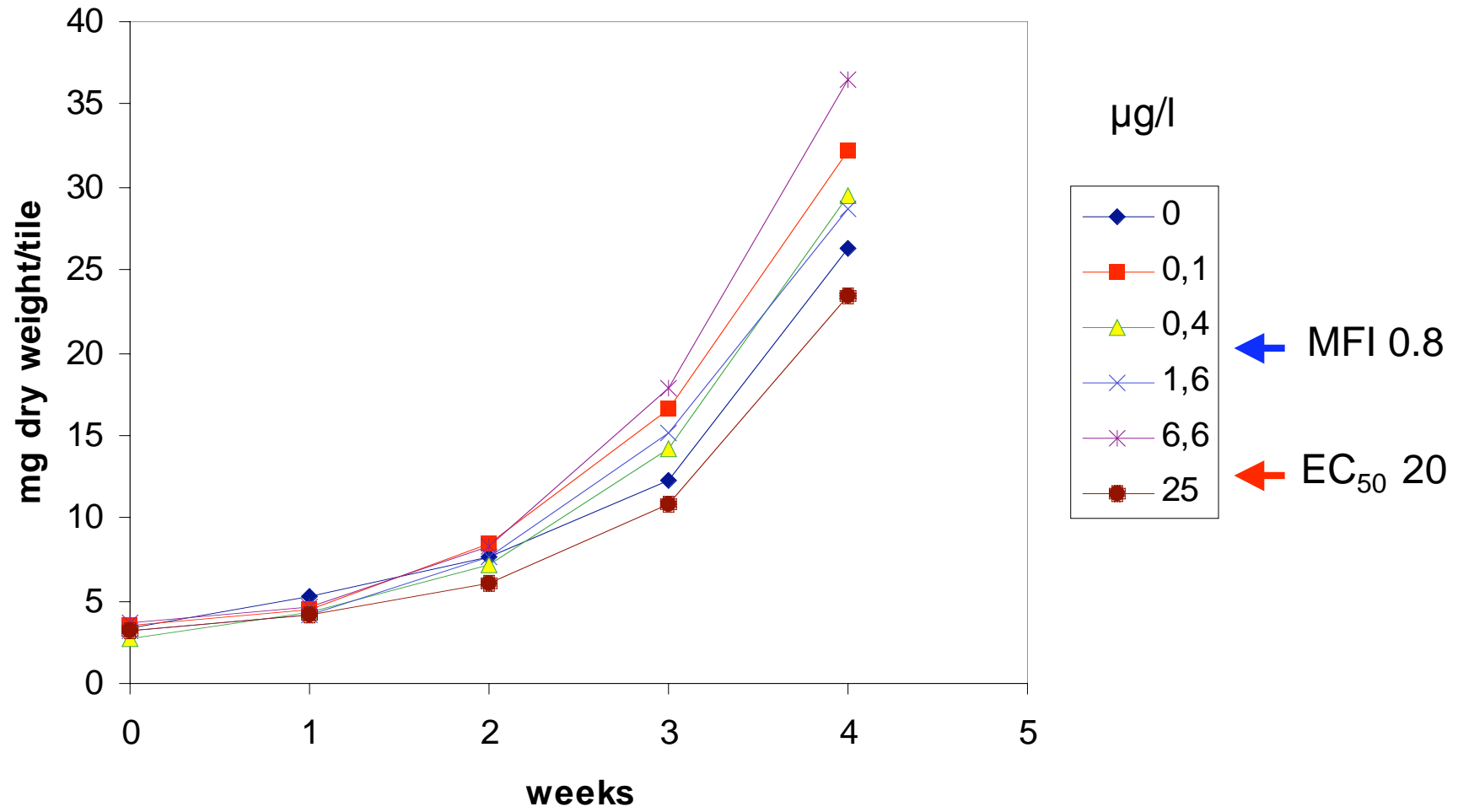
Linuron



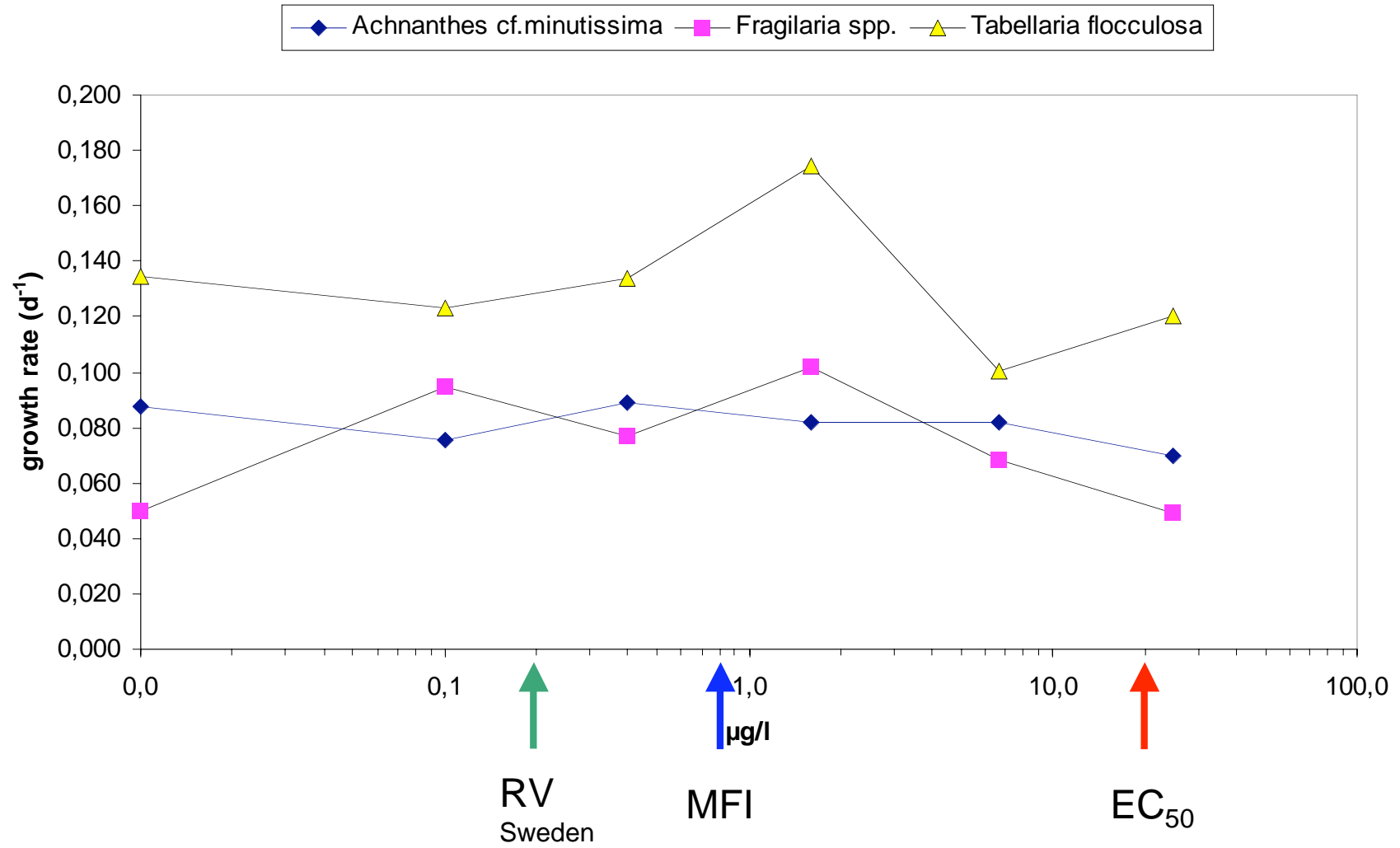
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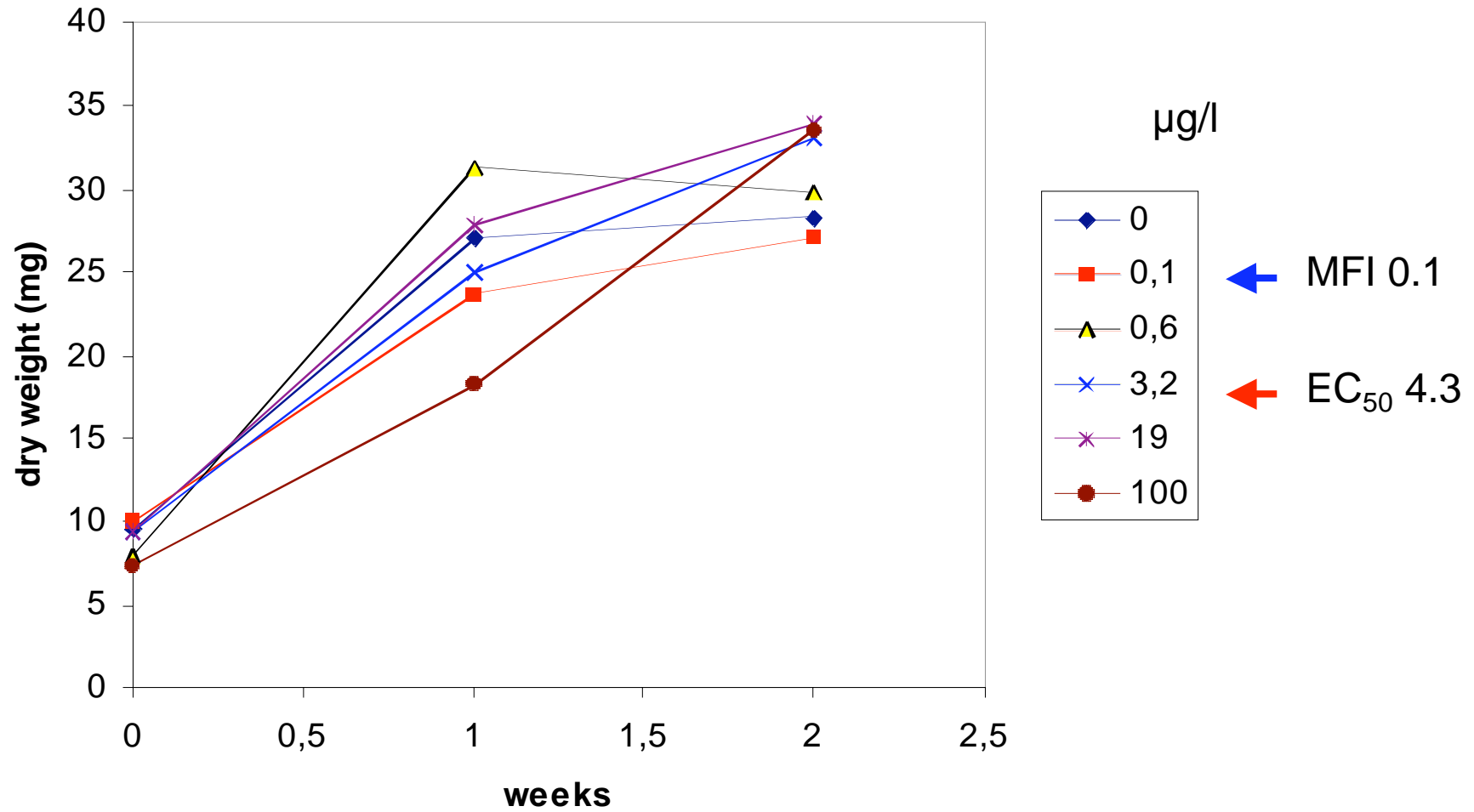
Metribuzin



Metribuzin



Tribenuron-methyl



Tribenuron-methyl

