



# Innovation of phosphorus-efficient crop production and phosphorus cycling

Marinus P. (Rien) van der Maas, J.J.C.F. van Bon

Dutch case: pear production on calcium-carbonate containing clay soil

## Standard:

restricted max. input: 65 kg P<sub>2</sub>O<sub>5</sub>

8 ton/ha spent mushroom compost:  
Input: 33 kg P<sub>2</sub>O<sub>5</sub>

Broadcast P-fertilizer:  
Input: 32 kg P<sub>2</sub>O<sub>5</sub>

result

P-uptake efficiency:  
P-leaf: 0% increase

P-effect:  
no increase in production or quality

## Innovation:

- (1) foliar P-application
- (2) P-extraction of spent mushroom compost



Standard spent mushroom compost



Low-P spent mushroom compost

restricted max. input: 65 kg P<sub>2</sub>O<sub>5</sub>

25 ton/ha Low-P sp. mushroom compost  
input: 25 kg P<sub>2</sub>O<sub>5</sub>

Foliar P-fertilizer:  
input: 40 kg P<sub>2</sub>O<sub>5</sub>

result

P-uptake efficiency foliar P:  
P-leaf: 29% increase

Foliar P-effect:  
fruit firmness after 8 month storage 15% higher

Additional soil quality effect:  
increase of soil organic matter content