

# Plant nutrition courier

A green tractor is shown from a low angle, with a large white bag hanging from its front loader. The tractor is positioned in a field of green grass. The sky is filled with soft, white clouds, suggesting a bright but slightly overcast day. The overall scene is agricultural and focused on plant nutrition.

The best bits of plant nutrition research

2023-02

## *In search for inhibitors of the denitrification process 9*

*Seed treatment improves nitrogen nutrition of wheat via reduced nitrification 4*

*Split-root hydroponic system prevents nutrient antagonism and precipitation 7*

*Granular phosphate from anaerobic cow manure digestion 11*

*Recent plant nutrition patent publications 42*



## Seed treatment improves wheat N status via reduced nitrification 4

Seed treatment with specific plant signalling compounds increases nitrogen uptake by wheat. This is due to less ammonia oxidizing (nitrifying) bacteria around the roots.



## Split-root hydroponics prevents nutrient antagonism, precipitation 7

Cucumber performs better if calcium is supplied separately from phosphate and magnesium to roots, rather than together with both nutrients in one hydroponic solution.



## In search for inhibitors of the denitrification process 9



## Granular phosphate from anaerobic cow manure digestion 11

### Arable farming

- 4 Seed treatment improves nitrogen nutrition of wheat via reduced nitrification
- 5 Short-stature and tall grain maize respond equally to nitrogen management
- 5 Negative charge of root surface explains adsorbed and absorbed cation amounts
- 5 Sulphur effects on acrylamide content in wheat grains
- 5 Liming reduces Rhizoctonia root rot in soybean
- 5 Splitting molybdenum sprays increases its content in bean seeds
- 5 Postflowering phosphite foliar fertiliser reduces grain weight in soybean
- 5 Ammonium increases risk of arsenic accumulation in rice
- 6 Foliar fertiliser can stimulate nocturnal nutrient uptake
- 6 Key measures to reduce nitrogen losses from cropland

### Potato nutrition

- 6 Publications about potato nutrition research

### Fruits and vegetables

- 7 Split-root hydroponic system prevents nutrient antagonism and precipitation
- 7 Fullerenol can alleviate zinc deficiency in cucumber
- 7 Nickel spray can reduce cherry cracking risk
- 7 Healthier pak choi by short-term pre-harvest phosphorus limitation
- 7 Elevated copper concentration for disease suppression

### Grass and forage

- 8 Denser swards increase load bearing capacity of peat meadows

### Plant and soil analytics

- 8 New statistical approach improves estimation of critical nitrogen dilution curves
- 8 New method to determine in-situ gross nitrification rate
- 8 Simplifying the determination of the active calcium carbonate fraction in soils
- 8 Ammonium detection with smartphone

### Nitrification and denitrification inhibitors

- 9 In search for inhibitors of the denitrification process
- 9 Half a century of research into the inhibition of denitrification
- 11 Nitrification inhibitor performance in tropical climate
- 11 New biological nitrification inhibitors

### Organic fertilisers

- 11 Granular phosphate from anaerobic cow manure digestion
- 11 Calcium carbonate reduces plant pathogens during composting

### Fertilisers

- 11 Climate-controlled lysimeter system
- 11 Low-energy ammonia separation in the Haber-Bosch process
- 12 Brewer's yeast produces polyphosphate from industrial waste water
- 12 Phosphate fertiliser technologies to improve phosphorus use efficiency
- 12 Phosphorus recovery from medium and low-grade rock
- 12 More insight into phosphate fixation by calcite
- 12 Igneous rocks suitable as potassium fertiliser
- 12 Seed and fertiliser in a gelatin capsule
- 13 Water-soluble iron-humic acid complexes for alkaline soils
- 13 Analytical method to separate isomers of new chelate
- 13 Publications about new, experimental and potential fertiliser formulations

### Plant nutrition patents

- 42 Recent plant nutrition patent publications

### Literature / Calendar

- 6 Publications about potato nutrition research
- 13 Publications about new, experimental and potential fertiliser formulations
- 17 Publications about plant nutrition research
- 44 Calendar of events

Publications about plant nutrition research		from page 17	
General	17	Phosphite	34
Rhizosphere, root hairs and soil hydraulics	17	Potassium	34
Biofortification	17	Calcium	35
Climate change	17	Lime / pH	36
Greenhouse gas emission	17	Magnesium	36
Mapping, sensing, sampling and analytics	18	Sulphur	36
Urea, ammonia and nitrate fabrication processes	20	Boron	37
Fertiliser production	20	Copper	37
Application technology	20	Iron	37
Foliar fertilisation	21	Manganese	37
Chelates	22	Molybdenum	38
Organic fertilisers and industrial wastes (selection)	22	Sodium	38
Green manure / cover crops	23	Zinc	38
Biochar	24	Aluminium	39
Humic acids	24	Nickel	39
Nano-fertilisers	24	Selenium	39
Urease, nitrification and denitrification inhibitors	25	Silicon	40
Coatings and other specific release mechanisms	25	Strontium	41
Nitrogen	27	Rhizobia, mycorrhiza etc.	41
Phosphorus	32		

### Information about silicon has been rearranged

Articles, news items and literature about silicon have been included in the back of the Plant nutrition *courier* for many years. This has been changed some time ago. Articles and news items about silicon can now be found in the section where they fit best: arable farming, horticulture, fertilisers, etcetera. Silicon literature is now classified with the other essential and beneficial nutrients.

Fertiliser companies



Fertiliser research



Liquid fertiliser applicators



Soil services



Agricultural cooperatives  
(Dutch - with international network of subsidiaries)



### How to advertise

Advertisements in the international Plant nutrition *courier* are published in six consecutive issues including one free issue. Follow [this hyperlink](#) for details about advertising in the Plant nutrition *courier* and/or in the email newsletter.

### Colophon

Editor	<a href="#">Gert van den Berg</a>
Publisher	Landbouwkundige Uitgeverij G.C. van den Berg
Address	Van Maerlantstraat 5, 3906 EL Veenendaal, The Netherlands
Website	<a href="http://www.plantnutritioncourier.nl">www.plantnutritioncourier.nl</a>
Subscriptions	Small: € 150,00/year ex VAT (1 - 10 readers at one physical location of the organisation). Medium: € 435,00/year ex VAT (11 - 50 readers at multiple physical locations of the organisation). Worldwide: € 925,00/year ex VAT (worldwide in-company subscription).
Single issues	€ 50,00/issue ex VAT.

Plant nutrition *courier* is an internationally published bimonthly digital newsletter on plant nutrition, including silicon and other beneficial elements. Authors and publisher declare the information in the Plant nutrition *courier* is provided to our best knowledge of the current situation, but they cannot accept responsibility for the validity or for the consequences of their use. Subscriptions will be extended, unless cancelled at least one month before the end of the yearly subscription.