



Knowledge grows

Decision Tools and Services for Grassland Nutrient Management

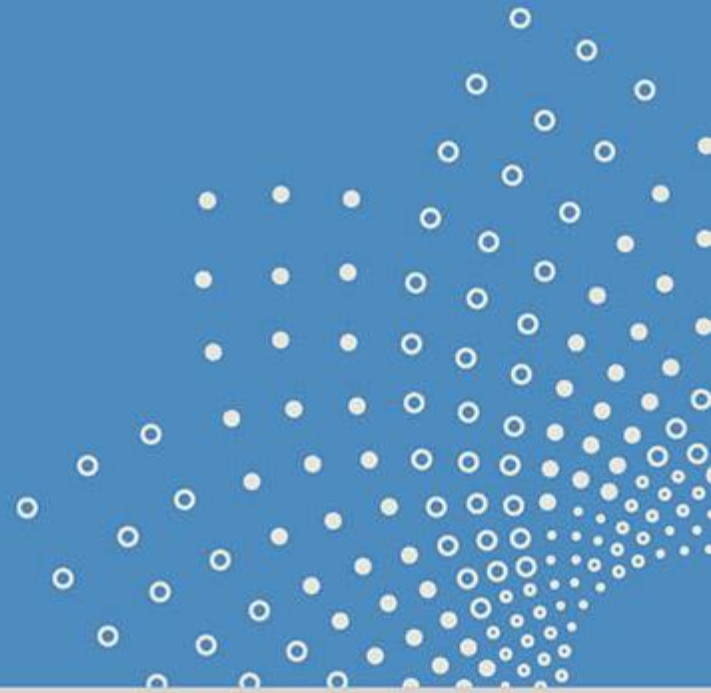
Emer Walker

Yara International

4th Sept. 2016 EGF Conference Trondheim



Yara International





Knowledge grows



- Founded 1905 in Norway
- Ca. 13000 Employees
- Present in 60 countries
- Sales to >150 countries

Yara - Supplying Crop Nutrient Solutions

Global provider of sustainable crop nutrition solutions, supporting farmer profitability through knowledge, optimal quality and productivity



Yara Crop Nutrition Focus



Consolidated and extensive
knowledge on
crops



Tools and services, application
concepts and competence



Wide and differentiated product range
to combine for better results

Sustainability

Life Cycle Assessment

Carbon Footprint

Water Footprint

Crop Nutrition for Grassland

Example of Grassland Product Portfolio from the UK



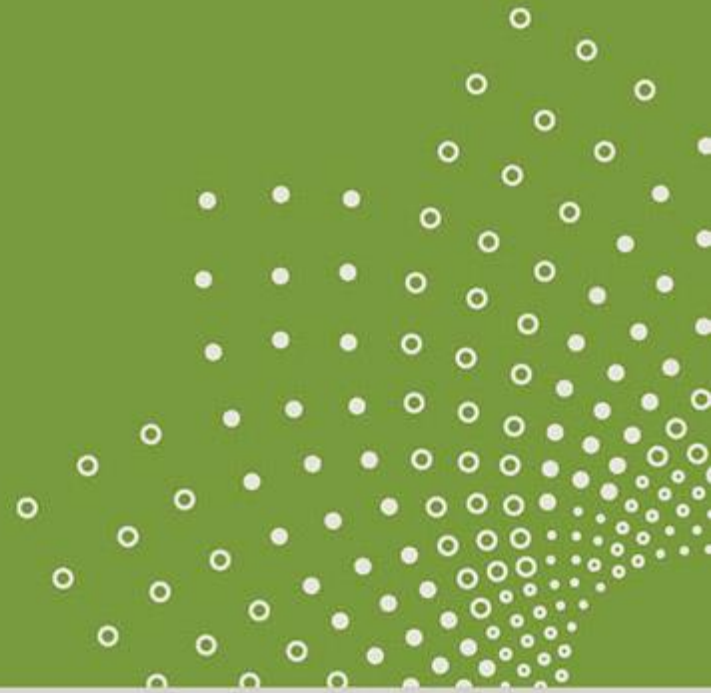
	Feb / Mar	April	May	June	July	August
YaraMila*	EXTRAGRASS 130 kg/ha 35 kg N/ha 7 kg P ₂ O ₅ /ha 7 kg K ₂ O/ha 8 kg SO ₃ /ha	EXTRAGRASS 225 kg/ha 61 kg N/ha 11 kg P ₂ O ₅ /ha 11 kg K ₂ O/ha 14 kg SO ₃ /ha	EXTRAGRASS 185 kg/ha 50 kg N/ha 9 kg P ₂ O ₅ /ha 9 kg K ₂ O/ha 11 kg SO ₃ /ha	EXTRAGRASS 125 kg/ha 34 kg N/ha 6 kg P ₂ O ₅ /ha 6 kg K ₂ O/ha 8 kg SO ₃ /ha	EXTRAGRASS 115 kg/ha 31 kg N/ha 6 kg P ₂ O ₅ /ha 6 kg K ₂ O/ha 7 kg SO ₃ /ha	EXTRAGRASS 100 kg/ha 27 kg N/ha 5 kg P ₂ O ₅ /ha 5 kg K ₂ O/ha 6 kg SO ₃ /ha
YaraMila*	STOCK BOOSTER 145 kg/ha 36 kg N/ha 9 kg P ₂ O ₅ /ha 9 kg K ₂ O/ha		STOCK BOOSTER 200 kg/ha 50 kg N/ha 10 kg P ₂ O ₅ /ha 10 kg K ₂ O/ha		STOCK BOOSTER 135 kg/ha 34 kg N/ha 8 kg P ₂ O ₅ /ha 8 kg K ₂ O/ha	
YaraBela*		NUTRI BOOSTER 240 kg/ha 60 kg N/ha 11 kg SO ₃ /ha		NUTRI BOOSTER 135 kg/ha 34 kg N/ha 7 kg SO ₃ /ha		NUTRI BOOSTER 100 kg/ha 25 kg N/ha 5 kg SO ₃ /ha

* This fertilizer programme supplies a total nitrogen requirement of 240 kg N/ha. Rate should be adjusted if the forage demand is higher or lower.

** If manures are applied, a full Nutrient Management Plan should be conducted in order to assess specific application rates.

- Extensive grassland product portfolio
- Yara products supply essential nutrients for grazed grass, as well as animal health and performance
- Balanced crop nutrition programs

Yara Decision Tools and Services for Optimizing Nutrient Management



Decision Support Tools and Services



Nutrient Management Software



Fertigation Management Software



N-Sensor



N-Tester



ImageIT



CheckIT



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N-Sensor for Grassland

1st Phase: N-Sensor Calibration Trials

Translate sensing signals into biomass and quality readings

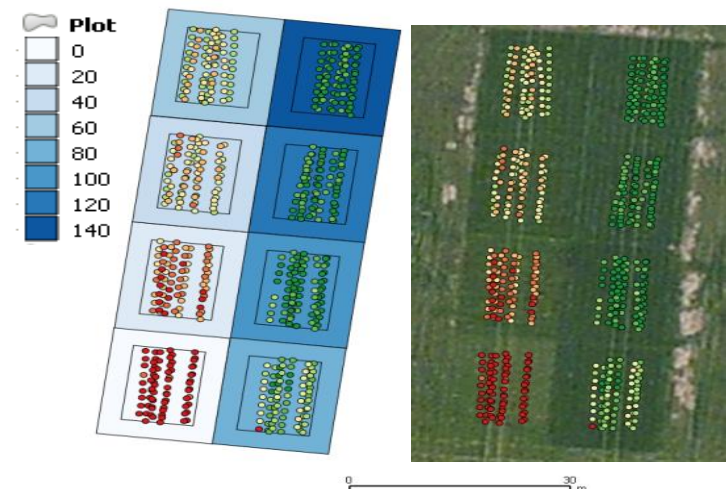
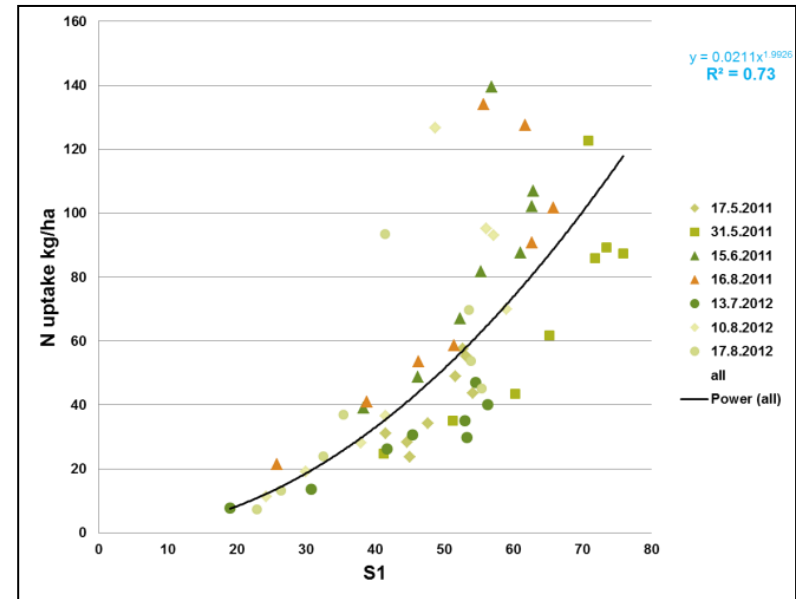
- Germany (2010)
- Finland (2011/2012)
- UK (2014 and 2015)

Current focus:

Biomass estimates for cut grass

- Finland
- Germany
- The Netherlands
- Cooperation partners: Universities of Bonn, Cologne and Wageningen

Finland Calibration Trial 2011/2012



Megalab - Yara Analytical Service

- Internet based system offering interpretation and biometric data services from agricultural analysis
- Operates through a worldwide network of partner labs
- Access to results available at all times



Megalab™



Yara operates the MEGALAB™ system which handles analytical data from a global network of laboratories, including Yara Analytical Services in the UK.

[Megalab™ Introduction...]

Megalab™ is now part of **Yara Interactive**, please contact your local Yara representative for more information.

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Analysis Results (SOIL)				
Customer	EXAMPLE ANIMAL HEALTH		Distributor	
Sample Ref			Date Received	16/12/2014
Sample No	ANIMAL HEALTH			
Crop	GRAZED GRASS (CATTLE)			
Analysis	Result	Guideline	Interpretation	Comments
pH	6.1	6.5	Slightly Low	Refer to Lime Requirement.
Phosphorus Irish (ppm)	20.0			Nil required.
Potassium Irish (ppm)	185			Possible interference on availability of Magnesium.
Magnesium (ppm)	118	175	Slightly Low	TREATMENT RECOMMENDED.
Calcium (ppm)	3500	2000	Normal	Adequate level.
Sulphur (ppm)	12	10	Normal	Adequate level.
Manganese (ppm)	30	25	Normal	Adequate level.
Copper (ppm)	0.8	8.0	Very Low	PRIORITY FOR LIVESTOCK HEALTH.(see comments below).
Boron (ppm)	0.02	0.50	Very Low	Low priority on this crop. Other crops may be affected.
Zinc (ppm)	> 100	7.0	High	Possible interference with availability of Iron.
Molybdenum (ppm)	0.01	<0.50	Slightly Low	No problems anticipated.
Iron (ppm)	368	50	Normal	Adequate level.
Sodium (ppm)	20	90	Very Low	Treatment may improve grass palatability.
Cobalt (ppm)	1.1	1.5	Low	PRIORITY FOR LIVESTOCK HEALTH.(see comments below).
Iodine (ppm)	0.4	1.5	Very Low	PRIORITY FOR LIVESTOCK HEALTH.(see comments below).
C.E.C. (meq/100g)	14.0	15.0	Slightly Low	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Selenium (ppm)	0.54	0.60	Slightly Low	



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Thank you very much for your attention

Dr. Emer Walker
emer.walker@yara.com