

Nutrient Management and Nutrient Recovery Thematic Network

Presentation of the NUTRIMAN FARMER PLATFORM

Prof. Massimo Pugliese University of Torino - AGROINNOVA Friday 11th June 2021



NUTRIMAN – Farmer Platform



- Specifically developed website for farmers.
- Key information in eight languages (EN, DE, FR, IT, NL, ES, PL, HU)
- Online Database of innovative N/P nutrient recovery technologies & novel N/P fertiliser products and practices:
 - EIP-AGRI practice abstracts,
 - info sheets,
 - product application and training materials,
 - audio-visual materials and
 - Infographics.
- https://nutriman.net/farmer-platform





Characteristics of the NUTRIMAN web platform

Dedicated pages:

- Description of the main characteristics of the product or technology
- Guidelines for appropriate involvement in agriculture

Are available:

- Fact sheet;
- Infographics;
- Audio-visual equipment

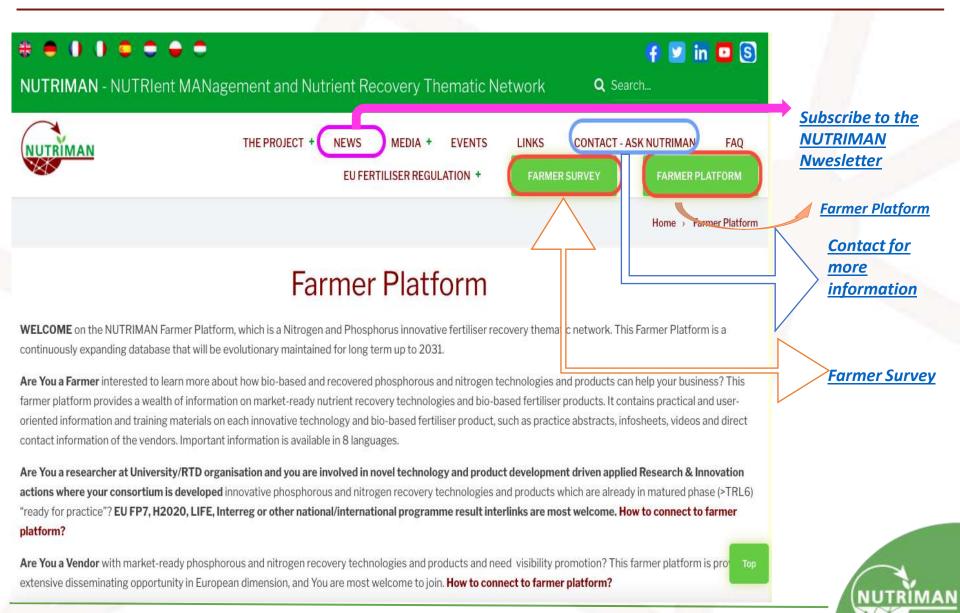
Joint work of the partner of the project and companies involved

Link to the platform for farmers in own language



Characteristic of NUTRIMAN Platform





Criteria for admission to the NUTRIMAN PLATFORM

The **products** and **technologies** on the platform have successfully passed an **admission phase** based on the **following criteria**:

- 1. INPUT material: waste, rejection.
- 2. OUTPUT material: recovery fertilizer containing N, P.
- 3. Advanced technological maturity level: **TRL> 6**.



Characteristics of the NUTRIMAN web platform



The production <u>technology</u> on the platform have been divided into categories:

- Biological Nutrient recovery: Composting, anaerobic digestion, microalgae technology;
- Phosphorus precipitation from liquid manure, waste water and drain water;
- Thermochemical Nutrient Recovery;
- 4. Physic-chemical nitrogen recovery from manure, digestate and wastewater: separation, stripping and membrane processes.

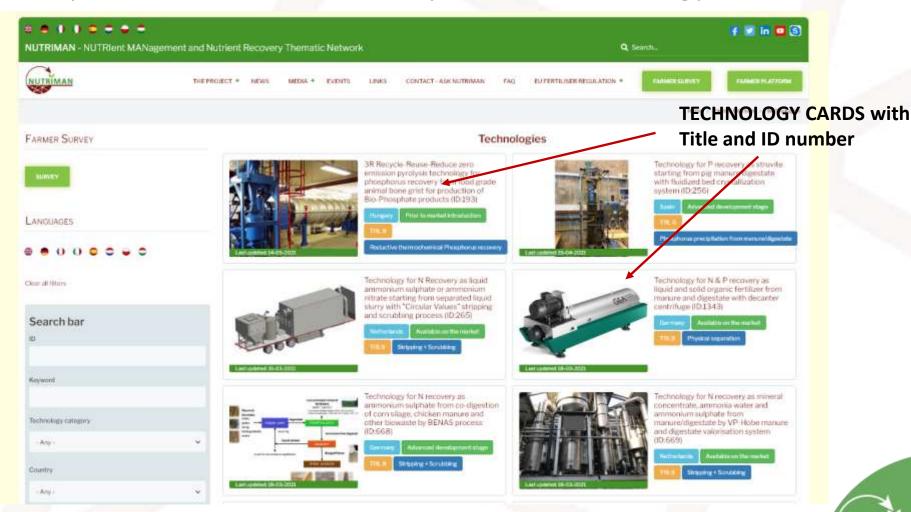
The platform contains the direct contacts:

- > fertilizer manufactures
- the developers of each of the technologies



NUTRIMAN Farmer Platform – Technology cards

https://nutriman.net/farmer-platform/technology





Characteristics of the NUTRIMAN web platform



The <u>products</u> present on the platform have been divided by category:

- Compost and digestate (and Biomass);
- 2. Ash;
- Struvite and other P-Products;
- 4. Biochar and Bio-Phosphate;
- 5. Scrubber water and mineral Nitrogen Concentrate

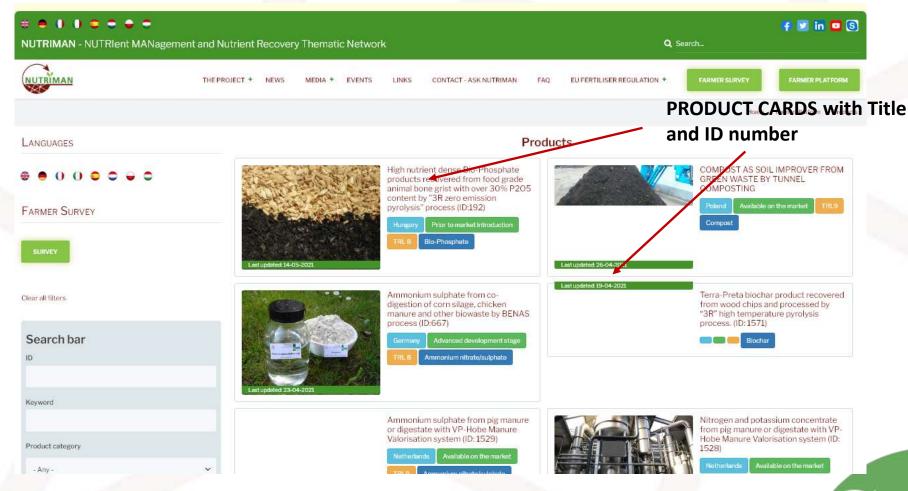
Direct contact are available:

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NUTRIMAN Farmer Platform – Product cards

https://nutriman.net/farmer-platform/product



Criteria for selection of P/T to the NUTRIMAN PLATFORM

Criteria for revision of longlist	
Technologies	Products
Technology maturity and readiness level from successfully completed TRL≥6. Applicable at farm level Preferably demonstrated in agricultural practice. If not, product can still be good, but choice of technology and production by another producer not by the farmer	Nutrient quality/efficiency, demonstrated in agricultural practice (proof of fertilizing value for agriculture) Effectiveness in fields Fertilizer replacement value Recommended by third parties (eg. Chamber of Agriculture) Known and homogeneous nutrient (macro-, micro-, trace-elements) content and concentration Based of harmonized or otherwise accepted research/analytical standards
2. Processing conditions proven effectiveness to convert crude input material into safe and high quality fertilizing products. Based on input material risk assessment of: bio-hazards, pathogens heavy metals, pollutants contaminants, foreign substances environmental/climate pollution social acceptance Important to determine applicable production and process legislation requirements Capacity to handle sufficient input volumes	Origin of raw material must be known to perform input material risk assessment of: bio-hazards, pathogens PTEs, pollutants contaminants, foreign substances environmental pollution climate impacts social and market acceptance Important to determine applicable product and application legislation Availability in region and fertilization period
CAPEX and OPEX: production costs euro/ton On commercial scale Use of energy and other resources Labour requirements Production costs compared with alternative costs for disposal	3. Product price EXW wholesale: euro/kg N; euro/kg P ₂ O ₅ • Fertilizer replacement value • The lower the nutrient density the lower the price • Total costs including transport, storage and application



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CAPEX and OPEX: production costs euro/ton On commercial scale Use of energy and other resources Labour requirements Production costs compared with alternative costs for disposal	Product price EXW wholesale: euro/kg N; euro/kg P ₂ O ₅ Fertilizer replacement value The lower the nutrient density the lower the price Total costs including transport, storage and application
4. Legal status (regional/MS national/EU) MS Authority permit available Regional permit requirements from local authorities In conformity with process requirements in: All relevant industrial, environmental, climate and safety norms and EU harmonized MS regulations Animal Byproduct Regulation (EC/1069/2009) New Circular Economy and New Green Deal	4. Legal status (MS national/EU) Product definition/classification according to: Animal Byproduct Regulation (EC/1069/2009) Fertilising Product Regulation (EU/1009/2019) Nitrates Directive (91/676/EEC) Waste Directive (2008/98/EC) Regulation and application limits Allowed for certified organic farming yes/no Product environmental performance (N leaching, emissions, GHG emissions,
Best available technique listing status	heavy metals, other contaminants)



Criteria for selection of P/T to the NUTRIMAN PLATFORM

Criteria for revision of longlist	
Technologies	Products
The technology output is:	Type of end product Product form (solid, fluid, grained, pilled pelletized, meal, dust, spreadable goods) Practical applicability, spreading, distribution, dosage. Application method/form, machinery requirements Homogenous



Give your opinion on N & P's recovery products and technologies! Fill out our

Farmer survey | NUTRIMAN.

Thank you for the attention!

Please visit the **NUTRIMAN FARMER PLATFORM**

To stay updated on the NUTRIMAN project, subscribe to the Newsletter





Nutrient Management and Nutrient Recovery Thematic Network

www.nutriman.net







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