Precision agriculture 4.0 and biogas digestate: a winning combination from both an environmental and economic point of view

Riferimenti
Tipo di progetto
Gruppo Operativo

Acronimo
BIOGAS 4.0

Tematica
Agricoltura di precisione

Information
Time frame
2019 - 2022

Durata
36 months

Partners (no.)
9

Regione
Lombardia

Comparto
Cerealicoltura

Localizzazione
ITC4B - Mantova

Costo totale
€649.760,36

Fonte di finanziamento principale
Programma di sviluppo rurale

Programma di sviluppo rurale
2014IT06RDRP007: Italy - Rural Development Programme (Regional) - Lombardia

Parole chiave
Fertilisation and nutrients management
Waste, by-products and residues management
Farming equipment and machinery
Farming practice
Agricultural production system

Sito web
http://www.biogas4zero.it

Project status
completed

Objectives
• Use only the digestate for the fertilization of the soil, to evaluate the economic and environmental use of advanced technologies of precision agriculture and farming 4.0
• Use of advanced technologies such as GPS technology for mapping and georeferencing of land; Soil prescription maps to optimize crop inputs; Seeding variable rate to limit the seed wastage, maximize yields and optimize the fertility of the soil; NIR technology for the distribution of digestate to homogenize fertilizer supplies; Production maps to check the previous points with GPS technology applied on the collection machines;

Activities
"• To optimize a crop model (agronomic sustainability) that maximizes the economic output (economic sustainability) of the farms involved by minimizing the environmental impacts (environmental sustainability) of a highly efficient production.
• Quantify the economic and environmental benefits of an integrated approach in the use of soil / fertilizer / biomass information
• Pursue the dissemination of results during the project and ultimately to maximize the dissemination of data and the rapid adoption of the cultivation and management techniques proposed"

Context
"The BIOGAS 4.0 project was born from a specific requirement of the cereal sector: 1) Lombard agriculture urgently needs improvements in competitiveness, increased productivity and production, more efficient use of resources, reducing environmental impacts. 2) The biogas sector needs to highlight the possibility, through the residual digestate of the plants, to contribute efficiently to the economic and environmental improvement of the production performance of farms.
Many of the proposed cultivation and analytical techniques are already, albeit in an extremely limited way, applied by ""pioneer farmers"". Up to now there has been no organic and systematic application of all these techniques that would allow their global evaluation from an economic, agronomic and environmental point of view"

Partenariato

Role	Azienda	Address	Telephone	E-mail
Leader	CIB – Consorzio Italiano Biogas e Gassificazione	Parco Tecnologico Padano Via Einstein Località Cascina Codazza 26900 Lodi LO Italy	0371 4662683	direzione@consorziobiogas.it
Partner	Università degli Studi di Padova - Dipartimento di Biomedicina Comparata e Alimentazione	Via 8 Febbraio, 2 35122 Padova PD Italy	049 8272602	dipartimento.bca@pec.unipd.it
Partner	Consorzio Italbiotec	Via Gaudenzio Fantoli, 16/15, c/o Polo Scientifico Multimedica 20100 Milano MI Italy		
Partner	Impresa individuale Ramaschi Carlo	Piazza Roma, 70 46030 SUSTINENTE MN Italy		
Partner	Impresa individuale Speziali Antenore	Via F. Cavallotti 28 46037 RONCOFERRARO MN Italy		

Role	Azienda	Address	Telephone	E-mail
Partner	Società Agricola Ronconi Giacomo di Ronconi F.lli S.S.	Via Belbrolo 27 46045 MARMIROLO MN Italy		
Partner	Mantova Energia Società Agricola A R.L.	Via Spezia 1 20100 Milano MI Italy		
Partner	Società Agricola Boccarone di Ronca Graziano e C. S.S.	Strada Roverbella - Bancole 46045 Marmirolo MN Italy		
Partner	Agricola Terreni Parolara di Roberto e Stefania Pasetto- Società Agricola Semplice	via Parolara, 56 46032 Castelberforte MN Italy		

Pratice abstract

Description
Develop and validate the application of the high efficiency distribution of the digestate based on the nutrient content needed for the crop by applying a variable rate related to the fertility of the soil. In this way we want to obtain an advanced cultivation system in which reduction of crop costs and reduction of environmental impact constitute a fundamental balance aimed at increasing soil fertility and promoting the recycling of nutrients and organic matter.

Description
Validate the application of NIR technology for the continue analisys of digestate nutrient during the distribution in fiel, in order to obtain an innovative precision system for the variable rate organic fertilization with digestate. In this way will be possible to have a significative improve of efficiency, valorisation and recycling of nutrients with significative environmental and economical advantages.

Description
Application and validation of an advanced cultivation technique for double crop winter cereal/mais with integrated application of precision farming and minimum tillage. The system will be based on combined elaboration of soil fertility data, crop prodictivity data and crop growth index in order to obtain the better rationalization and efficiency on productive factors use and soil fertility improving thank to the precision organic fertilization

Link utili

Titolo/Descrizione	Url	Tipologia
Sito web del progetto	http://www.biogas4zero.it	Sito web
Brochure del progetto	https://img.mdsweb.it/biogas4zero/allegati_documenti/62027993e3e38_BrochureBiog...	Materiali utili
Guida tecnica BIOGAS4.0	https://img.mdsweb.it/biogas4zero/allegati_documenti/6284e337788a0_Guida-Biogas...	Materiali utili
Sito del capofila del progetto	https://www.consorziobiogas.it/	Link ad altri siti che ospitano informazioni del progetto