

Innovative plant for the Conservative Removal of Nitrogen from livestock slurries and digestate

Riferimenti

Tipo di progetto

Gruppo Operativo

Acronimo

CONSERVA

Tematica

Emissioni di inquinanti e gas serra

Information

Time frame

2019 - 2022

Durata

36 months

Partners (no.)

6

Regione

Lombardia

Comparto

Zootecnia - suini

Localizzazione

ITC46 - Bergamo

ITC4A - Cremona

ITC4C - Milano

Costo totale

€688.454,95

Fonte di finanziamento principale

Programma di sviluppo rurale

Programma di sviluppo rurale

2014IT06RDRP007: Italy - Rural Development

Programme (Regional) - Lombardia

Parole chiave

Animal husbandry and welfare

Farming/forestry competitiveness and diversification

Waste, by-products and residues management

Agricultural production system

Sito web

<https://costruzionirurali.unimi.it/ConservA>

Project status

completed



Objectives

The project aims to develop an innovative technology for the removal of nitrogen from livestock manure and to create a pilot plant that can demonstrate the possibility of introducing the system in livestock farms. The technology to be developed involves the removal of nitrogen in the form of gaseous ammonia which is removed in an air stream. The subsequent passage of the air in sulfuric acid allows to obtain ammonium sulphate which can be easily transported and used as a mineral fertilizer.

Activities

The project plans to use a simplified nitrogen stripping technology based on a process tested in the laboratory with good results and which has been shown to have the characteristics suitable for introduction into livestock farms. The process involves the permanence of slurry or digestate in a container in which the surface of the liquid is lapped by a flow of air which is charged with ammonia which is subsequently sent to a scrubber where ammonium sulphate is formed. On this basis, a pilot plant will be built and the possibility of introducing the technology to livestock farms will be evaluated and demonstrated.

Context

In Lombardy, many livestock farms produce livestock manure with nutrient content in excess of regulatory constraints (170 kg / ha of livestock nitrogen in vulnerable areas and 340 kg / ha in non-vulnerable areas). For this they must find land on which to distribute the manure or treat the effluents by removing nitrogen. Most of the farms that have nitrogen excesses according to the legislation, are at the same time having to purchase mineral nitrogen

fertilizers to meet the nutritional needs of crops that require nitrogen inputs well above the 170 kg / ha provided for by the standard. The possibility of extracting nitrogen in mineral form from the effluents therefore constitutes a significant possibility of using the product obtained as a fertilizer. Pending the possibility of using it in livestock farms (currently the legislation classifies it as livestock manure, but an opening to the use of these products is foreseeable in the next few years) it is still possible to transport it easily and use it in agricultural areas with low livestock load.

Partenariato

Role	Azienda	Address	Telephone	E-mail
Leader	Università degli Studi di Milano - Dipartimento di Scienze Agrarie e Ambientali	Via Giovanni Celoria, 2 20133 Milano MI Italy	02 503111	sportello.ricerca@unimi.it
Partner	SOCIETA' AGRICOLA VERTUA S.S.	Cascina Caccialupo 24043 Caravaggio BG Italy		
Partner	SERALBA S.R.L. SOCIETA' AGRICOLA	Via Antonio Locatelli 22 24021 Bergamo BG Italy		
Partner	SASSI IVAN E MAURIZIO ENZO SOC. AGR. S.S	Via XXV Aprile, 45 24050 Mozzanica BG Italy		
Partner	Società Agricola Il Montizzolo di Merigo Donatello e C. S.S.	Cascina Montizzolo 24043 Caravaggio BG Italy		
Partner	Associazione Regionale Allevatori della Lombardia (ARAL)	Via Kennedy, 30 26013 Crema CR Italy	0373 89701	info@aral.lom.it

Pratiche abstract

Description

The project aims to develop an innovative technology for the removal of nitrogen from livestock slurries by means of a

simplified ammonia stripping technology. The technique already tested in the laboratory for the volatilization of ammonia from mixed and heated containers to then form an ammonium salt to be used as fertilizer will be developed.

A pilot plant will be built capable of treating a significant amount of product (1-2 cubic meters per day) which will be used with different types of sewage (in particular those of the partner farm of the project. The plant will consist of 4 reactors that will treat the slurries in batch mode in order to volatilize the ammonia and then convey it to a scrubber who washes it with a solution of sulfuric acid to form ammonium salts.

Link utili

Titolo/Descrizione	Url	Tipologia
pagina web del progetto	https://costruzionirurali.unimi.it/ConservA	Link ad altri siti che ospitano informazioni del progetto
Brochure informativa del progetto	http://costruzionirurali.unimi.it/wp-content/uploads/pieghevole-ConservA.pdf	Materiali utili
Scheda tecnica dell'impianto pilota	http://costruzionirurali.unimi.it/wp-content/uploads/scheda-tecnica-Conserva.pdf	Materiali utili
Presentazione del progetto e delle prestazioni dell'impianto	http://costruzionirurali.unimi.it/wp-content/uploads/Presentazione-Conserv-29_0...	Materiali utili
Pubblicazione scientifica sul processo di strippaggio	https://doi.org/10.3390/su14137709	Materiali utili