THE STRATEGIC ROLE OF NITRATES TO SOIL PERFORMANCE AND CARBON SEQUESTRATION

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A B S T R A C T

The aim of this research is to highlight an image of the risks of nitrates and soils but also of the global capacities to adapt to a sustainable agricultural economy. The article also focused on the ability to implement methods of proper use of nitrates to improve soil capacities as a means of sequestration of C. Productivity of crops with a high capacity to fix nitrogen in the soil contributes to the fulfillment of the mitigation mechanism and reduction of greenhouse gas emission. The main result of the research is the identification of adequate nitrate management in improving soil quality, as well as the use of crop rotation as a means of sequestering C at soil level. Methodologically, the conditions for optimizing the capture of C from the soil by adequate management of nitrates were followed. Research will help to understand the problems of land use in the context of climate change, as well as provide information on GHG emissions by advancing strategies that contribute to the effort to decarbonise agriculture through the proper treatment of agricultural land.

Introduction

Agriculture has a unique and important contribution to the economy and to the value of productivity, but low-carbon strategies in this area are often left out of planning. However, the distinct opportunities and challenges in agriculture make the transition to decarbonisation and alignment with environmental targets to be supported as a particular challenge. The ecological transition can contribute to bringing many benefits as well

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as environmental challenges in the conditions of a transition that involves a sustainable agri-food sector with ecosystem services.Net carbon sequestration on agricultural land might offset 4% of yearly global GHG emissions caused by the rest of the century, contributing significantly to the Paris Agreement's goals.

To fully realize the agricultural sector's potential to contribute positively to the sustainability agenda, careful monitoring of carbon stocks in the soil is required, as well as an understanding of what factors contribute to the loss of soil capacity, such as erosion, fertilizers, and non-compliant practices. Solutions to limit carbon loss from the soil would be included in such a strategic panel, which would encourage "win-win" solutions. The latter will need to keep coming up with new ideas for analyzing alternative techniques to resolve concerns about soil sequestration capability. Adaptation to climate change has become one of the cross-cutting objectives to be pursued by all Member States, through all measures to support agriculture as highlighted in (Frelih-Larsen and Bowyer, 2022).

Sustainable land management has been a key strategic priority for the EU and not only in recent years. The factors of choice must first understand what is not being done correctly and the consequences of each decision to use the land in order to better manage the land. Climate change is causing, among other things, an increase in global temperature, variations in the length and frequency of the seasons, and the incidence of extreme weather events. Several sectors of the economy produce greenhouse gas (GHG) emissions, including agriculture, which has become increasingly important in recent years.

In terms of the agricultural economy, it is necessary to prioritize action behavior in terms of agricultural sector vulnerabilities that we cannot predict, such that deepening these aspects supports agricultural orientation through climate change risk reduction measures.

Carbon sequestration contributes to the broader objective of reducing atmospheric greenhouse gas concentrations. One of the most important objectives in the realm of agriculture and rural development is reducing greenhouse gas emissions from the agricultural sector. There is evidence that organic farming has, in theory, a lower carbon footprint per ton of food produced than conventional agriculture because it does not use chemical fertilizers and pesticides. Prioritizing an action behavior in terms of vulnerability encourages ecologically beneficial agriculture practices. The focus is on the possibility of making an ecologically responsible industrial model easier to adopt and promote. We tried to underline problems that we feel are critical for the agriculture sector's development as a part of the economy throughout the file.

The research looks at the idea that carbon absorbers are equally as essential as reducing emissions and that the two are inexorably linked. As a result, a thorough knowledge of soil quality, as well as the preservation and improvement of natural absorbents found in agricultural soils, may be necessary. The research focuses on fertilization modifications depending on acid, neutral, and alkaline soil quality and texture.

The research focused on identifying aspects that may be used to optimize agriculture's decarbonization potential and promote an ecologically responsible agricultural strategy. While soil quality is being looked at, studies on correlations discovered through enhancing carbon dioxide storage at the farm level and environmental needs at the farm level will be strengthened. By managing the land and modifying its usage, the idea of carbon storage in the soil may be a way to regulate climate change for agriculture. In this study, we examine the potential for modifying the approach taken to measure carbon changes in soil. The data was given by FAOSTAT and the Romanian Institute of Statistics.

Materials and methods

The research focused on identifying aspects that may be used to optimize agriculture's decarbonization potential and promote an ecologically responsible agricultural strategy. When estimating greenhouse gas emissions from agricultural operations, the method for calculating the contribution of nitrogen from organic sources is essential. Simultaneously, investigations on correlations identified by improving carbon dioxide storage at the farm level and environmental needs at the farm level will be strengthened, all while soil quality is examined.

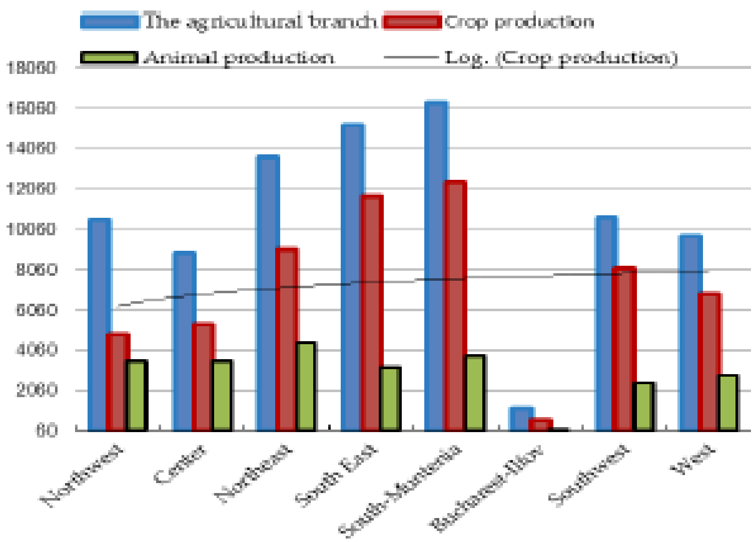
Studies that identify the type or types of soil on the farm, as well as the main morphological and physico-chemical properties relevant to providing maximum fertilization efficiencies and lowering the risk of groundwater pollution with nitrates (and possibly phosphorus), will be taken into consideration in the calculation method for nitrogen inputs from organic sources (slope, texture and soil permeability, degree of saturation in bases). The level of soil fertility, the need for possible improvement measures, and the most appropriate cultivation technologies in terms of soil works, date sowing, organic and mineral fertilizer application methods, and so on, can all be determined using this information, which is correlated with that obtained from agrochemical mapping. We focused on the use of fertilizers in soil based on crops to strategically assess the reduction of greenhouse gas emissions from agriculture, but we also noted the limitations of correspondence between nitrate levels in productive and unproductive soil owing to a lack of field crops.

This enabled a preliminary assessment of sustainability as well as a forecast for 2030, when greenhouse gas emissions are expected to fall. We used data from FAOSTAT's four land use categories to conduct the emissions study. To gain a better understanding of Romania's predicament, we looked at the evolution of land use emissions through time and space. Owing to the non-completion of the 2020 census due to pandemics, data on land use may be scarce. Simultaneously, studies on interactions will be improved by increasing carbon dioxide storage on farms and ensuring that environmental criteria are met on farms.

Agriculture and climate issues

Although many promising mitigation strategies have been proposed to reduce GHG emissions, less effort has been focused on adopting such farm management practices from an economic perspective (De Pinto et al, 2010; McCarthy et al., 2011)In other words, if a practice is not economical, its adoption would be low because farmers would not be stimulated to adopt it (Oster and Wichelns, 2003; Kulshreshitha et al., 2015).[23,24] However, several studies have examined a variety of barriers, including the potential risk of losing performance, the cost of learning, so a decision support system will be useful for analyzing scenarios and promoting farmers' adoption of mitigation practices. GES. Agricultural activity produces greenhouse gases (GHGs), but it also works as an absorbent, storing CO_2 in organic matter and biomass in the soil. In Romania, land abandonment has become more prevalent recently, which has led to a decline in biodiversity. Since 2005, the amount of uncultivated land has increased by 50%, making about 7% of the nation's total agricultural area (952 000 hectares) (2010). Affected ecosystem services by the abandonment of agricultural land include increased carbon storage, decreased soil erosion, improved water quality, and the disappearance of traditional cultural landscapes. Agriculture in Romania is low-productive, and rural regions are disproportionately impoverished. The high proportion of small agricultural holdings is a major contributor to low productivity. Figure no. 1 shows the location of agricultural farms in development regions, comparing the growth of agricultural productivity of plantations to that of farms that produce animals. Plant protection products have also increased in the South Muntenia regions, specifically the South East and Northeast, while there has been a modest increase in livestock and a decline in the consumption of plant protection products in the West.

Figure 1. Agricultural systems by branches in Romania



Source: Owner recherché from data * European Environment Agency (EEA)

Future climate changes will require the sector to plan for adaptation in addition to reducing Green House Gas (GHG) emissions. Greenhouse gas emissions in 2019, by type of gas, expressed in CO2 equivalent are shown in Table 1.

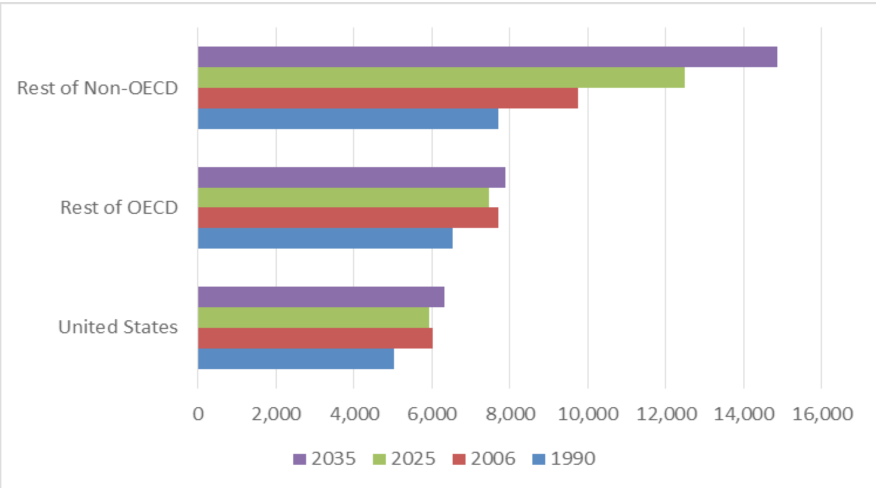
Table 1. The Greenhouse gas emissions

Gas type	Proportion
CO2	82,14%
CH4	10,14%
N2O	5,11%
HFC	2,35%

Source: OECD report

In 2019, the EU28's greenhouse gas emissions were broken down into major source sectors. In 2019, energy is responsible for 79.9 percent of greenhouse gas emissions in the EU28, with transportation accounting for around a third. Agriculture contributes 9.69 percent of greenhouse gas emissions, industrial processes and product consumption 7.86 percent, and water management 2.74 percent. Figure 2 depicts a timeline of carbon dioxide emissions since 1990.(billion metric carbon dioxide)

Figure 2. World carbon dioxide emissions by region, 1990,2007,2025 and 2035

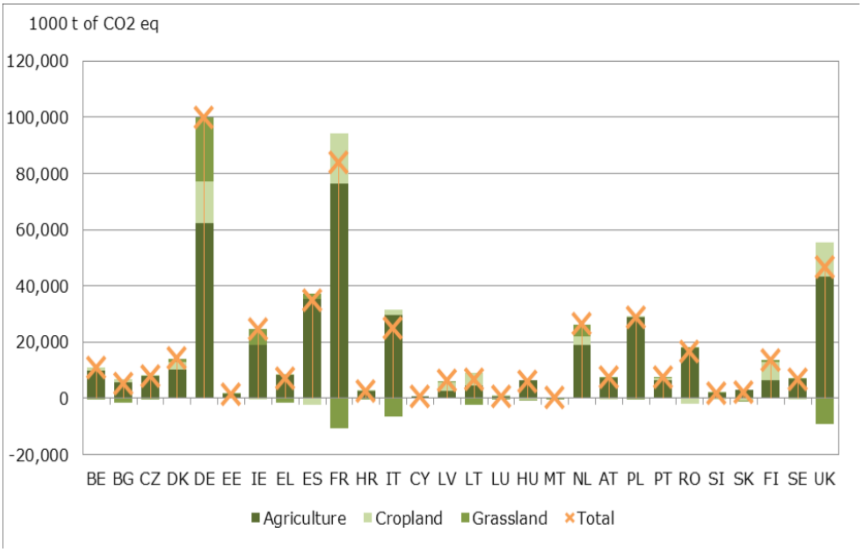


Source: OECD report

Agriculture and forestry, unlike other economic sectors, have the potential to fix carbon in the atmosphere through photosynthesis and store it in soil and biomass, allowing them to absorb emissions. Pastures, wetlands, and forests, in particular, have the capacity to fix huge amounts of carbon.

Carbon stocks, on the other hand, may be lost as a result of changes in land use (deforestation, pasture plowing, wetlands draining, and so on) or extreme weather events (storms, fires, and so on), resulting in the fast release of carbon stored in the atmosphere in the form of CO2. Compared to grassland and wild vegetation, LUCAS research in 2015 found that cultivated land has much lower levels of organic carbon in the soil. About 75% of all agricultural land in the European Union has less than 2% organic content.(Figure 3)

Figure 3. Agricultural land with organic carbon in the soil (UE)



Source: LUCAS report

To support the potential for soil sequestration, a wide variety of tools with best agricultural practices and applications are available.

Adopting hidden crops, for example, can provide benefits not only in terms of carbon accumulation, but also in terms of contributing to the reduction of solar erosion and, consequently, CO_2 emissions (Poeplau & Don, 2014). However, different tillage methods can have different effects on the amount of organic carbon in the soil, depending on the extraction conditions and the depth of the soil. However, two fundamental limitations of carbon sequestration remain: Carbon sequestration practices improve carbon storage until a new balance is reached.

There are three main sources of emissions: animal husbandry, agricultural production and the manufacture of agricultural production factors. The "emissions-absorption" balance reflects the efficiency of holdings in terms of GHG emissions.

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It is crucial that there be improved agricultural systems that make efficient use of nutrient resources, increasing not only the amount of carbon in the atmosphere but also biodiversity and agricultural resistance to climatic changes. Typically, adapting a certain agricultural activity can increase carbon stocks in agricultural soil. Additionally, studies show that carbon dioxide absorption is just as important to reducing emissions. To achieve a sustainable environment, it is vital to take into account the way the land is used, changes to its structure, the kind of crops that are grown, and the size of defrişures. All of these factors contribute to the improvement of the soil's quality. It is crucial to maintain and improve the natural wetlands composed of agricultural fields and coastal buffer zones. (Henderson and Lankoski, 2021).

The impact of agriculture on GHG emissions can also be estimated at the farm level, with the balance of emissions accounting for GHG emissions (carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) on the one hand, and CO_2 uptake (carbon credits) due to carbon sequestration in the soil and energy production from renewable sources and biomaterials on the other.

Animal husbandry, agricultural output, and the fabrication of agricultural production elements are the three main sources of emissions. In terms of GHG emissions, the "emissions-absorption" balance demonstrates the efficiency of holdings. Modeling can be used to estimate the influence of climate change on agriculture. Climate change has a bidirectional effect on production: it can have divergent consequences (an increase or decrease in output) that are highly dependent on regional conditions.

Increased temperature, drier summers, milder and rainier winters, intensification of extreme weather events with a significant impact on soil erosion (floods, droughts, etc.) and, indirectly, increased CO2 content in the atmosphere, which promotes photosynthesis, are some of the potential consequences. In many ways, the agricultural sector must adapt to climate change.These include, for example, the selection of species and varieties, the adaptation of agricultural work to the calendar (a greater degree of flexibility), the adaptation of agricultural production practices (fertilization, plant protection, irrigation, etc.) or the adoption of plant production that results in an increase in the soil's organic matter content or the soil being covered with plants. The latter seeks to reduce soil erosion. Reduced indirect N_2O emissions and the use of nitrogen-based mineral fertilizers can also help to reduce GHG emissions.

In terms of emissions, soil qualities, climate, and crop management are all important factors to consider. On the other hand, the accomplishment of this goal will be tracked by keeping an eye on the areas where green crops were planted and measuring how much plant biomass was generated as a result of afforestation. Most agricultural soils lack enough natural nitrogen to meet the needs of crops throughout the growing season. Soil's naturally existing nitrogen must therefore be replaced annually. The application of the correct amount of nitrogen at the right time is a must for successful fertilizer strategy.

The impact of climate change on agriculture can be estimated by modeling. Climate change affects production not only unidirectionally: it can have divergent effects (increase / decrease in production) that largely depend on regional conditions.

The effects can be increased temperature, drier summers, milder and rainier winters, intensification of extreme weather events with a significant impact on soil erosion (floods, droughts, etc.) and, indirectly, increased CO2 content in the atmosphere, which promotes photosynthesis. The agricultural sector needs to adapt to climate change in many areas.

These include, in particular, the selection of species and varieties, the adaptation of agricultural work to the calendar (a greater degree of flexibility), the adaptation of practices used in agricultural production (fertilization, plant protection, irrigation, etc.) or the adoption of plant production leading to an increase in the organic matter content of the soil or to the soil being covered with plants. The latter aims to slow down soil erosion

Reducing GHG emissions can also be achieved by reducing indirect N_2O emissions and using nitrogen-based mineral fertilizers.

In terms of emissions, soil qualities, climate, and crop management are all important factors to consider. The success of this goal will be evaluated by keeping an eye on the areas that were planted with green crops as well as the volume of plant biomass created through afforestation. The amount of harvestable nitrogen that can be obtained under a specific set of pedoclimatic and technical conditions varies greatly between crops, and even within the same crop. Only optimum circumstances, which are achieved when the components described above generate optimal conditions for plant growth and development, can a crop's genetically determined production potential be realized.

A helpful agricultural technique is to tailor fertilization and fertilizer timing to the kind of agricultural crop and soil characteristics. The nitrogen need is determined by the soil's nutrient reserve, local weather conditions, and the expected amount and quality of production.

Strategic option

Around 1.6 Gt of Cyr-1 emissions were estimated to have been produced globally by land use and land use change in the 1990s, accounting for close to 33% of the carbon dioxide emissions between 1950 and 1998. This was mostly due to deforestation (Watson et al., 2000). [19] Agricultural emissions made up 10% of all GHG emissions in the EU between 1990 and 2020, compared to over 20% of GHG emissions across all sectors in Romania, showing a downward trend for the EU as a result of CAP efforts to promote growth and protect the environment. In the case of Romania (Zaharia & Antonescu, 2014), the tendency is mostly attributable to unregulated fertilizer and pesticide use.

The form in which soil carbon inventory is stored, as well as the capacity, persistence, and bulk density of the soil, as well as the textural class of the soil, all play a role in land management for carbon sequestration. In some areas, particularly on soils with a thin limestone bedrock, groundwater contamination is a severe concern. Depending on the local circumstances, this danger should always be considered when applying organic fertilizers in high-risk areas. When estimating greenhouse gas emissions from agricultural operations, the method for calculating the contribution of nitrogen from organic sources is essential. Crops can only use organic nitrogen once it has mineralized or broken down into inorganic nitrogen in the soil.

The ratio of carbon to nitrogen in fertilizer (C/N) is the most important evolution factor for crystalline forms of nitrogen. Mineral fertilizers, such as nitrogen (N) and phosphorus (P), are particular minerals that are absorbed from the soil of plants to help them grow, and are used to enhance agricultural productivity. As a result, an excess of either nitrogen or phosphorus causes contamination in the environment, such as eutrophication of surface water. As a result, reducing the overuse of mineral fertilizers is important. Improper fertilizer management (natural or chemical) can cause substantial environmental and health issues (eutrophication, a condition that adversely disrupts the equilibrium of aquatic ecosystems). A classification of fertilizer products is presented in Table 2.

Table 2. Fertilizers the chemical composition used

FERTILIZER	N(%)	P_2O_5(%)	K_2O(%)
Nitrogen fertilizers			
1. Ammonium sulfate $(NH_4)2SO_4$	21		
2. Calcium nitrate $Ca(NO_3)2$	16		
3. Ammonium nitrate NH_4NO_3	34		
4. Calcium and ammonium nitrate $NH_4NO_3 + CaCO_3$ (CAN)	27		
5. Urea $CO(NH_2)2$	46		
Phosphorus fertilizers			
1. Simple superphosphate (SSP), $CaH_4(PO_4)2$+ CaHPO4· $2H_2O$		16-18	
2. Triple superphosphate (TSP), $Ca(H_2PO_4)2$+ CaHPO4		46	
3. Phosphate rock (PR), activated or not		22-40	
3. Phosphate rock (PR), activated or not	18	46	
3. Phosphate rock (PR), activated or not	11	48	
Potassium fertilizers			
1. Potassium chloride (MOP), KCl			60
2. Potassium sulphate (SOP), K2SO4			50
3. Potassium nitrate, KNO3	13		44
Complex fertilizers			
1. NPK	15	15	15
2. NPK	17	17	17
3. NPK	22	22	11

Source: ICPA

Denitrification and ammonia volatilization on the surface of alkaline soils are two processes that might cause these losses. Nitrogen is a nutrient specialized to plants and may be present in natural organic fertilizers in different proportions, primarily as protein from animal feces. The capacity to control fertilization according to vegetation, culture, agrofond, and nutritional deficits, as well as improved cost-efficiency indicators for extraradicular and liquid fertilizers, all led to the quick development of fertilization methods and technology. A helpful agricultural technique is to tailor fertilization and fertilizer timing to the kind of agricultural crop and soil characteristics. The nitrogen need is determined by the soil's nutrient reserve, local weather conditions, and the expected amount and quality of production.

The Table no.3 above shows evaluations fertilizer unit kgN/ha or kg P/ha cost from, 2015 to 2019 from CRAAQ [7]

Table 3. Fertilizer unit(kgN/ha or kg P/ha

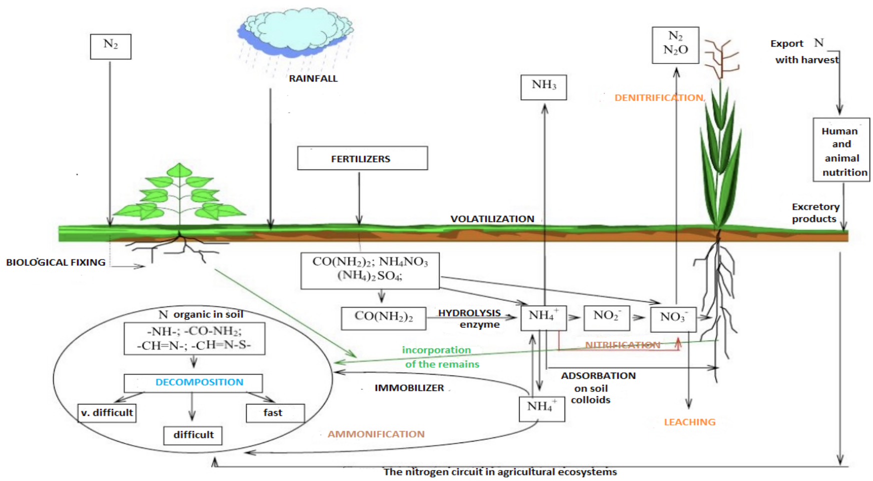
Fertilizer type	**Nutrient content**	**2015**	**2016**	**2017**	**2018**	**2019**
Calcium ammopnium nitrate	27-0-0	701	670	606	608	678
urea	46-0-0	780	702	654	665	735
Phosphate triple	0-46-0	1010	990	965	926	1013
Phosphate ammoniacal	18-46-0	911	910	822	840	930
Phosphate monomaniacal	11-52-0	905	945	833	793	N/A
Muricate de postassium	0-0-60	794	690	645	650	726

Source: Data extract from *CRAAQ*

Liquid fertilizer A-320 (0-45-34) (URAN) with a content of 32 percent nitrogen contains all three types of azote (ammoniacal, nitric, and amidic) and is applied during planting by soaking a date in irrigation water. This method of application has the advantage that the dosage of azot (active substance) can be divided into two to five stages, depending on the vegetative phase. Other versions used include the A 160 (0-46-0), A 200 (0-57-0), and A 280. (0-39-30).

For example, those with a high P_2O_5 content are more suited to presown grain cereals, while those with a high nitrogen ratio are better suited to technical crops, and so on Figure 4.

Figure 4. The nitrogen agricultural ecosystems



Source: incpe

Soil qualities impact fertilizer application: on heavy soils, more fertilizer may be applied than on light soils; on acid soils, fertilizers with an alkaline physiological response are used, while on alkaline soils, fertilizers with an acid physiological reaction are used.

To maximize crop nutrient uptake while limiting the usage of organic fertilizers, the times when they should be administered should be determined as early as possible throughout the crop growth cycle, taking into account a variety of factors. Only one crop is harvested per year on badly degraded meadows, whereas two or three harvests are produced on other meadows, with the first harvest having the maximum weight. Organic fertilizers used to permanent pastures (pastures and meadows) may not exceed a dose of 170 kg nitrogen per hectare per year and must not be administered during the restriction periods.

Schmidt (2008) focuses on the transition from natural to cultivated land. Cropland, grassland, and marshes have all been widely examined. However, because these methods must be managed according to external components based on the periods of soil management with fertilizers, a technical formula cannot be proved accurately. In terms of emissions, soil qualities, climate, and crop management are all important factors to consider. The interactions between crop development, soil carbon, nitrogen demands, and climate are explored in the following scenarios.

Due to the possibility of controlled application based on the development phases, extraradicular and liquid fertilizer fertilization methods and technologies developed quickly. Due to the extremely small amounts of active chemical used, using extraradicular fertilizers as a fertilizing strategy in modern agriculture is also a potential way to develop organic farming. Chemical fertilizers containing organic components and phytoregulatory functions are not covered by Regulation (EC) 2003/2003 on chemical fertilizers, which has been in effect in Romania since 2007.

These products can also be used for organic farming. On the other hand, acid rain, which is typically prevalent precisely in places where there is a large concentration of potential contaminants from over fertilization, magnifies neighboring dangers such as forest deterioration and even destruction.

Results

Human mistake is to blame for the most majority of environmental damage produced by improper fertilizer application. The land use, greenhouse gas emissions are a global phenomenon with serious consequences for the planet. As a result, many studies have focused on assessing land use emissions and their consequences rather than technical soil fertilization and forest curtain procedures. Contrarily, carbon sequencing is a function of ground-level storage, highlighting the significance of evaluating soil quality and interdependence with the climatic ecosystem. However, determining how to correlate the link between reducing emissions in agriculture and adapting to sustainable systems over time is a challenge for small farmers as well as holding companies. Soil is regarded as a strategic carbon store that holds more carbon than the atmosphere and terrestrial plants combined. The buildup of stabilized carbon in the soil necessitates storage regulation. Furthermore fertilizers, via their influence on microbial activity, plant carbon contributions, and meteorological conditions such as temperature solution.

Carbon sequencing, on the other hand, is a function of ground-level storage, stressing the need of identifying soil quality and climate ecological interaction. Small farmers and holding businesses, on the other hand, face a problem in establishing how to draw the relationship between cutting emissions in agriculture and adapting to sustainable systems over time. Soil is thought to be a strategic carbon store, storing more carbon than the atmosphere and terrestrial plants combined. Storage control is required for the buildup of stabilized carbon in the soil. Fertilizers, which are necessary for agricultural systems to sustain plant productivity, have an influence on the amount and kind of wastes generated by plants. In addition, they have an impact on microbial activity, plant carbon contributions, and climatic circumstances such as temperature.

Alignment with climate change is more than a challenge, but it is also a prerequisite for the development of new ways, such as organic farming practices that do not affect the environment in the long run. There is a need to reconsider priorities for accelerating processes in the agri-environment area in order to foreshadow the implementation of more environmentally friendly agricultural methods, in order to achieve low GHG levels.

Discussions

In recent centuries, the amount of emissions produced by various economic sectors has rapidly expanded all around the world. This increase in emissions has had a devastating impact on the climate of the globe, hurting human society, biodiversity, and all life. The fact that these effects worsen the issue is well known to scientists and governments who are striving to minimize and/or adapt to climate change. How land is used, changes in its structure, shared fertilizers to improve soil quality and the extent of deforestation are all important factors to consider when it comes to achieving sustainable land management by farmers and territorial administrative entities that own land in state ownership.

The distribution of nitrogen in the soil is regulated by organic carbon, vegetation, climate, and soil texture, as can be shown. As a result, land use, as well as novel agricultural techniques based on management built using local data and tailored to agricultural output, may all contribute to improved soil performance.

In our perspective, agricultural areas in general, and particularly those in Romania, have a lot of potential for carbon capture and storage.

Changing some agricultural techniques may generally increase carbon storage in agricultural soils. Carbon absorbers are equally as important as cutting emissions, according to study. Agricultural areas in general, and especially those in Romania, have a lot of potential for carbon capture and storage, in our opinion. Improved agricultural systems that properly use nutrient resources are critical for boosting not only the quantity of carbon in the soil, but also biodiversity and agriculture’s resistance to climate change.

Conclusions

As Nancu et al (2022) argue, we could perfect the options for developing agricultural systems as a whole, including both facilitation mechanisms in the agricultural production sector and in forest management, forestry both as potential mitigation levers as solutions. Reducing greenhouse gas emissions is not the sole responsibility of one area and therefore requires the involvement of all factors as a joint effort.Important steps have been taken to reduce emissions by using land, but the consumption of fertilizers still shows that reducing them would be an important indicator in measuring farmers' awareness of crossing the threshold to more environmentally friendly agriculture and reducing fertilizers.

By researching the current state of land resources, the impact of previous land reforms and policies, and by improving land legislation and the function of local government, one can find the pulse of this goal and what needs to be done afterwards.

An essential conclusion from the perspective of greenhouse gas emissions is related to the adaptation of agricultural systems to the conditions of soil management in environmental conditions. Other factors of land use change have been and continue to be the lack of actual procedures for executing the unified agricultural policy in order to fulfill cross-compliance and climate change needs. Both farmers and long-term rural development groups would gain from this. As a consequence, a lack of adaptation of cross-border measures in the CAP program leads to constraints from the perspective of sustainable agriculture and would increase greenhouse gas emissions from the atmosphere while a low emission value is the effect of environmentally friendly use of soil.

Therefore, the soil is at the center of the analysis of emissions from agricultural sources and due to its ability to store carbon in the soil from agricultural practice and crop rotation but also by the way fertilizers work in the soil thus increasing its nutritional value. Extensive discussions have been generated about environmental policy and its adaptation over time, The Paris Agreement practically aims at strengthening a reliable response to climate change by increasing the capacity of all to adapt to the environment. That is why we will state that sustainable for farmers also implies sustainable for the environment, because plants, soil, climate, and biodiversity all contribute to the agricultural system's overall sustainability. In terms of greenhouse gas emissions, the vision of agricultural products to soil management conditions in environmental contexts is a key conclusion. As a result, the CAP program's lack of cross-border adaptation inhibits sustainable agriculture and raises greenhouse gas emissions into the atmosphere, despite the fact that low emission values are the outcome of environmentally friendly soil usage. As a result, the soil is at the center of agricultural emissions analyses, not only because of the way fertilizers work in the soil to improve its nutritional value. Farmers must continuously adjust methods to new difficulties, such as keeping the soil covered and utilizing ways for regulating the land's environment to help preserve carbon in the soil. According to study, changes in land use have an impact on soil carbon.

Agriculture methods that are more ecologically friendly are promoted as a result of the development of an action behavior in terms of vulnerability. The need for agricultural innovation will help to define the requirements for building a viable and highly competitive market economy, as well as to understand the economic and financial implications of carbon storage on the farm. An important component of the research mission is to be both an advantage from the perspective of reconfiguring farm strategies through production methods aware of environmental risks and able to adapt ecological processes, step by step as a partner of responsibility.

Conflict of interests

The authors declare no conflict of interest.

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