Agricultural culture between perspectives and production trends of adaptation to climate change

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ABSTRACT

The climate paradigm of agriculture under the Common Agricultural Policy shows that current working practices together with environmental innovations and the elimination of chemical fertilizers are catalysts for a European agriculture that has the potential to become less harmful to the environment. Research seeks to extract a set of factors that can lead to the natural imbalance of plants. The development of an agricultural crop offers a new way on the general perception between need and consumption, the intersection being governed by the general cyclical and regenerative purpose in symbiosis with the environment. Thus, the change of environment generates direct effects in terms of production, farmers adapting production to the response of crops to climate, especially on plant protection, taking into account the effects of climate change. Environmental protection and sustainable management of natural resources, vulnerabilities related to fertilizer application techniques are current individualized concerns in the development of areas. The excessive and intrusive development generated by soil development and loss, causes degradation of the environment and society and the reorientation of methods applied to plant protection to protect the biosphere has returned today. Climate change involves the reduction of greenhouse gas emissions and the adaptation of agricultural systems and, in our opinion, these are closely linked to the use of different types of plant protection. Analyzes indicate that the products chemicals that are used to control diseases in agricultural crops are growing in the highlighted agricultural areas. This research uses the theories of empirical analysis, the role of research and studies has shown an important

factor in reducing the carbon footprint can be highlighted from the perspective of the production load and implicitly of plant protection products used. The novelty of this research indicates that agricultural practices for the application of plant protection have a response to climate change and due to atmospheric pressure. During the research, values were found that contribute to the development of the agricultural sector as part of the economy, Studies have shown effect of the climate being a factor not to be neglected in agricultural techniques. The research question is how climate change regulations influence the vision of the Common Agricultural Policy and climate change from the perspective of adapting to the needs imposed by sustainability. The main objective of the paper is to highlight the main levers of agricultural sustainability in accordance with the requirements of the Common Agricultural Policy.

Keywords: environmental; agricultural; pollution; climate change.

1. INTRODUCTION

Climate change, the reduction of greenhouse gas emissions and the adaptation of agricultural systems in our opinion, are closely linked to the use of different types of plant protection in interdependence with climate and atmospheric pressure. Climate pressure is reflected as a boomerang affecting the plant, soil, water triangle. Environmental change has a direct effect on production, with farmers adapting production to the crop's response to climate, in particular on plant protection, taking into account the effects of climate change. The role of research and studies has shown that an important factor in reducing the carbon footprint can be analyzed from the perspective of productivity and implicitly of the plant protection products used.

Today, the Common Agricultural Policy (CAP) is seen as a key tool in providing support to enable agriculture to transition to a more sustainable, low carbon future. But the steps towards integrating climate issues into the CAP have been taken gradually through a series of successive reforms. As a result, climate goals have gradually become more prominent in the CAP over the last two decades.

Obligations on good agricultural and environmental condition (GAEC) have required Member States to implement standards to reduce soil erosion and maintain soil organic matter levels and soil structure, all of which have the potential to be beneficial for storage and carbon sequestration.

According to the United Nations Framework Convention on Climate Change, human action is directly or indirectly responsible for climate change. In this situation, we can see both agricultural production standards and how these practices are exacerbated by the use of excessive fertilizer. The trend to creatively identify those agricultural regions that minimize the vulnerabilities produced by the environment by developing buffer zones, as an element to drive environmental conservation, has given predictability in agricultural systems a new lease on life. To build our resistance to climate change, we must take an active role in respecting agricultural methods in order to avoid uncontrolled groundwater deterioration and to keep track of natural catastrophes.

The agri-environmental measures were intended to promote the use of agricultural land compatible with the protection and improvement of: the environment, the landscape and its characteristics, natural resources, soil diversity and genetics, an ecologically favorable intensification of agriculture.

The Nitrates Directive is one of the first EU laws to control pollution and improve water quality. The effect of climate on plant physiology or climate effects are correlated with other factors, we are talking about climate effects, we are talking about widespread phenomena that occur on larger areas that do not take into account soil or land, the need for the EU to "adapt its policies in the light of climate change considerations ”to address the commitments made under the Kyoto Protocol, the first commitment period of which began in 2008 (recital 9 of Council Regulation (EC) No 73/2009) (Hart et al., 2017). Uncertainties about key vulnerabilities are associated with sensitive climate systems, to show an increase with all climate restrictions according to Adewale, C. (2019.) Climate action has been introduced in the CAP, recognizing that climate change mitigation could also be supported through sustainable agriculture.

As a key goal of sustainable development, we've emphasized the need of knowing how growing fertilizer usage, as measured by statistical databases, is influenced by the backdrop of climate change, and specifically how the stress of these changes impacts agricultural production.

The research question is whether there is a strong link between the CAP and climate change for farmers to become more aware and competitive in such a future. Taking all these aspects into account, the key objective of the paper is to analyze the links between agriculture and how to protect productivity through plant protection products according to their S_{phor} yield, in line with the adaptation to climate change according to the CAP.

2. MATERIAL AND METHODS

In the first stage of the study, on the basis of which this research was built, there are some consequences that we highlighted for the practical application of the calculation of the efficiency of adaptation to climate requirements, called effort as an evaluation index. First, agriculture has been caused by the conditioning of environmental requirements, without at least gradually introducing an index to calculate the effectiveness of climate monitoring and adaptation practices, whether they are small processors or large farmers. For the 1: 1 scale evaluations, the methodology used was a real challenge, in addition to the eloquent studies in the field. Thus, given the recommendations for calculating soil stock C, we had to introduce a correlation indicator to estimate the growth in application of environmental requirements, to the humidity index we introduced a new S_{phor} factor to estimate the exercise of atmospheric pressure that has the influence of moisture soil in conditions of climatic vulnerability on storage and storage CSAU at ground level. Therefore, depending on the E element independent of soil work over time, we have seen a stagnation of 5-8 months per year in which soil storage C does not stagnate, with the Sphor index averaging 4 - 6 months preferably: 4 months when it is assumed to be a long day, so during the summer the dynamic-humidity variable is low.

Our projection calls into question the fact that once climate change risk reports include the S_{phor} precisely because of the reporting point new in relation to climate. Climate change has inevitably led to the onset of deep tectonic movement, which has altered sea levels in many areas soil if not even on the ground, the one modified in terms of climate change. Crops capture a large amount of emission each year, which in turn generates a large amount of emission, which is excellent for the climate. The role of this research transposes this direct relationship between agricultural production as a major key to concerted greenhouse gas emissions. The sustainability of production in fact indicates an improvement in emissions over time. The collection of data from the reference year 2011 is based on Regulation (EC) no. 1185/2009 on pesticide statistics, which established a common framework for the systematic production of Community statistics on sales and use of those pesticides that are plant protection products.

The main quantitative methods taken into account in the impact assessment referred to the method of counterfactual assessment, based on a S_{phor} simulation indicator indicated in formal (1), of the effects used by protection products in weed eradication in agriculture

$$S_{\text{phor}} = \mathrm{P}^1 + \mathrm{CSAU} + \sum_{k^1}^{n} \frac{E^1}{t} \qquad (1)$$

n = number of periods for which data was collected in a given t,

k_1 = extension coeficient to a number of measurements

C_{SAU} = effective density C at the value SAU(per ha) in Kg/m3 C_{SAU}

P = soil nutrient power measured as a coefficient of weight C in mass, qualified as an index measured progressively at A surface area at depth, a_1=0-10 cm^3, a_2=0-30 cm^3,a_3= 0-40 cm^3

E^1= item independent of the atmospheric pressure variable that determines the humidity

S_{phor}= Increased absorption of C in the soil at variable atmospheric pressure

2.1 Analysis of Development Areas in Romania

During the growth season, most agricultural soils have insufficient natural nitrogen to satisfy growing requirements. In Europe, the use of nitrates in organic and artificial fertilizers in agriculture is a major source of water contamination. Mineral fertilizer consumption in the EU-15 fell sharply in the early 1990s and then stabilized over the last four years, but nitrate consumption increased by 6% in all 27 Member States. Nature's stress is reduced by reducing the possibility of pollution of soil, air, and surface water.

Once the land is ready, it is applied once every 3-4 years 20 - 30 tons of manure / ha, together with phosphorus and potassium fertilizers, in the amount of 40 - 60 kg of active substance / ha, making the farmer a real one creator, nature is not an obstacle, it just needs help once the land is ready, apply 20-30 tons of manure / ha once every 3-4 years, and fertilizers based on phosphorus and potassium. Lately, animal husbandry has been almost declining, which is why manure is only a resource that farmers find difficult to accept as fertilizer, and the emphasis is exclusively on chemical fertilization.

The increase was mainly due to new varieties of wheat and rice with high yields. However, new varieties have required large amounts of chemical fertilizers and pesticides to produce their high yields, raising concerns about costs and potentially harmful effects on the environment. Poor farmers, unable to afford agrochemicals, often harvested even smaller crops with these grains than with older stems, which were better adapted to local conditions and had some resistance to pests and diseases. The Common Agricultural Policy (CAP) supports the Nitrates Directive through direct assistance and rural development measures.

In the period 1998-2018, in the European Union agriculture accounted for 10% of total GHG emissions, while in Romania agriculture accounted for about 15% of GHG emissions in all sectors, indicating a downward trend for the EU due to CAP measures to protect environment and growth trend in the case of Romania (Zaharia & Antonescu, 2018), mainly due to the uncontrolled growth of fertilizers and pesticides. Many studies have estimated land use emissions using IPPC methodologies (Flynn et al., 2012; Don et al., 2012). Don et al. (2012) showed that it is difficult to estimate the balance of GHG emissions for bioenergy crops due to lack of data and that annual energy crops such as maize, wheat and barley have low GHG efficiency because “CO2 savings due to bioenergy production is compromised by GHG emissions during the production of raw materials ”.

Many studies suggest that the reduction of greenhouse gas (GHG) emissions is achieved by better choice of crop type, by improving yield and by applying better crop management (Don et al., 2012). Davis et al. (2014) considers that it is not enough to know the amount of land use emissions, but also requires the allocation of these emissions to activities and products and that this correlation can be achieved by distributing land use emissions in space and time taking into account the production and proxy area, permanence policies, space and time of consumption of products and their impact on other countries.

Plevin et al. (2010) showed that policies where risks are associated with uncertainty have better results in reducing GHG emissions from land use. In addition to studies analyzing emissions from land use, there have been studies on the benefits and measures taken for sustainable land management Cowie et al. (2011) recognize the benefits of sustainable land management on human communities and biodiversity and emphasize its importance for stabilizing and regulating carbon stocks.

Global economic transformations, social changes, in addition to the many challenges of translating the rural paradigm require redefining the place, role and impact that rural areas and economies have on global economies. Therefore, as presented in (De Toni et al, 2021), different levels of progress in rural development are based on local barriers and determinants, given the premise argument in the literature (Olsen and & McCormick, 218, Brayden, 2019), that rural policy itself started at the level of the European Union as a policy of territorial cohesion and not as a component part of the common agricultural policy.

In Romania, autumn cereals rank 2nd in area, after corn cultivation. Thus, if the grass weeds affect only a part of the agricultural area of the country, the annual and perennial dicot weeds affect the straw cereal crops on the entire territory of Romania. The findings indicate that the products (chemicals) that are used to control diseases in agricultural crops are increasing in some agricultural areas and are declining in others. The amount of fungicides sold in solid form in 2020 increased by 5.7% compared to the previous year. The arguments regarding the different urns of the use of fertilizers I found as a direct link with the climatic phenomena and the properties of the soil. In the argument he identified that the S_{phor} moisture index is a feasible cause for the dynamics of soil fertilizers in addition to soil saturation and other deficiencies caused by erosion and agricultural practices.

Another important issue that is widely discussed internationally is the consideration of externalities in all strategic plans, as land management involves land potential assessment activities and the establishment of adequate land use (Beinat & Nijkamp (Eds.), 1998). So, in particular, researchers emphasize the need for sustainable land management to ensure food security and safety for the future by improving access to land, land use and the entire land ownership system. Emissions from land use must be analyzed before any strategic decision is taken in the areas of sustainability and land management, as these should be one of the national indicators for determining a certain level of sustainable development.

3. DISCUSSION

The dynamics of state variables must meet the needs of nutrient retention in the soil depending on soil pH, fertilization is added to the productivity-increasing properties that clearly have the same equilibrium solution in a steady state to ensure agricultural production, promoting at the same time increasing resistance to climate change, which increases the risk of damage.

Making an explicit assumption about marginal productivity that increases carbon sequestration is in fact a simulation of determining the variable productivity of cereal and other plant production that gives agricultural systems the levers of efficiency in the fight against greenhouse gases.

Similarly, our next task has been to fully characterize these pathways, starting with the main theme of the link between the effects of agricultural practices influenced by climate change, to follow the evolution of resilience or the response to climate change, which is a direct consequence. With regard to the simplification assumptions mentioned above, we recall that the S_{phor} item is our way of balancing autarky for the global carbon stock (so common to both regions).

This suggests, for example, that in a high-tech technological environment of agricultural productivity, these benefits in investing in smart and innovative agriculture lead to the sole conclusion of increasing S_{pho}r's efficiency in reducing global carbon stocks while maintaining quality of the supplied product. In other words, increasing productivity and, consequently, increasing the efficiency of carbon sequestration in high environmental standards in agricultural areas could be a "win-win" in terms of improving the global environment, but also the longevity of this increase over time. .

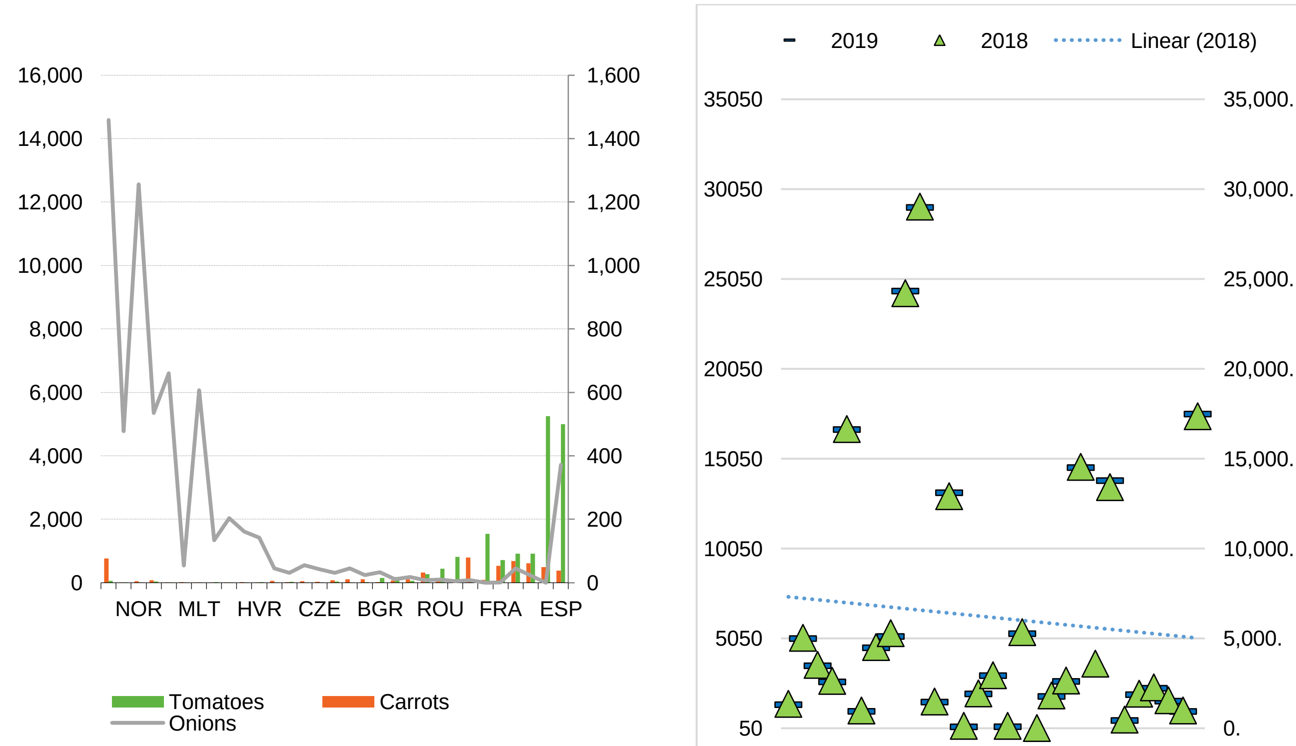
Moreover, in view of this consensus on the alignment of environmental conditions in the new CAP, it is necessary to regulate standard climate efficiency through the Sphor Index in order to balance the level of interest.

Our main theoretical innovation in this paper is the creation of an efficiency index in production and consumption agriculture in a general context, taking into account environmental risks.

The paper takes a step back from the ambitious requirements of climate conditionality in the new CAP vision of decarbonising agriculture, which highlights the effects of environmental regulations on changes in methodology at spatial rather than individual level and, in addition, intersects environmental condition in the agricultural ecosystem. competitors, small producers of non-technological agriculture and large agricultural producers, large producers of cereals on the global market, this interference being in fact the spatial result of carbon sequestration in relation to crops and land used.

Moreover, Acemoglu et al. (2012) show that technical progress towards a clean intermediate sector is optimal in terms of long term growth in the presence of optimal environmental regulation according to Hemous, (2016).

The expectations regarding the sustainability of the agricultural system have a long concern, what we propose is that, at the same time, we do not produce imbalances in the soil-water-plant equation. The balance of the biosphere beyond the establishment of plant nutrition is a prerogative, so the application of agricultural practices must be analyzed according to the characteristics and climatic texture, topography of the soil.



(a) Productivity values **(b)** Branches of agriculture

Figure 1. The value of the agricultural branch at 2019-2020 EU

Source: Owner recherché from data European Environment Agency and Eurostat data (2021)

According to Popescu (2020), focusing on upgrading crop plants with more extensive root systems could boost agricultural sy stems' potential multiple times. The carbon footprint, for example, is a measure of how much carbon dioxide emissions have been generated along the entire production chain of a product that reaches the EU as final consumption or investment, regardless of industry or location place of issue. Although these emissions are not technically present in the final products, they are frequently referred to as emissions in EU consumption, and these items are not only eaten, but can also be investment goods. Emission fingerprints provide a valuable supplement to greenhouse gas inventories and air emissions accounts. The last two years have seen record emissions on the manufacturing side, where the emissions originate. Instead, carbon footprints are calculated from the standpoint of the final product and its final destination, and are thus known as consumption-based accounts.
The most used practice in Romania is the spring herbicide against the annual and perennial dicotyledonous weeds, a herbicide that solves the palamid and the volbura, weeds that cannot be controlled by the autumn herbicide.

Preventive treatments allow the protection of the plant and stop the infection with fungal spores. The decision to apply a preventive treatment must be made based on the knowledge of a historical field or the careful monitoring of climatic conditions that may favor the occurrence of pathogens. Normally any fertilization should follow the fertilization plan that takes into account the soil mapping - unfortunately we do not excel here either and we must anticipate the preparation of the land with complex fertilizers. The rule is that the entire amount of P and K should be administered when preparing the land and N about 30% of the proposed amount. At the quantitative level, the proportions are 80-120 kg / ha of active substance P and K, and N approximately 150 kg / ha of active substance, of which 40-50 kg since autumn, the rest in two tranches, the first in March and the other in April. In general, the most used N-fertilizers are: urea, ammonium nitrate, ammonium sulfate and calcium azoate.

Along with agrotechnical measures, such as crop rotation, sowing season, balanced fertilization, cultivation of resistant varieties, measures to control fungicides play an important role, being the most effective means of combating diseases in straw cereal crops.

When we plan to obtain top yields and resort to an intensive technology with additional investments in seed quality assurance, soil preparation, fertilization, then the infection pressure of pathogens increases proportionally, and to avoid crop losses, the application of 2 to 3 fungicide treatments. The timing of application of fungicides is recommended to adapt to the evolution of pathogens and climatic conditions in that year.

But how important is the geographical area in which these practices become effective and what risks occur in sloping geographical areas where these fertilization measures must be adapted by arranging multifunctional protection areas, recognized as an integral part of agricultural areas or plots, because they maintain the ecological balance and contribute to the conservation of biodiversity increasing the number of species, pollinating insects, predatory insects and other non-target organisms, providing corridors for wildlife, reducing leaks and risks of pollution with phytosanitary products from adjacent water sources agricultural fields, while avoiding the phenomenon of soil erosion.

3. RESULT

The integration in rural space of the multifunctional protection areas are a major component of the local landscape, through an important role for the protection of natural resources, such as water and soil, biodiversity conservation in order to obtain a sustainable and competitive agricultural production. The different types of multifunctional protection areas between agricultural plots can be grass strips, strips of wild flowers as a source of pollen and nectar for pollinating insects or bird seeds. There are also those protection areas with the role of natural barrier, such as forest curtains - hedges, ditches. The interaction between this natural barrier and the adjacent protection zone can be a source of bio-diversity.

Climate change facing large commercial farms is different from subsistence, which is very small. Climate change is expected to affect farmers in the southern and southeastern region of Romania, in general and individually.

The soil can degrade depending on many objects. The pesticides applied must be as specific as possible to the source objective, as they can have side effects on human health, non-target organisms, sustainable agriculture and the environment by Ruttan, V. W. (2019).

Thus, an important role in the application of fertilizers is played by the multifunctional protection which must be recognized as an integral part of agricultural areas, given, on the one hand, that they maintain ecological balance and contribute to biodiversity conservation: watering the corridors for wild animals and, on the other hand, have the effect of reducing the risks of pollution with plant protection products from water sources adjacent to agricultural fields, while avoiding the phenomenon of soil erosion. A farm by using good soil pH management practices can bring alternative benefits, such as improving the environment and stormwater management by creating protected areas near the land, as shown in Figure 2, that modeling strategies for practicing the tern is vital.

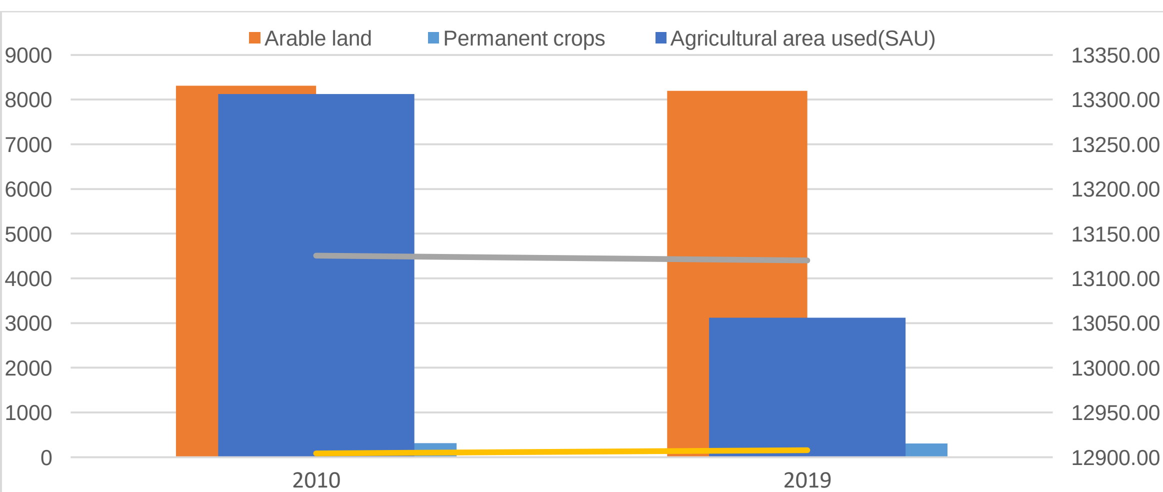
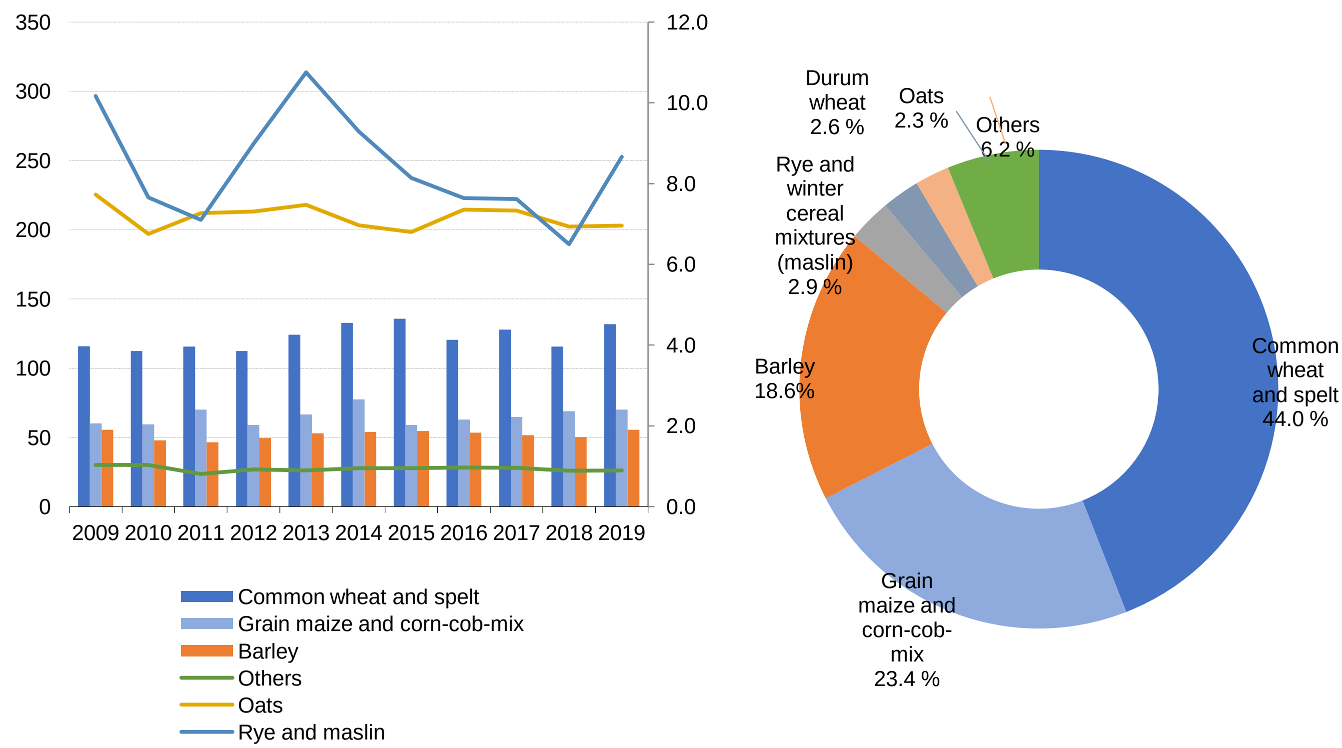


Figure 2. Arable land 2010-2019
Source: Eurostat data

Protection zones established in accordance with the provisions of the national legislation in force are a good solution to reduce the risk of water contamination with plant protection products, but also to conserve biodiversity.
The role of multifunctional protection zones is:
a) to significantly increase biodiversity;
b) the increase of production yields as a result of better pollination;
c) active and become habitats for small mammals and birds; Consequently, protection zones are measures to ensure the protection of soil and water.
Obtaining sustainable productions is associated today with the fulfillment of several targets with the climate, but also with the methodologies that facilitate an increase of the reproduction or the maintenance of the agricultural land at performance standard, by Ramírez, P. B (1019).
The symbiosis between the effects of productivity growth has a common factor in production processes, plant protection products, permanent grasslands, parcelling, buffer zones and meadows having the role of creating a balance of the environment with natural biodiversity.
That is why multifunctional protection areas are assigned a role as a major component of the rural landscape, being important for the protection of natural resources, such as water and soil, for the conservation of biodiversity and for obtaining a sustainable and competitive agricultural production. The different types of multifunctional protection are as between agricultural plots can be grass strips, wild flower strips as a source of pollen and nectar for insect pollination or bird seeds.
There are also those protection areas with the role of natural barrier, such as hedges, ditches. The interaction between this natural barrier and the adjacent protection zone can be a source of biodiversity, what is important to know is how to make these buffer zones in order to fulfill their role in the agricultural ecosystem.

Figure 3 shows an increase in the various cereals that common wheat and spelled, corn maize and corn cobmix, barley, others compared to 2019 when the increase was the maximum exist again an upward trend on these products, in the context of the new vision of The constant growth of the CAP shows that although the environmental requirements have been tightened, the farmers have not attracted the aggressive reduction of the productions adequate.



(a) Main cereals (million tonnes)

(b) Main cereals, EU-27, 2020

Figure 3. Production of main cereals, EU-27, 2009-2020

Source owner recherché from Agridata-Eurostat (2021)

Fertilizer manufacturing, grain drying and grain transport, for example, all result in indirect emissions of many greenhouse gases. In another case, indirect emissions are related to the manufacture of machinery and construction materials used in agriculture. From the perspective of the analysis of agricultural systems, impediments to soil carbon sechestration have been the focus of many researches, but how climate change changes the way fertilization is still sought here. For two years, crop rotation is key to reducing emissions.

In terms of the agricultural context, the economic durability system creates the perception of a more environmentally beneficial future, with agricultural producers having to comply with environmental requirements. But what are the costs of sustainability and if this is the key, between economic and financial sustainability are part of the problems of farmers and their profit. Among the objectives of Regulation (EC) No 1.107 / 2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/11 and EEC Directive 91/414 / EEC to reduce pesticide dependence, protection of human health and risks potential associated with the use of pesticides to achieve sustainable use of pesticides.

To reduce risks and their effects on human health and the environment, including, integrated pest management through non-chemical technical approaches to pesticides is promoted. For example EU consumption at 2020 level assessment looks at input components, fertilizers and soil improvers, phytosanitary products, seeds and propagating material as shown in Table 1 according to Eurostat, Economic Accounts for Agriculture (values at real basic price), the decreasing influences were a response to consumer demand at the analyzed level.

Table 1 Agricultural input in EU Member States

Input components	2019milion EUR	2020 milion EUR	2020 milion EUR	2019/2020	2019/2018
Fertilisers and soil improvers	14 486	14 133	14 070	2.4%	0.4%
Plant protection products	10 651	10 433	10 149	2.0%	2.7%
Seeds and planting stock	11 119	10 974	10 984	1.3%	0.1%

Source: Eurostat, data (2020)

The International Treaty on Plant Genetic Resources for Food and Agriculture (2004) and the Global Strategy for Plant Conservation (2011-2020) adopted by the Convention on Biological Diversity in 2002 emphasized the need for efficient conservation of plant genetic resources for food and agriculture as a means of counteracting the current rate of biodiversity loss at global, regional, national and local levels.

Thus, it is found that a farm through the performance of soil pH management techniques can bring alternative benefits, such as improving the environment and stormwater management.

Climate change faced by large commercial farms being different from subsistence, very small in size creates a difference in ideas in the accumulation of exponential environmental responsibilities, due to a wrong individual vision. The agricultural sector represents a facilitator through the obtained productions and the use of the land to adapt to a changing climate, the risks to disasters in the future, train the capacity of the capacity sector in the attenuation of Green House (GHG) emissions. Pugh, T. A (2015)

In Romania, especially in the Romanian Plain, which is analyzed by the large productions between the other areas, it has a special importance, maintaining the productivity being in direct connection with the performance of the soil and plant protection products, the protection of river waters requiring careful protection.

Climate change thus tends to strike producers who are isolated by subsistence productions that bring a constant profit but by competition with large producers of wheat, corn, etc. that achieve advanced agriculture to increase productivity both categories resonate in environmental responsibilities.

Because large farms usually have highly specialized products, such as cereals and oilseeds, they are particularly vulnerable to the impact of frequent and long term droughts, which affect their production and profit, such as farms and farms cultivated area, depending on the categories of use of the agricultural area used.

The rapid development of fertilization methods and technologies using extra-root fertilizers and liquids has been due to both the possibility of controlled application in accordance with the phases of vegetation, cultivation and nutritional deficiencies, as well as the increase of cost-effectiveness indicators fertilization economic. Due to its peculiar links of geochemical behavior, it is difficult to manage both in monoculture and in isolation. It is also difficult to determine with sufficient precision the amount of nitrogen required for a given crop during the active growing season, and to calculate the dose of nitrogen fertilizer to be applied for fertilization. The chemical composition of certain classical fertilizers used in basic fertilization.

It is vital to improve agricultural systems that make efficient use of nutrients, in-creasing not only the amount of carbon in the soil, but also the biodiversity and resilience of agriculture even to climate change. As a rule, carbon stocks in agricultural soils can be increased by adapting certain agricultural activities. Research also shows that carbon shock absorbers are just as important as reducing emissions. Maintaining and further improving the natural absorbents of soils, agricultural land and coastal wetlands are essential. Another special case is the drainage of peat, which is said to cause huge greenhouse gas emissions (especially N2O) showing unmanaged land, forestry and agriculture - four arrows represented CO2 exchange with forests, but there was no such equivalent for agriculture. Because plant cultivation is the cornerstone of agriculture, photosynthesis as a chemical reaction is a powerful phenomena, or as Neil A. Campbell et al. (2018) put it, "No chemical process is more important for the well-being of life on Earth" (p. 279). The first goal in this analysis for agriculture is to look at CH4 and N2O emissions, and the second goal is to look at the importance of N stream intake. In the soil section, analyses are based on empirical data as well as certain thinking styles (Fleck, 1935), assumptions (Polanyi, 1958), or paradigms (Kuhn, 1962), as well as the subjective selection of system limitations for analysis. The consumption of pesticides according to the latest provided by Eurostat is worrying and, therefore, our guidelines must also include alternative methods of reducing pesticide consumption by switching to organic fertilizers, and here we are talking about pages that should not be neglected.

4. CONCLUSION

Although legislation has been adopted at EU level over time to ensure the sustainable use of pesticides, there are still many implementation gaps at Member State level, and farmers argue that replacing pesticides is a difficult and costly task and that there are no alternatives to the immediate replacement of these plant protection products. Following an assessment by the Commission [COM (2017) 587 final], aimed at investigating alternatives to integrated pest control on agricultural land, the assessment was carried out in relation to crop types and practices.
In the evolution of efficient decarbonization and the fight against greenhouse gases, the S_{phor} unit aims to reach this estimated estimate of changes in atmospheric pressure to estimate changes in soil carbon. Once these boundaries of observations are limited, the differences between the areas on which they are analyzed. For large-scale assessment, the graph of soil CO2 emissions must be taken into account, as argued by Sauerbeck D. R. (1993).

Not infrequently we tend to analyze statistical indicators to ensure the growth and development of plants grown according to optimal production. In the research we analyzed some of the vulnerabilities, in the sense that if agricultural practices and tradition must have a common denominator when we talk about fertilizers according to the four elements, soil properties, nutrients needed for the analyzed production of crop, climate but also the tradition of the place. Together, these elements can be sources of environmental protection. Analyzing some agricultural production, the amount of pesticides used in agricultural production resulting from agricultural greenhouses is not predictable, the main pollution factor being in open spaces or in the environment the risk of using pesticides varies considerably from one pesticide to another, depending on intrinsic characteristics ethics of their active substances (toxicity, persistence, etc.) and patterns of use (volumes applied, period and method of application, culture and type of soil, etc.). For these reasons, the analysis of a S_{ph}or item which relates to the absorption capacity of C in the soil as a function of atmospheric pressure, indicates a higher accuracy in terms of greenhouse gases given the use or need for pesticides for different crops, unable to eliminate the need for fertilizers.

Currently, according to harmonized statistics on pesticide use, they are not available on a European scale. The role of monitoring the implementation of Regulation (EC) no. 1185/2009 on pesticide statistics, being vital for the provision of data on use in agriculture in crops every five years from 2015.

Any nitrogen fertilizer in organic form is mineralized as a result of the activity of bacteria present in the soil, eventually resulting in nitric and ammoniacal nitrogen. The method of calculating the contribution of nitrogen from organic sources is important for the assessment of greenhouse gas emissions from agricultural activities.

For example, some studies show that the shifting factors from permanent cover to an annual harvest, plus simultaneous factors for crop management changes, involve achieving a balance between soil carbon and its kinematic function of soil use and degradation. Not very often, the concern is to follow the cyclicity of the crops used, depending on the texture of the crop, although it is recommended at 2 years, it is done at 5 years, so adapting to standard environmental and practical requirements is a fluctuating component and can distort true expectations research and in predicting the future progress of agricultural systems affected by climate change. Although legislation has been adopted at EU level over time to ensure the sustainable use of pesticides, there are still many implementation gaps at Member State level, and farmers argue that replacing pesticides is a difficult and costly task and that there are no alternatives to the immediate replacement of these plant protection products. Following an assessment by the Commission [COM (2017) 587 final], aimed at investigating alternatives to integrated pest control on agricultural land, the assessment was carried out in relation to crop types and practices.

On the other hand, the sustainability of agricultural ecosystems can be applied separately, depending on the ecosystem, to give efficiency, the process being cyclical, therefore, in conditions of climate risk and the agricultural system suffers from the natural ecosystem, as noted by Aznar-Sánchez, J (2019). Reducing pollution, degrading soil and greenhouse gas emissions, maintaining biodiversity and maintaining balance by improving soil fertility call into question how much we actually rely on fertilizers and how we reduce consumption while maintaining the same yield. (Swinnen, 2015). In recent decades, intensification practices in agriculture have contributed to increased yields. This has led to far-reaching implications for shaping the ecological behavior of agricultural producers and achieving a more environmentally responsible agri-food model in the context of the CAP's greening policy. Although the trend of land abandonment has not accelerated in Romania in recent years, it has resulted in some biodiversity conservation. Agricultural land abandonment has far-reaching implications on ecosystem services, such as landfilling, as underlined in specialist research (Leal Filho et al., 2017; Rodrigo-Comino et al., 2018; Anderson & Mammides, 2020).

Carbon emissions are rising, soil erosion is decreasing, water quality is improving, and traditional cultural landscapes are disappearing. By managing land and modifying its usage, the assumption of carbon storage in soil could be a way to manage climate change for agriculture. We will look at the possibilities of altering the methodologies used to quantify soil carbon changes in this study. From an emissions standpoint, soil conditions, climate, and crop management are all important considerations.

The goal of reducing pesticide dependence for a wide range of crops, alternative methods that can replace chemical pesticides was to change agricultural practices, using crop rotation whenever possible, followed by the introduction of resilient and resistant plant varieties, there where appropriate, the use of beneficial insects, the use of alternative pesticides, etc.

According to the assessment, there is a trend for alternative agricultural practices to be differentiated and fitted to local conditions in order to improve the efficacy with which the CAP's instruments promote approaches among farmers. The tools offered for the post 2020 CAP in terms of adjusting the green construction within it to encourage farmers to use natural principles.

The results of a recent assessment by the Commission (COM (2017) 587 since the change in agricultural practices, using crop rotation whenever possible, followed by the introduction of resilient and resistant plant varieties, a set of tools that will contain effective pest control measures to help farmers deal with pest resistance and increase the autonomy of agricultural production factors so that they can choose measures better adapted to their own agronomic and economic situations. This will make it possible to achieve the sustainable use of pesticides, in accordance with the objectives of Directive 2009/128 / The availability of the characteristics observed before the intervention with plant protection products takes place, gives the advantage that this method does not require the estimation of complex data structures, but only aggregated data. A counterfactual impact was needed to apply the evaluation methodology to collect specific microdata at the level of fertilizer statistical tools used in the production of straw applications at the level of 2020.

Following the evaluation we highlighted the context of persistence and the emergence of new invasive weeds, requires the use of plant protection products and in the analysis of the S_{phor} item our searches managed to capture the fact that the margin of error is negligible in the last 5 years increased consumption of plant protection products.

This balance cannot be limited only to the disruptive growth of climate change as a determining factor, the method of micro-data analysis in databases cannot generate absolute variations attributing the increase of control risks against pests based on statistics related to productivity growth. Or the constant link can be attributed to the increase in yield in relation to the increase being the result of appropriate treatments applied by fertilizers and plant protection products, depending on the observation of these harmful symptoms.

The first effect of the CAP, characterized by increased flexibility, created the possibility for Member States to design their own individual program adapted to rural development for 2014-2020 in accordance with EU regulations no. 1303, 1305 and 1306/2013 (European Parlament, 2020).

These permanent monitoring by the scientific elite as well as by the EU authorities in linking the transition to decarbonization of agriculture have the effect of monitoring the economic vulnerability of farms (Volkov et al., 2019).

Although the implementation of the Directive on the sustainable use of pesticides (COM (2017) 587 final) states that integrated pest management is one of the cornerstones of the directive and the Commission has therefore considered it to be of particular concern thanks to the fact that Member States have not yet set clear targets and have not ensured their implementation, not even with regard to the wider use of land management techniques such as crop rotation. These tools could confirm whether the aim of integrated pest management as specified in the Directive, according to Aznar-Sánchez, J. A. (2019) the reduction of dependence on pesticide use, is achieved. Regulation (EU) no. 1305/2013 of 17 December provides for several measures in this regard, they are insufficient or ineffective, not producing the expected results in terms of maintaining the population in rural areas.

In particular, effective measures may be supported in accordance with: Pesticides and other environmental pollutants severely affect human well-being and the nature of promoting and stimulating research in public laboratories, research centers and academia, in the field of pest control in public areas and in agriculture, avoiding the use of herbicides; Consolidation and promotion of integrated protection and production measures in agriculture, in order to avoid the use of herbicides.

The disappearance of pollinators is one of the main ecological crises in recent years and this is attributed to climate disturbances. According to the scientific environment, it is estimated that about 35% of world crops depend to some extent on pollination by insects and pollinating birds. Several studies on all continents show that pollinating insects and birds are seriously threatened with extinction due to the indiscriminate use of herbicides and pesticides in agriculture. Increasing factor productivity in agriculture, appropriate structural changes as argued by (DeBoe, 2020) indicate the emphasis on those factors considered determinants in agricultural resilience.

The scale of sustainability objectives in the agrifood system along with efficiency and resilience has opened up unique opportunities to identify new mechanisms for efficiency and resilience of agriculture in line with the OECD report (2021).

The prevention of the occurrence and at the same time the elimination of harmful organisms should be achieved or supported by several methods and, in particular, by crop rotation the use of appropriate cultivation techniques, why not an agricultural discipline related to production efficiency. This could include the use of several pesticides with different modes of action. The risk approach in our research shows the preponderance of actions that affect biodiversity and the resilience of natural capital EC obstacles to adoption and field application will also be identified in the ongoing project.

COMPETING INTERESTS

"Authors have declared that no competing interests exist.".

AUTHORS' CONTRIBUTIONS

'Author Lavinia Popescu designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. 'Author Adela Sorinela Safta managed the analyses of the study and the literature searches All authors read and approved the final manuscript."

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