

The Causal Relationship of Agricultural Standards, Climate Change and Greenhouse Gas Recovery [†]

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Abstract: This paper presents an overview of the favorable risk factors in agriculture in terms of encumbering this area of inevitable climate change. The development of a sustainable agriculture is combined in the paper by pointing out the needs on which agricultural productions maintain their productivity using the technique of adapting to the motivational scale of Maslow, analyzing the evolution of needs determined based on the Martonne Index in the analysis of the cause of soil erosion in the water and wind equation. We highlighted the need to apply agricultural techniques depending on climatic zones due to the non-uniformity of geographical areas, the character of buffer zones in the protection of zonal biodiversity of natural resources. Methods of agricultural practice in the use of pesticides cause concern according to FAOSTAT data, some techniques of careful use of fertilizers are a factor in reducing plant protection products through other soil protection techniques. The implications for the adoption of the most innovative production techniques, the security in the handling of fertilizers can reduce the risk of pollution the importance of soil water in agricultural production practices being revealed in the paper. Avoiding environmental damage by caring for agricultural plantations contributes to reducing greenhouse gas emissions from agriculture in step with the need for refurbishment. A factor of research analysis was the more efficient assessment of the challenges of climate change solutions to reduce the carbon footprint on agricultural production indicates the need to depend agricultural production methods the effect of fertilizer imports on exports still indicates the need for fertilizers and not the cause of abandonment of the use of chemical fertilizers and pesticides. New type agriculture in the conditions of cross-compliance imposed by the New Agricultural Policy implies precision alternatives involves the introduction of high-performance technologies and equipment to streamline the agricultural process and ensure production control. This method helps farmers to better understand and manage their crops, to take advantage of potential soils, but also to protect their crops from pollutants and pests. Agricultural management becomes efficient, (J. Bouma, et al., 1999) because field measurements and analysis of environmental factors weather phenomes, soil type and texture, seasonality, stage of plant development, provide farmers with the necessary resources to understand and effectively manage their crop. In the research stages we collected data and information that, in our opinion, are important for reorienting agricultural practices by standardizing agro-environmental measures in rural areas complete the ability to adapt agricultural practices as part of the economy.

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Keywords: climate change; agricultural practices; greenhouse gas emissions; soil

1. Introduction

Agriculture qualifies as an area equally affected by changes in environmental policies, but in another respect it is considerably one of the perilous sectors given the size of farms from the small subsistence to the largest concerns, the labor force of (age) of those who work is often not an eligibility criterion, so diseases caused by exposure to uncontrolled fertilizers can be harmful to health. Evaluation and management of technological

resources especially in treatments with plant protection products, soil preparation are key steps in staging the need for standardization of agricultural methods thus avoiding risks of pollution or risks of disease of farmers, precisely uncontrolled or unbalanced excess of fertilizers as a whole. [1] Or exposure to fertilizers can often be serious and undetectable from the perspective of vulnerable people exposed due to lack of information or practices caused by excess or pollution accidents that can only be avoided through responsibility.

This situation generates controversy considering the ownership of farmers on land, they are in fact responsible not only for the quality of production provided on the market but also for the protection in material of the risks posed by the use of hazardous fertilizers, including handling pesticides.

In this context, as a tool to quantify the waste threshold in the use of pesticides or the need for effective consumption in agricultural production, the present study reveals a fluctuation between imports and exports from 2015–2018 the ratio being almost equal. Hence the conclusion that including the increase in pesticide consumption needs implies appropriate practices to improve the conditions related to the use of hazardous pesticides in the agricultural sector, in order to protect the rural environment but also people exposed to such a risk.

We analyzed by reference to the new environmental protection recommendations and the reduction of the C footprint, the relationship that this consumption of pesticides, relative to the uncontrolled effect of adapting agricultural policies at the local level or in the highest probabilities in certain areas as a result of agricultural techniques that require the supplementation of the texture of agricultural soils, many soils having a deficit of nitrogen and/or sulfur that is insufficient in plant development.

Applying the right amount of plant protection products to control silkworms and gargoyle of corn leaves, but also causes considerable damage to the production of wheat, soybeans, barley, beets, would reduce the risk of crop losses by controlling the practices used, in the same climatic conditions. Pest control solutions should, in our opinion, cover a wider use to reduce costs for farmers, as the level of excess consumption can be mediated by knowing the needs caused by climatic and technological factors. Hence the increasingly common requirements for compliance with cross-compliance techniques and the elimination of fertilizers by gradually moving to organic farming with low to zero risks in terms of environmental pollution to comply with the requirements of the new Common Agricultural Policy.

2. Experiments

Thus, regarding the impact of the labor force in agriculture, the net value added at the cost of the factor (income factor) we took this into account by decreasing the consumption of fixed capital from the gross value added at basic prices and adding the value of less taxed subsidies. AWU is defined as the workload of a full-time employee. Synergies related to activities at regional and local level. Extrapolating at the regional level before calculating the benefits of applying C sequestration in soil we need to identify in an estimated margin of error the size of the place and the number of soils that can contribute to this mechanism by bringing them back into agricultural production. Urban development has been quite aggressive in recent years and the loss of land even due to their removal for public utility is debatable, the dimensions not to be neglected due to the non-transparent mechanism of application of legal provisions. Appearance: Soil and carbon stock Failure by farmers to comply with cross-compliance rules leads to reduced payments or exclusion from payment, from one or more support schemes, for one or more calendar years.

Plant protection products can also have negative effects on plant production. Their use may involve risks and dangers to humans, animals and the environment, especially if they are placed on the market without being officially tested and authorized and if they are used incorrectly [2]. Crop production occupies a very important place in the Community. The use of plant protection products is one of the most important means of protecting

plants and plant products against harmful organisms, including weeds, and improving agricultural production.

Consumption of mineral fertilizers first fell sharply in the early 1990 and stabilized over the last four years in the EU-15, but in all 27 Member States nitrate consumption increased by 6%. In general, animal husbandry remains the main cause of over 50% of total nitrogen discharges into surface waters activities related to livestock and fertilizer management release nitrogen oxide (N₂O) and methane (CH₄), greenhouse gases with a global warming potential of 310 and 21 times higher than CO₂, respectively. If fully implemented, the Nitrates Directive could reduce, by 2020, for example, N₂O emissions by 6% compared to 2000 levels and help combat climate change. The Common Agricultural Policy (CAP) supports the Nitrates Directive through direct assistance and rural development measures. For example, a number of Member States have included among agro-environmental initiatives for which farmers can receive payments for nutrient management measures, such as the creation of larger buffer zones around watercourses.

The establishment of the institutional framework for action for the sustainable use of pesticides in Romania is amended and supplemented by the transposition of Commission Directive (EU) 2019/782 of 15 May 2019 amending Directive 2009/128/EC of the European Parliament and of the Council on the establishment of harmonized risk indicators published in the Official Journal of the European Union on 15 May 2019.

Requirements for the use of mineral fertilizers and/or plant protection products.

In accordance with art. 45 para. (8) of Delegated Regulation (EU) no. 639/2014 of the Commission of 11 March 2014 supplementing Regulation (EU) no. Regulation (EC) No 1.307/2013 of the European Parliament and of the Council laying down rules on direct payments to farmers under support schemes under the common agricultural policy and amending Annex X to that Regulation, as subsequently amended and supplemented, the use of mineral fertilizers and/or plant protection products is prohibited. Improper management of fertilizers (natural or chemical) can lead to serious environmental problems (eutrophication—a phenomenon that seriously affects the balance of aquatic ecosystems) and health is therefore recommended in drought-prone areas. Fertilization ensures precise application by minimizing water evaporation losses as well as nitrogen (N) losses in air and water and greatly increases efficiency.

Biodegradation has been shown to be suitable for organic products and residues from the basic chemical industry (alcohols, acetone, phenols, aldehydes and other solvents); complex compounds such as polycyclic aromatic hydrocarbons and pesticides system variability depending on meteorological and climatic conditions, soil type and agricultural practices (Miller et al., 2006) [3]. A holistic approach in soil properties research in cycle assessment (ACV) are frequently undertaken in an attempt to account for all GHG emissions, so whenever possible it is possible to restore land to productivity even if it lasts 2–3 years has long-term effects and is a gain.

3. Results

The soil can degrade depending on many objects. (Andrei A_S, Robeson MS, Barics A et al. (2015) [4]. 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 and the environment. Thus, an important role in the application of fertilizers has multifunctional protection areas Figure 1 [5], which must be recognized as an integral part of agricultural areas, considering on the one hand that they maintain the ecological balance and contribute to biodiversity conservation: ensuring corridors for wildlife and on the other hand have the effect is to reduce the risks of pollution with plant protection products of water sources adjacent to agricultural fields, while avoiding the phenomenon of soil erosion.

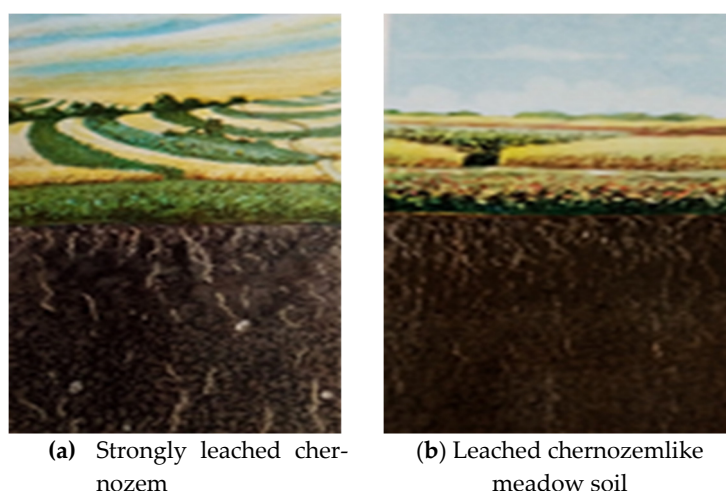


Figure 1. Types of Chernozoiic soils (Sources: Soils of Romania, C. Chirita).

In order to ecologically treat a land, its morphological state must first be qualified to determine the diagnosis, so that the organic soils in low places, meadows, depressions frequently found on the Romanian territory are characterized by vegetation with excessive accumulation of organized matter from residues vegetation, often with other alluvial or limestone material formed by the alteration of snail and shell shells with profiles of

$$\text{Type: T - Gr} \tag{1}$$

T is a start of about 0–8 cm, followed by 8–50 cm formed by Table 1 the remains of tulips with inseminated amounts of humus, while Gr is represented as a state rich in gravel sandy as indicated by Figure 1. Improving such an organic soil does not require fertilizer, being rich in ash-type mineral matter. These soils can be needed in agriculture after improving their hydrological regime through drainage works, as microbiological processes are strongly activated, so that although in the first phase the soil has large reserves of nutrients they remain blocked at great depths by lack of standardization of stages tillage and by drainage techniques that do not affect the biosphere, thus excluding the use of fertilizers that would aggress the soil. On these soils as crop plants can be potatoes, hemp, vegetables, sunflower and corn. Our conclusion is that the drainage works considerably reduce the need for fertilization and the soil works depend very much on the soil texture, some biological geological processes of soil degradation are reduced by characteristics such as permeability, aeration, as soil properties to be used in agricultural techniques, in the first phase, only after the exhaustion of the verifications it is possible to proceed to the application of the techniques for applying the necessary fertilizers.

Table 1. Eutrophic peat morphological diagnosis.

Vegetation	Organic Material %	Material Substances(ash)%	CaO %	P ₂ O ₅ %	K ₂ O %	N %	pH %
Roses and another herbs *	80–90	10–20	2.5–4.0	0.15–0.50	0.08–0.10	2.5–3.5	4.5–6
Roses and other herbs **	55–94	6–45	1.0–16.0	0.05–0.57	0.02–1.40	0.5–4.0	5.0–7.6

Sources * By Kostiakov [6]; ** By Obrejanu, Stanga, Blanaru [6].

3.1. Overview of Main Findings

Another cause of the reduction of the agricultural land area is represented by the effects of Rainwater management, arrangements of protection areas. (Aznar-Sánchez, J. A., at al. (2019) [7]. Thus, on the whole, the climate and the changing weather phenomena that have become more and more aggressive by their extent show the weight that farmers face on large commercial agricultural holdings but also the differences between farms that practice subsistence agriculture, small. Scenarios are being made worldwide regarding the effects of climate change here and the Green Deal approach, in order to prevent the

effects on farmers in general and individually. Given that large farms usually have a highly specialized production, such as cereals and oilseeds, they are particularly vulnerable to the impact of frequent and long-term droughts, which affect their production and profit.

But they are well-informed professionals, have the necessary technical and financial resources and have more options to adapt their agricultural systems to climate change through new technologies and irrigation systems. Small farms, which practice subsistence agriculture, are exposed to the effects of risks and vulnerability from a social and economic point of view to the shock of unfavorable climatic effects, with agriculture working directly about a third of the world's population. In some individual cases, farmers specialize in the production of specific crops, such as onions or potatoes, thus increasing their level of vulnerability because they will not be able to adapt to environmental requirements due to lack of knowledge. In other cases, some intrinsic resistance can be found in small-holder farming communities due to the practice of organic farming and resource recycling, low carbon economy, diversity of production, strong social relations and (in some regions) alternative sources of income. There is really a problem of eliminating fertilizers and switching to organic farming, but on the other hand the reality is that.

At the global level, in fact, this is not the case, European countries sold almost 1.8 million tons of pesticides per year between 2015 and 2018, representing more than 1/3 of the global share Figure 2, according to FAOSTAT data [8], the trend being an ascending one.

It should not be neglected that adding fertilizers to improve soil quality can help increase soil structure performance, balance pH and, in some cases, help bind contaminants and reduce exposure, providing additional benefits to the property and biosphere of the environment. A farm through the use of good soil pH management practices can bring alternative benefits such as improving the environment and storm water management [9].

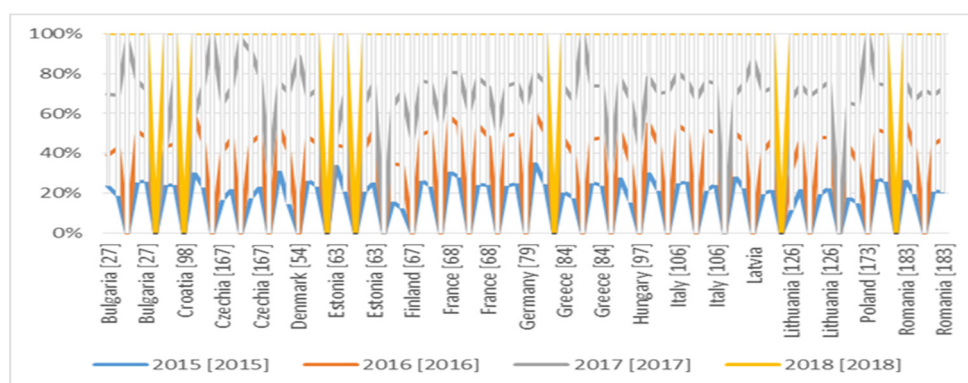
Total population (number of persons), of which 19,414,458, in predominantly rural regions (PR) 52.9%, 4.7% Agriculture, forestry and fishing (% of total GVA) Table 2.

Table 2. Standards for Farm structure.

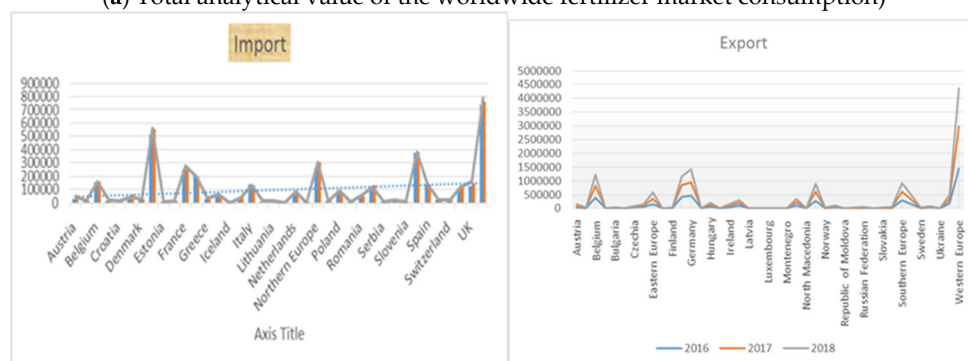
Holdings ¹ Total (No), of Which	2016	3,422,030	33.3%	of EU27_2020
UAA < 5 ha (%)	2016	91.8%	66.6%	in EU27_2020
Economic size < 4000 €	2016	84.6%	54.9%	in EU27_2020
Holder < 35 years (%)	Farm no	3.1%	5.1%	in EU27_2020
Holder > 64 years (%)	Farm no	44.3%	32.8%	in EU27_2020
UAA per holding (ha)	Total	3.7	15.2	in EU27_2020
Labor force AWU * (No)	2016	1,640,120	18.6%	of EU27_2020
Female farm holders (%)	2016	33.8%	30.7%	in EU27_2020
Male farm holders (%)	2016	66.2%	68.8%	in EU27_2020
Agriculture in % of total employment	2019	19.1%	4.1%	in EU27_2020

Sources: European Commission, Eurostat and Directorate General for Agriculture and Rural Development; * Annual Work Unit (AWU).

To determine the net value added at factor cost (income factor) we processed the data according to AWU is defined as the workload corresponding to a full-time employee worked [10].



(a) Total analytical value of the worldwide fertilizer market consumption)



(b) Export differences compared to export on the fertilizer market)

Figure 2. Regional Imports and Exports of Pesticides. (Source Rome, 11 June 2020 FAOSTAT Pesticide Trade).

3.2. Formatting of Mathematical Components

In Romania on the whole territory in order to determine the climate of the environment for humidity it is used to characterize the climate (*Iar*) or the aridity index: the Mar-tonne Index or aridity index:

$$Iar = \frac{P}{T + 10} \tag{2}$$

The climate has a great influence on the processes of wind and water erosion of the soils through its main components wind and water.

P— average multiannual precipitation;

T— multiannual average temperatures.

The aridity index shows the following values in the climatic conditions in our country: around of 17 in the steppe area, 50 in the forest area and over 80 in the mountain area.

4. Discussion

The expectations regarding the sustainability of the agricultural system have a long concern, what we propose is that, at the same time, we must not produce imbalances in the soil-water-plant equation. The balance of the biosphere beyond the establishment of the nutritional regime of plants is a prerogative, so we need to analyze the application of agricultural practices according to climatic characteristics and texture, soil topography. (Fowler, C., et al., 2007) [11]. At the level of research, we did not exclude the possibility of the opposite situation, for example the identification, in the case of the use of corn seeds as treatment, of high acute risks for bees following the use of plant protection products containing the active substance fipronil. The risk to bees was thus framed, in particular, as a result of exposure to dust. In addition, in the case of several crops, unacceptable risks caused by acute or chronic effects on the survival and development of colonies could not be ruled out. Thus, there is a lack of information on the long-term risk to bees of potential

exposure to pollen and nectar residues, potential exposure to gut fluids and exposure to residues from subsequent crops, weeds and soil. (John M., et al., 2007) [12].

These conditions shall reveal the importance of methods for the analysis of the active substance, the softener or the synergistic agent as it results from the manufacturing process and the methods for determining potentially hazardous impurities from a toxicological, Eco toxicological or ecological point of view are present in quantities of more than 1 g/kg in the composition of the active substance, softener or synergist resulting from the compulsorily validated manufacturing process and with certified, accurate and precise evidence it is necessary to restrict the use of plant protection products which contain fipronil and at the same time specific risk reduction measures for the protection of bees should be provided for. (Smith, P., et al., 2006) [13].

Thus, a decision was issued to limit the use of plant protection products containing fipronil, in the sense of limiting the treatment of seeds intended for sowing in greenhouses and the treatment of leek seeds, onions, shallots and vegetables of the Brassicaceae family intended for sowing, in the field and harvested before flowering. Crops harvested before flowering are not considered to be crops that attract bees. Consequently, the use of treated seed subject to the restrictions referred to in Article (1) of this Regulation with plant protection products containing clotianidine, thiamethoxam or imidacloprid in accordance with the restrictions referred to in Article 1 of this Regulation shall be permitted only for the purpose of experiments or tests related to research or development with Article 54 of Regulation (EC) No. 1107/2009 [14].

The risks to bees identified from treated seeds are also caused in particular by exposure to dust in several crops, by the consumption of residues present in pollen and contaminated nectar from certain crops, and by exposure to maize gout. In view of this situation, the use of treated seeds, the use and placing on the market of seeds treated with plant protection products containing clotianidin, thiamethoxam or imidacloprid concluded that it should be prohibited in the case of seeds from crops which attract bees and cereal seeds, excluding winter cereals and seeds used in greenhouses. (Lal, R., 2004) [15].

Not infrequently we tend to analyze statistical indicators to ensure the growth and development of cultivated plants according to optimal production. In the research we analyzed some of the vulnerabilities, in the sense that if the agricultural practices (Popescu L, 2020) [16] and tradition must have a common denominator when we talk about fertilizers depending on the four elements, the properties of the soil, the nutrients needed for the analyzed production of culture, climate but also the tradition of the place. Together, these elements can be sources of environmental protection. (Khoury, C.K, et al., 2016) [17].

5. Conclusions

The agricultural sector has a direct and significant impact on biodiversity and ecosystems. The introduction and development of sustainable and innovative practices and technologies can enhance the role of the agricultural sector in mitigating climate change and adapting to its effects synergies between environmental policies and economic objectives and social issues, such as achieving gender equality and empowering women. He highlighted the impact of environmental degradation on gender and discussed how a gender target could reduce the overall environmental footprint. (Huang, J. 2019) [18].

Research shows that the impact of environmental degradation tends to be concentrated among vulnerable groups and households. Air pollution by analyzing the consequences creates the premises for synergies related to activities at regional and rural level as many farmers as possible are attracted to environmental protection programs. (Ramírez, P. B., et al. (2019) [19].

That is why scientific research, whenever it will add a plus to the scientific equation, we will only be able to exclude any element that could not omit the right to give more information. It is good to know that research and innovation activities and services complement scientific information, traditionally born agricultural practices, which can help farmers to adopt production systems that best meet local characteristics. In our opinion, the

agricultural lands in general and especially those in Romania have considerable potential for carbon capture and storage. It is vital to have improved agricultural systems that efficiently utilize nutrient resources, increasing not only the amount of carbon in the soil, but also the biodiversity and resistance 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 absorbers are just as important as reducing emissions. Maintaining and further improving the natural absorbents represented by soils, agricultural land and coastal wetlands are essential. (Westhoek, H., Van Zeijts, H., Witmer, M., Van den Berg, M., Overmars, K., Van der Esch, S., & Van der Bilt, W. (2014) [20]. The consumption of pesticides according to recent data provided by Eurostat is worrying and therefore our guidance must also include alternative methods to reduce the consumption of pesticides by switching to organic fertilizers, and here we are talking about grasslands that should not be neglected. In this context, appropriate strategies are needed to improve the conditions for the use of hazardous substances in the agricultural sector, to ensure better protection of the health of agricultural workers and the environment, taking into account the provision of human rights interference, and protection especially in areas rural areas as essential elements.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

Abbreviations

PAC	Common Agricultural Policy
FAOSTAT	Food and Agriculture Organization

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