

Synergy between the biological factor and the institutional environment in agriculture

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Abstract

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The role of agriculture as a primary sector is defined differently in different times. The importance of this kind of economic activity in the perceptions of the individual, the groups and the society is defined/determined by its role for the existence of man. The idea of agriculture in the minds of both the individual and society as a whole is evolving. *Homo sapiens*, as the highest biological species, develop and upgrade its ideas about the environment and change its behavior to a natural factor. In the primary sector, this behavior is of existential importance. During the years of development of the societies, the rethinking of the relation biological factor-institutional environment in agriculture is in the direction of creating synergy opportunities with a positive sign. Considering intensification of a number of crisis phenomena, the philosophy of life nowadays is changing. In agriculture, given its importance for the physical health of the population, a number of policies have changed in recent decades in order to create synergies between the biological factor and the institutional environment in which the subjects in the primary sector operate.

Keywords: agriculture; biological factor; institutional environment; synergy

Introduction

Agriculture is a branch of material production with a complex intertwining of elements of animate and inanimate nature. Dynamic processes of economic, political and social nature shape the institutional environment in which business entities operate. The role of the biological factor for the final production results and the value creation in the sector is systematically related to the technological solutions in the implementation/derivation of the production process, agro-ecological conditions for growing crop species and animal breeds, production structures and other factors of production. The conditions for production and the factors in the production process during the different epochs are a function of institutional changes, considering the provision of an op-

portant economic environment and the achievement of certain socio-economic goals. The harmonious course of these processes ensures the manifestation of potential synergy effects, which multiply the benefits of the independent participation of the biological factor and the institutional environment on the final result of the economic activity in the industry (Marx, 1955).

In every society there are processes important for the socio-economic development, which are provoked by philosophical minds, highly educated rulers or by scientifically based ideas, tested in practice. An example of synergy in the protection of the biological factor and the preservation of good social conditions for the agricultural population, implemented by an appropriate institutional norm, is the legislation introduced in the fifteenth century by King Henry

VII, which determines the proportion of fields and pastures and prevents depopulation of many rural areas. The practice applied by King Henry, described by Marx in *Das Kapital*, chapter twenty sixth, is an example of responsible behavior from ruler to sovereign. At that time, science did not study synergies, but “renaissance thought” created many preconditions for its manifestation. An example in this regard is the work of the French philosopher Rene Descartes (Descartes, 2004) who bequeathed us the thought *Cogito, ergo sum* (*I think, therefore I am*). Dictum coined by Descartes in his *Discourse on Method* (1637) is the first philosophical work that was born in the transition from the Renaissance to the New Age. Rene Descartes is defined as the first thinker to emphasize the power of thought.

Reversing Descartes’ axiom “I think, therefore I am” in “*I think, therefore I am, therefore I think*”, Nietzsche emphasizes that in fact a social anthology, including logical and conceptual elements, is a condition that makes possible Descartes’ conclusion about human existence from such pre-established values (Jonas, 2015).

The process of studying the relationship between economic activity and the state of the environment is the subject of a number of scientific schools and prominent authorities of our time (Piketty, 2018; Kozhuharova-Zhivkova, 2009; Terry van Dijk & Kopeva, 2006). This is necessitated by the appearance of a number of critical points in human-nature communication, caused by the growing food print and the irreversible depletion of biological resources (Muntyan, 2020; Mantarova, 2020), leading to a threatening reduction of biodiversity. This requires a number of institutional measures in implementation of global, regional and local policies to improve the human living environment. The need to reveal potential synergy benefits (Mirkovich, 2006; Dimov, 2007) from the used means of labor of biological origin and the institutional environment in which the economic entities operate in agriculture is dictated by the increasingly necessary compliance of society with some problem areas as a result of depletion of natural factors (Mihailova, 2020; Stoeva & Dirimanova, 2020; Boliari, 2017) and problems deriving from this (UNEP, 2021; Ribeiro, 2018; EU, 2013).

Methodological Framework

The methodological framework of the analysis presented in this Research Article is based on the scientific method. The tools used include data from the author’s ESS-“Ecological culture of agricultural producers”, representative for registered farmers, conducted in 2012 in Bulgaria. A critical review of literature sources was performed; Desk Research, logical, expert method, etc. were used to reveal the potential

synergy benefits of combining biological factors in agricultural material production and changes in the institutional environment.

The full utilization of the agro-ecological potential of the agricultural lands and the biological potentialities of the varieties of agricultural crops, adapted to the conditions of the region, lead to a significant increase in amount of agricultural products.

Results and Discussion

The natural ecosystems maintain themselves their balance, i.e. they self-restore the equilibrium of their components (Yovchevska, 2007). Regarding the artificial systems such as agrosystems, when the anthropogenic impact violates their adaptive capacity, the development becomes unsustainable.

The successful development of agriculture (namely the crop productive agrosystems) is determined by the interaction between the production potential (soil fertility) of the agricultural land and the respective regional agroecological structures of the crop growing, through which the land, as the main factor of production, is used under market conditions. The rational use of the adaptive potential of agricultural crops in relation to the respective ecological conditions leads to an increase in the natural economic indicators and the production quality when applying optimal technological solutions in the cultivation of the respective crop species. The application of technological solutions in accordance with the characteristics of the biological factor has a nature-friendly impact, leads to relatively low production costs and insures the sustainability of agricultural production. There is an opportunity for the synergic impact appearance between the biological factor and the production technology. The potential benefits are multiplied by the combination of the biological factor characteristics and the optimal technological solutions, adapted by the agricultural actors to the specific object of economic activity. When combining these conditions, a synergistic effect is manifested, which strengthens the socio-economic result of the economic activity in an action that protects the natural/environment.

These are principled paradigms that are valid for all societies. Bulgaria is endowed with monopolistic qualities for the production of agricultural products. Under field conditions, more than 144 cultivated plant species can be produced under the open sky. The country, defined as agrarian, has strong socio-cultural traditions and a high ecological culture among farmers. This fact by itself is a prerequisite for generating synergy effects. Evidence of the good traditions in Bulgarian agriculture can be found in the old library funds. The review

of some of these documents testifies that the presence of the relation in the social norms during the separate historical periods is more an expression of the attitude of the authorities towards the optimization of the economic environment. It reflects the striving to renting material goods and preserving social benefits for societies. The first book of the scientific periodical issues in Bulgaria the “Bulgarian Collection” published in 1894 contains a unique document Regulation Paper № 10 467 of the Ministry of Agriculture - Manual of the Agricultural Supervisor. The publication of the Manual is an expression of the importance attached to the agriculture and the farmers, by the sector administration during nineteenth century. The officials of the Ministry train farmers to apply technological solutions that are best suited to obtain a good economic result from any fruit species grown under appropriate conditions and technological solutions. This is an example of synergy between the ability to use the biological factor potential and the creation of appropriate administrative/institutional conditions.

This tradition is preserved by the generational experience and is registered in the conducted ESS among the current farmers in the Bulgarian primary branch. Evidence of this judgment can be found in the answers of the respondents, which reveal their attitude and behavior towards agricultural production and towards the land as a main production factor in the sector (Figures 1-5).

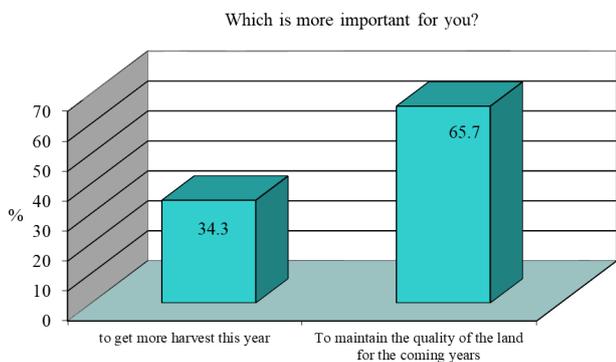


Fig. 1. Attitude of farmers to land as a resource

Fundamental in the economic activity of farmers is their attitude to land resources, to land as a major factor of production. Two thirds of the respondents think that maintaining the quality of the land is more important for them than the harvest in the current year.

Actors in agriculture show good awareness of pollutants. This is a sign of compliance with appropriate technological solutions for the cultivated crops and compliance with the deadlines for their implementation.

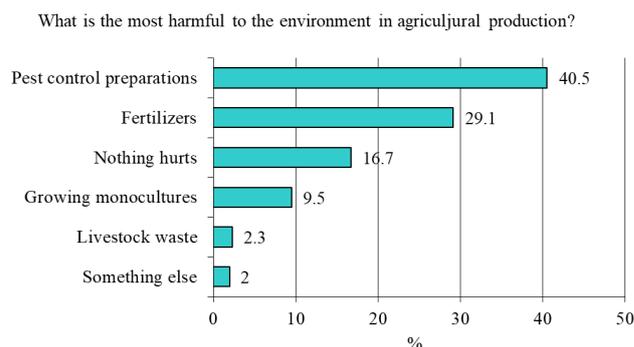


Fig. 2. Opinion of farmers on pollutants in production

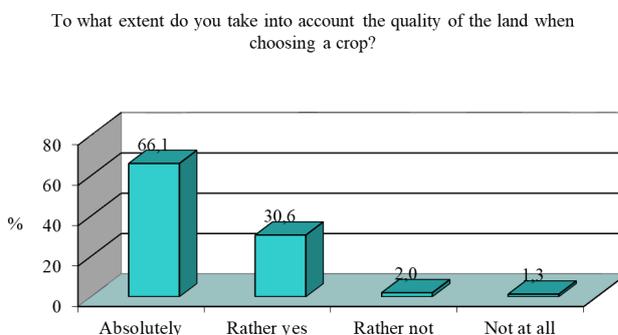


Fig. 3. Conformation of farmers with the quality of the land when choosing a crop

When structuring the agricultural crops on a specific micro-territorial site, the question of typical crop rotation arises with great urgency, which guarantees sustainable development of production. Therefore, the restructuring and territorial distribution of agricultural crops must strictly observe the structural boundaries for their combination in crop rotation, which ensures and maintains ecological balance, preserves soil fertility, reduces fertilizer consumption and saves additional funding for other investments, which is relevant in the agricultural crisis.

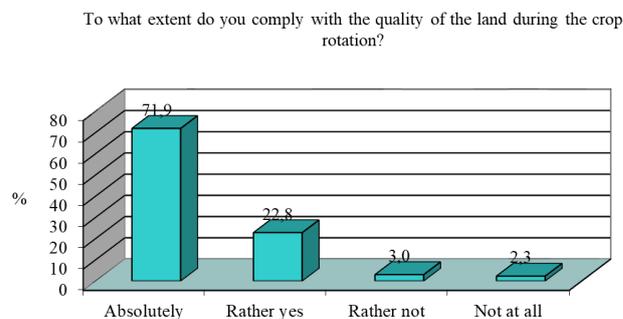


Fig. 4. Conformation of farmers with the quality of the land in crop rotation

Agroecosystems, as a production base, include the system of grown crops. The crops have been determined as a system of crop species (components of plant systems), which are cultivated, grown through a system of technologies. These components, which include the crops, are inseparable components of agroecosystems.

The system of crops and technologies are these specific components creating conditions for the production. This includes the crop rotation system.

Until the twentieth century the ecological system society-nature as a socio-ecosystem is still poorly studied. It enters the focus of society and it is increasingly becoming an object of manageable development, as the modern world experiences an ecological crisis. The phenomenon is complex, multi-layered, it affects all areas of human activity. The maintaining of the pace of degradation processes is considered as improving the state of the human environment and reversing the trend in a number of registered negative processes.

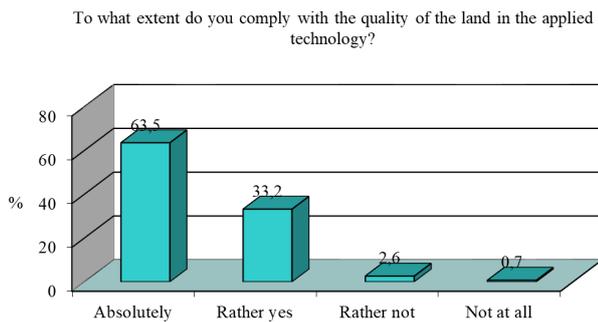


Fig. 5. Conformation of farmers with the quality of the land when choosing technology

On 1 June 2018, the European Commission presented legislative proposals on the common agricultural policy (CAP) for the period 2021-27. Negotiations are ongoing between the European Parliament and the Council of the EU; therefore the provisional start date of the proposed CAP reform has been put off till 1 January 2023.

The Commission's proposals are orientated to stimulate a sustainable and competitive agricultural sector that can contribute significantly to the European Green Deal¹, especially with regard to the farm to fork² strategy and biodiversity³ strategy. In particular, the proposals are aimed at:

¹ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

² https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/farm-fork_en

³ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/eu-biodiversity-strategy-2030_en

- securing a fair deal and a stable economic future for farmers;
- setting higher ambitions for environmental and climate action;
- safeguarding agriculture's position at the heart of Europe's society.

The Commission has set out nine specific objectives in order to fulfil/reach these goals:

- Ensure a fair income for farmers
- Increase competitiveness
- Rebalance the power in the food chain
- Climate change action
- Environmental care
- Preserve landscapes and biodiversity
- Support generational renewal
- Foster vibrant rural areas
- Protect food and health quality

The bioeconomy also has a significant role to play in implementing the philosophy of the Green Deal as a political platform for overcoming/mitigating crisis processes in the living environment of modern humans. DG Research and Innovation, European Commission, defines "The bioeconomy comprises those parts of the economy that use renewable biological resources from land and sea – such as crops, forests, fish, animals and micro-organisms – to produce food, materials and energy"⁴. In this area agriculture is of significance. The awareness of stakeholders, including farmers, is widely public and published on the European Network for Rural Development website. A strategy for accelerating the deployment of a sustainable European bioeconomy has been developed, including 5 goals:

- ensure food and nutrition security
- manage natural resources sustainably
- reduce dependence on non-renewable, unsustainable resources
- limit and adapt to climate change
- strengthen European competitiveness and create jobs

Conclusions

The manifestation of potential synergies in agriculture is an opportunity to increase both the socio-economic situation in rural areas and to improve the human living environment. This is in harmonious and systematic connection with the growing sensitivity of modern generations. The importance of farmers' sparing attitude towards the biological factor is growing given the fact that biodiversity is threatened. Spe-

⁴ https://enrd.ec.europa.eu/greening-rural-economy/bioeconomy/rural-bioeconomy-portal_en

cies worldwide are disappearing at a rate ten times faster than natural. The results of the ESS show that 2/3 of the respondents have environmentally friendly behavior, which for the scale of Bulgaria shows a significant opportunity for synergy and benefits from the implemented policies.

The presented analysis brings to the fore the rational, logical, fruit of reflection and meaningful behaviour of the subjects and of the institutions. The prioritization of the actions of individuals in agriculture is ranked on a value scale, whose leading place is assigned to the biological factor, land, flora and fauna, which are the life world of the farmer. Administrative bodies are the transposing channel of policies that create the institutional environment at macro, meso and micro levels. Given the nature of economic activity in the primary sector, there is always the possibility of potential synergistic benefits. Their implementation is the care and responsibility of all - producers, consumers and citizens. We are all called to Making Peace with Nature (UNEP 2021).

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