

CHAPTER «AGRICULTURAL SCIENCES»

STRUCTURAL MEASURES IN THE AGRICULTURAL LANDS – CONDITION AND FACTOR FOR THE FUNCTIONING OF ORGANIC AGRICULTURE IN THE REPUBLIC OF BULGARIA (BY THE EXAMPLE OF EXPERT STUDY)

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Abstract. The challenges in the agricultural sector of the Republic of Bulgaria provoke the evolutionary development and application of new approaches and new attitude towards the components of the agricultural system. The biological and conventional agricultural systems include the same elements, but their treatment of the biological system is based on current requirements for the development of environmentally friendly practices in agriculture. Organic production is an important priority in the policy for the development of the agricultural sector in the Republic of Bulgaria and one of the highlights of the common agricultural policy of the European Union for the period 2014-2020. Organic agriculture in the Republic of Bulgaria is subject to specific legislation. Integrated organic production can be defined as a model designed to optimize agricultural production by saving energy, protecting soil fertility and improving product quality. It is an alternative production model for the sustainable development of agriculture, such as the economic sector and the opportunity to put innovations at the service of sustainable agriculture, including the implementation of adequate development measures in agricultural lands intended for organic farming. The main objective of the study is to prove the role of development measures as a factor and condition in the agricultural lands designated for organic farming. For the purpose of the study, the authors chose the method of peer review.

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1. Introduction

Organic farming as a sustainable farming system dates back to the 20th century, mainly in economically developed countries such as Austria, Germany and others [2, p. 20].

Organic farming is closely linked to the landscape and the territory. In this regard, both the agricultural territories as a whole and the territories designated for organic farming are subject to specific development measures.

Sustainability of organic agriculture as a system in terms of its needs for modern infrastructure is directly dependent on the development activities.

The maintenance of soil fertility and the conservation of soil resources is also dependent on one of the varieties of development measures – reclamation.

In this regard, the subject of research in the material is the role of development measures in the agricultural lands, respectively, in the agricultural lands designated for organic agriculture as a condition and factor for the functioning of organic agriculture in the Republic of Bulgaria.

The subject of study and analysis in the material are summarized expert assessments of the development activities in the agricultural lands designated for organic farming.

For the purposes of the study – to confirm the role of development measures as a factor and condition in agricultural lands designated for organic farming, the method of expert assessments was used.

2. Organic Agriculture in the Republic of Bulgaria – Highlights

Models for conventional, integrated and organic production are more or less well-known practices. They have both similarities and differences, but in any case they represent different possibilities for food production.

Which model will the modern manufacturer choose is a matter of inner conviction and the presence of sufficient motivating factors.

In principle, models for sustainable development in agriculture are linked to the creation of agricultural systems that aim at increasing productivity, while preserving the sustainability of ecosystems. The transition to sustainable agriculture is a continuous and consistent process [4, p. 125].

The challenges in the agricultural sector provoke the evolutionary development and application of new approaches and new attitude towards the components of the agricultural system (soil, biodiversity, water and so on). The biological and conventional agricultural systems include the same

elements, but their treatment of the biological system is based on current requirements for the development of environmentally friendly practices in agriculture.

In organic agriculture, soil is regarded as a dynamic system, a reservoir of nutrients. It is characteristic of organic farms that the farmer pays particular attention to the presence of a higher amount of humus (soil organic matter) where most of the nutrients are in an easily accessible plant form.

For this purpose, one specific planning event – recultivation – was required in practice.

All agricultural practices inevitably change the natural environment. Practices in the organic farming system are related to seeking to minimize the effects of impacts.

The ideal organic farm fits in with its surroundings and becomes part of the natural landscape of the area, but this could be achieved to some extent by effective landscaping on farmland.

The management and maintenance of the natural environment is carried out by rules and voluntary practices, which are adhered to by bio producers and help to improve and maintain the landscape in agricultural areas, but also by means of landscaping.

Organic production is an important priority in the policy for the development of the agricultural sector in the Republic of Bulgaria and one of the highlights of the common agricultural policy of the European Union for the period 2014-2020. Organic agriculture in the Republic of Bulgaria is also subject to specific legislation [1].

The definition of organic production under Regulation (EC) No 834/2007 is a production that involves 'the use of the organic method at all stages of production (including the primary production of a biological product, its storage, processing, transport, sale or delivery of the final product consumer, and, where appropriate, labeling, advertising, import, export and subcontracting)".

As a result of the created conditions for development, by the end of 2014, the total number of food, forest, forestry, organic producers, processors and traders registered at the Ministry of Agriculture is 6 173 [5].

All this shows that in recent years, the biological sector of the Republic of Bulgaria is developing at a fast pace, and especially after 2009, organic farming has become a serious and real economic sector.

A basic principle of organic farming is that any living organism from the smallest microorganism in the soil to the largest plant is valuable.

The whole activity is aimed at maintaining and, if possible, increasing the diversity of plants and animals.

Practices that contribute to increasing biodiversity are often the result of good agricultural practices applied by organic producers and of EU rules in this regard.

Organic production is based on the following principles:

- general;
- specific.

Common principles include:

- the development and management of biological processes based on ecological systems and the use of natural resources internal to those systems through methods that: use living organisms and mechanical production methods, practice land-based cultivation of crops, animals and aquaculture in accordance with the principle for the sustainable use of resources, exclude the use of genetically modified organisms and products produced by or through genetically modified organisms and so on;

- limiting the use of external resources;

- strict limitation of the use of chemically synthesized substances;

- where necessary, adaptation of organic production provisions shall take into account health status, regional climatic differences and local conditions, stages of development and specific animal husbandry practices.

The specific principles are related to application in the following areas:

- agriculture (maintaining soil fertility, minimizing the use of non-renewable and external resources, recycling bio-waste, protecting plant and animal health, making productive decisions, while maintaining local or regional environmental balance, etc.);

- the processing of organic food (produced from organic ingredients of agricultural origin, restricting the use of nutritional supplements, organic ingredients, and the processing of food using biological, mechanical and physical methods);

- the processing of organic feed (produced from organic feed materials, limiting the use of feed additives and processing aids, feed processing using biological, mechanical and physical methods).

The conditions and procedure for support to agricultural producers in the Republic of Bulgaria who carry out agricultural activities aimed at improv-

ing environmental protection are laid down in a special ordinance for the application of the measure "Organic Agriculture" for the period 2014-2020.

During the five years of the voluntary commitment, certain basic requirements, as well as specific management requirements, must be met. In accordance with the requirements of the organic legislation, every registered bioproducer must also keep a logbook of the activities performed, the seeds, fertilizers used, the production obtained on the organic farm. In cases where, for various reasons, a logbook of the agricultural activities carried out on the holding is not kept, the State Fund for Agriculture reduces by 10% the payments to farmers.

In addition to meeting the basic and specific requirements, a good manager should also keep track of changes that have occurred in:

- the requirements for cross-compliance and the minimum requirements for fertilizing and using plant protection products. These requirements have been introduced for the first time since 2012 for farmers in the Republic of Bulgaria, in accordance with the provisions of the European Union, when the statutory management requirements are compulsory;

- the general requirements for the applicants for assistance – in accordance with the changes in the respective ordinance;

- management requirements for the selected destination.

Since 2012, a link has been made between the statutory management requirements and the direct payments received by the farmer.

Therefore, organic farmers have the advantage that they are more facilitated than other farmers in terms of cross compliance and good agricultural practices.

Therefore, every manager of an innovative farm, including a biofarm, must make greater efforts to provide timely information on the benefits of organic farming, as well as changes in national legislation in this regard.

Integrated organic production can be defined as a model designed to optimize agricultural production by saving energy, protecting soil fertility and improving product quality [3, p. 96].

It is an alternative production model for the sustainable development of agriculture, such as the economic sector and the opportunity to put innovations at the service of sustainable agriculture, including the implementation of adequate development measures in agricultural lands intended for organic farming.

3. Assessment by the method of expert assessments of development measures in agricultural lands as a condition and factor for the functioning of organic agriculture in the Republic of Bulgaria

3.1. Hypotheses of the study. For the purpose of the study, the authors chose the method of peer review

The main argument for this choice is, first of all, the specificity of organic farming as an important, developing and prospective sub-sector of the agricultural sector.

The second argument for the choice of authors is based on the direct dependence of organic farming as a specific package of agrarian activities, on the landscaping activities on agricultural land.

In this regard, expert evaluations, in their ranking and totality, play the role of tools to confirm, prove, or reject two hypotheses:

– Hypothesis “A” – The structure of the agricultural lands and the development measures on the agricultural lands are a condition for the functioning of organic agriculture, because it is through the development measures that the basic and necessary conditions in this direction are created;

– Hypothesis “B” – The structure of the agricultural lands and the organized development activities on the agricultural lands in terms of their isolation and expediency, are a factor for the functioning and development of organic agriculture in the Republic of Bulgaria.

3.2. Profile of the experts involved in the evaluation

Capturing the expert profile of the evaluators outlines the following parameters (Figure 1):

A / Total population – 28 people

B / Age differentiation:

a / 26-30 years – 2 people – 7.14%

b / 31-36 years – 12 people – 42.86%

c / 37-42 years – 8 people – 28.57%

d / 43-48 years – 2 people – 7.14%

e / + 48 years – 4 people – 14.29%

Age differentiation of experts indicates a priority proportion of persons aged 31 to 36 years. In the second place are the persons from 37 to 42 years.

This group is followed by persons over the age of 48, and in equal shares are two age groups – from 26 to 30 years and from 43 to 48 years.

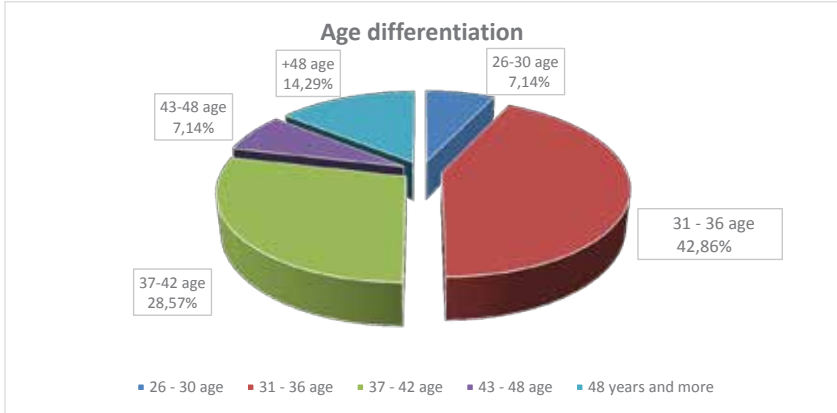


Figure 1. Age differentiation

B / Gender differentiation (Figure 2):

a / women – 13 people – 46,43%

b / man – 15 people – 53,57%

In the gender differentiation of the experts involved in the evaluation, man experts are prioritized, and women are two people less.

D / Differentiation by areas of expertise (Figure 3):

a / agrarian sciences – 4 people – 14,29%

b / development of the territory, including development of agricultural land – 9 persons – 32.14%

c / climate and climate change – 8 people – 28, 57%

d / organic farming – 7 people – 25.00%

Differentiation by area of expertise shows that the largest share is occupied by land-use experts, followed by climate and climate change experts.

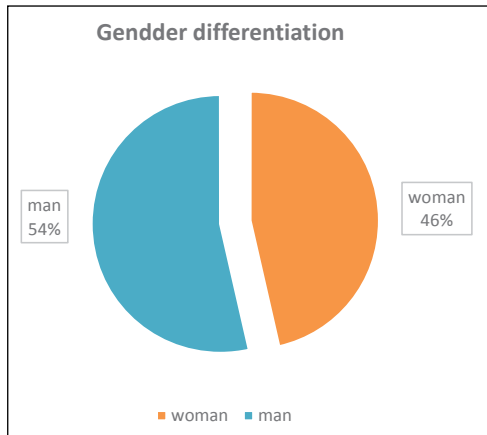


Figure 2. Gender differentiation

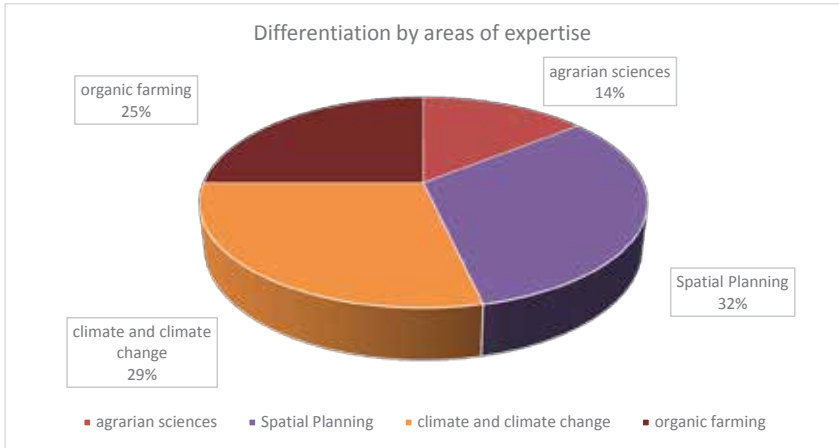


Figure 3. Differentiation by areas of expertise

E / Differentiating Exercise of Expertise in Years (Figure 4):

- a / up to 5 years – 2 people – 7.14%
- b / up to 10 years – 11 people – 39.28%
- c / up to 15 years – 9 people – 32.14%
- d / +15 years – 6 people – 21.44%

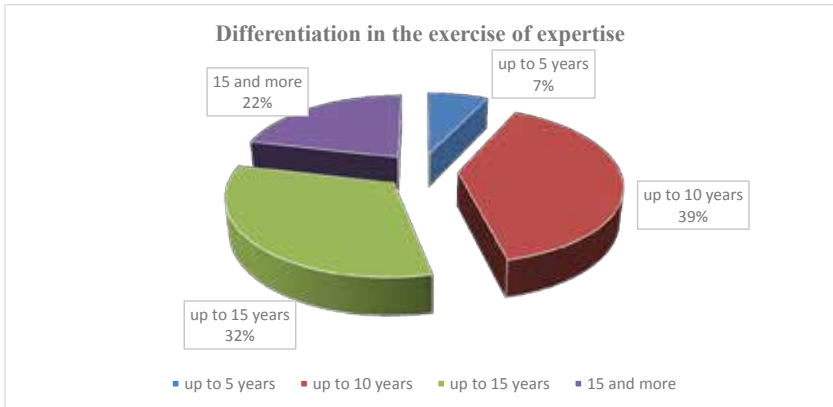


Figure 4. Differentiation in the exercise of expertise

Differentiating the exercise of expertise into years shows that the highest proportion is of experts up to 10 years, followed by experts up to 15 years and, respectively, experts of 15 and more years. Experts up to 5 years have the lowest share.

4. Expert evaluation technology

The postulates included in the expert evaluation are evaluated by experts with ratings ranging from 1 to 10 inclusive. The lowest score is 1 and the highest is 10.

Ranking in tabular form is performed on the basis of aggregated estimates.

The principle in the sequence of evaluations is from the basic issues, previously discussed with the experts and accepted by them in the proposed form, to the differentiated evaluation for the sake of completeness of the expertise.

4.1. Expert assessments

A / Factors in organic farming

The factors in organic farming can be divided into two groups:

- sustainable (factors 1);
- dynamic (factors 2).

What is the evaluation of each of these groups by experts in terms of the priority role of one or the other factor (Table 1):

The expert assessments grouped in Table 1 give rise to the following conclusions:

- Overall, despite the small difference, experts give priority to the factors of the second group, namely the dynamic factors;
- Estimates range over both groups of factors: the lowest is 2 and the highest is 10;
- Neither of the proposed estimates has a priority for both groups of factors – does not exceed 50%;
- It can be noted that both groups of factors are evaluated in parallel by experts, which means that they do not make a strict distinction between the two groups of factors and their role.

The experts agreed that the package of sustainable factors includes the following inter-structural elements:

- the common agricultural policy of the European Union, including the policy on organic farming;

Table 1

Grouping of factors in organic farming

Expert № Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total
Factors 1	6	7	10	9	5	8	4	10	7	9	6	3	8	10	4	2	10	8	7	5	9	10	8	4	3	10	9	7	198
Factors 2	8	10	5	9	7	6	7	10	9	8	5	4	9	7	10	3	9	6	5	2	7	8	10	5	9	4	8	10	200
Total	14	17	15	18	12	14	11	20	16	17	11	7	17	17	14	5	19	14	12	7	16	18	18	9	12	14	17	17	398

Table 2

Priority of intra-structural elements

Expert № Element №	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total
Element № 1	8	7	10	9	5	8	4	10	7	9	6	5	8	10	4	3	10	8	7	6	9	10	8	4	5	10	9	7	206
Element № 2	9	10	5	9	7	6	7	9	9	8	5	6	9	7	10	5	9	6	5	4	7	8	10	5	9	7	8	10	209
Element № 3	4	7	5	8	10	4	10	10	6	7	10	7	7	7	4	5	9	4	10	7	6	8	8	9	10	4	7	7	200
Total	21	24	20	26	22	18	21	29	22	24	21	18	24	24	18	13	28	18	22	17	22	26	26	18	24	21	24	24	615

Chapter «Agricultural sciences»

- the legislation of the Republic of Bulgaria;
- The natural-geographical complex of the Republic of Bulgaria.

Each of these elements was evaluated as follows (Table 2):

The expert assessments, grouped in Table 2, justify the following conclusions:

– In summary, the highest ranking in the ranking of results is element No 2 – the legislation of the Republic of Bulgaria;

– In the second place, the evaluating experts rank element No1, namely the common agricultural policy of the European Union, including the policy on organic farming;

– In the third place in the ranking of experts – evaluators, is element No 3, namely the nature and geographical complex of the Republic of Bulgaria;

– Expert estimates for element No 1 range from 3 to 10, and for element No 2 and element No 3 range from 4 to 10;

– When evaluating element No 1, most experts give ratings 10 and 8;

– When evaluating element No 2, most experts give ratings 9, 7 and 5;

– When evaluating element No 3, most experts give ratings 7 and 10;

Structural measures on agricultural land belong to the dynamic factors in organic farming because they reflect the dynamic needs of the sub-sector.

The level of interaction in such dynamics is assessed by the experts on the principle of rights and the feedback between them (Table 3):

The expert assessments grouped in Table 3 give rise to the following conclusions:

– Overall, with higher ranking in the ranking of the results, is connection No 2 – the feedback between the development activities and organic farming;

– Secondly, cumulatively, the evaluating experts ranked connection No 1, namely the right connection between development activities and organic farming;

– Ratings are in the range of both connections of the lowest grade 5 and the highest 10;

– Neither of the proposed assessments has priority in the two connections – it does not exceed 50%, but most experts give a rating of 5 and a rating of 10;

– It can be noted that both connections are also evaluated in parallel by experts, which means that they do not make a strict distinction here between the two connections and their role.

Table 3

Rights and feedback between development activities and organic farming

Expert №	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total
	Connection №	7	10	9	5	8	5	10	7	9	6	5	8	10	6	5	10	8	7	5	9	10	8	5	6	10	9	7	
Connection №	8	10	6	9	7	6	7	10	9	8	5	6	9	7	10	5	9	6	5	8	7	8	10	5	9	5	8	10	212
Connection №2 (the pposite)	15	17	16	18	12	14	12	20	16	17	11	11	17	17	16	10	19	14	12	13	16	18	18	10	15	15	17	17	423

Table 4

Priority of the intra-structural elements

Expert №	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total
	Element №	8	9	10	9	5	8	6	10	7	9	6	5	8	10	7	5	10	8	7	6	9	10	8	6	8	10	9	
Element №.1	9	10	8	9	7	6	7	9	9	8	7	6	9	7	10	7	9	6	8	6	7	8	10	7	9	7	8	10	223
Element №.2	9	7	8	8	10	9	10	10	9	7	10	7	7	9	7	9	7	9	8	10	7	6	8	8	9	10	8	7	231
Total	26	26	26	26	22	23	23	29	25	24	23	18	24	24	26	19	28	22	25	19	22	26	26	22	27	25	24	24	674

Chapter «Agricultural sciences»

The package of development measures in agricultural lands intended for organic farming includes the following inter-structural elements:

- recultivation of agricultural land intended for organic farming;
- construction of agricultural infrastructure;
- renovation of existing agricultural infrastructure.

Each of these elements was evaluated as follows (Table 4).

The expert assessments grouped in Table 4 give rise to the following conclusions:

- Overall, the highest ranking in the ranking of results is element No 3 – renovation of the existing agricultural infrastructure;
- Secondly, in total, the valuation experts rank element No 2, namely construction of agricultural infrastructure;
- Third in the ranking of experts – valuers is element No 1, namely recultivation of agricultural land intended for organic farming;
- Expert estimates for element No 1 range from 5 to 10, and for element No 2 and element No 3 range from 6 to 10;
- When evaluating element No 1, most experts give ratings 10 and 8;
- When evaluating element No 2, most experts give ratings 7 and 9;
- When evaluating element No 3, most experts give ratings of 7 and an equal number of experts give ratings of 8.9 and 10;

B / Solutions concerning development activities in agricultural land intended for organic farming.

Based on the ranking of expert assessments, it is also proposed to evaluate the need for a dynamic plan for some large-format solutions affecting development activities in agricultural lands intended for organic farming, namely:

- Some improvements and additions to the legislative package for developmental events;
- Adopt and implement cutting-edge practices for bio-agricultural infrastructure related to global climate change;
- Implementation of elements of flexibility and innovation in the management of development activities in agricultural land intended for organic farming.

Expert assessments of the needs for solutions are arranged as follows

The expert assessments, grouped in Table 5, give the following conclusions.

Table 5

Solution needs

Expert №	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total
The solution № 1	8	9	10	9	7	8	9	10	7	9	6	9	8	10	7	9	10	8	7	6	9	10	8	9	8	10	9	7	236
The solution № 2	10	10	8	9	8	7	7	9	9	8	7	6	9	10	10	7	9	7	8	9	7	8	10	8	9	10	8	10	237
The solution № 3	9	9	8	8	10	9	10	10	9	8	10	8	9	8	9	8	9	8	10	9	7	8	8	9	10	8	9	10	247
Total	27	28	26	26	25	24	26	29	25	25	23	23	26	28	26	24	28	23	25	24	23	26	26	26	27	28	26	27	720

– Overall, the highest ranking in the ranking of the results is solution No 3 – introduction of elements of flexibility and innovation in the management of development activities in agricultural lands intended for organic farming;

– Secondly, in total, the evaluating experts rank solution No 2, namely the adoption and implementation of avant-garde practices for bio-agricultural infrastructure related to global climate change;

– Third in the ranking of expert evaluators is solution No 1, namely some improvements and additions to the legislative package for developmental events;

– Experts' estimates for solution No. 1 and solution No. 2 range from 6 to 10 and for solution No. 3 range from 7 to 10;

– When evaluating decision No 1, most experts give a rating of 9, and an equal number of experts give a rating of 8 and a rating of 10;

– When evaluating solution No 2, most experts give grades 8, 9 and 10;

– When evaluating solution No 3, most experts give grades 8 and 9;

5. Conclusions based on ranked peer reviews

With respect to the objectives of the study, the results of the rankings of the peer reviews confirm the truth of hypothesis "A" and hypothesis "B", namely:

– Hypothesis "A":

The organization of agricultural lands and development measures on agricultural lands are a condition for the functioning of organic agriculture, because it is through development activities that the basic and necessary conditions in this direction are created.

Structural measures on agricultural lands and their accompanying conditions and actions are subjective in nature, but also legal justification, knowledge of which is a condition for the effective implementation of legal regulations, while their lack of knowledge or lack of knowledge, hinders and impairs the expected and pursued results of the implementation of the development activities.

– Hypothesis "B":

The structure of the agricultural lands and the organized development activities on the agricultural lands in terms of their isolation and expediency are a factor for the functioning and development of organic agriculture in the Republic of Bulgaria.

In connection with hypothesis "A" and as a continuation of its probative force, hypothesis "B" for the role and sustainable transformation of developmental measures on agricultural lands intended for organic farming is a necessary and permanently present instrument of agronomy, given their necessary role in providing the conditions for a number of processes in the agricultural sector, including in organic farming, to ensure their sustainability.

6. Conclusion

It is important to understand that the agrarian sector, respectively organic agriculture of the Republic of Bulgaria, is closely related not only to the economic and social processes in society, but also to two very important circumstances:

- environmental processes, including severe climate change;
- development activities in agricultural lands, including in lands designated for organic farming.

In this regard, agrarian management and legislation should focus their efforts in the interest of the sustainability of the agrarian sector, respectively on organic farming in the following areas:

- active and sustainable management of natural resources as a key tool in the search for solutions to the increasingly difficult production conditions and in reducing the effects of climate change;

– the achievement of such active management of resources, especially of soil resources and not only of them, is impossible without active, adequate, prospective development measures in agricultural lands, including agricultural lands designated for organic farming.

There are several options for successful solution to these problems and for the quality growth of the sector, but the optimum effect would only be achieved if the traditional organic farming is properly combined.

The main objective for the agricultural sector, respectively for organic farming, should be to create an intensive rather than extensive development model.

This calls for the creation and implementation of new technologies and approaches, including in spatial planning, and the ultimate goal should be the transition to integrated organic farming.

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