

---

11th LUMEN International Scientific Conference Communicative Action &  
Transdisciplinarity in the Ethical Society | CATES 2018 |  
23-24 November 2018 | Targoviste, Romania

---

## Communicative Action & Transdisciplinarity in the Ethical Society

---

### Romanian Agriculture and Sustainable Development

Constantin Aurelian IONESCU, Liliana PASCHIA,  
Mihaela Denisa COMAN\*

<https://doi.org/10.18662/lumproc.108>

**How to cite:** Ionescu, C. A., Paschia, L., & Coman, M. D. (2019). Romanian Agriculture and Sustainable Development. In C. Ignătescu (ed.), *11th LUMEN International Scientific Conference Communicative Action & Transdisciplinarity in the Ethical Society | CATES 2018 | 23-24 November 2018 | Targoviste, Romania* (pp. 156-169). Iasi, Romania: LUMEN Proceedings. <https://doi.org/10.18662/lumproc.108>



11<sup>th</sup> LUMEN International Scientific  
Conference **Communicative Action & Transdisciplinarity in  
the Ethical Society** | CATES 2018 | 23-24 November 2018 |  
Targoviste, Romania

## Romanian Agriculture and Sustainable Development

Constantin Aurelian IONESCU<sup>1</sup>, Liliana PASCHIA<sup>2</sup>,  
Mihaela Denisa COMAN\*<sup>3</sup>

### *Abstract*

*Agriculture is a vital activity with major consequences on food security of the population and on regional and local ecosystems, becoming a geostrategic tool important for the economic development of any country. In accordance with the requirements of the European Union, agriculture must be developed and transformed into an ecological agriculture that can offer viable solutions for: satisfying the demand for natural products obtained without the use of fertilizers and chemical substances, while at the same time diversifying and expanding the agricultural sector in harmony with environmental protection and the principles of sustainable development. The aim of the paper is to highlight the evolution of Romanian agriculture in the context of sustainable development according to the requirements of the European Union.*

**Keywords:** *sustainable development; agriculture; bio economy; economic efficiency; ecological agriculture; environmental protection; ecosystems;*

### Introduction

The economic environment characterized by unpredictability, uncertainty and subject to several current and future challenges such as:

---

<sup>1</sup> Lecturer, Hyperion University of Bucharest, Romania, [ionescuarelian89@gmail.com](mailto:ionescuarelian89@gmail.com)

<sup>2</sup> Lecturer, Hyperion University of Bucharest, Bucharest, Romania, [paschialiliana@gmail.com](mailto:paschialiliana@gmail.com)

<sup>3</sup> PhD. Research Assistant, Institute of Multidisciplinary Research for Science and Technology Valahia University of Targoviste, Targoviste, Romania, [cmndenisa@gmail.com](mailto:cmndenisa@gmail.com)

\* Corresponding author.

global competition, high costs of production factors, low utility yields or climate change outline a context that requires revitalization of agriculture that includes food production and the evolution of rural communities, the rural environment and its natural resources, which need to be developed in line with the astringent demands of sustainable development. At European Union level, there are about 500 million consumers who require safe sources of healthy, nutritious and affordable food that can be provided by developing sustainable agriculture. At the same time, agriculture and food production are essential elements of the contemporary economy and society, with an estimated 12 million farmers and 4 million people working in the food sector at EU level. Thus the agricultural and food sectors are accountable together for 7% of all jobs and 6% of the EU's gross domestic product [27].

Sustainable development of agriculture requires an integrated approach to ensuring food and environment safety, an approach based on the relationship between food, water, energy, environment and climate, offering a reorientation and reorganization of food production, distribution and consumption. Increasing agricultural productivity leads to increased food safety, but it must minimize the impact on the environment, by discarding pesticides, insecticides and toxic fertilizers and using biological ones instead, thus making the use of natural resources more efficient. For developing countries where agriculture holds a significant share in gross domestic product, increasing agricultural productivity is an astringent need in conjunction with rigorous management of farmland and pastures, protection of soil quality, restoration of degraded land [7].

The sustainable development of agriculture can be achieved through [30], [3]: *i) supplementing public investment in agricultural research and development; ii) introducing agronomic practices and advanced technologies; iii) increasing the use of information technologies in order to ensure that farmers are properly informed about agricultural techniques and technologies, market price developments, etc.; (iv) increasing green areas; v) development of rural development strategies and increased infrastructure investments, which may lead to better interconnection between producers and the market; vi) removing intermediaries between producers and consumers; vii) grouping of small producers under various legal forms to strengthen their position on the market; viii) establishing of efficient collection and storage areas for agricultural products; ix) using ecological fertilizers and seeds.* The aim of this paper is to highlight the evolution of Romanian agriculture in the context of sustainable development according to the requirements of the European Union.

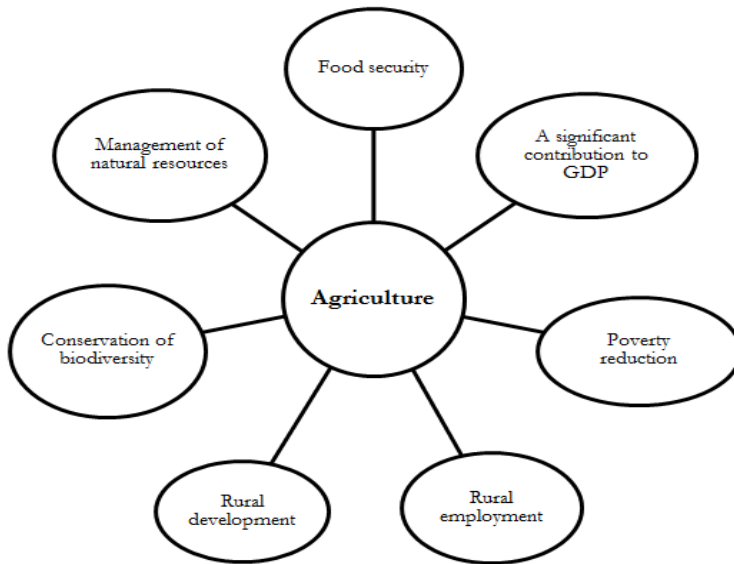
## Theoretical Background – Sustainable development of the agricultural sector

Sustainable development is defined as *"Development that meets today's needs without affecting the needs of future generations"* [29], *"Net biomass productivity (positive mass per unit area unit) is maintained along the decade to centuries."* [2], *"Sustainable economic growth maintains an "acceptable" rate of real income growth per capita without diminishing national stockpile or natural resource stock."* [26]. The definition of sustainable development is based on three dimensions: the environment, the economy, society and it assumes pursuit of objectives such as: *i) preservation and improvement of natural resources, ii) technology reorientation and risk management, iii) integrating environment into the economy, iv) economic development v) ensuring food safety and quality vi) sustainable population evolution vii) residue management (viii) rebalancing the disparities between urban and rural areas; ix) poverty reduction* [4].

The aim of the research is to highlight the functions (Figure no.1) and the evolution of agriculture (Table no. 1), a significant component for the economic development of any country, but also for ensuring the food security of the population. Starting from the definition of sustainable development in general, we continue the research process by presenting the concept of sustainable development of agriculture in particular. Sustainable development of agriculture must be perceived dynamically through its implementation, results and socio-economic effects, in line with the three main dimensions of sustainable development [14]. Sustainable agriculture has a considerable role in: *i) food security - meeting the primary needs of people; ii) poverty reduction, as 38.3% of the global workforce is active in this field* [11]; *iii) ensuring the sustainable management of natural resources.*

From the point of view of ensuring food security, the sustainable development of agriculture is essential because it contributes to the availability, access, stability and diversity of the food produced. It is well known that during the last 50 years global agricultural production has tripled, by increasing agricultural area by 12%, using varieties with high yield and productivity, extensive irrigation, application of fertilizers and pesticides, specialization in agricultural techniques and production management [31]. These specialized systems have significantly contributed to the loss of biodiversity, the loss of soil fertility, the occurrence of erosion and land degradation, the pollution of water, air, etc. [12]. In recent years, global concerns have been stepping up on the establishment and

development of sustainable and environmentally-friendly farming systems that can ensure food supply in the future.



(Source: processed after Elliot J.A., 2006)

**Fig. no. 1.** Functions of agriculture

Thus, farmers operate in a competitive global market, in a food chain dominated by multinational companies, and agricultural production is characterized by the cost-to-sales ratio. For the development of agriculture in this global context, investments in technology and research are needed to increase productivity and sustainable development of activity, which means balancing the activities of farmers and the environment, increasing the safety and quality of food, maintaining, developing and promoting rural communities [24]. Thus, it can be argued that the sustainable development of agriculture can be assessed from a multidimensional point of view, having a significant role in shaping a sustainable society.

Sustainable development of agriculture requires the creation of a complex and integrated agricultural production system that involves overcoming its primary function, namely food and fiber production [20], by increasing the utility of secondary functions that can provide services and benefits to ecosystems, such as [15]: soil conservation and restoration,

biodiversity protection, carbon deposit and filtering, natural pollination [19] and, on the other hand, contribute to the development of socio - economic culture and viability of rural areas. At the same time, organic farming systems can provide a balance between food production and biodiversity conservation, with an impact on nutrition diversification and an increase in quality of life [1].

Table no. 1. Evolution of agriculture

Criteria	Traditional Agriculture	Modern Agriculture	Ecological Agriculture
<b>Technology</b>	- Primary tools	- Mechanization; - Use of agrochemicals; - Diversification of seeds and varieties.	- <i>Biotechnology;</i> - <i>Information technology;</i> - <i>Integrated technology systems;</i> - <i>Irrigation and water management systems.</i>
<b>Organization</b>	- Decentralized - Unspecialized	- Increasing the yield of agricultural production; - Work productivity; - Specialization, intensification and concentration of crops; - Concentration of agricultural production on medium and large farms.	- <i>Protecting the environment;</i> - <i>Increasing the quality of agricultural products;</i> - <i>Development of new varieties of organic crops;</i> - <i>Using marketing techniques;</i> - <i>Optimizing the distribution chain for agricultural products;</i> - <i>Nutritional optimization of products;</i> - <i>Enhanced research and implementation of innovative results;</i> - <i>Waste management.</i>
<b>Social impact</b>	- Ensuring the needs of a rural household (subsistence agriculture).	- Increasing Productivity; - Reducing the production period; - Export of production.	- <i>Rural development;</i> - <i>Increasing the social responsibility of producers;</i> - <i>Continuous structural changes;</i> - <i>Production according to the needs, preferences and qualitative requirements of consumers.</i>

(source: processed after Shinohara T., 2001)

Agriculture must become a sustainable concept based on multifunctionality, respecting the following considerations [13]:

- ✓ *organic farming based on the preservation of natural resources* - agricultural systems will have to reduce dependence on non-renewable resources

and the intensive use of chemicals and increase the use of: renewable resources, organic products and seeds, wild pollination, soil quality improvement by using natural fertilizers, preservation of local natural resources, etc. Good management of ecosystems as well as renewable natural resources will lead to the increase and surplus yield of agriculture [16];

- ✓ *organic farming based on biodiversity* - the agricultural system is regarded from a binomial perspective, namely: from the perspective of a farm where crops and fruit growing must be diversified, by using multiple varieties and landscaping, through which the farm must include the natural areas around it, to protect them and to promote the services of the ecosystem;
- ✓ *organic farming based on farm management* - agricultural systems must increase the production of ecosystem services and develop biodiversity by including perennial crops, gioncreasing the number of fruit trees, etc., which will generate soil protection and reduce carbon emissions;
- ✓ *using agricultural technical and technological production systems using renewable resources*;
- ✓ *developing green business models*: new business models must generate economic benefits for both agriculture and the community and ecosystems. Agricultural business models are focused on: reducing the use of non-renewable resources, developing a sustainable link between agricultural productivity, food production and food waste management, residue management, certified organic products, expanding, managing and selling ecosystem services [9].
- ✓ *raising farmers' level of education*: in order to achieve performance in the 21st century, strong knowledge of agriculture is needed on the one hand and knowledge of economics and management on the other hand for efficient coordination of the economic activity of the farm;
- ✓ *use of small business association systems*, to strengthen market position and viability;
- ✓ *optimization of the distribution chain*: the organization of farmers in association systems with legal personality leads to the elimination from the distribution chain of intermediaries, which in most cases make profits in excess of those made by the producers. At the same time, associations between producers determine easy access in large commercial chains, as they can supply the quantities of products they need;

In order to ensure sustainable development, agriculture must: *i) respond to consumers' needs for high-quality and healthy fiber products and foods; ii) protect and restore the natural resources base it uses; (iii) agricultural product prices include production costs and environmental costs, leading to profit for farmers; (iv) be adaptable to environmental, economic and social change; v) contribute to job creation and rural development; vi) contribute to the maintenance of country-specific traditions* [22].

## **Romanian Agriculture and Organic Farming in the Context of Sustainable Economy**

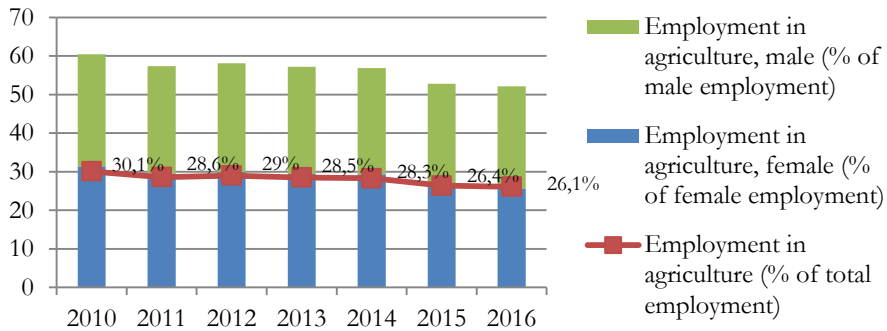
Romania, with a used agricultural area of 13.3 million ha, has an agricultural sector with a significant role in terms of its reporting to the size of the rural population (about 45.7% of the population lives in the countryside), the occupancy rate (about 30% of the population working in the agricultural sector) and the contribution to the economy [25]. At the same time agriculture is practiced in a large number of small, subsistence and semi-subsistence farms, which due to their low economic dimensions are vulnerable and with limited perspectives of adaptation and orientation towards market requirements. These types of farms are characterized by poor technical endowment, low productivity, reduced economic efficiency, etc. [18]. An astringent need for the modernization of small farms can be identified by encouraging the association of farmers in the form of cooperatives or producer groups.

Merging plots contributes to: *i) improving the efficiency and yield of agricultural holdings both in terms of productivity and environmental protection; ii) easy access to the use of modern technologies; iii) diversification and improvement of production; iv) ensuring a sustainable farm management; v) strengthening the market position of farmers and increasing the negotiation power; vi) waste management; vii) reducing the use of pesticides and chemical fertilizers; (viii) environmental protection and restoration; (ix) easy access to investment credits; x) consolidating the market position of the products offered by farmers, by integrating them into high-performance food distribution chains, etc.* [17].

The evolution of the Romanian agri-food sector must be based on increasing the technical, economic and environmental knowledge that farmers have in order to ensure their sustainable development and to successfully align with the European Union standards on: food safety, animal health, sustainable management of natural resources and adaptation to climate change [5], [6], [28]. Sustainable development of agriculture is



necessary because at the level of 2016, 26.1% of all employees worked in the agricultural sector (Fig.2).



(Source: Worldbank)

**Fig. no. 2.** Employment in Romanian agriculture (% of total employment)

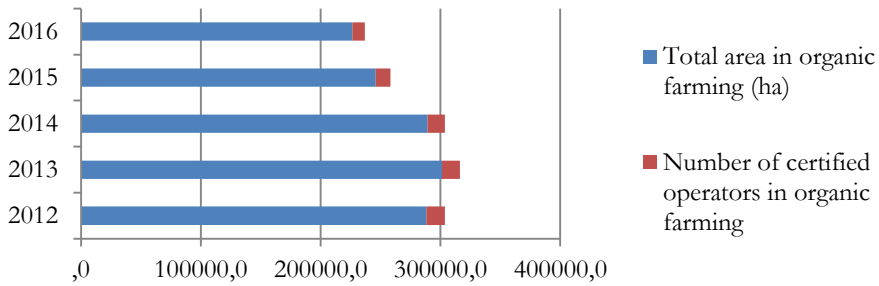
The Romanian agricultural sector is endangered by aging among owners and farm managers, which is negatively reflected on the level of development, modernization, competitiveness and the use of good environmental practices within the farms. This requires a high number of young farmers to take over farm management, improve productivity, expand organic crops and increase market access. Increasing the education level for young people working or willing to work in the agricultural sector will lead to the improvement of the technical capacity and the research and development potential, will ensure a sustainable management aimed at improving the overall performances of the farms, respecting the environmental requirements, reducing the use of fertilizers and chemical pesticides, increasing organic production and effectively integrating them into the market [18].

Although the Romanian agricultural sector is experiencing various difficulties, it is possible to identify an opportunity to increase the competitiveness of producers by integrating them within the agri-food chain through quality schemes based on organic farming. The use of quality systems ensures the added value of agri-food products in terms of both quality and authenticity. Applying the principles of sustainable development and the extension of organic farming can ensure the revival of the Romanian agricultural sector. Population awareness of the necessity and importance of practicing organic farming in rural areas can also provide a solution for revitalization and repopulation of rural areas. Organic

agricultural production is based on: *i) non-use of synthetic chemicals; ii) respect for animal welfare; iii) sustainable management of water use and recycling, iv) waste management; v) preservation, restoration of the environment and biodiversity; vi) reducing the consumption of non-renewable resources within the local agricultural systems; vii) promoting the healthy and sustainable use of soil, water and air, as well as minimizing all forms of pollution that may result from agricultural practices; vi) increasing the biological activity of the soil and maintaining its long-term fertility; (ix) using methods of processing agricultural products that maintain organic integrity and product quality at all stages* [10].

The organic food product is a mixture of ingredients from organic farming that is certified, marked and labeled in accordance with industry regulations [23]. At the same time, plants and plant products are considered to be organic if: (i) organic production rules have been applied to plots over a period of at least two years prior to sowing; (ii) in the case of perennial pastures or feedingsuffs, the ecological rules shall be applied at least two years before use as feed; (iii) for perennial crops other than forage, the ecological rules shall be applied at least three years before the first harvest of organic products. At the EU level [8], the cultivated organic area was 11.9 million hectares, with an increase of 18.7% between 2012 and 2016. In Romania [21] there is a downward trend (-21.5%) in the same time period as regards the organic cultivated area (Fig. 2).

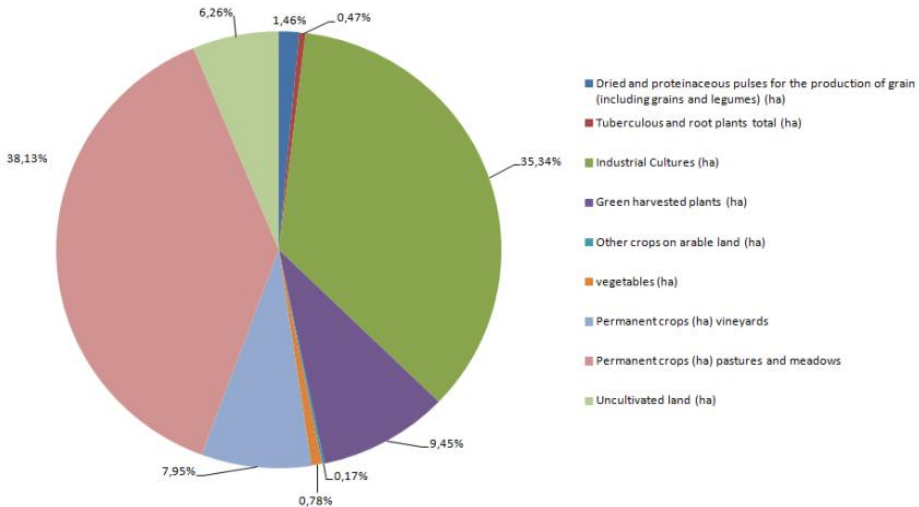
The organic food product is a mixture of ingredients from organic farming, which is certified, marked and labeled according to the regulations in the field [23]. At the same time, plants and plant products are considered to be organic if: *(i) organic production rules have been applied to plots over a period of at least two years prior to sowing; (ii) in the case of perennial pastures or feedingsuffs, the ecological rules shall be applied at least two years before use as feed; (iii) for perennial crops other than forage, the ecological rules shall be applied at least three years before the first harvest of organic products.* At the EU level [8], the cultivated organic area was 11.9 million hectares, with an increase of 18.7% between 2012 and 2016. In Romania [21] there is a downward trend (-21.5%) over the same time in terms of cultivated organic area (Fig no. 3.).



(Source: The Ministry of Agriculture and Rural Development)

**Fig. no. 3.** Romanian certified operators in organic farming vs total area in organic farming

The competitiveness of organic products is determined by: *i) the number of operators registered in the organic farming sector and the number of processors; ii) extension of the area cultivated in organic farming; iii) expanding the organic products market; iv) diversifying the supply of organic products; v) consumer awareness of the quality, value and beneficial effects of organic health products; vi) the significant contribution of organic farming to the sustainable development of society and the environment.* At the same time, organic crops can be divided into three main crop types: *i) arable crops (cereals, vegetables, green fodder, industrial crops); (ii) permanent pastures and meadows; (iii) permanent crops.* The distribution of Romanian organic crops in 2016 is presented in Fig. no. 4.



(Source: The Ministry of Agriculture and Rural Development)

**Fig. no. 4.** Distribution of Romanian organic crops in 2016

Having presented in the course of this research the distribution of organic operators and organic crops, we can say that the techniques used in organic farming ensure and contribute significantly to the sustainable development of the environment and society through: *i) the use of crop rotation (determines the diversity of food cultures, contributes to the preservation of genetic resources of plants and contribute to the improvement of agricultural production), while using organic fertilizer contributes to improving the structure and soil fertility; ii) protecting biodiversity by using plants with pest control properties; (iii) preventing and combating erosion, compaction, salinisation and alkalisation of the soil; iv) use of renewable resources; v) recycling of nutrients through the use of compost and manure residues* [10].

## Conclusions

Agriculture in Romania, characterized by decentralization and a predominant organization in small subsistence or semi-subsistence farms requires rethinking and reorganization to ensure sustainable development. Respecting the conditions and principles of sustainable development applicable to agriculture, we have identified in this research that considerable efforts are being made in Romania for the sustainable development of agriculture and the promotion of organic farming. It is imperative to continue to support farmers to develop farms, to organize them in cooperatives or producer associations to help them strengthen their position on the market. In fact, we need to increase agricultural productivity, invest in high technology, research and innovation in biotechnology. At the same time it is necessary to educate the farmers in order to ensure the sustainable management of the farm and prevent the aging phenomenon of farmers and employees working in agriculture, by modernizing and promoting agricultural vocational and technical education. An important aspect that is closely linked to the sustainable development of agriculture is sustainable rural development. In light of the considerations presented in the research approach and in line with the European Union's strategies for the sustainable development of agriculture, we can say that Romania has substantial and fertile agricultural areas at European level, which by using: the principles of sustainable development, research and innovation, IT but also by educating farmers can ensure food security, reduce poverty and social exclusion, revitalize rural and primary areas to ensure the sustainable development of agriculture.

---

**References**


---

- [1] Beed F, Benedetti A, Cardinali G, Chakraborty S, Dubois T, Garrett K, Halewood M. Climate change and micro-organism genetic resources for food and agriculture: state of knowledge, risks and opportunities. Background Study Paper No. 57. Rome, Italy: Commission on Genetic Resources for Food and Agriculture (FAO); 2011.
- [2] Conway GR. The properties of agroecosystems. *Agricultural Systems*. 1987;24: 95-117.
- [3] Deloitte. eTransform Africa: agriculture sector study: sector assessment and opportunities for ICT [Internet]. 2012. Available from: [http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/282822-1346223280837/Agriculture\\_FullReport.pdf](http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/282822-1346223280837/Agriculture_FullReport.pdf)
- [4] Elliott JA. An introduction to Sustainable Development. 3<sup>rd</sup> Edition. London: Routledge Perspectives on Development; 2006.
- [5] European Commission. Action Plan for Future Organic Production in European Union, Bruxelles [accessed on 4 March 2018]. Available from: [http://ec.europa.eu/agriculture/organic/documents/eu-policy/european-action-plan/act\\_en.pdf](http://ec.europa.eu/agriculture/organic/documents/eu-policy/european-action-plan/act_en.pdf)
- [6] European Commission. Eurostat. European Statistics, Area under organic farming; 2015. Available from: <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tsdpc440&plugin=1> (accessed on 4 March 2018). [Google Scholar]
- [7] European Commission. Să înțelegem politicile uniunii europene; 2014. Available from: [http://publications.europa.eu/resource/cellar/f08f5f20-ef62-11e6-8a35-01aa75ed71a1.0018.01/DOC\\_1](http://publications.europa.eu/resource/cellar/f08f5f20-ef62-11e6-8a35-01aa75ed71a1.0018.01/DOC_1)
- [8] Eurostat. 2017. Organic farming statistics. Available from: [http://ec.europa.eu/eurostat/statisticsexplained/index.php/Organic\\_farming\\_statistics](http://ec.europa.eu/eurostat/statisticsexplained/index.php/Organic_farming_statistics)
- [9] Farming First. Agriculture for a Green Economy: Improved Rural Livelihood, Reduced Footprint, Secure Food Supply. Available from: [http://www.farmingfirst.org/wordpress/wp-content/uploads/2011/10/Farming-First-Policy-Paper\\_Green-Economy.pdf](http://www.farmingfirst.org/wordpress/wp-content/uploads/2011/10/Farming-First-Policy-Paper_Green-Economy.pdf)
- [10] FAO. 2015. Training manual for organic agriculture. Available from: [http://www.fao.org/fileadmin/templates/nr/sustainability\\_pathways/docs/Compilation\\_techniques\\_organic\\_agriculture\\_rev.pdf](http://www.fao.org/fileadmin/templates/nr/sustainability_pathways/docs/Compilation_techniques_organic_agriculture_rev.pdf)
- [11] FAO. 2015. The State of Food and Agriculture. Social protection and agriculture: breaking the cycle of rural poverty. Rome. Available from: <http://www.fao.org/3/a-i4910e.pdf>

- [12] FAO. 2014. Building a common vision for sustainable food and agriculture, principles and approaches. Rome; 2014. Available from: <http://www.fao.org/3/a-i3940e.pdf>
- [13] Giovannucci D, et al. Food and Agriculture: the future of sustainability. A strategic input to the Sustainable Development in the 21st Century (SD21) project. 2012. New York: United Nations Department of Economic and Social Affairs, Division for Sustainable Development.
- [14] HLPE. Sustainable agricultural development for food security and nutrition: what roles for livestock? [Internet]; 2016. Available from: [www.fao.org/cfs/cfs-hlpe](http://www.fao.org/cfs/cfs-hlpe)
- [15] Klein AM, Vaissière B, Cane J, Steffan-Dewenter I, Cunningham S, Kremen C, Tscharntke T. Importance of pollinators in changing landscapes for world crops. *Proceedings of the Royal Society B*; February 7. 2007; 274: 303–313.
- [16] Liniger H, Critchley W (eds). Where the land is greener: case studies and analysis of soil and water conservation initiatives worldwide. [Internet]. 2007. Available from: <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/2662.pdf>
- [17] Ministerul Agriculturii și Dezvoltării Rurale. Analiza socio-economică în perspectiva dezvoltării rurale 2014-2020. [Internet] ; 2013. Available from: <http://www.madr.ro/docs/dezvoltare-rurala/programare-2014-2020/analiza-dezvoltarii-rurale-agricultura-iulie-2013.pdf>
- [18] Ministerul Agriculturii și Dezvoltării Rurale (MADR). Programul Național de Dezvoltare Rurală pentru perioada 2014 – 2020, Ministerul Agriculturii și Dezvoltării Rurale (MADR) - Direcția Generală de Dezvoltare Rurală (AM PNDR). [Internet]; 2017. Available from: <http://www.madr.ro/docs/dezvoltare-rurala/PNDR-2014-2020-versiunea-aprobata-30-iunie-2017.pdf>
- [19] McCartney M, Rebelo L, Senaratna Sellamuttu S, De Silva S. Wetlands, agriculture and poverty reduction. [Internet]. Colombo, Sri Lanka: International Water Management Institute. 2010. Available from: [https://www.researchgate.net/publication/241760961\\_Wetlands\\_Agriculture\\_and\\_Poverty\\_Reduction](https://www.researchgate.net/publication/241760961_Wetlands_Agriculture_and_Poverty_Reduction)
- [20] Müller A, Schmidhuber J, Hoogeveen J, Steduto P. Some insights in the effect of growing bio-energy demand on global food security and natural resources. Presented at “Linkages between Energy and Water Management for Agriculture in Developing Countries” Conference. India: Hyderabad. 28–31 January 2007. Available from: <https://pdfs.semanticscholar.org/9e3a/c666a724ecf8364cfa72c751a2d4ef422275.pdf>
- [21] Ministry of Agriculture and Rural Development. Dinamica operatorilor si a suprafetelor in agricultura ecologica. [Internet]. Available

- from: <http://www.madr.ro/agricultura-ecologica/dinamica-operatorilor-si-a-suprafetelor-in-agricultura-ecologica.html>
- [22] NSW Government. Policy for Sustainable Agriculture in New South Wales. NSW Agriculture. [Internet]. December 1998. Available from: [https://www.dpi.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0010/189622/policy-sustainable-ag.pdf](https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0010/189622/policy-sustainable-ag.pdf)
- [23] PwC. Potențialul dezvoltării sectorului agricol din România. [Internet]. 2017. Available from: [https://www.juridice.ro/wp-content/uploads/2017/03/Raport\\_PwC-agricultura.pdf](https://www.juridice.ro/wp-content/uploads/2017/03/Raport_PwC-agricultura.pdf).
- [24] Shinohara T. Adopting technologies for sustainable farming system: the public interest perspective. Adoption of technologies for sustainable farming systems wageningen workshop proceedings. [Internet]. 2001;28 p. Available from: <https://www.oecd.org/greengrowth/sustainable-agriculture/2739771.pdf>
- [25] Strategia pentru dezvoltarea sectorului agroalimentar pe termen mediu și lung orizont 2020-2030. [Internet]. București. 2015. Available from: <http://www.madr.ro/docs/agricultura/strategia-agroalimentara-2020-2030.pdf>.
- [26] Turner RK. Sustainable Environmental Management. London: Belhaven; 1998: 12.
- [27] United Nations. Department of Economic and Social Affairs. World economic and social survey 2013: Sustainable development challenges; 2013. UN.
- [28] World Bank. Employment in Agriculture (% of total employment). [Internet]. [accessed on 18 April 2018]. Available from: <http://data.worldbank.org/indicator/SL.AGR.EMPL.ZS/countries>
- [29] World Commission on Environment and Development. Our Common Future. Oxford: Oxford University Press; 1987: 43.
- [30] World Development Report. Agriculture for Development. [Internet]. 2008. Washington, D.C. Available from: [https://siteresources.worldbank.org/INTWDR2008/Resources/WDR\\_00\\_book.pdf](https://siteresources.worldbank.org/INTWDR2008/Resources/WDR_00_book.pdf)
- [31] World Economic Forum. Realizing a New Vision for Agriculture: A roadmap for stakeholders. [Internet]; 2010. Available from: [http://www3.weforum.org/docs/IP/2016/NVA/WEF\\_IP\\_NVA\\_Roadmap\\_Report.pdf](http://www3.weforum.org/docs/IP/2016/NVA/WEF_IP_NVA_Roadmap_Report.pdf)