Potential of agricultural production in Romania

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Abstract. In this paper we summarize Romania's potential for agricultural production, evaluating pedoclimatic factors, agrobiodiversity, human resources and irrigation systems. While Romania has significant potential, challenges such as the need for modernization, sustainable practices, and adapting to changing climate patterns must be addressed to fully realize this potential.
Key Words: agrobiodiversity, human resources, irrigation, pedoclimatic.

Introduction. In this paper we aim to summarize Romania's potential for agricultural production, evaluating pedoclimatic factors, agrobiodiversity, human resources and irrigation systems.

Romanian soils. The quality of soil in Romania, like in any country, can vary widely depending on factors such as climate, geology, land use, and agricultural practices (Stănilă & Dumitru 2016). Romania has diverse soil types due to its varied topography and climate, ranging from fertile plains to mountainous regions (Stănilă & Dumitru 2016). Generally, Romania has a mix of soils that can be classified into several categories.

Chernozem. These are some of the most fertile soils in the world and are found in the southern and eastern parts of Romania. Chernozems are known for their high organic matter content and are suitable for a wide range of crops.

Luvisol. These soils are found in areas with forest vegetation. They are well-draining and have a good structure for plant growth.

Podzol. Typically found in coniferous forests and areas with acidic parent material, podzols can be less fertile than chernozems but are still capable of supporting certain types of vegetation.

Gleysol. These are waterlogged soils and are typically found in low-lying areas or areas with poor drainage. They are not very suitable for agriculture.

Regosol. These are shallow, rocky soils that can be found in mountainous regions. They are generally not very fertile.

Andosol. Found in volcanic regions, andosols are known for their high fertility due to their rich mineral content. Romania has volcanic areas, particularly in the Carpathian Mountains.

When comparing Romanian soils to those in other parts of the world, it is important to consider the specific context and criteria for evaluation, such as: fertility, diversity, sustainability and management practices (Munteanu & Florea 2001).

Fertility. Chernozem soils found in Romania are highly fertile and can be compared favorably to some of the best soils globally (Munteanu & Florea 2001; Stănilă & Dumitru 2016). However, they may not be as inherently fertile as certain soils found in places like the American Midwest or the Ukrainian Black Earth region (Boincean & Dent 2019).

Diversity. Romania's diverse landscape results in a wide variety of soil types, each with its own characteristics. This diversity can be an asset for different types of agriculture and land use.

Sustainability. The quality of soil is not just about its immediate fertility but also about its ability to sustain agriculture over the long term. Factors like erosion, organic matter content, and nutrient cycling are crucial considerations.

Management practices. The way soils are managed and treated by farmers and landowners has a significant impact on their overall quality. Proper agricultural practices can enhance soil quality, while poor management can degrade it.

While Romania has some very fertile soils, it also has areas with less fertile or less suitable soils for agriculture. As with any country, sustainable land management practices are crucial for maintaining and improving soil quality over time (Brejea et al 2021).

Climate. Romania has a diverse climate that allows for a variety of agricultural activities. The suitability for agriculture depends on the region within the country (Petrescu-Mag et al 2022). We will present in the next rows a general overview.

Mild continental climate (Central and Southern Romania). This region experiences hot summers and cold winters. It's suitable for a wide range of crops including wheat, corn, barley, sunflower, and various fruits (such as apples, plums, grapes, and peaches) (Alexandrescu 1996).

Subtropical climate (Black Sea coast). This region benefits from a milder climate influenced by the Black Sea (Gâștescu et al 1975). It's suitable for crops like maize, sunflower, soybeans, and a variety of fruits.

Submediterranean climate (Southwestern Romania). This area has a climate somewhat influenced by the Mediterranean. It's favorable for growing crops like maize, sunflower, and a variety of fruits including grapes and olives.

Alpine and subalpine zones (Carpathian Mountains). These areas are characterized by a harsher climate, with cooler temperatures and shorter growing seasons (Alexandrescu 1996). Some mountainous regions are used for pastoral activities (raising livestock), while certain crops like potatoes, cabbage, and other cold-tolerant plants can be grown.

Transitional climate (Northern and Northwestern Romania). This region experiences a transition between a continental and maritime climate (Brejea et al 2021). It's suitable for a variety of crops including wheat, corn, barley, and sunflower.

Hill and plateau regions (various areas). These areas have diverse climates depending on their altitude and geographical features. They are suitable for a range of crops and livestock farming.

Danube River Valley. The fertile plains along the Danube River are highly suitable for agriculture (Gâștescu et al 1975). Crops like wheat, corn, sunflower, and soybeans are commonly grown in this region.

Northern and Eastern Romania. These regions have a more continental climate with colder winters and shorter growing seasons (Mihăilă et al 2019). Crops like wheat, barley, and rapeseed are commonly grown.

It is worth noting that climate patterns can change over time due to various factors, including global climate change (Istudor et al 2019). Additionally, local microclimates can be influenced by factors such as proximity to bodies of water, elevation, and geographic features. Romania has a diverse climate that supports a wide range of agricultural activities, making it an important agricultural producer in Europe. However, it is essential for farmers and policymakers to adapt to changing climate conditions and implement sustainable practices to ensure long-term agricultural viability (Istudor et al 2019).

Irrigation systems. Romania has a relatively well-developed irrigation system, but it faces challenges related to infrastructure maintenance, water scarcity in certain regions, and the need for modernization (Dogaru et al 2019; Halbac-Cotoara-Zamfir et al 2023). We present below some key points about irrigation systems in Romania.

Historical context. Romania has a long history of irrigation, with some of the earliest systems dating back to Roman times (Halbac-Cotoara-Zamfir et al 2023). However, modern irrigation systems were established during the communist era, when large-scale projects were undertaken (Robu et al 2020).

Infrastructure. The country has an extensive network of irrigation infrastructure, including canals, reservoirs, pumping stations, and pipelines. Some of the major rivers in Romania, such as the Danube, Siret, and Mureș, are used to supply water for irrigation (Dogaru et al 2019; Robu et al 2020; Halbac-Cotoara-Zamfir et al 2023).

Usage. Irrigation is primarily used in agriculture, particularly for crops like cereals, vegetables, and fruit orchards. It plays a crucial role in ensuring stable agricultural production, especially during dry periods (Robu et al 2020; Halbac-Cotoara-Zamfir et al 2023).

Challenges

Aging infrastructure. Much of Romania's irrigation infrastructure was built several decades ago and is in need of repair and modernization (Florea et al 2020).

Water scarcity. Some regions, especially in the south and southeast, face water scarcity issues, which can impact the availability of water for irrigation (Minea et al 2020).

Efficiency. There is room for improvement in the efficiency of irrigation practices. More modern, water-saving techniques like drip irrigation are being encouraged (Florea et al 2020).

Sustainable practices. There is a growing emphasis on sustainable irrigation practices in Romania. This includes promoting water-saving technologies, precision agriculture, and better management of water resources (Boincean & Dent 2019; Dogaru et al 2019).

Legislation and regulation. Romania is subject to European Union directives and regulations regarding water management and irrigation. This includes guidelines for sustainable water use and environmental protection (Dogaru et al 2019; Halbac-Cotoara-Zamfir et al 2023).

Research and innovation. There is ongoing research and innovation in the field of irrigation in Romania (Enescu et al 2020). This includes studies on improving water use efficiency, adopting new technologies, and developing drought-resistant crop varieties.

EU funding. Romania has accessed European Union (EU) funds for the modernization and improvement of its irrigation infrastructure. These funds have been used to upgrade existing systems and implement more sustainable irrigation practices (Dogaru et al 2019).

Human resources. The situation of human resources for agriculture in Romania is characterized by several key factors, as we will see below.

Significant agricultural workforce. Agriculture has traditionally been an important sector in Romania, employing a substantial portion of the population. Many people, especially in rural areas, are engaged in agricultural activities (Iancu et al 2020; Vasile et al 2020). At the same time, the rural area loses human resources due to an exodus. Farmers leave for the big cities or for western Europe, for a higher salary.

Rural vs. urban divide. There is a notable urban-rural divide in Romania. Rural areas have a higher concentration of agricultural workers (Iancu et al 2020; Vasile et al 2020), while urban areas have more diversified economies.

Aging workforce. The agricultural workforce in Romania tends to be older, with a significant proportion of farmers being above retirement age (Iancu et al 2020; Vasile et al 2020). This poses challenges for the sector in terms of generational transition and succession planning.

Small-scale farming. Romania has a large number of small-scale family farms (Petrescu-Mag et al 2011; Iancu et al 2020). These farms often rely on family labor, and there may be limited access to hired labor or mechanization.

Seasonal labor migration. Romania is known for seasonal labor migration, where agricultural workers from rural areas, especially in the south, travel to other European countries to work on farms during peak seasons (Iancu et al 2020; Vasile et al 2020). This phenomenon can affect the availability of labor within Romania.

Skills and training. There is a need for continuous training and education in modern agricultural practices, sustainable farming methods, and the use of technology. Access to such training can vary, with more resources available in certain regions.

Mechanization and technology adoption. The level of mechanization and technology adoption varies across farms. Larger commercial farms tend to be more mechanized, while small-scale farms may rely on manual labor.

Policy and support programs. Government policies and support programs can play a significant role in shaping the human resources landscape for agriculture. These may include subsidies, training initiatives, and programs to promote sustainable practices.

EU agricultural policies. Romania, as an EU member state, is subject to the Common Agricultural Policy (CAP) which provides funding and support for agriculture (Petrescu-Mag 2007). This can have implications for workforce development and training.

Agricultural diversity. Romania boasts significant agricultural diversity due to its varied climate, topography, and soil types. This diversity allows for the cultivation of a wide range of crops and the rearing of various types of livestock (Petrescu-Mag 2007; Petrescu-Mag et al 2022). We will present below some key aspects of agricultural diversity in Romania.

Crop diversity. Romania cultivates a broad spectrum of crops, including:

Cereals. Wheat, corn, barley, oats, and rye are among the major cereal crops.

Oilseeds. Sunflower, rapeseed, and soybeans are important oilseed crops.

Fruits. Romania is known for its orchards, producing apples, plums, peaches, cherries, and various berries. Grapes are also grown for wine production.

Vegetables. Common vegetables include potatoes, tomatoes, cabbage, onions, carrots, and bell peppers.

Legumes. Beans, peas, and lentils are among the legumes cultivated.

Specialty crops. Some regions cultivate specialty crops like tobacco, hops, and medicinal herbs.

Livestock production. Romania has a well-established livestock sector, including:

Cattle. Both dairy and beef cattle are raised, with dairy farming being particularly significant in certain regions (Grădinaru et al 2018). Buffaloes are raised now in smaller numbers than in the past (Coroian et al 2011).

Pigs. Romania is a notable pork producer, with both small-scale and large-scale pig farming operations (Botha et al 2016, 2020; Petrescu-Mag et al 2017).

Poultry. Chicken and turkey production is prevalent (Gheorghe-Irimia et al 2023).

Sheep and goats. Romania has a strong tradition of sheep farming, producing lamb, mutton, and dairy products like cheese (Dărăban et al 2009; Cighi 2016; Carșai et al 2019; Rakossy et al 2019a, b, c; Răducu et al 2022).

Horses. Horses are raised for various purposes, including agricultural work and recreation (Stuparu et al 2017; Cighi et al 2019).

Viticulture and wine production. Romania has a rich tradition of viticulture, with numerous grape varieties grown for wine production. The country is known for both table wines and high-quality varieties used in the production of fine wines (Chiurciu et al 2020).

Forestry and wood processing. The forested areas in Romania contribute to the timber industry (Bouriaud et al 2019), providing raw materials for construction, furniture production, and paper manufacturing.

Apiculture (beekeeping). Romania has a vibrant beekeeping sector, producing honey and beeswax (Stoian et al 2018a, b, c), as well as providing important pollination services to agriculture (Mag et al 2006).

Fisheries. In addition to agriculture, Romania also has a fisheries sector, with fish farms and freshwater fishing contributing to the economy (Bud et al 2016a, b; Ionescu 2020; Ionescu & Petrescu-Mag 2022).

Organic and specialty farming. There is an increasing trend towards organic farming in Romania, with a growing number of certified organic farms. Additionally, specialty farming practices like aquaculture and greenhouse cultivation are gaining traction (Petrescu et al 2015, 2017; Petrescu & Petrescu-Mag 2015).

Sustainable and agroecological practices. Some Romanian farmers are adopting sustainable and agroecological practices to enhance soil health, conserve water, and promote biodiversity (Petrescu et al 2015, 2017; Petrescu & Petrescu-Mag 2015).

Romania's agricultural diversity is a significant asset, allowing for a varied and resilient agricultural sector. This diversity contributes to the country's food security and economic stability. However, like in many places, it is important for Romanian agriculture to continue evolving to meet challenges like climate change, sustainability, and changing consumer preferences.

Conclusions. Romania has a substantial potential for agricultural production due to the following features and advantages.

Diverse climate and topography. The country's varied climate and landscape allow for a wide range of crops and livestock to be cultivated.

Fertile soil. Many regions in Romania have fertile soils suitable for diverse agricultural activities.

Abundant water resources. The presence of major rivers like the Danube and fertile plains provides ample water resources for irrigation and farming.

Tradition and expertise. Romania has a long history of agriculture and a skilled farming workforce.

Agricultural diversity. The country cultivates a broad spectrum of crops, from cereals and oilseeds to fruits, vegetables, and specialty crops.

Livestock production. Romania has a well-established livestock sector, including cattle, pigs, poultry, sheep, and goats.

Forestry resources. Forested areas contribute to the timber industry and provide additional economic opportunities.

Viticulture and wine production. Romania is known for its viticulture, producing a variety of grapes for both table wines and fine wines.

Apiculture and fisheries. The country has a vibrant beekeeping sector and a fisheries industry.

Potential for organic and specialty farming. There is a growing trend towards organic farming and specialty practices like aquaculture and greenhouse cultivation.

Access to EU markets. Romania's membership in the European Union provides access to a large market for agricultural products.

Opportunities for innovation and technology. There is room for technological advancements and sustainable practices to further enhance agricultural productivity.

However, while Romania has significant potential, challenges such as the need for modernization, sustainable practices, and adapting to changing climate patterns must be addressed to fully realize this potential.

Conflict of interest. The author declares that there is no conflict of interest.

References

Alexandrescu M., 1996 Favourable climate conditions of the Subcarpathian area in Romania. Characteristic features. Geograficky Casopis Slovenskej Akademie Vied 48(2):129-138.

Boincean B. P., Dent D. L., 2019 Farming the black earth: sustainable and climate-smart management of chernozem soil. Spring Nature Switherland AG, 253 pp.

Botha M., Petrescu-Mag I. V., Gavriloaie C., 2016 Rustic gene reserves for the future of breed improvement technologies: old swine (*Sus scrofa domesticus*) strains and their perspectives. Porc Res 6(2):37-56.

Botha M., Kovacs E., Gavriloaie C., Papuc T., Petrescu-Mag I. V., 2020 Re-enrichment of the swine world: rebuilding a so-believed lost breed - the Black Mangalitza (*Sus scrofa domesticus*). Porc Res 10(1):25-34.

Bouriaud O., Don A., Janssens I. A., Marin G., Schulze E. D., 2019 Effects of forest management on biomass stocks in Romanian beech forests. Forest Ecosystems 6(1):19.

Brejea R., Rosca S., Taut F. D., Bilașco Ș., Domuța C., Borza I. M., 2021 Quantitative GIS model for evaluating the favorability of Alfalfa (*Medicago sativa* L.) culture for suitable varieties in Romania: case study Bihor County. Applied Sciences 11(9): 4205.
Bud I. G., Todoran L., Petrescu-Mag I. V., 2016a [Treaty of aquaculture and biodiversity. Volume 1]. Editura Vatra Veche, 1096 pp. [in Romanian]
Bud I. G., Todoran L., Petrescu-Mag I. V., 2016b [Treaty of aquaculture and biodiversity. Volume 2]. Editura Vatra Veche, 1110 pp. [In Romanian]
Carsai T. C., Vlaic B. A., Cighi V., 2019 Genetic polymorphism study of growth hormone gene (GH1) from exons 2 and 3 in autochthonous Carpatina goat breed. ABAH Bioflux 11(2):41-45.
Cighi V., 2016 Morpho-productive characterization of a Tsigai breed sheep stock. ABAH Bioflux 8(1):15-20.
Cighi V., Vlaic B. A., Burista Z., Popa C., Marchis Z., Carsai T. C., 2019 Comparative study of the main parameters of conformation, constitution and performance in Gidran young horses. ABAH Bioflux 11(2):47-53.
Chiurciu I. A., Zaharia I., Soare E., 2020 Production of wine grapes and cultural traditions related to vine in Romania. Scientific Papers. Series "Management, Economic Engineering in Agriculture and Rural Development" 20:133-143.
Coroian A., Coroian C. O., Vodnar D. C., Trif M., Mireșan V., Răducu C., 2011 Study on some milk production indices of Romanian buffalo. ABAH Bioflux 3(1):10-17.
Dărăban S., Coroian C., Georgescu B., 2009 Cluj Merino breeds' potential for meat production. ABAH Bioflux 1(1):57-62.
Dogaru D., Mauser W., Bâlteanu D., Krimly T., Lippert C., Sima M., et al, 2019 Irrigation water use in the Danube Basin: facts, governance and approach to sustainability. Journal of Environmental Geography 12(3-4):1-12.
Enescu F. M., Bizon N., Onu A., Răboacă M. S., Thounthong P., Mazare A. G., Șerban G., 2020 Implementing blockchain technology in irrigation systems that integrate photovoltaic energy generation systems. Sustainability 12(4):1540.
Florea A. M., Radu R. I., Stanciu S., 2020 The influence of the associative forms in the development of the Romanian agriculture during the last century. In 31st IBIMA Conference: Innovation Management and Education Excellence through Vision, pp. 4302-4311.
Gâștescu P., Pisota I., Ciovică N., Pătăchie I., 1975 The hydro-climatic particularities of Romania. Geoforum 6(1):29-37.
Gheorghe-Irimia R. A., Tapaloaga D., Sonea C., Ilie L. I., Tapaloaga P. R., 2023 Chicken meat production trends in Romania - a twelve-year forecast. Annals of "Valahia" University of Târgoviște. Agriculture 15(1):6-8.
Grădinaru A. C., Petrescu-Mag I. V., Oroian F. C., Balint C., Oltean I., 2018 Milk protein polymorphism characterization: a modern tool for sustainable conservation of endangered Romanian cattle breeds in the context of traditional breeding. Sustainability 10(2):534.
Halbac-Cotoara-Zamfir R., Salvati L., Eslamian S., 2023 Irrigation management in Romania. In: Handbook of irrigation hydrology and management. Irrigation case studies. Eslamian S., Eslamian F. (eds), CRC Press, pp. 221-235.
Iancu T., Adamov T. C., Petroman C., Șuba A., Pascariu L., 2020 Aspects characterizing the labor force from Romanian agriculture. Agricultural Management/Lucrari Stiintifice Seria I, Management Agricol 22(2):51-58.
Ionescu T. I., 2020 Future of Danube sturgeons: international station for Danube sturgeons conservation and migratory fish research (Conceptual Note). ABAH Bioflux 12(1):26-42.
Ionescu T. I., Petrescu-Mag I. V., 2022 Solutions and proposals for wild fish populations conservation and recovery, in Romanian fishery. ABAH Bioflux 14(2):81-95.
Istudor N., Ion R. A., Petrescu I. E., Hrebenciuc A., 2019 Agriculture and the twofold relationship between food security and climate change. Evidence from Romania. Amfiteatru Economic 21(51):285-293.

Mag I. V., Petrescu R. M., Petrescu D. C., 2006 [The diversity of pollen collected by *Apoidea hymenoptera* - a possible indicator of the health of meadows]. Revista Agricultura 1-2(57-58):100-103. [in Romanian]
Mihăilă D., Bistricean P. I., Briciu A. E., 2019 Assessment of the climate potential for tourism. Case study: the North-East Development Region of Romania. Theoretical and Applied Climatology 137:601-622.
Minea I., Iosub M., Boicu D., 2020 Groundwater resources from Eastern Romania under human and climatic pressure. Sustainability 12(24):10341.
Munteanu I., Florea N., 2001 Present-day status of soil classification in Romania. European Soil Bureau, Research Report No. 7, pp. 55-62.
Petrescu D. C., Petrescu-Mag R. M., 2015 Organic food perception: fad, or healthy and environmentally friendly? A case on Romanian consumers. Sustainability 7(9): 12017-12031.
Petrescu D. C., Petrescu-Mag R. M., Burny P., 2015 Management of environmental security through organic agriculture. Contribution of consumer behavior. Environmental Engineering and Management Journal 14(11):2625-2636.
Petrescu D. C., Petrescu-Mag R. M., Burny P., Azadi H., 2017 A new wave in Romania: organic food. Consumers' motivations, perceptions, and habits. Agroecology and Sustainable Food Systems 41(1):46-75.
Petrescu-Mag I. V., Stoian R. O., Todoran C., 2017 Pork production in Romania. Porc Res 7(1):32-38.
Petrescu-Mag R. M., 2007 [Common agricultural policy: past, present and future]. Editura Fundaţiei pentru Studii Europene, Cluj-Napoca, 328 pp. [in Romanian]
Petrescu-Mag R. M., Creangă S., Păsărin B., Gîlcă V., Petrescu-Mag I. V., 2011 Small-scale rabbit production: a solution for limited-resource rural and suburban populations and its impact on the environment. In: Environmental issues in the context of sustainable development. Les Presses Agronomique de Gembloux, Gembloux & Bioflux, Cluj-Napoca, pp. 157-167.
Petrescu-Mag R. M., Petrescu D. C., Muntean O. L., Petrescu-Mag I. V., Radu Tenter A., Azadi H., 2022 The nexus of traditional knowledge and climate change adaptation: Romanian farmers' behavior towards landraces. Local Environment 27(2):229-250.
Rakossy Z., Petrescu-Mag I. V., Kovacs E., Gavriloaie C., Corioan C. O., Papuc T., Ungureanu T., Botha M., 2019a Saving the black variety of the Red face Tsigai - documenting efforts to rescue an endangered breed. ABAH Bioflux 11(2):54-61.
Rakossy Z., Petrescu-Mag I. V., Kovacs E., Gavriloaie C., Corioan C. O., Papuc T., Ungureanu T., Botha M., 2019b Why should be rescued the black variety of the Red face Tsigai? ABAH Bioflux 11(2):62-68.
Rakossy Z., Petrescu-Mag I. V., Kovacs E., Gavriloaie C., Corioan C. O., Papuc T., Ungureanu T., Botha M., 2019c Black wooled sheep breeds of the world, I. ABAH Bioflux 11(2):69-78.
Răducu C., Pascalău S., Mireșan V., Cocan D., Constantinescu R., Uiuiu P., Lațiu C., Vinte C., Sava A., Ihut A., 2022 The sheep milk quality as a raw material for the telemea cheese assortment from Vinţe Farm. ABAH Bioflux 14(2):75-80.
Robu A. D., Costuleanu C. L., Ungureanu G., Borza M., Brezuleanu S., 2020 Secondary irrigation infrastructure in Romania: influence of the water users associations modernization on the performance of their member farms. Lucrări Ştiinţifice USAMV – Iaşi Seria Agronomie 63(2):191-194.
Stănilă A. L., Dumitru M., 2016 Soils zones in Romania and pedogenetic processes. Agriculture and Agricultural Science Procedia 10:135-139.
Stoian R. O., Botha M., Petrescu-Mag I. V., 2018a Beekeeping in Romania and artificial insemination of honey bee, *Apis mellifera*. State of the art. ABAH Bioflux 10(2):93-121.
Stoian R. O., Malinas C., Botha M., Petrescu-Mag I. V., 2018b Technical, sanitary and environmental sequences to improve artificial insemination of honey bee, *Apis mellifera*. Part I. Experimental results. ABAH Bioflux 10(2):122-149.

Stoian R. O., Botha M., Petrescu-Mag I. V., 2018c Technical, sanitary and environmental sequences to improve artificial insemination of honey bee, *Apis mellifera*. Part II. Improved procedure. ABAH Bioflux 10(2):150-155.
Stuparu A., Oroian T., Ilea D., 2017 Research on mare milk quality upon three breeds reared in Romania: Lipitan, Semigreu Romanesc and Furioso North Star. ABAH 9(1):1-8.
Vasile V., Boboc C. R., Ghiţă S. I., Băncescu I., Săseanu A. S., 2020 Labor force shortage analysis in Romania-size, impact and measures. In: Proceedings of the International Conference on Applied Statistics 2(1):240-250.

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