Research Journal of Agricultural Science, 58 (3), 2026; ISSN: 2668-926X;

http://doi.org/10.59463/RJAS.2026.3.06

CULTIVATION POTENTIAL FOR MEDICINAL AND AROMATIC N IN WESTERN ROMANIA: A STRUCTURED REVIEW

S. BĂTRÎNA[1], L. BOTOȘ[1], I. IMBREA[1], A. ABU-AWWAD[1], C. BRATU[2], C. VÂNĂTORU[2]

[1]University of Life Sciences "King Mihai I" of Timișoara, 119 Calea Aradului, Timișoara, Romania;

[2]Banca de Resurse Genetice Și Vegetale Buzău, Aleea Mistrețului, Buzău, România

Corresponding author: amer.abuawwad@usvt.ro

Abstract: *Western Romania combines fertile chernozem and alluvial plains, hilly luvisols, and cooler sub-montane and montane belts, creating a heterogeneous but potentially favorable environment for medicinal and aromatic plants (MAPs). This structured review evaluates the cultivation suitability of MAP species for the region by synthesizing published scientific evidence from Romania and pedoclimatically comparable areas of Central and Eastern Europe and the Balkans. An OpenAlex-based search retrieved 406 unique records published between 2005 and 2026. After keyword screening and eligibility assessment, 45 records were retained in the extraction matrix; 32 of these are cited in the present condensed manuscript, which emphasizes sources providing directly interpretable agronomic, phytochemical, or cultivation evidence. The strongest and most transferable evidence concerns Lamiaceae and Asteraceae species, particularly lavender, sage, mint, lemon balm, marigold, chamomile, milk thistle, and selected mountain species. Quantified agronomic responses include the effects of variety and row spacing in marigold, mulching in lavender, density and harvest regime in lemon balm, shading in mint and basil, and fertilizer regime in peppermint and chamomile. For the Banat plain, the evidence is strongest for lavender, Calendula, Mentha, Melissa and related aromatic herbs. Mountain and sub-mountain areas are more compatible with Arnica montana, Gentiana lutea and Rhodiola rosea. Evidence from Mediterranean, semi-arid, or arid environments remains informative but requires local validation. The review identifies western Romania as a credible MAP diversification region while emphasizing the need for local trials on soil reaction, frost tolerance, water regime, genotype-by-environment interaction, and raw-material quality.*

Keywords: *medicinal plants, aromatic plants, Banat, pedoclimatic suitability, essential oils, crop diversification*

INTRODUCTION

Medicinal and aromatic plants occupy an increasingly important position at the interface between agriculture, horticulture, food production, phytotherapy, cosmetics and essential-oil processing. In Romania, their relevance is reinforced by high floristic diversity and by a long tradition of collecting and cultivating medicinal species. National syntheses report that more than 50 MAP species are cultivated or considered for introduction into cultivation, while the diversity of environmental conditions allows species with contrasting ecological requirements to be grown across plains, hills and mountain areas (MUNTEAN, 2013; MUNTEAN et al., 2019). For farms in western Romania, diversification toward MAPs is particularly relevant because it can complement cereal and oilseed production, create higher-value raw materials, and support cultivation on sites that are less competitive for conventional arable crops (MANOLE et al., 2009).

Western Romania is not a uniform agroecological unit. The western lowlands of Banat and Crișana include fertile chernozems, fluvisols and alluvial soils under a temperate-continental climate moderated by western and sub-Mediterranean influences. Toward the eastern and south-eastern sectors, hill and sub-mountain landscapes become more frequent, with luvisols and cambisols, cooler temperatures, greater relief heterogeneity and a shorter vegetation period. This

internal variation is agronomically decisive. Species suitable for intensive cultivation in the Timiș-Arad sector of the Western Plain cannot automatically be transferred to the Bihor hills or to the mountain fringe of Caraș-Severin without considering soil reaction, drainage, winter hardiness, water supply, altitude and harvest destination.

The available literature is fragmented across agronomy, horticulture, phytochemistry, conservation biology and regional development. Direct Romanian experiments exist for lavender, Calendula, Mentha, Gentiana and Arnica, while additional evidence is available from Serbia, Hungary, Poland, Bulgaria, Croatia, Ukraine, Germany and other areas with partial climatic analogy. The strongest justification for using such evidence is not geographic proximity alone, but similarity in the agronomic variables controlling crop performance. Serbian Pannonian sites, for example, are particularly relevant to the Banat plain, whereas Polish and Carpathian studies are more informative for cooler mountain or sub-mountain conditions. Conversely, studies from Egypt, Greece or semi-arid North America can indicate physiological responses to irrigation or drought, but their management recommendations cannot be transferred directly without local validation.

The purpose of this review is therefore to identify MAP species for which cultivation evidence is most transferable to western Romania, to synthesize the main agronomic factors influencing their productivity and quality, and to distinguish robust recommendations from hypotheses that still require regional experimentation. Particular attention is given to species selection by sub-region, crop establishment, plant density, fertilization, water management, propagation, harvest strategy and the relationship between biomass yield and bioactive-compound quality.

MATERIAL AND METHODS

The review followed an agronomic Species-Context-Outcome framework. The species domain included herbaceous and shrubby medicinal or aromatic plants with documented temperate-zone cultivation. The context was defined as western Romania and climate-analog regions characterized by temperate-continental or Pannonian conditions, together with cooler hill and mountain environments relevant to the Western Carpathian fringe. The outcomes of interest were field cultivation suitability, soil and water requirements, fertilization response, propagation and planting system, yield, essential-oil or bioactive-compound response, and tolerance to climatic stress.

Bibliographic discovery was performed through OpenAlex using five combinations of medicinal/aromatic plant terms, cultivation or field-trial terms, and geographic or climatic descriptors. The search window covered 2005-2026 and was restricted to English-language records. After DOI/OpenAlex deduplication, 406 unique sources were obtained. A first keyword screen identified 216 records with agronomic or regional signals. The 80 highest-ranked candidates were assessed against predefined eligibility criteria, and 45 records were retained in the structured extraction matrix. Of these, 32 sources are cited in the present condensed version. The retained set included journal articles, reviews and other academically indexed research outputs containing field-cultivation, agronomic, pedoclimatic or cultivation-relevant information. Purely pharmacological, clinical, in-vitro and non-agronomic sources were excluded from the agronomic synthesis.

For every retained source, study design, species, location, agronomic treatment, principal outcomes and limitations were extracted from titles, abstracts and indexed metadata. The evidence was then grouped by botanical family and agronomic function and mapped to three practical western-Romanian sub-zones: (i) the western lowlands of Banat and Crișana,

dominated by fertile arable soils and warmer continental conditions; (ii) hill environments, where drainage, slope and soil reaction become more variable; and (iii) sub-montane and montane environments, where lower temperatures and shorter seasons favor perennial and conservation-oriented species. Because the extraction relied primarily on abstracts and metadata, precise parameters not explicitly reported by the source were not inferred. This conservative rule was maintained throughout the synthesis.

The review has three methodological limitations that affect interpretation. First, OpenAlex was the sole discovery database and may underrepresent regional agronomic literature. Second, 136 lower-ranked candidates were not individually screened after the first-stage ranking. Third, full texts were not systematically retrieved, so soil pH, exact frost thresholds and complete statistical details were frequently unavailable. Consequently, the results below should be read as an evidence-based prioritization of species and management factors, not as a substitute for site-specific cultivation protocols.

RESULTS AND DISCUSSION

The evidence base is strongest for aromatic *Lamiaceae*. Lavender is supported by direct Romanian cultivation and by Serbian trials conducted outside the crop's native Mediterranean distribution. In Romania, plant development responded to mulch type and variety, confirming that establishment management can modify early growth (SZÉKELY-VARGA et al., 2021). Under Serbian Pannonian conditions, several lavender and lavandin cultivars produced essential oils meeting compositional standards, with linalool and linalyl acetate remaining within commercially relevant ranges despite the more continental environment (KIPROVSKI et al., 2023). These findings make lavender one of the best-supported diversification options for the western lowlands, provided that site drainage, winter survival and cultivar choice are locally verified.

Mint and lemon balm also show high transferability. Romanian work on three Mentha taxa confirmed distinct chemotypes, demonstrating that cultivar or taxon choice determines the qualitative profile of the essential oil (MOGOȘAN et al., 2017). Peppermint fertilizer trials reported strong treatment effects on herb and essential-oil yield, while a high-yielding peppermint clone evaluated in the United States showed that genetic material and harvest timing can substantially alter oil productivity (TEPECIK et al., 2022; KIPPES et al., 2024). For *Melissa officinalis*, a two-season temperate-climate experiment found that harvest regime influenced yield more strongly than density and that double harvesting improved productivity (NURZYŃSKA-WIERDAK et al., 2023). Serbian shade experiments additionally showed moderate increases in essential-oil yield in lemon balm, mint and basil under 40% shade, illustrating the potential value of microclimate management during hot periods (ILIĆ et al., 2021).

Sage and related aromatic species offer a second diversification group. Balkan population-genetic evidence for *Salvia officinalis* highlights the importance of planting-material provenance, while *Salvia sclarea* studies show useful variation in flowering and sclareol-related traits for breeding and cultivar selection (REŠETNIK et al., 2016; CHALVIN et al., 2021). In vineyards, intercropping with *Origanum vulgare* and *Thymus vulgaris* reduced topsoil water and nutrient availability in a German steep-slope experiment, but grape yield effects were primarily controlled by climatic conditions, suggesting that aromatic intercropping can be feasible where rainfall or supplemental water is sufficient (DITTRICH et al., 2021). This is relevant to western Romania's viticultural districts, where aromatic crops may provide additional products and ecosystem services but must not intensify water competition during drought.

Asteraceae provide some of the most directly actionable evidence. In a Serbian field experiment, *Calendula officinalis* showed clear responses to both variety and row spacing; the cultivar 'Plamen Plus' produced the highest fresh-flower yield, and the 40 cm row spacing gave the highest yield across varieties (CRNOBARAĆ et al., 2008). Romanian trials further show that fertilization and cultivar choice affect phytochemical quality. Fertilization increased flavonoid concentration in Calendula but decreased carotenoid and phenylpropanoid components, while cultivar comparisons demonstrated substantial variability in carotenoid content in Calendula and Tagetes (ONIGA, 2018; TOIU et al., 2017). Therefore, production technology should be designed around the targeted raw material - flowers, pigments, extracts or pharmacopoeial quality - rather than biomass yield alone.

Chamomile and milk thistle illustrate two different levels of evidence. A recent Bulgarian trial found that organic fertilization improved chamomile yield and essential-oil quality, supporting fertilizer optimization under a climate broadly relevant to south-eastern Europe (GEORGIEVA, 2026). *Silybum marianum* is widely recognized as a low-input species adapted to marginal environments, but the literature itself emphasizes the shortage of standardized field protocols (MARCEDDU et al., 2022). Milk thistle can therefore be considered a promising candidate for lower-input or marginal land in western Romania, but seeding density, fertilization and harvest technology should be locally tested before commercial recommendations are made.

Mountain and sub-mountain species require a different production concept. *Arnica montana* has direct Romanian evidence from conservation-oriented cultivation and meadow management. Work in Maramureș demonstrated that sustainable cultivation can be integrated into nutrient-poor grassland systems, while surveys in the northeastern Carpathians identified abandonment of traditional meadow management as a major threat and supported mowing, moderate grazing and limited fertilization (FLEMMING & HEILMANN, 2013; MARDARI et al., 2024). *Gentiana lutea* also has Romanian cultivation evidence, with wild and experimentally cultivated material differing in bitterness and volatile-oil characteristics (TANASE et al., 2007). *Rhodiola rosea* has multi-year cultivation evidence from western Poland, where biometric and phenolic variation among field-grown groups demonstrates the importance of genotype and planting material (ADAMCZAK et al., 2016). These species are more appropriate for cooler, higher-elevation sites and should not be treated as intensive plain crops.

Other species are promising but require cautious transfer. *Plantago lanceolata* combines rapid growth, deep rooting and drought tolerance, making it relevant to grassland and marginal sites (POL et al., 2021). *Hypericum perforatum* responded strongly to irrigation in a Greek trial, where essential-oil yield was substantially higher under irrigated than rainfed conditions, but the Mediterranean climate limits direct transfer of the irrigation regime to Romania (TEGOU et al., 2024). *Crocus sativus* has documented cultivation and quality-management experience in southern Ukraine, showing that a high-value crop can be introduced under non-traditional continental conditions when traceability and post-harvest management are rigorous (MYKHAILENKO et al., 2022). *Foeniculum vulgare* and dill trials from arid or semi-arid areas indicate responses to sowing date, humic substances and fertilizer type, but these results should be treated as hypotheses for Romanian validation rather than ready-to-use prescriptions (SAMY et al., 2024; MARTÍNEZ-SABATER et al., 2022).

Table 1

Priority MAP groups for western Romania and the main evidence supporting their cultivation

Species / group	Evidence base	Main agronomic signal	Best-fit regional context
Lavandula angustifolia	Romania; Serbia	Mulch and cultivar effects; acceptable essential-oil quality under continental conditions	Western lowlands; warm hills
Calendula officinalis	Serbia; Romania	Variety and 40 cm row spacing increased flower yield; fertilization altered phytochemical profile	Lowlands and lower hills
Mentha spp.	Romania; Serbia; other field trials	Strong chemotype effects; fertilizer, shade and harvest timing influence essential-oil yield	Irrigable lowland sites
Melissa officinalis	Temperate Europe; Serbia	Double harvest and planting density affect yield; shade can increase essential-oil yield	Lowlands and sheltered hill sites
Salvia officinalis / S. sclarea	Balkans; Croatia	Provenance and genetic diversity relevant to cultivar choice and breeding	Warm lowland and hill sites
Chamomilla recutita	Bulgaria	Organic fertilization improved yield and essential-oil quality in a regional climate analog	Lowlands and lower hills
Silybum marianum	Review evidence	Low-input, marginal-land potential, but limited standardized agronomy	Drier or marginal sites
Arnica montana	Romanian Carpathians	Low-intensity cultivation compatible with meadow conservation and limited fertilization	Sub-montane and montane
Gentiana lutea	Romania	Cultivated material differs in bitterness and volatile-oil profile; propagation requires specialization	Mountain fringe
Rhodiola rosea	Western Poland	Multi-year field cultivation; genotype-linked biometric and phenolic variability	Cooler mountain sites
Plantago lanceolata	European evidence	Deep rooting and drought tolerance support marginal grassland use	Hills and marginal land
Hypericum perforatum	Greece	Strong irrigation response, but Mediterranean conditions require Romanian validation	Experimental local trials
Crocus sativus	Ukraine	Successful non-traditional cultivation with strict good agricultural and collection practices and traceability	Protected, well-drained trial sites

The regional mapping of this evidence is consistent. The western lowlands of Banat and Crișana have the densest support because Romanian and Serbian experiments provide direct or near-direct evidence for lavender, Calendula, mint, lemon balm, basil and dill on comparable continental sites. Hill areas have a thinner evidence base but are suitable for aromatic perennials, vineyard intercropping and drought-tolerant species, subject to slope, drainage and water competition. The sub-montane and montane fringe is best matched to Arnica, Gentiana, Rhodiola and other perennial medicinal species whose cultivation is closely linked to cooler climates, grassland management or specialized propagation.

Across species, three management principles recur. First, genotype and provenance matter. Large differences among Calendula varieties, Mentha chemotypes, clary-sage populations and Rhodiola groups show that the choice of planting material can be as important as fertilization. Second, maximization of biomass is not equivalent to maximization of medicinal quality. Fertilizer treatments can change flavonoids, carotenoids, essential-oil content or individual metabolites in different directions, so quality specifications must be defined before the fertilization program is designed (ONIGA, 2018; TEPECIK et al., 2022; LV et al., 2025). Third, microclimate and water management are increasingly relevant. Shade responses in *Lamiaceae*,

deep rooting in Plantago and the drought-oriented profiles described for lavender, thyme and other high-value crops suggest that climate resilience should become an explicit selection criterion for western Romanian trials (ILIĆ et al., 2021; POL et al., 2021; ZEHTAB-SALMASI & MARTIN, 2024).

The economic and institutional context supports diversification but does not remove production risk. Romanian analyses have long identified MAPs as a potential value-added component of agriculture, especially when improved technology replaces low-input traditional practice (MANOLE et al., 2009; MUNTEAN et al., 2019). Consumer interest in ecological medicinal-plant products and the persistence of household cultivation in neighboring countries indicate a cultural and market base for small-scale production (ONOFREI et al., 2016; IVANOVA et al., 2021). At the same time, recent value-chain research stresses the need for coordinated growers, processors, quality-control laboratories and advisory services if cultivation is to generate consistent commercial products (BĄCZEK et al., 2026). For western Romania, agronomic suitability should therefore be evaluated together with access to certified planting material, drying and storage capacity, essential-oil distillation or extraction infrastructure, and stable buyers.

The principal evidence gaps are sufficiently specific to define a regional research agenda. Field experiments should quantify species-level soil-pH tolerance, winter survival and frost injury across the three sub-zones; compare cultivars and provenances under the same technology; evaluate irrigation thresholds under increasingly frequent summer drought; and measure both yield and the targeted quality traits in the same experiment. Local replication is especially important for fennel, St. John's Wort and other species whose strongest quantitative evidence comes from warmer and drier climates. A second priority is a Romanian-language and regional-journal search capable of capturing locally published trials not indexed by OpenAlex. These steps would convert the present evidence-based prioritization into validated, location-specific cultivation recommendations.

CONCLUSIONS

Western Romania has a credible and diversified resource base for medicinal and aromatic plant cultivation, but species must be matched to the region's internal pedoclimatic heterogeneity. The strongest evidence for the western lowlands of Banat and Crișana concerns lavender, Calendula, Mentha, Melissa and other aromatic *Lamiaceae* supported by Romanian or Pannonian-basin field studies. Their practical management is influenced by cultivar or chemotype, row spacing, mulching, fertilization, shade, plant density and harvest regime. These are sufficiently well documented to justify regional pilot cultivation, provided that quality parameters are monitored together with yield.

For hill and mountain environments, the evidence shifts toward perennial, marginal-land and conservation-oriented species. *Arnica montana* and *Gentiana lutea* are supported by Romanian Carpathian experience, while *Rhodiola rosea* and *Plantago lanceolata* are supported by climate-analog European evidence. Milk thistle also has potential for marginal or lower-input sites, although standardized field technology remains insufficiently defined. Quantitative findings from Mediterranean, arid and semi-arid environments should be retained as comparative evidence, but not adopted directly as cultivation prescriptions for western Romania.

The main constraint is therefore not the absence of candidate species, but the uneven depth of region-specific agronomic data. The most useful next stage is a coordinated western-Romanian testing program that combines genotype selection, soil characterization, water and fertilization treatments, winter-hardiness assessment and chemical-quality analysis. Such trials

would allow the current literature-based ranking of promising species to be converted into robust cultivation technologies adapted to the Banat lowlands, western hills and Western Carpathian fringe.

BIBLIOGRAPHY

ADAMCZAK A., BUCHWALD W., GRYSZCZYŃSKA A., 2016 - Biometric Features and Content of Phenolic Compounds of Roseroot (*Rhodiola rosea L.*). Acta Societatis Botanicorum Poloniae. https://doi.org/10.5586/asbp.3500

BĄCZEK K., WĘGLARZ Z., SEMERDJIEVA I., AY S. T., PĘCZEK T., BĄDEL A., SOBCZYK P., SOBOLEWSKI A., 2026 - Stakeholder's Engagement in Medicinal and Aromatic Plants Sector. SpringerBriefs in Agriculture. https://doi.org/10.1007/978-3-032-34699-5_3

CHALVIN C., DREVENSEK S., CHOLLET C., GILARD F., SOLIC E. M., DRON M., BENDAHMANE A., BOUALEM A., CORNILLE A., 2021 - Study of the Genetic and Phenotypic Variation Among Wild and Cultivated Clary Sages Provides Interesting Avenues for Breeding Programs of a Perfume, Medicinal and Aromatic Plant. PLoS ONE. https://doi.org/10.1371/journal.pone.0248954

CRNOBARAĆ J., JAČIMOVIĆ G., MARINKOVIĆ B., MIRCOV V. D., MRĐA J., BABIC M., 2008 - Dynamics of Pot Marigold Yield Formation Depended by Varieties and Row Distance. Hop and Medicinal Plants. https://doi.org/10.15835/hpm.v16i1-2.3040

DITTRICH F., ISERLOH T., TRESELER C., HÜPPI R., OGAN S., SEEGER M., THIELE-BRUHN S., 2021 - Crop Diversification in Viticulture with Aromatic Plants: Effects of Intercropping on Grapevine Productivity in a Steep-Slope Vineyard in the Mosel Area, Germany. Agriculture. https://doi.org/10.3390/agriculture11020095

FLEMMING M., HEILMANN J., 2013 - Protection and Sustainable Cultivation of *Arnica montana L.* in Maramureș (Romania). Planta Medica. https://doi.org/10.1055/s-0033-1352377

GEORGIEVA R., 2026 - Reaction of Chamomile to Organic Fertilisation. Advanced Research in Life Sciences. https://doi.org/10.2478/arls-2026-0008

ILIĆ Z. S., MILENKOVIĆ L., TMUŠIĆ N., STANOJEVIĆ L., STANOJEVIĆ J., CVETKOVIĆ D., 2021 - Essential Oils Content, Composition and Antioxidant Activity of Lemon Balm, Mint and Sweet Basil from Serbia. LWT. https://doi.org/10.1016/j.lwt.2021.112210

IVANOVA T., BOSSEVA Y., CHERVENKOV M., DIMITROVA D., 2021 - Enough to Feed Ourselves!-Food Plants in Bulgarian Rural Home Gardens. Plants. https://doi.org/10.3390/plants10112520

KIPPES N., CULP D., WILSON R., DOWD E., COMAI L., HENRY I., 2024 - Velvet: An Alternative High-Yielding Peppermint Clone for Oil Production. Crop Science. https://doi.org/10.1002/csc2.21421

KIPROVSKI B., ZEREMSKI T., VARGA A., ČABARKAPA I., FILIPOVIĆ J., LONČAR B., AĆIMOVIĆ M., 2023 - Essential Oil Quality of Lavender Grown Outside Its Native Distribution Range: A Study from Serbia. Horticulturae. https://doi.org/10.3390/horticulturae9070816

LV J., LIU S., HU C., DING L., WANG Z., LI X., YANG F., SHEN Q., ZHANG H., MA G., ZHANG S., BAI Y., 2025 - Saponin Content in Medicinal Plants in Response to Application of Organic and Inorganic Fertilizers: A Meta-Analysis. Frontiers in Plant Science. https://doi.org/10.3389/fpls.2025.1535170

MANOLE V., GEORGE C. P., DAVITOIU S., 2009 - Medicinal and Aromatic Plants (MAP) - A Chain of Competitiveness in Romanian Agriculture. AgEcon Search. https://doi.org/10.22004/ag.econ.57341

MARCEDDU R., DINOLFO L., CARRUBBA A., SARNO M., MICELI G. D., 2022 - Milk Thistle (*Silybum marianum L.*) as a Novel Multipurpose Crop for Agriculture in Marginal Environments: A Review. Agronomy. https://doi.org/10.3390/agronomy12030729

MARDARI C., BÎRSAN C. C., ȘTEFANACHE C. P., TĂNASE C., 2024 - Main Threats Affecting *Arnica montana L.* in the Northeastern Region of Romanian Carpathians. Journal of Plant Development. https://doi.org/10.47743/jpd.2024.31.1.963

MARTÍNEZ-SABATER E., PÉREZ-MURCIA M., ANDREU-RODRÍGUEZ F. J., ORDEN L., AGULLÓ E., SÁEZ J. A. L., MARTÍNEZ-TOMÉ J., BUSTAMANTE M., MORAL R., 2022 - Enhancing Sustainability in Intensive Dill Cropping: Comparative Effects of Biobased Fertilizers vs. Inorganic Commodities on Greenhouse Gas Emissions, Crop Yield, and Soil Properties. Agronomy. https://doi.org/10.3390/agronomy12092124

MOGOȘAN C., VOȘTINARU O., OPREAN R., HEGHES C., FILIP L., BALICA G., MOLDOVAN R. I., 2017 - A Comparative Analysis of the Chemical Composition, Anti-Inflammatory, and Antinociceptive Effects of the Essential Oils from Three Species of *Mentha* Cultivated in Romania. Molecules. https://doi.org/10.3390/molecules22020263

MUNTEAN L. S., 2013 - The Use and Cultivation of Medicinal and Aromatical Plants in Romania. Hop and Medicinal Plants. https://doi.org/10.15835/hpm.v18i1-2.8938

MUNTEAN L. S., MUNTEAN S., FLORIAN S., 2019 - The Status of Medicinal and Aromatic Plant Culture and Exploitation in Romania. Hop and Medicinal Plants. https://doi.org/10.15835/hpm.v27i1-2.13580

MYKHAILENKO O., SAIDOV N. B., IVANAUSKAS L., GEORGIYANTS V., 2022 - Model Implementation of the Legal Regulation on Medicinal Plant Cultivation for Pharmaceutical Purposes. Case Study of *Crocus sativus* Cultivation in Ukraine. Botanica. https://doi.org/10.35513/botlit.2022.1.4

NURZYŃSKA-WIERDAK R., ZAWIŚLAK G., PAPLIŃSKI R., 2023 - Agronomic Practices in Lemon Balm Production under Temperate Climate Conditions: Raw Material Yield and Active Substances Content. Agronomy. https://doi.org/10.3390/agronomy13051433

ONIGA I., 2018 - Influence of Fertilizer Treatment on the Chemical Composition of Some *Calendula officinalis* Varieties Cultivated in Romania. Farmacia. https://doi.org/10.31925/farmacia.2018.6.11

ONOFREI V., TELIBAN G., BĂLAN C. B., ROPOTOAIA I., BUBURUZ A. A., CLINCIU-RAD R. A., ROBU T., 2016 - Necessity, Desirability and Importance of Ecological Agriculture in the Context of Medicinal Plants Cultivation. Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca Agriculture. https://doi.org/10.15835/buasvmcn-agr:12015

POL M., SCHMIDTKE K., LEWANDOWSKA S., 2021 - *Plantago lanceolata* - An Overview of Its Agronomically and Healing Valuable Features. Open Agriculture. https://doi.org/10.1515/opag-2021-0035

REŠETNIK I., BARIČEVIĆ D., RUSU D. B., CAROVIĆ-STANKO K., CHATZOPOULOU P., STEVANOVIĆ Z. D., GONCEARIUC M., GRDIŠA M., GREGURAŠ D., IBRALIU A., JUG-DUJAKOVIĆ M., KRASNIQI E., LIBER Z., MURTIĆ S., PEĆANAC D., RADOSAVLJEVIĆ I., STEFKOV G., STEŠEVIĆ D., ŠOŠTARIĆ I., ŠATOVIĆ Z., 2016 - Genetic Diversity and Demographic History of Wild and Cultivated/Naturalised Plant Populations: Evidence from Dalmatian Sage (*Salvia officinalis L.*, Lamiaceae). PLoS ONE. https://doi.org/10.1371/journal.pone.0159545

SAMY A. M., SOLIMAN S. S., ABDEL-RAHMAN S., SOLIMAN W. S., ABBAS A. M., 2024 - Influence of Sowing Date and Humic Acid Application on *Foeniculum vulgare Mill.* Growth, Yield, and Essential Oil Composition. Horticulturae. https://doi.org/10.3390/horticulturae11010018

SZÉKELY-VARGA Z., BOȘCAIU M., KENTELKY E., CANTOR M., 2021 - Does Mulch Affect Lavender Growth? Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca Horticulture. https://doi.org/10.15835/buasvmcn-hort:2020.0057

TANASE M., SAND C., BOBIT D., LĂZURCĂ D., BONCUT M., BARBU C. H., POP M., 2007 - Variation of the Morphological Characteristics and Active Principles in Wild and Cultivated *Gentiana lutea L.* from Romania. Planta Medica. https://doi.org/10.1055/s-2007-987073

TEGOU A., GIANNOULIS K. D., ZOURNATZIS E., PAPADOPOULOS S., BARTZIALIS D., DANALATOS N., WOGIATZI-KAMVOUKOU E., 2024 - Assessing the Impact of Irrigation and Biostimulants on the Yield and Quality Characteristics of Two Different St. John's Wort Cultivars in Their Second Growing Season. Plants. https://doi.org/10.3390/plants13243573

TEPECIK M., ESETLILI B. Ç., ÖZTÜRK B., ANAÇ D., 2022 - Effect of Different Fertilizers on Peppermint - Essential and Non-Essential Nutrients, Essential Oils and Yield. Italian Journal of Agronomy. https://doi.org/10.4081/ija.2022.1921

TOIU A., BENEDEC D., DUDA M., HANGANU D., ONIGA I., 2017 - Determination of Total Carotenoid Content in Some *Calendula officinalis* and *Tagetes patula* Varieties. Hop and Medicinal Plants. https://doi.org/10.15835/hpm.v24i1-2.12602

ZEHTAB-SALMASI S., MARTIN C. A., 2024 - Introducing Saffron and a Few Medicinal and High Value Plants for Small Farms and Water Deficit Conditions of Northern New Mexico. The Journal of Phytopharmacology. https://doi.org/10.31254/phyto.2024.13410