VII. Međunarodni znanstveno - stručni skup

International conference

Inovacije i agrobiznis

Inovations and agribusiness

Knjiga sažetaka

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OPĆENITO O ZNANSTVENO-STRUČNOM SKUPU

ABOUT THE CONFERENCE

UVOD

Hrvatsko agroekonomsko društvo je 2025. godine uspješno organiziralo sedmi međunarodni znanstveno-stručni skup pod nazivom Inovacije i agrobiznis – Mediteranska poljoprivreda i agroturizam. Skup je ukazao na nužnost uvođenja inovacija u hrvatski agrobiznis, te istaknuo važnu činjenicu da postoji prostor, kako za nove inovativne tehnologije u proizvodnji i upravljanju tako i za nove oblike povezivanja poljoprivrednika s fokusom na mediteranski prostor.

Poljoprivreda je više od gospodarskog sektora, ona pridonosi ciljevima održivosti kao što su socijalna dobrobit, zdravlje ekosustava te sigurnost hrane. Prema podatcima Europske agencije za okoliš, unatoč značajnim ulaganjima u zajedničku poljoprivrednu politiku i druge relevantne politike EU-a, doprinos poljoprivrede gubitku bioraznolikosti, prekomjernoj potrošnji vode, emisijama stakleničkih plinova, napuštanje ruralnih područja i gubitku ruralne baštine se nastavlja i predstavlja izazove u Europi.

Poljoprivredna proizvodnja i otpornost prehrambenog sustava sami po sebi ovise o prirodnim resursima i procesima te su osjetljivi na degradaciju okoliša i klimatske promjene. Smanjenje navedenih pritisaka na okoliš i prilagodba njihovim utjecajima je neophodna kako bi se zaštitila sigurnost hrane, obradivo zemljište i sredstva za život poljoprivrednika. Poljoprivredni i prehrambeni sustavi također su korisni ljudima i okolišu, uključujući akumulaciju ugljika u tlu i vegetaciji, očuvanje poluprirodnih staništa i vrsta divljih životinja te korištenjem učinkovitije tehnologije, društvenih inovacija i prakse kružnog gospodarstva.

U globaliziranom svijetu koji se sve brže mijenja, a koji je obilježen izazovima i brojnim ugrozama planiranje budućnosti danas je važnije nego ikad prije. U tom pogledu pravodobno prepoznavanje trendova, vlastitih prednosti i slabosti ključno je za pretvaranje izazova i novih mogućnosti u razvojne prilike. Teme poput digitalizacije, demografskih izazova, klimatskih promjena, sigurnosni hrane i održivosti dominiraju raspravama o izazovima koji će obilježiti naredno desetljeće. Prema tome glavni izazovi poljoprivredno prehrambenog sektora su proizvodnja visokokvalitetne hrane po konkurentnim cijenama, održivo upravljanje prirodnim resursima uz povećanje otpornosti na klimatske promjene te poboljšanje kvalitete života i povećanje zaposlenosti u ruralnim područjima. Odgovor na navedene izazove nalazimo u konkurentnom i inovativnom agrobiznisu, jačanju održivosti i otpornosti poljoprivredne proizvodnje na klimatske promjene i krize, ravnomjernom regionalnom razvoju, obnovi ruralnih gospodarstva i unaprjeđivanju uvjeta života u ruralnim područjima te poticanju inovacija u poljoprivredno prehrambenom sektoru.

Cilj znanstveno-stručnog skupa je na jednom mjestu okupiti dionike poljoprivredno – prehrambenog sektora, od proizvođača do krajnjih potrošača, uključujući i znanstvenike, konzultante i predstavnike državne vlasti. Skup će omogućiti razmjenu znanja, iskustava i ideja među sudionicima koja su usmjerena ka stvaranju uspješnog i održivog agrobiznisa temeljenog na inovacijama

INTRODUCTION

In 2025, the Croatian Society of Agricultural Economists successfully organized the seventh international conference entitled "Innovations and agribusiness - Mediterranean agriculture and agritourism". The conference pointed out the need to introduce innovations in Croatian agribusiness and the important fact that there is room for new innovative technologies in production and management, as well as new forms of networking among farmers with focus on mediteranena area.

Agriculture is more than an industry, it contributes to sustainability goals such as social well-being, ecosystem health and food security. According to the European Environment Agency, despite significant investments in the Common Agricultural Policy and other relevant EU policies, agriculture continues to contribute to biodiversity loss, excessive water use, greenhouse gas emissions, the desertification of rural areas and the loss of rural heritage, posing challenges for Europe.

Agricultural production and the resilience of the food system are inherently dependent on natural resources and processes and are vulnerable to environmental degradation and climate change. To protect food security, farmland and farmers' livelihoods, it is necessary to reduce the above environmental pressures and adapt to their impacts. Farming and food systems also benefit people and the environment. These include the accumulation of carbon in soil and vegetation, the conservation of semi-natural habitats and wildlife species, and the use of more efficient technologies, social innovations and circular economy practises.

In a globalised world that is changing ever more rapidly and is characterised by challenges and numerous threats, planning for the future is now more important than ever. In this context, the timely recognition of trends, one's own strengths and weaknesses is crucial in order to turn challenges and new opportunities into development opportunities. Topics such as digitalisation, demographic challenges, climate change, food security and sustainability dominate discussions about the challenges that will shape the next decade. The main challenges for the agri-food sector are therefore the production of high quality food at competitive prices, the sustainable management of natural resources while increasing resilience to climate change, and improving the quality of life and increasing employment in rural areas. The answer to the above challenges can be found in a competitive and innovative agricultural economy, in strengthening the sustainability and resilience of agricultural production to climatic changes and crises, in balanced regional development, in restoring the rural economy and improving living conditions in rural areas, and in promoting innovation in the agri-food sector.

The aim of the scientific conference is to bring together stakeholders from the agri-food sector, from producers to end consumers, including scientists, consultants and government officials. The conference will enable the exchange of knowledge, experiences and ideas among the participants aimed at creating a successful and sustainable agribusiness based on innovation.

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SAŽECI POZVANIH PREDAVANJA

ABSTRACTS OF INVITED LECTURES

Agrobiznis u kontekstu inoviranja poslovnog modela – suradnja sa akademskom zajednicom

Agribusiness in the Context of Business Model Innovation – Collaboration with the Academic Community

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Sažetak

Pojam „poslovni model“ tijekom godina postao je gotovo trendovski, no neupitno je da se u njegovu središtu nalazi ostvarivanje profita. Poslovni model stoga definira na koji način poduzetnik stvara, isporučuje i zahvaća vrijednost.

Važnost poslovnog modela ogledava se u pomoći poduzetniku da dizajnira i vodi vlastito poduzeće na logičan i dosljedan način, komunicira s vlastitim dionicima, privlači potencijalne investitore, ispituje strateške alternative, inovira kombinirajući ključne varijable, te da se prilagođava promjenama u poslovanju. Ono što uvelike pomaže poduzetnicima u stvaranju, shvaćanju njihovog načina poslovanja je platno poslovnog modela sa svojih devet polja: segmenti kupaca, ponuda vrijednosti, kanali, odnosi sa kupcima, izvori prihoda, ključni resursi, ključne aktivnosti, ključna partnerstva i struktura troškova. Preživljavanje poduzetnika na tržištu definirano je stvaranjem konkurentske prednosti, odnosno oblikovanjem poslovnog modela, što ulazi u domenu inoviranja.

U Istarskoj županiji prema podacima iz 2023. godine poslovalo je 6 826 poljoprivrednih gospodarstava različitih vrsta, no svima je zajedničko što žele plasirati i prodati svoje proizvode. Zbivanja u okruženju određuje i dinamiku poslovnih subjekata, pa je stoga u fokusu ovog izlaganja način na koji su se poslovni subjekti u agrobiznisu prilagođavali zbivanjima, pritom bivajući kreativni, inovativni. Komponenta poslovnog modela koja se odnosi na ključna partnerstva, svakako treba biti dobro promišljena jer o njoj ovisi stvaranje vrijednosti proizvoda, ali i prepoznatljivost, plasman istog.

U izlaganju će biti prezentirani primjeri suradnje Fakulteta ekonomije i turizma „Dr. Mijo Mirković“ sa dionicima poljoprivrednog sektora, kao prikazom uključivanja akademske zajednice u poslovne modele gdje su profesori, ali i studenti provodili istraživanja na terenu, te oblikovali rješenja na iznesene poslovne problematike. Ovakva partnerstva imaju beneficije za sve uključene strane, stvarajući sinergijski efekt i svakako otvarajući nove dimenzije poslovanja, od društvene odgovornosti, promocije, pa sve do valorizacije poljoprivrede i agrobiznisa, koji vapi za pomlađivanjem.

Abstract

The term “business model” has become almost trendy over the years, but it is unquestionable that profit making is at its core. A business model therefore defines how an entrepreneur creates, delivers and captures value.

The importance of a business model is reflected in helping an entrepreneur design and run their own company in a logical and consistent manner, communicate with their own stakeholders, attract potential investors, examine strategic alternatives, innovate by combining key variables, and adapt to changes in business. What greatly helps entrepreneurs in creating and understanding their way of doing business is the business model canvas with its nine fields: customer segments, value proposition, channels, customer relationships, revenue sources, key resources, key activities, key partnerships and cost structure. The survival of an entrepreneur in the market is defined by creating a competitive advantage, or by shaping a business model, which is in the domain of innovation.

According to data from 2023, 6 826 agricultural subjects of various types operated in the Istrian region, but they all have in common that they want to sell their products. Events in the environment also determine the dynamics of business entities, and therefore the focus of this presentation is the way in which business entities in agribusiness adapt to events, while being creative and innovative. The component of the business model that refers to key partnerships should certainly be well thought out because the creation of product value, as well as its recognition and placement, depends on it.

The presentation will describe examples of cooperation between the Faculty of Economics and Tourism "Dr. Mijo Mirković" with stakeholders in the agricultural sector, as a demonstration of the inclusion of the academic community in business models where professors and students conducted field research and designed solutions to the presented business problems. Such partnerships have benefits for all parties involved, creating a synergistic effect and certainly opening up new dimensions of business, from social responsibility, promotion, to the valorization of agriculture and agribusiness, which is crying out for rejuvenation.

Utjecaj gastronomske i enološke ponude Slavonije i Baranje na razvoj turizma

The Impact of the Gastronomic and Enological Offer of Slavonia and Baranja on Tourism Development

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Sažetak

prikazati kako gastronomska i enološka ponuda doprinosi razvoju turizma u tim regijama. Istraživanje je obuhvatilo analizu desetogodišnjih statističkih podataka o broju dolazaka i noćenja turista, analizu sadržaja društvenih mreža (Instagram, Facebook, TripAdvisor i OpenTable), kao i provedbu pet polustrukturiranih intervjua s dionicima u turizmu te 80 anketa među turistima koji su posjetili regiju.

Statistički podaci potvrđuju kako je u posljednjih deset godina zabilježen stabilan rast turističkih dolazaka, pri čemu destinacije s izraženijom eno-gastronomskom ponudom bilježe veći porast broja noćenja. Čak 71 % ispitanika navodi kako je gastronomska i enološka ponuda važna za razvoj turizma u promatranim regijama (N=80). Rezultati također ukazuju na velik interes za isprobavanje lokalne hrane i vina tijekom putovanja. Tako je 65 % ispitanika navelo da je maksimalno zainteresirano za isprobavanje lokalne hrane i vina dok ih je 34 % zainteresirano (N=80).

Analiza društvenih mreža otkriva kako platforme poput Facebooka i Instagrama također igraju ulogu u promociji i oblikovanju imidža destinacije dok recenzije na specijaliziranim turističkim portalima dodatno jačaju vjerodostojnost ponude. Analizom Facebook stranice Visit Slavonija Baranja uočeno je da je stranica aktivna u objavljivanju sadržaja, osobito onih koji se odnose na manifestacije i lokalna događanja, no zamjetan je izostanak komentara i korisničke interakcije što otežava prikupljanje autentičnih dojmova posjetitelja te umanjuje potencijal stranice kao alata za građenje imidža destinacije putem digitalnog dijaloga.

Intervjui s predstavnicima turističkih zajednica naglašavaju važnost manifestacija poput vinskih i kulinarskih festivala, koji privlače posjetitelje i izvan glavne sezone, čime se doprinosi produljenju turističke godine.

Rezultati ankete i statistički pokazatelji jasno potvrđuju da eno-gastronomska ponuda Slavonije i Baranje uživa visok stupanj prepoznatljivosti i atraktivnosti među posjetiteljima. Autentična hrana i vina ne samo da povećavaju zadovoljstvo gostiju, nego se pokazuju i kao snažan motivator u diferencijaciji regije u odnosu na druge destinacije u Hrvatskoj. Posebno se ističe uloga manifestacija i festivala, koji doprinose produženju turističke godine i privlačenju gostiju izvan ljetnih mjeseci. Nakon svega navedenog, može se reći da eno-gastronomija u Slavoniji i Baranji nije tek prateći sadržaj, već ključan strateški alat za održiv

razvoj turizma, jačanje regionalnog identiteta na domaćem i međunarodnom tržištu te dugoročnu konkurentsku prednost regije.

Ključne riječi: Baranja, enoturizam, gastroturizam, Slavonija

Abstract

The gastronomic and enological offer is becoming an increasingly important segment of tourism development, especially for regions such as Slavonia and Baranja, which rely on their authenticity, tradition, and richness of local products. The aim of this paper is to show how gastronomy and wine tourism contribute to the development of tourism in these regions. The research included an analysis of ten years of statistical data on tourist arrivals and overnight stays, as well as an analysis of social media content (Instagram, Facebook, TripAdvisor, and OpenTable). Additionally, it comprised five semi-structured interviews with tourism stakeholders and 80 surveys among tourists who had visited the region.

Statistical data confirm that over the last ten years, there has been steady growth in tourist arrivals, with destinations offering a more pronounced eno-gastronomic offer recording a higher increase in overnight stays. As many as 71% of respondents stated that the gastronomic and enological offer is important for the development of tourism in the observed regions (N=80). The results also indicate a strong interest in trying local food and wine during travel. Thus, 65% of respondents said they were highly interested in tasting local food and wine, while 34% expressed high interest (N=80).

The analysis of social media reveals that platforms such as Facebook and Instagram also play a role in promoting and shaping the destination's image, while reviews on specialized tourism portals further strengthen the credibility of the offer. The analysis of the Facebook page "Visit Slavonia Baranja" showed that the page is active in publishing content, especially related to events and local happenings. However, a noticeable lack of comments and user interaction makes it difficult to collect authentic visitor impressions and reduces the page's potential as a tool for building the destination's image through digital dialogue.

Interviews with representatives of tourist boards highlight the importance of events such as wine and culinary festivals, which attract visitors even outside the main season, thereby contributing to the extension of the tourist year.

The survey results and statistical indicators clearly confirm that the eno-gastronomic offer of Slavonia and Baranja enjoys a high level of recognition and attractiveness among visitors. Authentic food and wine not only increase guest satisfaction but also prove to be a strong motivator in differentiating the region from other destinations in Croatia. The role of events and festivals is particularly emphasized, as they contribute to prolonging the tourist season and attracting guests outside the summer months.

Based on all the above, it can be said that eno-gastronomy in Slavonia and Baranja is not merely a supplementary element, but a key strategic tool for the sustainable development of tourism, strengthening the regional identity in domestic and international markets, and securing the region's long-term competitive advantage.

Keywords: Baranja, enoturism, gastroturism, Slavonia

Uloga nacionalnog portala ruralnog turizma idemonaselo.hr u osiguravanju održivosti ruralnih područja

The Role of the National Rural Tourism Portal idemonaselo.hr in Ensuring the Sustainability of Rural Areas

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Sažetak

Projekt Idemo na selo započeo je 2019. godine održavanjem Tjedna seoskog turizma Zagrebačke županije, a nastavljen je kreiranjem Ruralnog adresara i razvojem prvog nacionalnog neprofitnog portala ruralnog turizma. Odsustvo službenih podataka o pružateljima usluga u posebnim oblicima turizma koji djeluju u ruralnim područjima (seoski, pustolovni, lovni, ribolovni, kulturni i sl.) bio je glavni motiv za izradu Ruralnog adresara kojega je Udruga ruralnog turizma Hrvatske kreirala u suradnji s Veleučilištem u Križevcima tijekom 2024. godine. Putem studentske prakse, studenti su prikupili podatke o preko 1600 pružatelja usluga u posebnim oblicima turizma. Inovativni pristup realizaciji studentske prakse primjenom modela društvenom korisnog učenja omogućio je studentima korištenje prikupljenih podataka u njihovim završnim radovima. Nakon dodatne provjere podataka, Udruga je 2025. godine objavila i Analizu o broju pružatelja usluga u svim važnijim posebnim oblicima turizma, i to po županijama. Radi se o prvoj analizi posebnih oblika turizma u Republici Hrvatskoj čiji se podaci već koriste u znanstvenim istraživanjima.

Istovremeno, rezultati renomiranih istraživanja (primjerice Tomas Hrvatska 2022/2023) pokazali su značajni manjak online informacija o ruralnom turizmu, osobito u kontinentalnoj Hrvatskoj. Isti se može pripisati neadekvatnim mrežnim stranicama turističkih zajednica i samih pružatelja usluga koji su uglavnom mali poduzetnici ograničenih kapaciteta za promociju. Manjak online informacija negativno utječe na planiranje putovanja, konzumaciju turističkih proizvoda i posjećenost brojnih manifestacija u destinacijama čime se direktno smanjuju prihodi, kako pružatelja usluga tako i proračuna na svim razinama. Nepovoljni učinci dugoročno utječu i na dobrobit odnosno održivost lokalnih zajednica radi smanjenja poljoprivredne proizvodnje, iseljavanja i sličnih negativnih trendova.

Koristeći prikupljene podatke i rezultate istraživanja, Udruga je u travnju 2025. godine objavila prvi neprofitni portal za turistička putovanja u Hrvatskoj idemonaselo.hr. Portal je zamišljen kao suradnička platforma putem koje privatni, javni i civilni sektor zajednički doprinose razvoju održivog, regenerativnog i integrativnog ruralnog turizma i ruralnih područja Republike Hrvatske. Uz objavu podstranica pružatelja usluga i destinacija, portal omogućuje i objavu informacija o različitim vrstama događanja kako bi, kao centralno mjesto ruralnog turizma RH, olakšao dostupnost informacija i time dodatno pospješio posjećenost lokalnih manifestacija. Radi povećanja atraktivnosti zapošljavanja u ruralnim područjima, kreirana je i online Burza ruralnih poslova koja poslodavcima omogućuje objavu potreba za radnim mjestima.

Povećana online dostupnost informacija na brojnim svjetskim jezicima doprinijet će lakšem planiranju putovanja i boljoj posjećenosti ruralnih destinacija, a time i većoj potrošnji odnosno prihodima i boljitku lokalnih zajednica osiguravajući pritom održivost ruralnih područja. Dodatna vrijednost portala odnosno dostupnost podataka olakšat će izradu stručnih i znanstvenih istraživanja o ruralnom turizmu te zakonodavnih akata temeljenih na stvarnim podacima. Isti bi mogli biti korišteni za stvaranje povoljnijeg poslovnog okruženja i daljnji razvoj ruralnog turizma i održivih područja Republike Hrvatske sukladno strateškim dokumentima na svim razinama.

Ključne riječi: održivi turizam, održivost ruralnih područja, promocija ruralnog turizma, sektorska suradnja, studentska praksa

Abstract

The Idemo na selo project began in 2019 with the organization of the Week of Rural Tourism in Zagreb County and continued with the creation of the Rural Directory and the development of the first national non-profit portal for rural tourism. The lack of official data on service providers in special forms of tourism operating in rural areas (such as agritourism, adventure, hunting, fishing, cultural tourism, etc.) was the main motivation for creating the Rural Directory, which the Croatian Rural Tourism Association developed in collaboration with the Križevci University of Applied Sciences in 2024. Through student traineeship program, students collected data on more than 1,600 service providers in special forms of tourism. The innovative approach to student traineeships, applying the model of community-based learning, enabled students to use the collected data in their final theses. After further verification of the data, in 2025 the Association published an Analysis of the number of service providers in all major special forms of tourism by county. This is the first analysis of special forms of tourism in the Republic of Croatia, and its data are already being used in scientific research.

At the same time, the results of renowned research (for example, Tomas Croatia 2022/2023) showed a significant lack of online information about rural tourism, especially in continental Croatia. This can be attributed to inadequate websites of tourist boards and the service providers themselves, who are mostly small entrepreneurs with limited promotional capacities. The lack of online information negatively affects travel planning, the consumption of tourist products, and the attendance of numerous events in destinations, directly reducing income for both service providers and budgets at all levels. The unfavourable effects also have a long-term impact on the well-being and sustainability of local communities, due to decreased agricultural production, emigration, and similar negative trends.

Using the collected data and research results, in April 2025 the Association launched the first non-profit portal for tourist travel in Croatia, idemonaselo.hr. The portal is envisioned as a collaborative platform through which the private, public, and civil sectors jointly contribute to the development of sustainable, regenerative, and integrative rural tourism and rural areas of the Republic of Croatia. In addition to publishing subpages for service providers and destinations, the portal also enables the publication of information about various types of events so that, as the central hub for rural tourism in Croatia, it can facilitate

access to information and thereby further boost attendance of local events. To increase the attractiveness of employment in rural areas, an online Rural Jobs Exchange was also created to allow employers to post their job openings.

Increased online availability of information in numerous world languages will make it easier to plan trips and improve the visitation of rural destinations, which will in turn increase spending, income, and the well-being of local communities, thereby ensuring the sustainability of rural areas. An added value of the portal, that is, the availability of data, will facilitate the development of professional and scientific research on rural tourism and the drafting of legislative acts based on real data. The same could be used to create a more favourable business environment and further develop rural tourism and sustainable areas of the Republic of Croatia in accordance with strategic documents at all levels.

Keywords: sustainable tourism, sustainability of rural areas, promotion of rural tourism, sectoral cooperation, student traineeship

Uloga turizma i tradicionalnih elemenata u kreiranju održivog proizvoda obiteljskih poljoprivrednih gospodarstava

The Role of Tourism and Traditional Elements in Creating Sustainable Products on Family Farms

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Sažetak

Ruralni turizam u zemljama Europske unije snažno pridonosi očuvanju tradicionalnog načina života lokalne zajednice doprinoseći aktivno jačanju ekonomskih i socio-demografskih pokazatelja.

U ruralnim prostorima Europske unije ruralni turizam predstavlja snažno sredstvo promicanja i očuvanja kulture i baštine lokalne zajednice(kako materijalne tako i nematerijalne), uklanjanja jaza koji se javlja između lokalne zajednice i turista te postaje snažan zamašnjak opće gospodarske i ekonomske uspješnosti zemlje. U Europskoj uniji djeluje preko 200.000 agro-turističkih domaćinstava s 1,2 milijuna kreveta). Lokalnu hranu i proizvode obiteljskih gospodarstava nudi čak 20% nositelja ponude, dok 80% smještajnih jedinica čine ruralne kuće za odmor. Prema podacima udruženja ruralnog turizma dnevna potrošnja po gostu u ruralnim područjima je 45 - 80 €, od čega se 1/3 potrošnje odnosi se na smještaj, ostalo se troši na ostale usluge na domaćinstvu i okolici (dodatne usluge).

Ekonomski stručnjaci tvrde da ruralni turizam ostvaruje izniman multiplikativni efekt te da 1 € turističke potrošnje kreira 2,2 € lokalnoj ruralnoj ekonomiji. Prema njima ekvivalent od 4 kreveta kreira jedno radno mjesto, a indirektno agroturizam održava 3 milijuna radnih mjesta, s procijenjenim prihodom od 12 milijardi € godišnje.

Za takav uspjeh zaslužan je destinacijski pristup organizaciji ruralne turističke ponude, što treba implementirati i Republika Hrvatska

Iako ruralna područja zauzimaju 92% teritorija Republike Hrvatske te na njemu živi 4% ukupnog stanovništva on još uvijek nije prepoznat u dovoljnoj mjeri kao razvojni potencijal ruralnih područja, te se je o njegovom razvoju počelo razmišljati tek 1991. godine. O tome svjedoči i podatak da je tek 2021. godine pokrenuta prva nacionalna kampanja ruralnog turizma Doživi domaće. Istraži ruralnu Hrvatsku od strane entuzijasta iz udruge Idemo na selo.

Glavni nositelji ponude ruralnog turizma Republike Hrvatske moraju biti prije svega nositelji Obiteljskih poljoprivrednih gospodarstava te lokalno stanovništvo. Danas je evidentirano 1.600 pružatelja usluga u posebnim oblicima turizma koji djeluju u ruralnim područjima Republike Hrvatske. Istarska županija i Dubrovačko-neretvanska županija predvodnice su razvoja ruralnog turizam naše zemlje od samih početaka, što je vidljivo i danas.

Najveći broj pružatelja usluga u: Istarskoj županiji (237), Dubrovačko-neretvanskoj (192), Osječko-baranjskoj (140), Splitsko-dalmatinskoj (124) i Primorsko-goranskoj županiji (100), dok je najmanji broj pružatelja usluga u:Brodsko-posavskoj (24), Virovitičko-podravskoj (28) i Ličko-senjskoj županiji (35).

U odnosu na vrstu posebnog oblika turizma, najviše pružatelja usluga zabilježeno je u seoskom agroturizmu (1.119 ili 70%), kulturnom (176), pustolovnom (122), ribolovnom (72), konjičkom (54), lovnom (42) i zdravstvenom turizmu (12)

Turizam je gospodarska grana koja za svoj razvoj treba očuvanu resursnu osnovu, prije svega onu prirodne baštine, ali i one nastale ljudskim djelovanjem – baštine u cjelini.

Kako bi se zaustavio negativan trend opće depopulacije i ekonomskog nazadovanja ruralnog prostora kroz poticajne mjere Vlade Republike Hrvatske turizam mora postati ključ razvoja jer omogućuje razvoj poljoprivredi komplementarne djelatnosti utemeljene na održivom razvoju i očuvanju tradicijskog načina života. Ondje gdje je to moguće, turizam omogućava revitalizaciju baštine, poglavito one nematerijalne, a koja je u najvećoj mjeri pogođena procesima depopulacije i nestajanja stanovništva.

Prema podacima Instituta za turizam u Zagrebu, u 2022. godini selo i ruralno područje bilo je glavni motiv dolaska za 4,6% turista u jadranskoj, te 7,8% turista u kontinentalnoj Hrvatskoj što je u suprotnosti s realnim mogućnostima koje ruralna područja posjeduju. Ukoliko u taj udio turista ubrojimo i turiste koji u našu zemlju dolaze radi gastronomije, baštine, događanja, rekreacije na otvorenom taj broj znatno raste. Ruralna područja mogu ponuditi jedinstveni i neponovljiv doživljaj turistu, što je danas jedan od temeljnih motiva putovanja. Prema istraživanju koje je provedeno radi potrebe izrade Strategije održivog razvoja turizma Republike Hrvatske do 2030. godine, čak 74% želi da mi se u destinaciji nudi lokalna hrana i piće kad god je to moguće, a 65% ispitanika očekuje da se u destinaciji u kojoj borave usluge pružaju na ekološki odgovoran način. Isto tako, 62% teži potrošiti tamo gdje novac ostaje lokalnoj zajednici i pridonosi unapređenju destinacije, a njih 58% pokazuje dublji interes za destinaciju, želi je razumjeti i „živjeti" kao lokalno stanovništvo što ukazuje na to da turistička potražnja postoji, ali je nažalost ne prati odgovarajuća ponuda našeg sela.

Interpretacija baštine i uključivanje svih segmenata poljoprivrednih aktivnosti u turistički proizvod ruralne destinacije i OPG-a kao njenog nositelja ključ je uspjeha.

Interpretacijom ruralne baštine istu uključujemo u turistički proizvod, pridajemo joj novu / obnovljenu vrijednost, prenosimo znanja i vještine predaka na mlade naraštaje, čuvamo baštinu, identitet, jezik i govor.

U kreiranje uspješnog turističkog proizvoda na ruralnom prostoru mora se aktivno uključiti jedinica lokalne samouprave koja mora u dogovoru s lokalnom zajednicom donijeti jasan i održiv plan razvoja turizama s jasno determiniranim ciljevima i smjernicama.

Abstract

Rural tourism in European Union countries strongly contributes to the preservation of the traditional way of life of the local community, actively contributing to the strengthening of economic and socio-demographic indicators.

In the rural areas of the European Union, rural tourism is a powerful tool for promoting and preserving the culture and heritage of the local community (both tangible and intangible), bridging the gap between the local community and tourists, and becoming a powerful driver of the country's overall economic and social success. There are over 200,000 agri-tourism households operating in the European Union with 1.2 million beds. Local food and products from family farms are offered by as many as 20% of the providers, while 80% of the accommodation units are rural holiday homes. According to data from the Rural Tourism Association, daily spending per guest in rural areas is €45-80, of which 1/3 of the spending is on accommodation, while the rest is spent on other services in the household and the surrounding area (additional services).

Economic experts claim that rural tourism has an exceptional multiplier effect, with €1 in tourist spending generating €2.2 in local rural economies. According to them, the equivalent of 4 beds creates one job, and indirectly, agritourism supports 3 million jobs, with an estimated annual revenue of €12 billion.

Such success is due to the destination approach to organizing rural tourism, which should also be implemented by the Republic of Croatia.

Although rural areas occupy 92% of the territory of the Republic of Croatia and are home to 4% of the total population, they have not yet been sufficiently recognized as the development potential of rural areas, and their development began to be considered only in 1991. This is evidenced by the fact that it was not until 2021 that the first national rural tourism campaign, Experience the Local. Explore Rural Croatia, was launched by enthusiasts from the Idemo na selo association.

The main providers of rural tourism in the Republic of Croatia must be, first and foremost, family farms and the local population. Today, there are 1,600 registered service providers in special forms of tourism operating in rural areas of the Republic of Croatia. The counties of Istria and Dubrovnik-Neretva have been leaders in the development of rural tourism in our country since the very beginning, which is still evident today.

The largest number of service providers is in: Istria County (237), Dubrovnik-Neretva County (192), Osijek-Baranja County (140), Split-Dalmatia County (124) and Primorje-Gorski Kotar County (100), while the smallest number of service providers is in: Brod-Posavina County (24), Virovitica-Podravina County (28) and Lika-Senj County (35).

In relation to the type of special form of tourism, the most service providers were recorded in rural agritourism (1,119 or 70%), cultural (176), adventure (122), fishing (72), equestrian (54), hunting (42) and health tourism (12).

Tourism is an economic sector that needs a preserved resource base for its development, primarily that of natural heritage, but also that created by human activity - heritage as a whole.

In order to stop the negative trend of general depopulation and economic decline of rural areas through incentive measures of the Government of the Republic of Croatia, tourism must become the key to development because it enables the development of complementary activities to agriculture based on sustainable development and preservation of traditional lifestyles. Where possible, tourism enables the revitalization of heritage, especially intangible heritage, which is most affected by the processes of depopulation and population loss.

According to the Institute for Tourism in Zagreb, in 2022, the village and rural area were the main motive for arrival for 4.6% of tourists in the Adriatic and 7.8% of tourists in continental Croatia, which is contrary to the real possibilities that rural areas have. If we include tourists who come to our country for gastronomy, heritage, events, and outdoor recreation in this share of tourists, this number increases significantly. Rural areas can offer a unique and unrepeatable experience to tourists, which is one of the fundamental motives for travel today. According to a survey conducted for the purpose of drafting the Strategy for Sustainable Tourism Development of the Republic of Croatia until 2030, as many as 74% want to be offered local food and drinks in the destination whenever possible, and 65% of respondents expect that services in the destination where they stay are provided in an environmentally responsible manner. Likewise, 62% tend to spend where the money stays with the local community and contributes to the improvement of the destination, and 58% of them show a deeper interest in the destination, want to understand it and "live" like the locals, which indicates that tourist demand exists, but unfortunately it is not matched by an adequate offer from our village.

Interpretation of heritage and inclusion of all segments of agricultural activities in the tourism product of a rural destination and the family farm as its carrier is the key to success.

By interpreting rural heritage, we include it in the tourism product, give it new/renewed value, transfer the knowledge and skills of our ancestors to the younger generations, and preserve our heritage, identity, language, and speech.

The local government unit must be actively involved in creating a successful tourism product in rural areas, and must, in agreement with the local community, adopt a clear and sustainable tourism development plan with clearly defined goals and guidelines.

SAŽECI POJEDINAČNIH PREDAVANJA

ABSTRACTS OF LECTURES

Primjena umjetne inteligencije u detekciji plodova masline i procjeni uroda

Application of artificial intelligence in detection of olive fruits and yield estimation

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Sažetak

Ovaj sažetak opisuje ideju projekta "Računalni vid u detekciji plodova i procjeni prinosa maslina (HRZZ IP-2024-05-6393)". Ona se temelji na razvoju inteligentnog sustava koji uključuje korištenje bespilotnih letjelica u prikupljanju slika s maslinika i primjenu dubokih neuronskih mreža u njihovoj analizi u svrhu detekcije plodova i njihovih karakteristika. Sustav dalje analizira detektirane plodove i procjenjuje njihovu zrelost kao i očekivani prinos na pojedinačnom stablu kao i u cijelom masliniku. Nakon gotovo godinu dana projektnih aktivnosti, prikupljeno je više od 500 RGB i multispektralnih slika stabala sorti maslina (istarska bjelica, leccino i oblica) u različitim dobima sezone, formirana je početna baza podataka koja je pripremljena za označavanje. Testirane su različite arhitekture dubokih neuronskih mreža za detekciju plodova masline koje su pokazale obećavajuće rezultate (preciznost: 77%, odaziv: 0,44, F1 mjera: 0,556), čak i uz korištenje male baze slika za učenje (91 slika masline, 11227 označenih maslina). Očekuje se uspostavljanje okvira kvalitete te inteligentnog sustava za otkrivanje i procjenu zrelosti plodova, koji će se moći nadograditi i nakon formalnog završetka projekta.

Ključne riječi: Umjetna inteligencija, duboke neuronske mreže, detekcija maslina, bespilotne letjelice, urod

Abstract

This abstract describes the idea of the project "Computer Vision in Fruit Detection and Olive Yield Estimation (HRZZ IP-2024-05-6393)". It is based on the development of an intelligent system that includes the use of unmanned aerial vehicles in collecting images from olive groves and the application of deep neural networks in their analysis for the purpose of detecting fruits and their characteristics. The system further analyzes the detected fruits and estimates their maturity as well as the expected yield on an individual tree as well as in the entire olive grove. After almost one year of project activities, more than 500 RGB and multispectral images of tree olive sorts (istarska bjelica, leccino and oblica) were collected at different times of season, initial database is formed and prepared for labelling. Various deep neural networks for detection of olive fruit were tested and showed promising results

(precision:77%, recall: 0.44, F1 measure: 0.556), even with the use of a small image database for training (91 olive tree images, 11227 labelled olives).

It is expected that a quality framework will be set up and an intelligent system for detecting and assessing fruit maturity will be established, which will be able to be upgraded even after the formal completion of the project.

Keywords: Artificial intelligence, deep neural networks, olive detection, UAVs, yield estimation

Potencijal peleta ovčje vune u održivoj proizvodnji povrća

The potential of sheep wool pellets in sustainable vegetable production

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Sažetak

U Hrvatskoj se 2024. uzgajalo oko 553.000 ovaca, ponajprije zbog mesa, dok se manji dio populacije koristi za proizvodnju mlijeka. Iako se godišnje proizvede i oko 1300 tona vune od domaćih pasmina, često se odlaže u prirodi, što stvara ekološki problem. Ipak, ovčja vuna je biorazgradiva, bogata hranjivima te se može koristiti u poljoprivredi. Kao rješenje razvijena je proizvodnja peleta ovčje vune (POV), koji se ponašaju slično organskim gnojivima, osiguravaju usporedive prinose, bogati su dušikom, zadržavaju vlagu i polako otpuštaju hranjiva, čime smanjuju rizik od ispiranja. U sklopu projekta *InoBioPov – Peleti ovčje vune – budući izbor u održivoj proizvodnji povrća* kroz dvije godine provesti će se poljski pokusi na različitim lokacijama diljem Hrvatske. Pokusi će biti primijenjeni na različitim tipovima tla, klimi i kulturama, a u ovom izlaganju dati će se kratki uvid u dosadašnje analize i rezultate. Cilj je istražiti utjecaj primjene POV na proizvodna svojstva i kvalitetu povrća u odnosu na klasičnu gnojidbu te utvrditi brzinu razgradnje POV i preporučiti način i količine primjene. Također, kroz istraživanja proučiti će se utjecaj POV na mikrobiološku aktivnost i plodnost tla. Rezultati će biti korisni za obiteljska gospodarstva i širu biljnu proizvodnju, te će omogućiti lakši plasman POV-a, potaknuti otkup vune i smanjiti negativan utjecaj na okoliš.

Ključne riječi: ovčja vuna, proizvodnja povrća, održivost, organsko gnojivo, peleti ovčje vune

Abstract

In Croatia, around 553,000 sheep were raised in 2024. Although around 1,300 tons of wool from domestic breeds are produced annually, it is often disposed of in nature, creating an environmental problem. However, sheep wool is biodegradable, nutrient-rich, and can be used in agriculture. As a solution, the production of sheep wool pellets (SWP) has been developed. These act similarly to organic fertilizers, provide comparable yields, are rich in nitrogen, retain moisture, and slowly release nutrients, thereby reducing the risk of leaching. As part of the InoBioPov project – Sheep Wool Pellets – the Future Choice in Sustainable Vegetable Production, field trials will be conducted in various locations across Croatia over the course of two years. The trials will be applied to different soil types, climates and crops, and this presentation will provide a brief insight into the analyses and results so far. The aim is to investigate the impact of the application of SWP on the production properties and quality of vegetables compared to classical fertilization, and to determine the rate of SWP decomposition and recommend the method and amounts of application. Also, the research

will study the impact of SWP on microbiological activity and soil fertility. The results will be useful for family farms and wider plant production, and will enable easier placement of SWP, encourage the purchase of wool and reduce the negative impact on the environment.

Keywords: sheep wool, vegetable growing, sustainability, organic fertilizer, sheep wool pellets

Važnost meteoroloških podataka u prilagodbi maslinarstva na području zapadne Istre klimatskim promjenama

The importance of meteorological data in the adaptation of olive growing in the western Istria region to climate change

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Sažetak

Maslinarska proizvodnja je izložena često negativnim utjecajima klimatskih promjena, zbog čega je važno kontinuirano praćenje klimatoloških podataka.

Cilj rada je temeljem meteoroloških podataka utvrditi kritične točke utjecaja klimatskih prilika na maslinarsku proizvodnju. U tu svrhu analizirani su podaci meteoroloških postaja u Poreču i Vižinadi. Tijekom petogodišnjeg razdoblja (od travnja 2019. do ožujka 2025. godine) praćeni su temperatura i vlaga zraka, oborine i vjetar. Na postaji Poreč najniža temperatura u ožujku od -1,7 ºC evidentirana je 2022. godine, dok je u travnju 2021. godine iznosila -0,9 ºC. Na postaji Vižinada najniže temperature u ožujku i travnju evidentirane su 2021. godine i iznosile su -1,8 ºC, odnosno -3,2 ºC. U toj godini zahlađenje na početku travnja prouzročilo smrzavanja izboja što se je odrazilo na značajno smanjenje uroda plodova maslina. Ukupne oborine u vegetacijskom razdoblju (travanj-rujan) na postaji Poreč iznosile su od 574 mm u 2020. godini do najnižih 248 mm u 2024. godini. Na postaji Vižinada ukupna količina oborina kretala se od 669 mm u 2019. godini do najnižih 404 mm u 2023. godini. Evidentno je da se je ukupna količina oborina u vegetacijskom razdoblju tijekom analiziranog perioda značajno smanjila. Dobiveni meteorološki podaci ukazuju da je potrebno usmjeriti postojeće tehnologije u maslinarstvu prema održivim praksama koje doprinose očuvanju vlage u tlu, poput navodnjavanja, međurednog zatravnjivanja, primjene organske pokrivke tla, poboljšane rezidbe i sličnog.

Ključne riječi: klimatske promjene, maslinarstvo, zapadna Istra, održive prakse

Abstract

Olive production is highly vulnerable to the negative impacts of climate change; therefore, continuous monitoring of climatological data is essential.

The aim of this study is to identify, using meteorological data, the critical points where climatic conditions affect olive production. For this purpose, meteorological data from the stations in Poreč and Vižinada were analysed. From April 2019 to March 2025, a five-year monitoring program recorded air temperature, relative humidity, precipitation, and wind conditions. At the Poreč station, the minimum temperature recorded was –1.7 °C in March 2022 and –0.9 °C in April 2021. The Vižinada station recorded its lowest March and April temperatures in 2021, measuring –1.8 °C and –3.2 °C, respectively. In that year, an early April cold snap led to shoot freezing, which significantly reduced olive fruit yield. At the Poreč station, total precipitation during the vegetation period (April–September) varied between 574 mm in 2020 and a minimum of 248 mm in 2024. Total precipitation at the Vižinada station varied between 669 mm in 2019 and a minimum of 404 mm in 2023. The data show a clear decrease in precipitation during the vegetation period over the analysed years. Analysis of the meteorological data suggests that olive-growing practices should be adapted toward sustainable methods that enhance soil moisture retention, including optimized irrigation, inter-row weeding, the use of organic ground cover, and improved pruning techniques.

Keywords: climate change, olive cultivation, western Istria, sustainable practices

Inovacije u mediteranskoj poljoprivrednoj proizvodnji: pristupi, učinci i smjernice za unaprjeđenje održivosti

Innovations in mediterranean agricultural production: Approaches, Impacts and Guidelines for Enhancing Sustainability

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Sažetak

Mediteranska poljoprivreda suočava se s brojnim izazovima, uključujući klimatske promjene, nestašicu vode, degradaciju tla, nestabilnost prinosa i potrebu za održivim modelima proizvodnje. Cilj ovog rada jest istražiti moderne inovacije u poljoprivrednim praksama mediteranskog područja, ocijeniti njihove učinke na produktivnost, održivost i otpornost, te preporučiti mjere za unaprjeđenje postojećeg sustava podrške inovacijama. Istraživanje se temelji na analizi literature iz baza Scopus, Web of Science i FAOStat u razdoblju od 2013. do 2023. godine, pri čemu su u obzir uzete studije koje se odnose na inovacije u biljnoj i stočarskoj proizvodnji te održivo upravljanje resursima, dok su isključene analize temeljene isključivo na tehnološkim patentima bez primjene u praksi. Identificirane inovacije obuhvaćaju preciznu poljoprivredu (upotreba senzora, dronova i satelitskih podataka za optimizaciju navodnjavanja i gnojidbe), regenerativne prakse (pokrovni usjevi, smanjeno oranje, poboljšanje kvalitete tla), razvoj sorti otpornijih na sušu i slanost, digitalne sustave za praćenje bolesti i štetnika, te organizacijske inovacije (savjetodavne mreže, partnerstva i novi financijski modeli). Inovacije su rangirane prema učestalosti primjene i području utjecaja; najzastupljenije su one vezane uz upravljanje vodnim resursima i digitalizaciju proizvodnje. Rezultati pokazuju povećanje učinkovitosti potrošnje vode za 20 do 40%, smanjenje upotrebe mineralnih gnojiva do 25%, te porast prinosa za prosječno 15% po jedinici resursa u područjima gdje su inovacije sustavno uvedene. Zaključuje se da inovacije imaju ključnu ulogu u transformaciji mediteranske poljoprivrede prema održivijem i otpornijem sustavu. Međutim, potrebno je unaprijediti postojeće EU i nacionalne programe kroz bolju edukaciju proizvođača, integraciju istraživanja u prakse te fleksibilnije financijske instrumente koji bi poticali primjenu inovacija u malim i srednjim poljoprivrednim gospodarstvima.

Ključne riječi: mediteranska poljoprivreda, inovacije, održivost, precizna poljoprivreda, regenerativne prakse, klimatska otpornost

Abstract

Mediterranean agriculture faces multiple challenges, including climate change, water scarcity, soil degradation, yield instability, and the need for sustainable production systems. The aim of this paper is to investigate modern innovations in agricultural practices across Mediterranean regions, evaluate their impacts on productivity, sustainability, and resilience, and propose measures for improving existing innovation support systems. The research is based on an analysis of literature from Scopus, Web of Science, and FAOStat databases covering the period 2013–2023. Studies focusing on innovations in crop and livestock

production and sustainable resource management were included, while those limited to technological patents without practical application were excluded. The identified innovations include precision agriculture (use of sensors, drones, and satellite data for optimised irrigation and fertilisation), regenerative practices (cover crops, reduced tillage, soil quality improvement), development of drought- and salinity-tolerant crop varieties, digital pest and disease monitoring systems, and organisational innovations (advisory networks, partnerships, and new financial models). The innovations were ranked according to frequency of application and area of impact, with the most prevalent being those related to water resource management and production digitalisation. Results indicate an increase in water-use efficiency by 20–40%, a reduction in mineral fertiliser use by up to 25%, and an average yield growth of 15% per resource unit in areas where innovations have been systematically implemented. The study concludes that innovations play a crucial role in transforming Mediterranean agriculture toward a more sustainable and resilient system. However, there is a need to enhance existing EU and national programmes through better farmer education, stronger integration of research into practice, and more flexible financial instruments that support innovation adoption among small and medium-sized farms.

Keywords: Mediterranean agriculture, innovations, sustainability, precision farming, regenerative practices, climate resilience

Permakulturnom proizvodnjom hrane ususret izazovima budućeg vremena

Permaculture food production to meet the challenges of the future

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Sažetak

U novije vrijeme, u sjeni konvencionalne poljoprivrede, egzistiraju alternativni pokreti proizvodnje hrane vođeni idejom samodostatnosti i nultog utjecaja na okoliš. Uspjeh ovih pristupa leži u masovnom prakticiranju malih vrtova koji mogu povećati prehrambenu samoodrživost lokalnih zajednica. Ideja je primjenjiva u uvjetima hrvatske agrarne strukture u kojoj čak 60,23 % registriranih poljoprivrednih gospodarstava raspolaže sa zemljištem do 3 ha, a kojima se svakako trebaju pribrojiti brojni mali obiteljski vrtovi ruralnih i urbanih zona. U ovom radu istražena je hrvatska znanstveno-stručna perspektiva permakulturne proizvodnje hrane, koja je obrađena u literarnoj građi dostupnoj u bazi Google Scholar. Cilj rada je ocijeniti razinu uključenosti hrvatske znanstveno-istraživačka zajednica u svjetske trendove promicanja permakulture. Rezultati istraživanja govore o oskudnoj domaćoj literaturi. Ne pronalaze se radovi koji ekonomiziraju ovo pitanje niti značajniji istraživački utjecaji i znanstveno vođenje postojećih permakulturnih praksi što upućuje na zaključak da je potrebno animirati znanstvenu zajednicu kao pomoć aktivistima promotorima ovog načina proizvodnje hrane.

Ključne riječi: definicija permakulture, povijest permakulture, permakultura u Hrvatskoj praksi i znanosti

Abstract

Recently, in the shadow of conventional agriculture, alternative food production movements have emerged, driven by the idea of self-sufficiency and zero environmental impact. The success of these approaches lies in the mass practice of small gardens that can increase the self-sustainability of local communities. The idea is applicable in the conditions of the Croatian agrarian structure, in which as many as 60.23% of registered agricultural holdings have land up to 3 ha, to which should certainly be added numerous small family gardens in rural and urban areas. This paper explores the Croatian scientific and professional perspective of permaculture food production, which is covered in the literature available in the Google Scholar database. The aim of the paper is to assess the level of involvement of the Croatian scientific and research community in global trends in promoting permaculture. The results of the research speak of the scarce domestic literature, there are no works that economize this issue, nor significant research influences and scientific management of existing permaculture practices, which points to the conclusion that it is necessary to animate the scientific community to help the activists promoting this way of food production.

Keywords: definition of permaculture, history of permaculture, permaculture in Croatian practice and science

How consumers perceive different types of burgers?

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Abstract

In recent years, burgers have become extremely popular. However, with the growing awareness of the negative impact of the meat industry on the environment, increasing concern for animal welfare, and a rising number of vegetarians, the market has been enriched with a wide range of innovative burgers. The aim of this study was to determine how Croatian consumers perceive different types of burgers (beef, game, shrimp, and algae). An online survey was conducted on a convenience sample of 221 respondents. The questionnaire included sociodemographic questions, questions about burger consumption behavior, and questions assessing consumers' perceptions of different types of burgers (algae, beef, shrimp, and game). Univariate and bivariate (analysis of variance) analyses were performed using SPSS. Most respondents consume burgers several times a year, usually during social gatherings with friends/family, without a specific occasion. Participants perceived meat-based burgers (beef and game) as tastier than those with seafood (shrimp and algae). Shrimp burgers were considered healthier, while game and shrimp burgers were perceived as more expensive compared to other options. The results of this study are highly relevant for burger producers, restaurateurs and policymakers.

Keywords: burgers, consumers, perception

Agrarna struktura Osječko-baranjske županije 2024.

Agrarian structure of Osijek-baranja country 2024

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Sažetak

Agrarna struktura predstavlja temeljni pokazatelj organiziranosti i održivosti poljoprivredne proizvodnje. Cilj ovoga rada bio je analizirati promjene u agrarnoj strukturi Osječko-baranjske županije između 2023. i 2024. godine te ukazati na ključne izazove koji utječu na razvoj ruralnog prostora i agrobiznisa. Istraživanje je provedeno analizom službenih podataka Agencije za plaćanja u poljoprivredi, ribarstvu i ruralnom razvoju (APPRRR), metodom deskriptivne i komparativne analize. Rezultati pokazuju pad ukupnog broja poljoprivrednih gospodarstava s 12.056 u 2023. na 11.762 u 2024. godini (–2,4%). Broj obiteljskih poljoprivrednih gospodarstava (OPG) smanjen je s 9.335 na 6.626 (–29%), što ukazuje na proces okrupnjavanja i odustajanja manjih gospodarstava. Smanjenje bilježe i samoopskrbna gospodarstva (SOPG) s 1.881 na 1.390 (–26%), kao i obrti (–79%) i trgovačka društva (–77%). Broj zadruga i drugih pravnih osoba ostao je gotovo nepromijenjen. Struktura nositelja pokazuje dominaciju muškaraca sa srednjoškolskim obrazovanjem te izražen trend starenja nositelja, što potvrđuje potrebu za generacijskom obnovom. Usporedna analiza potvrđuje strukturne promjene koje mogu imati dugoročne posljedice na održivost poljoprivrede u županiji. Rezultati upućuju na potrebu za inovativnim pristupima u ruralnom razvoju – poticanjem mladih poljoprivrednika, digitalizacijom poslovanja i jačanjem obrazovanja u poljoprivredi – kako bi se osigurala konkurentnost i otpornost agrarnog sektora.

Ključne riječi: agrarna struktura, Osječko-baranjska županija, obiteljska gospodarstva, inovacije, ruralni razvoj

Abstract

The agrarian structure represents a key indicator of agricultural organization and sustainability. The aim of this paper was to analyze the changes in the agrarian structure of Osijek-Baranja County between 2023 and 2024 and to identify the main challenges affecting rural development and agribusiness. The research was based on official data from the Paying Agency for Agriculture, Fisheries and Rural Development (APPRRR) using descriptive and comparative analytical methods. The results indicate a decrease in the total number of agricultural holdings from 12,056 in 2023 to 11,762 in 2024 (–2.4%). The number of family farms (OPGs) dropped significantly from 9,335 to 6,626 (–29%), suggesting consolidation and the withdrawal of smaller holdings. Self-sufficient family farms (SOPGs) decreased from 1,881 to 1,390 (–26%), while agricultural crafts (–79%) and companies (–77%) also declined. The number of cooperatives and other legal entities remained nearly unchanged. The demographic profile of farm holders continues to be dominated by men with secondary education, with an evident trend of population aging. These structural changes may have long-term effects on the sustainability of the county's agricultural sector. The findings

highlight the need for innovative approaches in rural development—supporting young farmers, promoting digitalization, and strengthening agricultural education—to ensure the competitiveness and resilience of the agrarian sector.

Keywords: agrarian structure, Osijek-Baranja County, family farms, innovation, rural development

Usporedba tradicionalnih izvora financiranja poljoprivredne proizvodnje s crowdfundingom

Comparison of traditional sources of financing for agricultural production with crowdfunding

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Sažetak

Poduzetnici se suočavaju s brojnim poteškoćama te su potrebna nova rješenja, posebno kada je riječ o financiranju poljoprivredne proizvodnje. Cilj rada je analizirati i usporediti tradicionalne izvore financiranja i crowdfunding s naglaskom na njihove prednosti, nedostatke te mogućnosti komplementarne primjene. U istraživanju je primijenjena kvalitativna analiza dostupne literature te usporedba ključnih obilježja tradicionalnog financiranja i crowdfundinga. Tradicionalni izvori financiranja poput vlastitih sredstava, kredita, potpora i europskih fondova osiguravaju stabilnost i sigurnost, ali su često opterećeni dugotrajnim administrativnim procedurama i zahtjevima za kolateralom, što otežava pristup malim proizvođačima osobito početnicima. Kao odgovor na te prepreke moguće je primijeniti crowdfunding kojim se prikupljaju sredstava putem online platformi. Ovakav način financiranja predstavlja i mogućnost prodaje proizvoda/usluga unaprijed čime se stječe kapital za početak ili razvoj poslovanja. Crowdfunding omogućuje realizaciju inovativnih ideja i izravnu komunikaciu s ulagateljima, ali nosi rizik neuspješne kampanje, zahtijeva određena financijska sredstva, digitalne kompetencije i aktivno upravljanje troškovima. Usporedba pokazuje kako oba modela imaju značajne prednosti i ograničenja, no njihova kombinacija može stvoriti raznolikiji i otporniji sustav financiranja, što je posebno važno u kontekstu digitalizacije, klimatskih izazova i održivog razvoja poljoprivrede.

Ključne riječi: crowdfunding, financiranje, poljoprivredna proizvodnja

Abstract

Entrepreneurs face numerous difficulties and new solutions are needed, especially when it comes to financing agricultural production. The aim of the paper is to analyze and compare traditional sources of financing and crowdfunding, emphasizing their advantages, disadvantages, and possibilities for complementary applications. The research applied a qualitative analysis of the available literature and a comparison of the key features of traditional financing and crowdfunding. Traditional sources of financing, such as own funds,

lengthy administrative procedures and collateral requirements, which makes access difficult for small producers, especially beginners. As a response to these obstacles, crowdfunding can be used, which collects funds via online platforms. This method of financing also presents the possibility of selling products/services in advance, thus acquiring capital for starting or developing a business. Crowdfunding enables the realization of innovative ideas

and direct communication with investors, but it carries the risk of an unsuccessful campaign, requires certain financial resources, digital competencies, and active cost management. The comparison shows that both models have significant advantages and limitations, but their combination can create a more diverse and resilient financing system, which is especially important in the context of digitalization, climate challenges and sustainable agricultural development.

Keywords: crowdfunding, financing, agricultural production

Projekt REVIVE kao primjer participativnog pristupa u održivom razvoju turizma temeljenom na potrebama zajednice

The REVIVE Project as an Example of a Participatory Approach in Sustainable Tourism Development Based on Community Needs

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Sažetak

Projekt REVIVE sufinanciran je iz programa Interreg Euro-MED, a provodi se u okviru misije „Inovativna održiva ekonomija“. Glavni cilj projekta je razviti inovativne poslovne modele koji će doprinijeti oživljavanju ruralnih područja Mediterana, pri čemu se poseban naglasak stavlja na suradnju i uključivanje dionika. Projekt okuplja 9 partnera iz 7 mediteranskih zemalja: Cipra, Italije, Hrvatske, Španjolske, Sjeverne Makedonije, Grčke i Slovenije, a u svakoj zemlji projekt se provodi na odabranom ruralnom pilot području. Institut za poljoprivredu i turizam projekt provodi u unutrašnjosti Istre i to na području Grada Buzeta te općina Cerovlje, Lanišće, Lupoglav i Oprtalj. Provedba projekta temelji se na uključivanju dionika s ciljem razvoja održivog poslovnog modela koji je usklađen s potrebama zajednice. Inovativno rješenje usmjereno je na turistički sektor i povezane djelatnosti - poljoprivredu, ugostiteljstvo, kreativnu industriju te ostale djelatnosti koje zajedno oblikuju integrirani i održivi turistički proizvod. Projekt povezuje različite skupine dionika: lokalne vlasti, destinacijske menadžment organizacije, lokalne poslovne subjekte i pružatelje usluga, digitalni inovacijski hub, lokalne udruge i grupe te lokalno stanovništvo, pri čemu svaka skupina ima važnu ulogu u procesu kreiranja i implementacije rješenja. Cilj je okupiti dionike koji će zajedničkim snagama doprinositi lokalnom području kroz međusobnu suradnju, razmjenu ideja i znanja te pružanje podrške, a takav pristup jedno je od temeljnih obilježja održivog razvoja turizma.

Ključne riječi: participativni poslovni model, održivi razvoj, održivi turizam, ruralne zajednice, suradnja

Abstract

The REVIVE project is co-financed by the Interreg Euro-MED programme and is implemented within the framework of the Innovative Sustainable Economy Mission. The main objective of the project is to develop innovative business models that will contribute to the revitalisation of rural areas of the Mediterranean, with a particular emphasis on stakeholder collaboration and engagement. The project brings together 9 partners from 7 Mediterranean countries: Cyprus, Italy, Croatia, Spain, North Macedonia, Greece and Slovenia, and in each country, the project is implemented in a selected rural pilot area. The Institute of Agriculture and Tourism is implementing the project in the interior of Istria, specifically in the area of the City of Buzet and the municipalities of Cerovlje, Lanišće,

Lupoglav, and Oprtalj. The project implementation is based on stakeholder involvement with the aim of developing a sustainable business model aligned with community needs. The innovative solution is focused on the tourism sector and related activities - agriculture, hospitality, creative industry and other sectors that together form an integrated and sustainable tourism product. The project connects various stakeholder groups: local authorities, destination management organisations, local businesses and service providers, a digital innovation hub, local associations and groups, and local residents, with each group playing an important role in the process of creating and implementing the solution. The goal is to bring together stakeholders who will jointly contribute to the local area through cooperation, exchange of ideas and knowledge, and mutual support, which is an approach that represents one of the fundamental characteristics of sustainable tourism development.

Keywords: participatory business model, sustainable development, sustainable tourism, rural communities, cooperation

Unapređenje obrazovanja o zelenom turizmu u visokoškolskom sustavu razvojem alternativnih prilika za učenje

Improving the educational background of green tourism in higher education by developing alternative educational materials and learning opportunities

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Sažetak

Unapređenje obrazovanja o zelenom turizmu u visokoškolskom sustavu razvojem alternativnih prilika za učenje (GreenTEA) je projekt financiran sredstvima programa Erasmus+. Projekt je osmišljen s ciljem da korisnicima pruži znanja i vještine potrebne za razvoj svijesti o odgovornom putovanju te pružanju turističkih usluga koje podržavaju očuvanje okoliša i doprinose globalnoj borbi protiv klimatskih promjena. Glavni rezultat projekta bit će e-platforma koja će sadržavati različite obrazovne materijale, od osnova zelenog turizma do naprednijih tema, prezentiranih putem interaktivnih digitalnih sadržaja. Također će uključivati materijale o održivim praksama i odgovornom turizmu, s ciljem da korisnici steknu dublje razumijevanje važnosti očuvanja okoliša. Aktivnosti projekta uključuju: izradu sučelja e-platforme i interaktivnih sadržaja, razvoj osnovnih tematskih cjelina u obliku e-publikacija te organizaciju ljetnih škola radi testiranja platforme i edukativnih digitalnih materijala. Krajnji korisnici projekta su studenti koji pohađaju studijske programe povezane s turizmom, no sadržaji će biti dostupni i svim ostalim korisnicima zainteresiranima za zeleni turizam. Kroz platformu će korisnici steći razumijevanje utjecaja klimatskih promjena na okoliš i ulogu turizma u ublažavanju tih utjecaja, postati svjesni njihovih posljedica na lokalne zajednice te razviti vještine potrebne za promicanje održivog turizma.

Ključne riječi: zeleni turizam, održive prakse, klimatske promjene, odgovorno putovanje, E-platforma

Abstract

Improving the educational background of green tourism in higher education by developing alternative educational materials and learning opportunities (GreenTEA) is a project financed by Erasmus+ program. The project is designed to provide users with knowledge and skills to be informed and responsible travellers, as well as providers of tourism services who support the environment and the global fight against climate change. The primary outcome is an e-platform that will provide a range of educational materials, covering the fundamentals of green tourism as well as more advanced topics, with content presented through interactive digital materials. It will also include a range of content such as sustainable practices and responsible tourism to ensure that users are well-informed and understand the importance of environmental preservation. Project activities include: developing the platform interface and interactive content, creating core thematic units in the form of an e-publication, and organising summer schools to test the platform and educational

digital content. The end users of this project are students enrolled in tourism-related programs; however, materials will be available to all users interested in green tourism. Through the platform, users will understand the impacts of climate change on the environment and the role of tourism in mitigating these impacts, become aware of the effects of climate change on local communities, and acquire skills necessary for advocating sustainable tourism.

Keywords: Green Tourism, Sustainable Practices, Climate Change, Responsible Travel, E-Learning Platform

Stanje i perspektive ekološke poljoprivredne proizvodnje u Bujštini

Status and Prospects of Organic Agricultural Production in Bujština

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Sažetak

Povoljni agroekološki uvjeti, tradicija i povezanost s turizmom predstavljaju veliki potencijal za razvoj ekološke poljoprivrede na području Bujštine. Ciljevi rada su utvrditi (1) stanje ekološke poljoprivrede na području Bujštine te (2) glavne izazove i prilike za razvoj ekološke poljoprivrede na području Bujštine. Empirijski dio istraživanja temelji se na anketnom istraživanju provedenom među 50% registriranih ekoloških proizvođača (14 proizvođača od 28 aktivnih). Kao glavne razloge prelaska na ekološku proizvodnju ispitanici ističu očuvanje okoliša, tržišnu potražnju i certifikaciju. Maslinarstvo, vinogradarstvo, pčelarstvo i povrćarstvo su najvažnije djelatnosti, a glavni kanali za plasiranje proizvoda su izravna prodaja i kratki lanci opskrbe. Kao glavne izazove ispitanici su istaknuli klimatske promjene, visoki troškovi proizvodnje, nedostatna podrška lokalnih vlasti i ograničen pristup širem tržištu. Ipak, većina proizvođača profitabilnost ocjenjuje vrlo dobrom ili izvrsnom te koristi dostupne potpore. Rezultati istraživanja ukazuju na potrebu za jačanjem institucionalne podrške, edukacijom i promocijom ekološke proizvodnje. Dobiveni podaci mogu poslužiti kao temelj za oblikovanje lokalnih i nacionalnih politika koje potiču održivost i konkurentnost ekološke poljoprivrede u Bujštini.

Ključne riječi: ekološka poljoprivreda, Bujština, održivi razvoj, ruralni razvoj, agroekologija

Abstract

Favourable agro-ecological conditions, tradition, and links with tourism represent significant potential for the development of organic agriculture in the Bujština area. The objectives of this paper are to determine (1) the state of organic agriculture in the Bujština area and (2) the main challenges and opportunities for its development. The empirical part of the research is based on a survey conducted among 50% of registered organic producers (14 out of 28 active producers). Respondents highlight environmental protection, market demand, and certification as the main reasons for switching to organic production. Olive growing, viticulture, beekeeping, and vegetable cultivation are the most important activities, with direct sales and short supply chains as the main channels for marketing products. Respondents identified climate change, high production costs, insufficient support from local authorities, and limited access to wider markets as the main challenges. However, most producers rate profitability as very good or excellent and make use of available support. The research results indicate the need to strengthen institutional support, education, and promotion of organic production. The data obtained can serve as a basis for shaping local

and national policies to encourage the sustainability and competitiveness of organic agriculture in the Buje region.

Keywords: organic agriculture, Bujština, sustainable development, rural development, agroecology

Analiza distribucijskih kanala lješnjaka u Republici Hrvatskoj

Analysis of Hazelnut Distribution Channels in the Republic of Croatia

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Sažetak

Cilj rada je analizirati distribucijske kanale lješnjaka u Republici Hrvatskoj iz perspektive proizvođača, s naglaskom na njihove prednosti, slabosti, prilike i prijetnje. Korištenjem sekundarnih izvora podataka provedena je SWOT analiza dvaju najčešćih kanala distribucije: direktnog i indirektnog (veleprodajnog). Kriteriji usporedbe temeljeni su na elementima SWOT metodologije koji utječu na konkurentnost proizvođača. Globalna potražnja za lješnjacima kontinuirano raste zahvaljujući širokoj primjeni i jačanju svijesti o zdravoj prehrani. Površine pod nasadima lijeske porasle su s 913.092 ha (2013.) na 1.078.192 ha (2023.), što predstavlja rast od 18 %. Turska zadržava dominantan udio u svjetskoj proizvodnji (57–65 %), dok su Italija, Njemačka i Francuska najveći uvoznici. U Hrvatskoj se bilježi značajan rast proizvodnje, gotovo trostruko povećanje površina (s 2888 ha 2013. na 8700 ha 2023.), potaknuto većom potražnjom, državnim poticajima i ugovorenim otkupom. Cijene lješnjaka u posljednjem desetljeću osciliraju između 2,12 i 3,16 €/kg. Povećanje domaće proizvodnje, tehnološki napredak i udruživanje proizvođača kroz zadruge i klastere doprinijeli su rastu izvoza. Rezultati SWOT analize ukazuju na specifičnosti pojedinih kanala distribucije te na važnost odabira prikladnog modela prema veličini gospodarstva, proizvodnim kapacitetima i tržišnim ciljevima. Direktni kanali pokazali su se pogodnima za male proizvođače zbog veće fleksibilnosti, kontrole kvalitete i boljeg odnosa s potrošačima, dok su indirektni kanali prikladniji za veće proizvođače zbog šire tržišne pokrivenosti i nižih operativnih troškova.

Ključne riječi: distribucijski sustavi, konkurentnost, tržišni trendovi, SWOT metodologija, lješnjak

Abstract

The aim of this paper is to analyze the distribution channels of hazelnuts in the Republic of Croatia from the producers' perspective, with emphasis on their strenghts, weaknesses, opportunities and threats. Using secondary data sources, a SWOT analysis was conducted on the two most common distribution channels: direct and indirect (wholesale). The comparison criteria were based on SWOT methodology elements influencing producers' competitiveness. Global demand for hazelnuts continues to grow due to their wide range of applications and the increasing awareness of healthy eating habits. The global area under hazelnut cultivation increased from 913,092 ha in 2013 to 1,078,192 ha in 2023, representing an 18% growth. Turkey maintains a dominant share in global production (57–65%), while Italy, Germany, and France are the largest importers. In Croatia, hazelnut production has

increased significantly, with the cultivation area almost tripling from 2,888 ha in 2013 to 8,700 ha in 2023. This growth has been driven by higher domestic and international demand, government incentives, and contract-based purchasing opportunities. Over the past decade, hazelnut prices have fluctuated between 2.12 and 3.16 € per kilogram. Increased domestic production, technological advancements, and producer cooperation through cooperatives and clusters have contributed to export growth. The SWOT analysis revealed the specific characteristics of analyzed distribution channel and emphasized the importance of selecting an appropriate model according to farm size, production capacity, and market goals. Direct channels proved more suitable for small producers due to greater flexibility, quality control, and closer consumer relations, while indirect channels are more favorable for larger producers due to broader market reach and lower operational costs.

Keywords: distribution system, competitiveness, market trends, SWOT methodology, hazelnut

Digitalni marketing kao instrument povezivanja turističke ponude i potražnje u ruralnim zajednicama

Digital marketing as an instrument for connecting tourism supply and demand in rural communities

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Sažetak

U posljednjih desetak godina, društvene mreže poprimile su važnu funkciju u oblikovanju digitalnih marketinških strategija koje provode turistički djelatnici i promotori lokalnih zajednica. Ključnu ulogu u tom procesu ima mobilni segment digitalne komunikacije, s obzirom na sveprisutnost pametnih telefona i jednostavan pristup informacijama putem aplikacija kao što su Facebook, Instagram, Tik Tok, YouTube i TripAdvisor. Primarni cilj ovog istraživanja bio je identificirati ključne digitalne alate koji se koriste u promociji ruralnog turizma, ispitati razinu informiranosti potencijalnih posjetitelja o lokalnoj ponudi te uočiti moguće barijere u komunikaciji između ponude i potražnje. Provedeno je anketno ispitivanje (N=88), posjetitelja ruralnih destinacija. Anketni upitnik sadržavao je pitanja o poznavanju digitalnog marketinga, učestalosti korištenja pojedinih platformi, utjecaju digitalnih sadržaja na izbor destinacije, te razini upoznatosti s konkretnom turističkom ponudom županije. Rezultati istraživanja pokazuju da 55,8% ispitanika povremeno koristi društvene mreže kao primarni izvor informacija o turističkim destinacijama, dok je 74,7% ispitanika navelo da ih upravo fotografije i videozapisi lokalnih manifestacija i prirodnih pejzaža najviše motiviraju na posjet. Nadalje, 55,8% ispitanika istaknulo je preporuke i recenzije drugih korisnika kao ključan faktor u donošenju odluke o putovanju. Istraživanje je također pokazalo da je razina informiranosti o ruralnoj ponudi još uvijek relativno niska – tek 32% ispitanika bilo je prethodno upoznato s konkretnim sadržajima i događanjima. Zaključno, digitalni marketing, posebice putem društvenih mreža i mobilnih aplikacija – predstavlja neizostavan alat za promociju ruralnog turizma. Njegovom primjenom moguće je povećati vidljivost i privlačnost lokalnih proizvoda, smještajnih kapaciteta, gastronomske ponude i kulturno-povijesne baštine.

Ključne riječi: digitalni marketing, ruralni turizam, društvene mreže

Abstract

Over the past decade, social media has assumed a significant role in shaping digital marketing strategies implemented by tourism professionals and local community promoters. A key component of this process is the mobile segment of digital communication, driven by the ubiquity of smartphones and the easy access to information through applications such as Facebook, Instagram, TikTok, YouTube, and TripAdvisor. The primary aim of this paper is to identify the main digital tools used in the promotion of rural tourism, assess the level of awareness among potential visitors regarding local tourism offerings, and detect potential barriers in the communication between supply and demand. A survey-based study was conducted among visitors to rural destinations (N=88). The questionnaire included questions

related to the knowledge of digital marketing, frequency of using various platforms, the impact of digital content on destination choice, and the level of familiarity with the specific tourism offer in the region. The results indicate that 55.8% of respondents occasionally use social media as their primary source of information about tourist destinations, while 74.7% stated that photographs and videos of local events and natural landscapes are the strongest motivational factors for their visit. Furthermore, 55.8% of respondents emphasized user recommendations and online reviews as key influences in their travel decision-making process. The study also revealed a relatively low level of awareness of rural tourism offerings, with only 32% of respondents being previously familiar with specific attractions and events. In conclusion, digital marketing, particularly through social media and mobile applications has become an indispensable tool for promoting rural tourism. Its application enables greater visibility and attractiveness of local products, accommodation capacities, gastronomy, and cultural and historical heritage.

Keywords: digital marketing, rural tourism, social networks

Višekriterijska ocjena smještajnih kapaciteta ruralnog turizma Šibensko-kninske županije

Multicriteria Evaluation of Rural Tourism Accommodation Capacities in Šibenik-Knin County

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Sažetak

Unatoč rastu broja ponuditelja i sve većem interesu turista, još uvijek ne postoji sustavno razvijen model vrednovanja kvalitete ruralnog smještaja u Hrvatskoj. U ovom radu analizirana je kvaliteta smještajnih objekata u ruralnom turizmu Šibensko-kninske županije primjenom višekriterijske metode *Simple Multi-Attribute Rating Technique* (SMART) koja je uključila izradu modela vrednovanja kvalitete njihove ponude s osam kriterija i 21 potkriterijem. Kriteriji su odabrani temeljem relevantne znanstvene literature i prethodnih istraživanja, dok je njihova težinska važnost određena ocjenama osam stručnjaka iz područja turizma i ruralnog razvoja. Najveći utjecaj na ukupnu ocjenu objekta ima lokacija (težinski koeficijent 0,138), zatim cijena noćenja (0,127) i opremljenost objekta (0,126). Modelom je usporedno vrednovana kvaliteta ponude pet smještajnih objekata prema dostupnim podacima sa specijaliziranog portala Booking.com i službenih mrežnih stranica. Pri odabiru smještajnih kapaciteta primijenjeni su kriteriji prema kojima smještaj mora biti dio poljoprivrednog gospodarstva, a opis na Booking.com mora omogućavati kvantifikaciju svih čimbenika vrednovanja. Najvišu ukupnu ocjenu ostvarilo je gospodarstvo iz okolice Drniša, zahvaljujući najvišim ocjenama u kategorijama opremljenosti i društvene održivosti, unatoč nižim rezultatima u segmentima cijene i lokacije. Prednost rada je jednostavna interpretacija rezultata, dok su ograničenja vezana uz subjektivnost u određivanju važnosti kriterija. Rad doprinosi razvoju analitičkog sustava vrednovanja ruralnog smještaja, korisnog za ponuditelje i njihove potencijalne goste.

Ključne riječi: ruralni turizam, višekriterijska metoda, Šibensko-kninska županija

Abstract

Despite the growing number of providers and increasing interest from tourists, a systematically developed model for evaluating the quality of rural accommodation is still lacking. This paper analyzes the quality of accommodation facilities in rural tourism in the Šibenik-Knin County using the multi-criteria Simple Multi-Attribute Rating Technique (SMART) method. The model developed includes eight criteria and twenty-one subcriteria for assessing the quality of accommodation offerings. The criteria were selected based on relevant scientific literature and previous research, while their weighted importance was determined through evaluations by eight experts in tourism and rural development. The most influential factor in the overall rating of a facility is its location (weight coefficient 0.138), followed by the price per night (0.127) and the level of equipment (0.126). The model was applied to evaluate five accommodation facilities using data from the specialized portal

Booking.com and official websites. The highest overall rating was achieved by Agrotourism Duvančić, owing to top scores in equipment and social sustainability, despite lower results in price and location. The advantage of this study lies in the straightforward interpretation of results, while its limitations stem from the subjectivity in determining the importance of criteria. The paper contributes to the development of an analytical system for evaluating rural accommodation, beneficial to both service providers and potential guests.

Keywords: rural tourism, multi-criteria method, Šibenik-Knin County

Ruralne inovatorice između tradicije i inovacije – iskustva GRASS CEILING projekta

Mowing the grass ceiling: Rural women innovators between tradition and innovation - experiences from the GRASS CEILING project

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Sažetak

Kako bi se osnažile žene u ruralnim područjima, osmišljen je trogodišni projekt GRASS CEILING, financiran kroz program Obzor Europa. Žene Europe i Hrvatske nailaze na mnogostruke prepreke u ruralnim područjima koje se kategoriziraju kao strukturne i društvene, poduzetničke, političke i institucionalne te specifične prepreke u inovacijama. U domenu strukturnih i društvenih prepreka pripadaju dvostruka diskriminacija (rodne nejednakosti i ruralni i urbani jaz), nevidljivi rad (rad na poljoprivrednom gospodarstvu nije plaćen niti statistički prepoznat), ograničen pristup javnim uslugama te tradicionalne rodne norme. Poduzetničke prepreke se očituju u različitim financijskim barijerama, nedostatku podrške i isključenosti iz mreža. U političkim i institucionalnim preprekama kao najvažnije se izdvajaju neuzimanje u obzir specifičnosti poljoprivrednih gospodarstava koje vode žene u okviru Zajedničke poljoprivredne politike, slaba zastupljenost žena u lokalnim strukturama vlasti, nedostatak rodno razvrstanih podataka koji otežava praćenje i kreiranje politika te činjenica da politike često ostaju rodno neutralne što pogoduje muškarcima. U konačnici, žene se susreću i s raznim preprekama i u samim inovacijama jer njihove inovacije često ostaju formalno neregistrirane i izvan sustava potpore, a ideje ostaju nevidljive. Kako bi se osnažile žene u ruralnim područjima, osmišljen je trogodišni projekt GRASS CEILING, financiran kroz program Obzor Europa. Kao jedan od ciljeva postavlja osnaživanje žena u ruralnim područjima prvenstveno kroz edukaciju o inovacijskom procesu, identifikaciju megatrendova i budućih scenarija za žene u ruralnim područjima, identifikacije prepreka i poticaja za žensko poduzetništvo kroz analizu recentne literature, analize politika i zakonodavstva koje utječu na žene u ruralnim područjima te razvoj alata i preporuka za politike koje podržavaju inovatorice u ruralnim područjima.

Ključne riječi: ruralne žene, prepreke, poduzetništvo, inovacije, rodna ravnopravnost

Abstract

To empower women in rural areas, a three-year GRASS CEILING project was developed and financed through the Horizon Europe programme. Women in Europe and Croatia face multiple obstacles in rural areas, categorised as structural, social, entrepreneurial, political, institutional, and specific barriers to innovation. Structural and social barriers include double discrimination (gender inequalities and the urban-rural gap), invisible labour (work on the farm is neither paid nor statistically recognised), limited access to public services and traditional gender norms. Entrepreneurial barriers manifest themselves in various financial

barriers, lack of support and exclusion from networks. Among the political and institutional barriers, the most important are the failure to take into account the specificities of women-run farms under the Common Agricultural Policy, the low representation of women in local government structures, the lack of gender-disaggregated data, which makes it difficult to monitor and design policies, and the fact that policies often remain gender-neutral, which favours men. Finally, women also face various obstacles in innovation itself, as their innovations are often not formally registered and remain outside the funding system, and their ideas remain invisible. To empower women in rural areas, a three-year project GRASS CEILING has been developed, funded by the Horizon Europe programme. One of its objectives is to empower women in rural areas, primarily by educating them about the innovation process, identifying megatrends and future scenarios for women in rural areas, identifying barriers and incentives for female entrepreneurship by analysing current literature, analysing policies and legislation that affect women in rural areas, and developing tools and recommendations for policy measures to support women innovators in rural areas.

Keywords: rural women, barriers, entrepreneurship, innovation, gender equality

Analiza korištenja poljoprivrednih potpora u Osječko-baranjskoj županiji u 2024. godini

Analysis of the use of agricultural subsidies in Osijek-Baranja County in 2024

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Sažetak

Cilj rada je analizirati raspodjelu, strukturu i prostornu zastupljenost poljoprivrednih potpora u Osječko-baranjskoj županiji u 2024. te procijeniti promjene u odnosu na 2023. godinu. Korišteni su službeni podaci Agencije za plaćanja u poljoprivredi, ribarstvu i ruralnom razvoju (APPRRR) za 2023.–2024., agregirani po jedinicama lokalne samouprave. Primijenjene su deskriptivna statistika (ukupni i fondovski iznosi, broj jedinstvenih korisnika), komparativna analiza (2023. vs 2024.) i prostorna usporedba po gradovima/općinama. Ukupan iznos isplata u 2024. iznosi 155.598.093,17 EUR (127.503.153,45 EUR iz EU fondova i 28.094.939,72 EUR iz nacionalnih sredstava), uz 8.132 jedinstvena korisnika. Najveći udio ima EAGF s 81.972.054,87 EUR, EAFRD sudjeluje s 50.352.156,21 EUR, dok EURI i nacionalne potpore zajedno iznose 23.153.807,23 EUR; EMFF je marginalan. Prostorna analiza pokazuje koncentraciju korisnika u Osijeku i Đakovu, dok se po ukupnim iznosima ističe Darda, što upućuje na veći udjel kapitalno intenzivnih mjera. U odnosu na 2023., redoslijed vodećih jedinica ostaje stabilan uz blagi porast ukupnih isplata. Zaključak, utemeljen na navedenim pokazateljima, potvrđuje da kombinacija izravnih plaćanja (EAGF) i investicijsko-okolišnih mjera (EAFRD), uz ciljane NP/EURI, značajno doprinosi konkurentnosti i održivosti poljoprivredne proizvodnje u županiji.

Ključne riječi: potpore, poljoprivreda, EAGF, EAFRD, Osječko-baranjska županija, 2024

Abstract

The aim of the paper is to analyze the distribution, structure and spatial presence of agricultural subsidies in Osijek-Baranja County in 2024 and to assess changes compared to 2023. Official data from the Paying Agency for Agriculture, Fisheries and Rural Development (APPRRR) for 2023–2024 were used, aggregated by local government units. Descriptive statistics (total and fund amounts, number of unique beneficiaries), comparative analysis (2023 vs 2024) and spatial comparison across cities/municipalities were applied. The total amount of payments in 2024 is EUR 155,598,093.17 (EUR 127,503,153.45 from EU funds and EUR 28,094,939.72 from national sources), with 8,132 unique beneficiaries. The largest share belongs to the EAGF with EUR 81,972,054.87, the EAFRD participates with EUR 50,352,156.21, while EURI and national subsidies together amount to EUR 23,153,807.23; the EMFF is marginal. The spatial analysis shows a concentration of beneficiaries in Osijek and Đakovo, while Darda stands out by total amounts, which indicates a higher share of capital-intensive measures. Compared to 2023, the order of leading units remains stable with a slight increase in total payments. The conclusion, based

on the stated indicators, confirms that the combination of direct payments (EAGF) and investment-environmental measures (EAFRD), with targeted NP/EURI, significantly contributes to the competitiveness and sustainability of agricultural production in the county.

Keywords: subsidies, agriculture, EAGF, EAFRD, Osijek-Baranja County, 2024

Analitički pristup vrednovanju ljudskog kapitala: znanja, vještina sposobnosti i iskustava agropoduzetnika

Analytical Approach to the Evaluation of Human Capital: Knowledge, Skills Abilities, and Experiences of Agrientrepreneurs

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Sažetak

U poslovanju gospodarskih subjekta ljudski resursi čine osnovu za primjenu poduzetništva. Ponekad mogu predstavljati jedinu imovinu o kojoj ovisi opstanak, rast i razvoj poslovanja. U poljoprivredi oni su osnova za upotrebu materijalnih resursa kojima tehnološkim procesom nastaju proizvodni rezultati. Učinkovitost korištenja materijalnih resursa povezuje se sa znanjima, vještinama, sposobnostima i iskustvima poljoprivrednika. Rastom vrijednosti takvog, ljudskog kapitala nastaje poslovna jezgra za poduzetničku kreativnost, inovativnost i proaktivnost. Cilj rada je kvantificirati važnost pojedinih sastavnica ljudskog kapitala agropoduzetnika i utvrditi latentne razvojne potencijale. Vrednovana su 4 atributa ljudskog kapitala s 15 tvrdnji koje su opisivale atribute. Kvantifikacija vrijednosti izražena je ponderima važnosti težinskog omjera, prosječnim ocjenama atributa i ukupnom vrijednošću ljudskog kapitala. Analitičkim vrednovanjem utvrđeno je da najveću vrijednost ljudskog kapitala agropoduzetnici prepoznaju u vlastitim sposobnostima (1,31), zatim slijede znanja (1,12), vještine (1,07) i iskustva (0,50). Vrijednost ljudskog kapitala, izražena ukupnom vrijednošću iznosi 4,00 i ponderom važnosti 1,00. Zaključuje se kako agropoduzetnici imaju latentne potencijale koji su prepoznati u vlastitim sposobnostima za primjenu inovacija, donošenje kvalitetnih poslovnih odluka i poduzetničkom ponašanju.

Ključne riječi: agropoduzetnici, ljudski kapital, vrednovanje

Abstract

Human resources are fundamental to the operations of economic entities and form the basis for entrepreneurship. In some cases, it can represent the only asset upon which a business survival, growth, and development depends. In agriculture, they are key to the effective use of material resources in the technological process. The efficiency of utilizing material resources is directly linked to the farmer's knowledge, skills, abilities, and experience. Increasing the value of human capital creates a business core conducive to entrepreneurial creativity, innovation, and proactivity. The aim of this paper is to quantify the importance of the individual components of human capital and to determine latent development potentials. To this end, 4 attributes of human capital were evaluated with 15 descriptive statements. The value quantification is expressed through the importance weighting ratio, average attribute ratings, and the total value of human capital. Analytical evaluation determined that agrientrepreneurs recognize the greatest value of human capital in their own abilities (1.31),

followed by knowledge (1.12), skills (1.07) and experience (0.50). The value of human capital, expressed as a total value of 4.00 and an importance weight of 1.00. It is concluded that agrientrepreneurs possess latent potentials in their abilities related to applying innovations, making quality business decisions, and demonstrating entrepreneurial behavior.

Keywords: agrientrepreneurs, human capital, evaluation

Olive leaf extracts as a source of antimicrobial innovation: insights from the BioTech2Agri project

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Abstract

The BioTech2Agri project (Interreg VI-A Italija-Slovenija 2021-2027 ITA-SI0600180) addresses a shared challenge in the Italy–Slovenia programme area by promoting biotechnology-driven innovations that improve production processes, foster new products, stimulate local economies, and enhance sustainability through reduced resource use.

As part of the project, the Institute for Oliviculture at ZRS Koper partnered with the SME Microbium to investigate the antimicrobial properties of olive leaf extracts, an underutilized by-product of olive cultivation. 'Istrska belica' was selected to conduct biophenol analysis of the leaves, and perform standardized microbiological testing (ISO 20776-1:2007) on ethanolic extracts of dried and milled leaves. The extracts inhibited *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Candida albicans* at a minimum inhibitory concentration (MIC) of 25%, with partial activity at 12.5%. For *Escherichia coli*, full inhibition was achieved at 25%. These findings confirm the broad-spectrum antimicrobial potential of olive leaf bioactive compounds, particularly oleuropein and related phenolics, and highlight their applicability in cosmetic, nutraceutical, and agri-food sectors.

This collaboration demonstrates the value of connecting applied research with SMEs to unlock biotechnological solutions from agricultural by-products and build sustainable cross-border agro-innovation ecosystems.

Keywords: olive leaf extracts, antimicrobial activitiy, BioTec2Agri, innovations in natural cosmetics

Inovacije i efikasnost u procesu otkupa voća u Mačvanskom okrugu Republike Srbije

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Sažetak

Istraživanje analizira proces otkupa i pakovanja voća u hladnjači Mačvanskog okruga sa posebnim osvrtom na efikasnost, tržišne faktore i potrebu za inovacijama. Cilj rada jeste identifikacija ključnih izazova u lancu otkupa, od prijema i skladištenja do plasmana proizvoda, kao i sagledavanje posledica nedostatka tehnoloških i organizacionih inovacija na konkurentnost sektora. U istraživanju je primenjen kombinovani metodološki pristup, koji obuhvata kvantitativnu i kvalitativnu analizu. Kvantitativnom analizom obrađene su cene i količine maline, dok je kvalitativno analiziran proces rukovanja u hladnjači. Podaci su prikupljeni iz primarnih izvora (direktno sa otkupnog mesta hladnjače) i sekundarnih izvora (zvanične statistike i relevantna istraživanja). U istraživanju su mereni pokazatelji inovativnosti, produktivnosti i efikasnosti segmenata hladnjačarskog procesa, s posebnim fokusom na faze otkupa, skladištenja i plasmana voća. Efikasnost je procenjena kroz trajanje ciklusa zamrzavanja (prosečno 12 sati), gubitke mase (prosečno 2% gubitka od svežeg do smrznutog voća), iskorišćenost kapaciteta, tačnost evidencije. Inovativnost je ocenjena prema stepenu primene savremenih tehnologija i digitalizacije procesa, dok je produktivnost analizirana kroz odnos obrađene količine i utrošenog vremena. Dobijeni rezultati potvrđuju postojanje negativne korelacije između obima otkupljenih količina i visine otkupnih cena, pri čemu smanjena ponuda vodi ka povećanju tržišne vrednosti. Analiza je pokazala da tradicionalni sistemi ograničavaju radnu i energetsku efikasnost, te da uvođenje modernih tehnologija i digitalizovanih sistema predstavlja ključnu smernicu za unapređenje hladnjačarskog sektora.

Ključne riječi: inovacije, otkup voća, Mačvanski okrug, hladnjače, tržište

Abstract

The research analyzes the process of fruit procurement and packaging in a cold storage facility in the Mačva District, with particular emphasis on efficiency, market factors, and the need for innovation. The aim of the study is to identify key challenges within the procurement chain, from reception and storage to product distribution, as well as to examine the consequences of insufficient technological and organizational innovation on the sector's competitiveness. A combined methodological approach was applied, encompassing both quantitative and qualitative analyses. The quantitative analysis covered raspberry prices and quantities, while the qualitative analysis focused on the handling process within the cold storage facility. Data were collected from primary sources (directly from the cold storage procurement site) and secondary sources (official statistics and relevant studies). The study measured indicators of innovation, productivity, and efficiency within segments of the cold storage process, with a particular focus on the stages of procurement, storage, and product distribution. Efficiency was assessed through the duration of the freezing cycle (an average

of 12 hours), mass losses (an average of 2% from fresh to frozen fruit), capacity utilization, and the accuracy of record-keeping. Innovation was evaluated based on the degree of implementation of modern technologies and process digitalization, while productivity was analyzed through the ratio of processed quantities to labor time. The results confirm the existence of a negative correlation between the volume of purchased quantities and procurement prices, indicating that reduced supply leads to an increase in market value. The analysis also shows that traditional systems limit labor and energy efficiency, and that the introduction of modern technologies and digitalized management systems represents a key guideline for improving the efficiency and sustainable development of the cold storage sector.

Keywords: innovations, fruit procurement, Mačva District, cold storage, market

Pozicioniranje ruralnog turizma na mrežnim stranicama županijskih turističkih zajednica

Positioning of rural tourism on the websites of county tourist boards

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Sažetak

Turizam predstavlja jedan od najvažnijih gospodarskih sektora Republike Hrvatske, koji značajno doprinosi nacionalnom gospodarstvu, zapošljavanju i međunarodnom imidžu zemlje. Međutim, okosnicu turističke ponude čini maritimni turizam, dok je kontinentalni turizam često u lošijem položaju jer ne uživa jednaku institucionalnu, medijsku i investicijsku potporu kao maritimni turizam. Naročito su u nepovoljnom položaju ruralna područja Hrvatske, bogata prirodnim i kulturnim resursima, gdje se najčešće razvijaju različiti oblici ruralnog turizma. U Republici Hrvatskoj glavna institucija zadužena za predstavljanje i promociju cjelokupne domaće turističke ponude jest Hrvatska turistička zajednica koja ima svoje ispostave u svakoj županiji (20) te čak u 256 jedinica lokalne samouprave. Cilj rada je istražiti promovira li se ruralni turizam Hrvatske na adekvatan način kroz pozicioniranje ruralnog turizma na web stranicama županijskih turističkih zajednica. Stoga je na web stranicama provedena analiza dostupnosti i zastupljenosti pojma ruralnog turizma, ali drugih vezanih pojmova kao što su seoski turizam i agroturizam, izletište, ruralna soba/apartman i slično, na način da su otvoreni svi izbornici, kategorije i poveznice (sve što je na pojedinoj web stranici bilo dostupno za otvoriti) u potrazi za navedenim pojmovima. Rezultati istraživanja pokazuju da su na internetskim stranicama županijskih turističkih zajednica pojmovi vezani uz ruralni turizam uglavnom neujednačeno raspoređeni po različitim kategorijama te da je snalaženje u potrazi za ruralno-turističkim informacijama vrlo otežano. Pojam seoski turizam dostupan je na 55% istraživanih stranica, pojam agroturizam na 50%, dok je pojam ruralni turizam dostupan na samo 15% stranica. Nažalost, na onim stranicama na kojima su zastupljeni ti pojmovi, najčešće nisu pozicionirani na adekvatan način, odnosno potpadaju pod razne druge kategorije koje uglavnom nisu vezane uz ruralni, seoski ili agroturizam. Rezultati istraživanja trebali bi poslužiti kao podloga za zajedničku i organiziranu promociju ruralnog turizma na web stranicama svih ispostava Hrvatske turističke zajednice, što je ključno je za veću vidljivost seoskih destinacija, učinkovitije informiranje turista te osiguravanje ravnomjernog turističkog razvoja svih regija.

Ključne riječi: ruralni turizam, seoski turizam, agroturizam, pozicioniranje na web stranici, turističke zajednice

Abstract

Tourism represents one of the most important economic sectors of the Republic of Croatia, which significantly contributes to the national economy, employment and the country's international image. However, the backbone of the tourist offer is maritime tourism, while continental tourism is often in an unfair position because it does not enjoy the same institutional, media and investment support as maritime tourism. The rural areas of Croatia,

rich in natural and cultural resources, where different forms of rural tourism are most often developed, are particularly disadvantaged. In the Republic of Croatia, the main institution responsible for presenting and promoting the entire domestic tourist offer is the Croatian Tourist Board, which has branches in every county (20) and in as many as 256 local government units. The goal of this paper is to investigate whether rural tourism in Croatia is promoted adequately through the positioning of rural tourism on the websites of county tourist boards. Therefore, an analysis of the availability and representation of the term rural tourism, but also other related terms such as rural tourism and agrotourism, excursion site, rural room/apartment and the like, was conducted on the websites, in such a way that all menus, categories and links (everything that was available to open on a particular website) were opened in search of the mentioned terms. The results of the research show that on the websites of county tourist boards, terms related to rural tourism are mostly scattered across different categories and that it is very chaotic to find information on rural tourism. The term rural tourism is available on 55% of the researched pages, the term agrotourism on 50%, while the term rural tourism is available on only 15% of the pages. Unfortunately, on those pages where these terms are present, they are most often not positioned adequately or fall under various other categories that are mostly not related to rural, village or agrotourism. The research results should serve as a basis for joint and organized promotion of rural tourism on the websites of all branches of the Croatian Tourist Board, which is crucial for greater visibility of rural destinations, more effective information for tourists, and ensuring balanced tourism development of all regions.

Keywords: rural tourism, village tourism, agritourism, website positioning, tourist boards

Promoting the Mediterranean diet in student canteens: a social marketing plan in three countries

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Abstract

The Mediterranean diet is widely recognised as a healthy, sustainable, and culturally significant dietary pattern that is in line with the United Nations Sustainable Development Goals (FAO). However, its uptake among the younger generation is limited. University students are an important target group for the promotion of the Mediterranean diet, as they are at a stage in their lives when personal responsibility for nutrition is increasing and long-term eating habits are being formed. As many students eat in canteens, these facilities offer a promising starting point for the promotion of the Mediterranean diet. However, the current supply of Mediterranean meals in student canteens is often limited, so targeted strategies are needed to increase both the supply of and demand for Mediterranean meals. This paper presents a social marketing plan to promote the Mediterranean diet in student canteens in Portugal, Croatia, and Turkey, which was developed as part of the MedDiet4Campus project (PRIMA Section 2 Multi-topic 2022). Social marketing differs from traditional marketing in that it focuses on behaviour change and stakeholder engagement, emphasising that not only consumers but also other stakeholders — such as policy makers, nutritionists, canteen managers, and staff — play a crucial role in shaping outcomes. If stakeholders are not considered in the early stages of planning, they can hinder rather than support change. The plan was developed on the basis on systematic qualitative and quantitative research involving various stakeholders and applied all six of Andreasen's benchmark criteria for social marketing. A structured framework guided the process, including internal and external analyses, a SWOT assessment, segmentation and targeting strategies, and the formulation of a comprehensive marketing mix. The results of the SWOT analysis have shown that the development of the future nutritional concept should utilise the multidisciplinary expertise of the stakeholders and take into account the preferences of the students. The marketing plan will be aimed at students, but also at all stakeholders in the student food chain. In addition to new products and dishes that are adapted to the Mediterranean dietary pattern, the social marketing plan places particular emphasis on student-friendly advertising. The cross-country perspective illustrates the adaptability of social marketing strategies in different cultural and

institutional contexts, and provides valuable insights for future interventions to improve student nutrition and promote sustainable dietary patterns.

Keywords: Mediterranean diet, social marketing, student canteens, behaviour change, cross-country study

Farmer-led innovations, agricultural and economic development in developing countries: a systematic review

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Abstract

Farmer-led innovations have been supported by mainstream research activities through donor funding, for farmers to explore and contribute to the growing needs of agricultural technologies. This research aims to identify different innovations introduced by farmer innovators and determine their impacts and challenges in its implementation. Through a systematic review, a multi-database approach was used to source relevant scientific publications key to the topic of review. Articles originating from developing countries, on farmer-led innovation and mostly peer-reviewed journal sources were used. The findings revealed several specific farmer-led innovations under broad category of livestock, crop husbandry, agro-processing and storage and post-harvest innovations. In some cases, productivity and incomes were improved due to the adoption of farmer-led innovations. Challenges in farmer-led innovations in developing countries include low education, a lack of donor interest, limited research capacity and lack of cost sharing. These challenges can negatively impact food security improvement in smallholder farm households.

Keywords: Farmer-led Innovations, Impact, Challenges, agricultural development, Systematic review

Primjena agrotehničkih mjera i ekonomski uspjeh u proizvodnji pšenice i kukuruza na području Brčko Distrikta

Application of Agrotechnical Measures and Economic Success in Wheat and Corn Cultivation in the Brčko District Area

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Sažetak

U Bosni i Hercegovini pšenica i kukuruz predstavljaju najvažnije ratarske kulture, koje zauzimaju dominantno mjesto u strukturi korištenih poljoprivrednih površina. Stoga, u ovom radu se na osnovu empirijskog istraživanja analizira proizvodnja pšenice i kukuruza na području Brčko Distrikta, s naglaskom na analizu primjenjenih agrotehničkih mjera i postignutih ekonomskih rezultata izraženih putem pokrića varijabilnih troškova po hektaru. Istraživanje je obuhvatilo 30 poljoprivrednih gazdinstava u Distriktu, a osnovni uslov je bio da imaju proizvodnju na više od 1,5 ha pod posmatranim kulturama. Informacije su prikupljene kroz struktuirane anketne upitnike, koji su sadržavali detaljna pitanja o primijenjenim agrotehničkim praksama, prinosima, troškovima i prihodima. Rezultati pokazuju da prosječni prinosi iznose 5,3 t/ha za pšenicu i 8,7 t/ha za kukuruz. Ekonomskom analizom utvrđeno je da je pokriće varijabilnih troškova iznosilo 639 KM/ha za pšenicu i 1.611 KM/ha za kukuruz. Bolji finansijski rezultat kukuruza djelomično je posljedica viših prinosa i stabilnije proizvodnje. S druge strane, umjerenije pokriće troškova kod pšenice ukazuje na potrebu za optimizacijom agrotehničkih mjera radi povećanja produktivnosti i ekonomske isplativosti. Najveći udio u ukupnim troškovima imaju troškovi mehanizacije i upotreba mineralnih đubriva, dok su najznačajnije nepravilnosti u primjeni agrotehnike zabilježene upravo u segmentu đubrenja, zbog izostanka analize plodnosti tla. Stoga preporuka ovoga rada jeste sprovođenje analize tla prije đubrenja radi optimizacije troškova i izbjegavanja nepotrebne primjene hranjiva.

Ključne riječi: kukuruz, pšenica, Brčko Distrikt, agrotehničke mjere, pokriće varijabilnih troškova

Abstract

In Bosnia and Herzegovina, wheat and corn are the most important crops, occupying a dominant position in the structure of agricultural land use. Consequently, based on empirical research, this paper analyses wheat and corn production in the Brčko District, focusing on the applied agrotechnical measures and the economic results, as reflected by the gross margin per hectare. The research involved 30 farms in the district, with the main condition that they cultivate more than 1.5 hectares of the targeted crops. Data was collected through structured survey questionnaires, which included detailed questions about the applied agrotechnical practices, yields, costs, and revenues. The results indicate that average yields are 5.3 tonnes/ha for wheat and 8.7 tonnes/ha for corn. Economic analysis shows that the gross margin was 639 KM/ha for wheat and 1,611 KM/ha for corn. The higher financial

results for corn are partly due to higher yields and more stable production. Conversely, the moderate gross margin for wheat highlights the need to optimise agrotechnical measures to boost productivity and economic profitability. The largest share of total costs is for mechanisation and mineral fertilisers, while the most notable irregularities in applying agrotechnics occurred in fertilisation, mainly due to the lack of soil fertility analysis. Therefore, this paper recommends conducting soil analysis before fertilisation to optimise costs and prevent unnecessary fertiliser application.

Keywords: corn, wheat, Brčko District, agrotechnical measures, coverage of variable costs

Understanding the Market for Gluten-Free Pasta with Teff: A Discrete Choice Experiment with Celiac and Non-Celiac Groups

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Abstract

The increasing popularity of the gluten-free diet (GFD) has encouraged the expansion of the market of gluten-free (GF) products. However, research on consumers' preferences for GF products is still very limited. Therefore, the current study sought to evaluate the preferences of both celiac and non-celiac consumers, the latter including those who voluntarily follow a GFD or family members of celiac patients, for gluten-free pasta with teff. An online survey and discrete choice experiment were designed for eliciting consumers' preferences, in Italy for brand and label. In total 300 participants responded to the survey. In addition, the average willingness to pay (WTP) was calculated. Our findings reveal that consumers, in general, are reluctant to switch from their habitual GF pasta products. Results from the choice experiment show that brand and labeling are important factors for most consumers, with the Italian Celiac Association label preferred over the generic GF claim, though celiac participants place less emphasis on labels and more on ingredient lists. Non-celiac participants preferred Coop's BeneSi brand, while celiac individuals favored Dr. Schär due to its established reputation in the GF market. Celiac consumers were willing to pay a premium for select brands, but neither group showed a significant willingness to pay for products based solely on a GF label. Results from this study have significant implications for the industry and exploring consumers' preferences for this niche market.

Keywords: gluten-free pasta, choice experiment, brand, label, willingness to pay

Prototype of a hoeing robot for non-chemical weed control in vegetable production

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Abstract

The research, conducted in the BC Naklo experimental greenhouse (46.2706° N, 14.3147° E), examined the effectiveness of mechanical hoeing in weed control using a hoeing robot. As part of the experiment, we sowed garden cress (*Lepidium sativum*) and red radish (*Raphanus sativus*) in a greenhouse, using four plots that each measured 50 × 50 centimetres. Three plots were hoed on three separate occasions at regular intervals, whereas the fourth plot was left untreated. The measurements were taken in four phases: before the first hoeing and after the first, second, and third hoeing. After the first hoeing, weed control effectiveness reached 68% on the first plot, 62% on the second, and 84% on the third. Following the second hoeing, effectiveness increased to 95%, 94%, and 97% on the respective plots. After the third hoeing, efficiency reached 100% on all plots, as all plants were completely eliminated. Preliminary findings suggest that robotic hoeing is a promising method for weed control; however, further research with a larger number of repetitions is needed to confirm statistical significance.

Keywords: robotic hoeing, weed control, smart technologies

Transformation of agriculture through agrotechnology: Analysis of the challenges for small agricultural farmers

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Abstract

Digital agrotechnology is a key factor in the transformation of agricultural production, especially in the context of emerging markets, where small producers make up a significant part of the agricultural sector. The agricultural value chain includes multiple steps from land use to product distribution, which significantly complicates the process of managing small agricultural farmers. Digaital technological solutions offered through AI, machine learning, digital platforms, etc., improve productivity, efficiency and sustainability of small agricultural holdings.

This paper aims to examine the level of availability and affordability of digital agrotechnology for small producers in different socio-economic contexts, and identify key challenges in the application of digitaal agrotechnology. Structural and systemic challenges that affect the integration of new technologies are considered, including digital inequality, lack of institutional support, and the rate of technological adaptation. Through comparative analyses from different countries and regions, an attempt is made to identify and consolidate the challenges faced by small agricultural farmers in the process of implementing digital agrotechnology. Special focus is placed on the socio-economic context, where the application of digital agrotechnology can have multiple effects: from poverty reduction to strengthening local food security.

The results of the research showed that farmers face obstacles related to the availability of digital information, network accessibility, insufficiently developed knowledge about digital agrotechnology, IT literacy, etc.

Keywords: agrotech, small agriculture farmers, emerging markets, challenges

Importance of other income activities for agricultural holdings in Serbia

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Abstract

Small commercial agricultural holdings in the Republic of Serbia are facing increasingly intense competition and a relative decline in income. In order to preserve their competitive position, farms are increasingly finding solutions in the development of other income-generating activities (OIA).

The aim of this paper is to analyze the importance of OIA in the income structure of commercial agricultural holdings in Serbia, as well as their impact on the economic sustainability and diversification of farm activities. While the majority of income is still generated from crop and livestock production, an increasing number of farms are developing additional activities such as processing of raw products, rural tourism, wood processing, traditional handicrafts, and the provision of services in forestry, education, and social care. These activities utilize the existing resources of the farm — land, buildings, and machinery — without significant financial investment, but with increased engagement of labor and knowledge of household members.

The data used in this research come from the 2023 Agricultural Census. The results show, first, that a relatively small number of farms engage in these activities — 63,684 agricultural holdings, or less than 10% of the total number. Second, the relative importance of OIA in the total farm income is still modest but shows a growing trend. Almost half of the farms earn less than 20% of their income from OIA, while 18% generate more than half of their total income from these activities. Third, the largest number of farms are engaged in processing agricultural products and traditional handicrafts, particularly in brandy production.

The results confirm that diversification of activities represents a key factor in increasing competitiveness, resilience to market risks, reducing unemployment, and promoting the sustainability of family farms in rural areas.

Keywords: agricultural holdings, other income-generating activities, diversification

The Impact of Retail Trade Margins in the Food Sector on the Value of the Consumer Basket in the Republic of Serbia

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Abstract

The aim of this paper is to determine the extent to which retail trade margins in the food sector affect the value of the consumer basket in the Republic of Serbia. The research was conducted on a sample of twelve largest retail chains by turnover, which together account for approximately 70% of total food retail in Serbia. Based on the analysis of officially published financial statements, it was established that these chains operate with an average gross trade margin of 34%. Data from the Ministry of Internal and External Trade show that food accounts for 41% of the average consumer basket and 48% of the minimum basket. This means that as much as 14% of the value of the average consumer basket and 16% of the minimum basket represent retail trade margins, indicating significant financial pressure on consumers. In comparison with EU countries, where average gross margins in food retail range between 15% and 22%, Serbia's margin level of 34% indicates a structural imbalance in the food supply chain. The analysis also reveals that the highest consumer price growth indices in 2023, 2024, and the first half of 2025 were recorded for pork, beef, and edible oils. These product categories should therefore be prioritized in margin reduction and price stabilization policies, as retailers often use increases in supplier prices as an opportunity to justify and expand their own profit margins. The research, based on descriptive and comparative analysis and the examination of financial indicators and secondary statistical sources, highlights that a targeted reduction of margins in these key food categories could significantly contribute to improving household purchasing power and stabilizing the value of the consumer basket in the domestic market.

Keywords: trade margins, food retail, consumer basket, purchasing power

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