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THE ROLE OF RURAL AREAS IN SUSTAINABLE DEVELOPMENT

SUMMARY

Sustainable development is defined as ecologically acceptable long-term management of all resources for the benefit of the population and the environment. Sustainable development is also a long-term planning and systematic exploitation of these resources, with minimal "losses" that are harmful to flora and fauna. One of the essential components of sustainable development is the conservation of biological diversity that abounds in the area of the eastern Adriatic coast. In the region of Dalmatia, 61 varieties of olives are currently known, around 130 varieties of various fruits, 82 varieties of grapes and 94 varieties of spices and aromatic herbs. The extent of this biological diversity is a consequence of the large number of climate, geographical, social and cultural conditions that prevail in this area. Turbulent historical upheavals (wars, socio-economic and political relations, policy changes, etc.) during the last century in this region have resulted in significant changes in rural areas (population migration from rural to urban areas, declining agricultural production, demographic changes in the country, aging population, etc.). Simultaneously with these changes has been the process of introduction of new technologies in agricultural production (mechanization of agriculture, manufacturing and production in the monoculture of genetically modified crops). The result of these changes and events is the "erosion" of traditionally bred varieties and breeds. According to our research, one variety of olive has completely disappeared, and 16 are critically endangered. For traditional varieties of fruits, 14 of them have no data and 31 species are critically endangered. The agricultural biodiversity of Dalmatia is not well studied, preserved, protected or promoted. Therefore, it is not used in the selection, or recognized as economically important, in creating original and distinctive high-value agricultural products, which have great tourist potential and are an important tool for preserving the existing Dalmatian environment. This work will show the changes in the rural areas of Dalmatia and its impact on the preservation of traditional varieties of fruit and olive trees.

Key words: sustainable development, biological diversity, varieties, breeds, and rural area

INTRODUCTION

Dalmatia is a biologically isolated space that throughout history has developed a large number of plant and animal species. The isolated condition arises from the north by the high mountains Dinara (1831 m), Kamešnica (1810 m), Mosor (1330 m) and Biokovo (1762 m), while the south side area is isolated

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by the Adriatic Sea. Dalmatia is a region with 4324 km of coastline and contains 926 islands, islets and rocks (Defilippis 1997). Four great rivers flow in this area: the Zrmanja, Krka, Cetina and Neretva. In addition to its geomorphological characteristics, its climatic characteristics stand out. Dalmatia has a Mediterranean climate, but in one part of its space, it mixes with the continental. For all these reasons, Dalmatia is one of the most diverse biological and landscape areas of the Europe (Ozimec et al. 2009). Parts of these areas have rural characteristics, and a smaller part is urban, although the situation is completely reversed when we look at this space with demographic aspects. This area has introduced a large number of plant and animal varieties, some of which were isolated as economically important and found broader application in practice. On the other hand, marginal varieties and breeds with less economic value also exist, whose survival is questionable. They can be found only in rural areas on individual family farms.

MATERIAL AND METHODS

The data analysed for the rural region of Dalmatia is based on statistical data (Census, 2011). Information collected about plant and animal species that are grown in this area are from literature data. The most important varieties of olives and fruit species are inventoried and the starting tree is established. The identified species and varieties are morphologically described, identified, propagated and collected. Described varieties are evaluated economically and agronomically and the level of danger of their disappearance is determined.

RESULT AND DISCUSSIONS

Rural area of Dalmatia

Dalmatia occupies an area of 11960 km², with about 857 000 inhabitants (DZS 2011). It stretches from the village of Tribanj - Kruščica in the north to Cape Oštro and includes the area of the island of Pag. The area of Dalmatia also includes the islands Drvenik, Long island, Pašman, Ugljan, Islands of Kornati, Šolta, Brač, Čiovo, Hvar, Vis, Lastovo, Korčula, Mljet, Islands of Elafiti, Palagruža and a host of other smaller islands.

Table 1. Number of municipalities and cities in the Dalmatia region.

County	City	Municipalities	Villages
Zadarska	6	28	259
Sibensko-kninska	5	15	192
Splitsko-dalmatinska	16	38	364
Dubrovačko-neretvanska	5	17	202
TOTAL	32	98	1.017

The coastal area is very narrow (its widest part is 70 km). The whole region is administratively divided into four counties (Zadarska, Sibensko-

Kninska, Splitsko-dalmatinska and Dubrovacko-neretvanska). The lower administrative units of counties are municipalities and cities (Table 1).

Fruit gene pool

The area of Dalmatia is known for the growing or cultivation of twelve economically important fruit species, which are represented today by around 130 known varieties of fruit. Among the many native species, highlights are on 37 varieties of olives, 29 of figs, 12 of almonds, 7 of carob, 7 of cherry, one variety of mandarin (Unshui), citron, rowan and loquat, 4 varieties of oranges, 20 of pomegranate, and marasca cherries of 14 different types (Ozimec et al. 2009). There are many other unexplored wild fruit species such as wild rose hip (*Rosa canina* L.), elderberry (*Sambucus nigra* L.) and pistachio (*Pistacia vera* L.). Most native trees of these species and varieties of fruit were found and described in rural areas, with the exception of the large domestic loquat (*Eryobotria japonica* L.), which was originally identified as a tree in an urban area. This fruit was a result of introduction of this ancient fruit species by sailors and merchants who brought it to this area.

Olive gene pool

Various authors cite a number of different varieties in cultivation, and according to our research (Strikić et al. 2006, 2010), 36 varieties of olives were identified in Dalmatia (Table 2).

Table 2. The name of the olive variety, its growing area and growing area characteristics in Dalmatia

Olive variety	Growing area	Growing area characteristics
Oblica	Kaštela	Urban area
Levantinka	Grohote	Rural area
Drobnica	Kaštela	Urban area
Karbunčela	Kaštela	Urban area
Oštrica*	Turanj	Rural area
Puljka	Turanj	Rural area
Brindićanka**	Kožino	Rural area
Lastovka	Kaštela	Rural area
Bjelica	Slano	Rural area
Dužica	Banići	Rural area
Grozdača*	Slano	Rural area
Jeruzalemka*	Zaton Veliki	Rural area
Kosmača*	Slano	Rural area
Mezanica	Brsečine	Rural area
Murgulja	Brsečine	Rural area
Piculja	Luka šipanska	Rural area
Uljarica	Zaton	Rural area

Velika lastovka	Orašac	Rural area
Zuzorka*	Orašac	Rural area
Žabarka*	Orašac	Rural area
Želudarica*	Orašac	Rural area
Crnica	Vitaljina	Rural area
Lumbardeška	Vitaljina	Rural area
Sitnica	Vitaljina	Rural area
Dubravka*	Dubrava	Rural area
Sitnjaka velika*	Župa dubrovačka	Rural area
Pujizica	Suđurađ	Rural area
Mezanica šipanska*	Luka šipanska	Rural area
Šljivača*	Luka šipanska	Rural area
Lituša*	Suđurađ	Rural area
Krivulja*	Luka šipanska	Rural area
Kalamata*	Otok Koločep	Rural area
Kamasa*	Otok Koločep	Rural area
Paštrica	Ston	Rural area
Česvinka*	Česvinice	Rural area
Buharica	Sumartin	Rural area

* endangered or critically endangered cultivars

** irretrievably lost cultivar

Large parts of the original olive trees are found in rural areas (91.9%). Featured original domestic varieties of trees are commonly found in the family garden, yard, around local churches and even in cemeteries, while we found urban trees in the olive groves that are located on the edge of town. It is important to notice, according to this research, that of the 36 total varieties, 16 varieties are endangered or critically endangered, while the cultivar 'Brindićanka' has been irretrievably lost.

CONCLUSIONS

The whole area of Dalmatia is abundantly populated with villages, towns and biodiversity. Gradual changes that lead to significant changes in the urban and rural area are significantly influenced by different gene pools. The expansion of cities and towns has narrowed natural habitats, thus increasing the threat to domestic plant and animal species. Similarly, major changes in agricultural production, primarily the intensity of production, introduction of high yielding varieties and breeds, and on the other hand, the abandonment of agricultural land and urbanization of some rural areas, are significantly affecting the disappearance of rare and endangered varieties and breeds. For all these reasons, it is necessary to emphasize the importance of preserving the natural biodiversity and the existing gene pool.

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ULOGA RURALNIH PODRUČJA NA ODRŽIVI RAZVOJ

SAŽETAK

Održivi razvoj se smatra kao ekološki prihvatljivo dugoročno upravljanje svim resursima za korist stanovništva i okoline. Održivi razvoj je takođe dugoročno planiranje i sistematična eksploatacija takvih resursa sa minimalnim „gubicima“ koji su štetni za biljni i životinjski svijet. Jedna od osnovnih komponenti održivog razvoja je očuvanje biološkog diverziteta kakvim područje istočne Jadranske obale obiluje. U regionu Dalmacije je do sada poznata 61 vrsta malina, oko 130 različitih vrsta raznog voća, 82 vrste grožđa, 94 vrste začina i aromatičnog ljekovitog bilja. Veliko područje ovog biodiverziteta je posljedica velikog broja klimatskih, geografskih, društvenih i kulturnih uslova koji preovlađuju u ovom području. Turbulentni istorijski prevrati (ratovi, socio-ekonomske i političke veze, politika promjena itd.) za vrijeme posljednjeg vijeka u ovom regionu je rezultirao značajnim promjenama u ruralnim područjima (migracije stanovništva iz ruralnih u urbana područja, napuštanje poljoprivredne proizvodnje, demografske promjene u zemlji, starost stanovništva, itd.). Istovremeno sa ovim promjenama nastavio se i proces uvođenja novih tehnologijau poljoprivrednoj proizvodnji (mehanizacija poljoprivrede, proizvodnja u monokulturi genetski modifikovanih usjeva). Rezultat ovih promjena i događaja je "erozija" tradicionalno gajenih vrsta i sorti, i prema našem istraživanju, jedna vrsta maslina je potpuno nestala, a njih 16 je kritično ugroženo. Od tradicionalnih vrsta voća za njih 14 nema podataka, a 31 vrsta je kritično ugrožena. Poljoprivredni biodiverzitet Dalmacije nije dobro ispitan, zaštićen, ili promovisan. Stoga, nije uzet u odabir, ili prepoznat kao ekonomski važan u kreiranju originalnih i karakterističnih poljoprivrednih proizvoda visoke vrijednosti, što je ogroman turistički potencijal i važno sredstvo za zaštitu Dalmatinskog područja. U ovom radu će biti prikazane promjene u ruralnim područjima Dalmacije i njihov uticaj na zaštitu tradicionalnih vrsta voća i maslina.

Ključne riječi: održivi razvoj, biološki diverzitet, sorte, rasa, i ruralno područje