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Agro-ecology as a sustainable approach in Slovenia

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Abstract

The article presents sustainable approaches applied in Slovenia that are similar to agro-ecology (AE). We have discovered that the concept of AE is not known or in use in Slovenia. In Slovenia the term is limited to the understanding of the importance of natural factors in farming. The representatives of the Slovenian institutions of the Chamber of agriculture and forestry who have a similar project on the topic of AE, designed for agricultural consultants, have confirmed that there is no official definition for this in Slovenia. AE deals with contents as the ecology in agriculture, organic farming, sustainable agriculture, green agriculture, permaculture, ecoremediations, integrated farming and natural agriculture. According to the official definition the term AE means the use of traditional practices that are consistent with the characteristics of the local environment and do not limit only on food production, but also on food processing (recipes), products made from natural materials, especially wood, stone and construction as well as on ways of sustainable relationship to nature (water storage, attitude to water use, attitude to soil, shallow ploughing, attitudes toward animals, plants).

Key words: agro-ecology, agroeculture, sustainable development, permaculture, ecoremediation

I. Introduction

The term AE is not often used in recent years in Slovenia. This can be seen by the inclusion of Slovenia in international projects with this content, which can be seen in the following part. In comparison with former republics of Yugoslavia, where the concept of AE is very often used, the term in Slovenia can be found only on some web pages.

Project SAGITER-Agro-ecological knowledge and ingenuity of rural areas is only one under the term AE in Slovenia (Online source 2).

Data for the project SAGITER, which is the acronym for the project "Agro-ecological knowledge and ingenuity of rural areas", we gathered from the website of the Chamber of agriculture and forestry of Slovenia (<http://sagiter.eu/wakka.php?wiki=Pourquoi>). In the framework of the Leonardo da Vinci programme as a partner organization in a project with the title SAGITER the Slovenian representative is the Chamber of agriculture

and forestry (KGZS). This takes into account the legality of farming, according to traditional systems, adjusted to the specificities of their environment. Project SAGITER combines the ten partner institutions from seven European countries.

II. Methodology

Most of descriptions of AE recognized on national level are based on the environmental aspects of sustainability and underline its importance (Praterious, 2006). Hereafter report summarized some key international and national definitions, adapted to national agriculture situation.

AE is a term that can be used in several ways, as a science, as a movement and as a practice in the field of agriculture in the world. AE treats agriculture in an interdisciplinary way. Agriculture is considered as part of the ecology, therefore, AE is focused on OF principles (online source 3).

AE is a set of different skills, adapted for use in local environments for the most sustainable oriented farming. Approaches do not exclude a sustainable-oriented innovation or the transfer of knowledge from another environment where it appeared useful. The holders and users of this knowledge are mainly small farmers who have less and less space in the "farming for profit".

In some places in Europe, particularly in France, they have been collecting local knowledge and trying to transmit it to the young generations with the help of schools, for a long time. We are fortunate that many skills are still maintained and in some cases they still apply. AE approaches can help to evaluate this knowledge and maintain it (Graham, 2010).

AE is not associated with a particular method of production, whether it be organic, conventional, intensive or extensive. In addition, it does not define any way of management, such as the use of natural enemies instead of insecticides, or polyculture instead of a monoculture. Additionally, agro-ecologists do not unanimously oppose technology or inputs in agriculture, but want to assess how, when and if the technology can be used in conjunction with the natural, social and human resources. AE proposes a context or "site-specific" method of studying in agro-ecosystems studies and, as such, recognizes that there is no universal formula or recipe for success and the greatest prosperity of the agricultural ecosystem. Instead, agro-ecologists may study questions related to the four system properties of agro-ecosystems: productivity, stability, sustainability and justice. Unlike disciplines dealing only with one of certain properties, agro-ecologists see all four properties, which are connected to each other. Agro-ecologists study these four properties through an interdisciplinary approach. Using natural science agro-ecologist tries to understand the items in the ecosystems such as soil properties and plant, and that by using the methods of the social sciences they understand the effects of farming in rural areas, economic constraints to developing new methods or cultural factors determining farming practices.

The approach of Eugen Odum is based on the assumptions that natural systems with their stability and immunity are the best model for imitation. Usually the ecosystems of AE are not actively involved in social sciences, but this school is based primarily on the belief that the intensive agriculture is unappropriated (online surce 1).

The second approach involves the traditional agricultural production. This approach is also not actively involved in the social sciences of the AE analysis, however, it does use the social understanding of the processes by which an intensive agriculture became unsustainable. The third approach focuses on the multifunctionality of landscapes, instead of focusing exclusively on the promotion of agriculture. Agriculture and nutrition counts as an institutional complex that relates and connects with other social institutions (Stutz, Warf, 2005; Plut 2012 and Raman 2006).

In accordance with the above definitions , summarizes them into a common working definition adapted to the national agriculture situation: AE means the use of sustainable practices based on traditional and local farmer's knowledge, consistent with the characteristics of the local environment and conservation of the biodiversity and cultural landscape. The management systems focus on the whole food system, including environmental, economic, social and ethical dimension and the support of small scale farmers. AE is considered being a part of the ecology and developed ecological structures that doesn't need external inputs and allows the interactions among species for the system to work.

III. The results – agro-ecology in Slovenia

Slovenia has difficult conditions for the development of agriculture due to specific factors such as the diverse terrain, different climatic, geological, morphological and soil conditions; high percent of forest, natural preserved and mountained areas; high level of permanent grassland share; a low share of arable farmland and perennial crops; unfavorable farm size structure; dominance of mix farms holdings which are too small to make the income from agricultural activity alone; unfavourable age structure of the population on farms; high unemployment rate among young people; abandonment of agriculture land and natural forest re-growth where the number of farms is dropping constantly. At the same time, Slovenia has a varied natural endowment, with different types of landscapes and lush landscaping specifications, with a large proportion of the mountain uplands of farms and other areas of less-favoured agricultural activity represent good opportunities for further and accelerated the development of naturally more friendly forms of farming. Such practices contribute significantly to the provision of public goods, the preservation of the cultural landscape, conservation or improvement of agricultural biodiversity, the protection of drinking water resources and protection of the whole environment (online source 5).

Due the this , specific conditions are the main chalanges of Slovene agriculture: increase the level of agriculture productivity and help young farmers to get started, creating new jobs and fostering local development in rural areas, reduce the land abandonment and to improve the polluted ecosystems, support market organisation and short food supply chains, new ways of collaborations among small scale farmers, providing new working places for young people, increase of knowledge and innovation transfer.

During the period of Slovenia entering into the EU, Slovenia began to encourage conversion to sustainable forms of farming, for which there were EU and national financial incentives, which helped farms to replace the lost income due to the transition. Slovenia promotes the introduction of agricultural practices, which in the long term contribute to the preservation and protection of the environment, sustainable management of non-

renewable natural resources, soil fertility, preserving biodiversity and traditional rural cultural landscapes, protection of drinking water resources, adaptation to climate change and at the same time ensuring the production of high-quality and safe food (online source 6).

In Slovenia, sustainable forms of farming have a long-term strategic focus and are included in all of the most important strategic documents of Slovenian agriculture. For example, the Slovenian development strategy of agriculture from 1993; The program of the reform of agriculture from 1998; Slovenian agri-environmental programme from 2001; Rural development programme (RDP 2004-2006); Action plan for the development of organic agriculture in Slovenia by 2015; Resolution on the strategic development of the Slovenian agriculture and agri-food sectors by the year 2020 " provide.si food for tomorrow, " taken in 2011.

Slovenia is in accordance with the objectives of the EU'S common agricultural policy, the national legislation and the national strategic documents supported financially and as a form of environmentally friendly agricultural practices encourages in particular, integrated production and OF. All forms of sustainable farming represent the long-term strategic course of agriculture, understood as interdependent and balanced development in the economic, social, environmental and ethical aspect. The national agricultural policy emphasises issues such as : (de)population of the countryside, preservation of cultural landscapes, ecological acceptability of human activities, ecological and social factors in addition to market-oriented ones.

Other sustainable approaches, which are based on more traditional forms of farming as they are also understood in AE and take into account the circulation of substances on the farm, the crop rotation without the use of mineral fertilizers and pesticides. They are derived from the knowledge of the nature of the crops and animals. Approaches such as biodynamic farming, permaculture and ecoremediation in agriculture represent a new alternative forms of organic farming.

IV. The importance of agro-ecological knowledge for education

In accordance with the present educational programmes and courses we consider that the knowledges of AE are not accessible to the general population of students, but only to those who are studying agriculture and to all those who choose elective subjects in the field of ecoremediation, protection of soil, sustainable water planning and sustainable development of protected areas, which shall be carried out through the Department of geography as a part of physical geography. Additional educational opportunities are through lifelong learning approach where very much is going on. In Slovenia, there are a variety of workshops, lectures and field views from the substantive areas of AE. Most of the training takes place in a private-individual level. This kind of education also links theory with practice. While the so-called academic education is more tied to the theoretical approach.

Trends in organic agriculture in Slovenia are not positive, because of the subsidy, on which this approach is based on, are declining and therefore the number of organic farms is also decreasing. Classical-oriented farms in Slovenia still use phytopharmaceutical products and extensive use of nitrogen, which has a negative impact on underground water and soil (Green, 2012; Dunphy, , Spellman, 2009 and Piercea, 1990). Therefore, agriculture in Slovenia is considered as the main culprit for the polluted soil and underground water.

Selective subject AE at the University of Primorska exists seven years, but since the study programme has been formed it has not yet been selected, which can be an indicator of low interest in this content.

The official education in Slovenia with the current systems does not effect on the knowledge of AE and that this content should be more integrated into the educational process. This is already happening on the "unofficial" level, because many organized it for themselves and want to gain knowledge in the field of AE. Thankfully, schools are already informed and enable children additional field education in these areas. It is necessary to point out that this education also involves the generation of 65 + who attends workshops and many are starting with the natural way of food production for the first time in their lives. Therefore, there is more knowledge in the society about the AE than the official systems are showing. Here it is necessary to stress the importance of the media, who are daily trying to enter these kind of content on the radio and TV programme, many number of magazines have issued in the field of production and processing of food (Frameworks for Teaching and Learning; Whitefield, 2012, Sag 2012). And another important fact, Slovenians are a nation of gardeners and everyone wants to take a very good care of their land, so it is going to be a growth in AE.

V. Conclusion

Most of descriptions of AE are based on the environmental aspects of sustainability and underline its importance. Article discovered that the content of AE is implemented into the formal curricula only at two Facilities as an elective study programme, but students and pupils have more opportunities to learn about AE principles mostly within informal educational programmes based on learning by doing methods.

AE as a sustainable agriculture concept is not officially applied in the strategic policy, but some sustainable principles linked with AE are already carried out especially at local and regional level, particularly due to the preserved traditional agricultural management and knowledge of small family farms and informal educational trainings and programmes linked with AE.

The scope of the legislation and regulations shows that the focus is on financing forms of sustainable production of organic farming. Therefore, we miss policies put forth by AE consisting of the transfer of traditional forms of farming in the practice of what is now understood as an alternative farming. In addition to organic farming today we have developed other forms such as permaculture and biodynamic farming which are stil not financially supported or implemented in the legislation and strategic documents but have gained big support among the general public and local farmers.

Slovenia has a rich diversity and it has great potential for further development toward AE, but the cooperation of all stakeholders and innovative approaches are needed for developing unique Slovenian agriculture based on sustainable small size family farming model with adequate social standards.

On the national level the interest for AE knowledge and practice were recognised, but the administrative and financial limitations enable more effective progress toward AE.

Bibliography

Graham, B. (2010). *Permaculture garden*. Ljubljana: ARA Publisher.

Green, M. (2012). Place, Sustainability and Literacy in Environmental Education: Frameworks for Teaching and Learning. *RIGEO Review of International Geographical Education Online* ISBN: 2146-0353, p. 326-346.

Dunphy, A., Spellman, G. (2009). Geography fieldwork, fieldwork value and learning styles. *International Research in Geographical and Environmental Education* 18:1, 19-28. DOI:10.1080/10382040802591522.

Praterious, P. (2006). A Permaculture School Garden. *Teaching green*. Nr. 78, pg. 6 – 10.

Piercea, J. (1990). *The food resource*. New York, Longman Scientific & Technicl, 334 pg.

Plut, D. (2012). Prehranska varnost sveta in Slovenije. *Dela* 38, p. 5-23. Ljubljana.

Raman, S. (2006). *Agricultural sustainability – principles, processes and prospects*. New York: Food products Press, 474 pg.

Stutz, F. Warf, B. (2005). *World economy. Resources, location, trade and development*. Upper Saddle River, N.J., Pearson/Prentice Hall, 543 pg.

Sage, C., (2012). *Environment and food*. Routledge, 320 pg.

Whitefield, P. (2012). *Permaculture in a Nutshell*. Permanent Publications. London: Permaculture Association.

Online sources:

Online source 1: Kmetijsko gozdarska zbornica Slovenije. Retrieved from <http://www.kgzs.si/GV/Aktualno/V-srediscu/Novica/ArticleId/2307/Projekt-SAGITER.aspx>

Online source 2: Sagiter Project web site. Retrieved from <http://sagiter.eu>

Online source 3: Wikipedija prosta enciklopaedija: Agroekologija. Retrieved from <https://sl.wikipedia.org/wiki/Agroekologija>

Online source 4: Ministrstvo za kmetijstvo, gozdarstvo in prehrano. Retrieved from http://www.mkgp.gov.si/si/delovna_podrocja/kmetijstvo/

Online source 5: Vlada RS, Akcijski načrt razvoja ekološkega kmetijstva v Sloveniji do leta 2015. Retrieved from http://www.mkgp.gov.si/fileadmin/mkgp.gov.si/pageuploads/podrocja/Kmetijstvo/Ekolosko_kmetijstvo/ANE_K_slo.pdf

Online source 6: Ministrstvo za kmetijstvo, gozdarstvo in prehrano: ekološko kmetijstvo. Retrieved from http://www.mkgp.gov.si/si/delovna_podrocja/kmetijstvo/ekolosko_kmetovanje/

Online source 7: Ministrstvo za kmetijstvo, gozdarstvo in prehrano: Integrirana pridelava. Retrieved from http://www.mkgp.gov.si/si/delovna_podrocja/kmetijstvo/integrirana_pridelava/

Online source 8: Kmetijsko gozdarska zbornica Slovenije: Ekološko kmetovanje. Retrieved from <http://www.kgzs.si/gv/kmetijstvo/ekolosko-kmetovanje.aspx>

Online source 9: Ministrstvo za kmetijstvo, gozdarstvo in prehrano. Retrieved from http://www.mkgp.gov.si/si/delovna_podrocja/program_razvoja_podezelja/

Online source 10: Cunder T. Strukturne spremembe v Slovenskem kmetijstvu. Retrived from <http://revije.ff.uni-lj.si/Dela/article/view/1337/1141>

Online source 11: Ministrstvo za kmetijstvo, gozdarstvo in prehrano: Razvoj programa podeželja. Retrieved from http://www.mkgp.gov.si/si/delovna_podrocja/program_razvoja_podezelja/

Online source 12: Agencija RS za kmetijske trge in razvoj podeželja. Retrieved from http://www.arsktrp.gov.si/si/storitve_ukrepi/ukrepi_razvoja_podezelja/programsko_obdobje_2014_2020/

Online source 13: Ministrstvo za kmetijstvo, gozdarstvo in prehrano. Retrieved from http://www.mkgp.gov.si/si/delovna_podrocja/kmetijstvo/skupna_kmetijska_politika_50_let_zive_zgodovine/

Online source 14: RS Ministrstvo za kmetijstvo in okolje: Strategija za izvajanje resolucije o strateških usmeritvah razvoja slovenskega kmetijstva in živilstva do 2020. Retrieved from http://www.mkgp.gov.si/fileadmin/mkgp.gov.si/pageuploads/podrocja/Kmetijstvo/strategija_razvoj_slo_kmetijstva_2020.pdf

Online source 15: A. Batoč in sod. Z ekovasmi, ekonaselji in permakulturo v bolj trajnostno – harmoničnejše življenje. Retrieved from http://www.mko.gov.si/fileadmin/mko.gov.si/pageuploads/svo/53seja_Batic.pdf

Online source 16: Spletna stran Zavoda Eko vas. Retrieved from <http://www.ekovas.si/index.php>

Online source 17: Društvo za biološko-dinamično kmetovanje Podravje. Retrieved from <http://biodinamika-podravje.si/kaj-je-bd>

Online source 18: Delo in dom: Znanost o biodinamičnem kmetovanju: najbolj trajnostna pridelava. Retrieved from <http://www.deloindom.si/ekoloska-pridelava/znanost-o-biodinamicnem-kmetovanju-najbolj-trajnostna-pridelava>

Online source 19: Ajda: Društvo za biološko-dinamično gospodarjenje. Retrieved from <http://www.ajda-vrzenec.si/index.asp?LANG=slo>

Online source 20: Delo in dom: Biodinamično kmetovanje: v harmoniji z zemeljskimi in kozmičnimi ritmi. Retrieved from <http://www.delo.si/gospodarstvo/okolje/biodinamicno-kmetovanje-v-harmoniji-z-zemeljskimi-in-kozmicnimi-ritmi.html>

Online source 21: Lifestyle Natural: Ekoremediacije in kmetijstvo. Retrieved from <http://www.lifestylenatural.com/453/Ekoremediacije-in-kmetijstvo>

Online source 22: Ministrstvo za kmetijstvo gozdarstvo in prehrano, Direktorat za kmetijstvo: Oblikovanje meril za izbiro pilotnih območij za uporabo ekoremediacij (ERM) za uravnavanje podnebnih sprememb. Retrieved from http://www.mkgp.gov.si/fileadmin/mkgp.gov.si/pageuploads/podrocja/Kmetijstvo/Naravne_nesrece/Oblikovanje_meril_za_izbiro_pilotnih_obmocij_za_uporabo_ekoremediacij_ERM_za_uravnavanje_podnebnih_spremb.pdf

Online source 23: A. Vovk Korže in D. Vrhovšek: Ekoremediacije za učinkovito delovanje okolja. Maribor 2006. Retrieved from <http://www.eu-skladi.si/kohezija-do-2013/ostalo/gradiva2/ekoremediacije-za-ucinkovito-varovanje-okolja.pdf>

Classroom in nature (2013). Retrieved from www.ucilnicavnaravi.si

Permaculture institute (2013). Retrieved from: http://www.permaculture.org/nm/index.php/site/key_concepts/#sthash.Nosg7Nlc.dpuf

Permaculture Free Presse (2013). Retrieved from <http://permaculturefreepress.com/?p=401>

Program razvoja podeželja. Retrieved from <http://www.program-podezelja.si/sl/prp-2014-2020/kaj-je-program-razvoja-podezelja-2014-2020>

Program razvoja podeželja. Retrieved from <http://www.program-podezelja.si/sl/prp-2007-2013/o-programu-razvoja-podezelja-2007-2013>

Factsheet on 2014-2020 Rural Development Programme for Slovenia. Retrieved from http://ec.europa.eu/agriculture/rural-development-2014-2020/country-files/si/factsheet_en.pdf

Rural Development Programme 2014-2020. Retrived from <http://www.program-podezelja.si/en/199-slideshow-news/402-test-en>

Martina Bavec et al. Small and organic farms' contribution towards food security, environment protection, preservation of cultural heritage and social inclusion. Retrived from [http://www.irdo.si/skupni-cd/cdji/cd-irdo-2015/referati/28-martina-bavec-in-drugi-\(dp.pdf](http://www.irdo.si/skupni-cd/cdji/cd-irdo-2015/referati/28-martina-bavec-in-drugi-(dp.pdf)

Ministry of Agriculture, Forestry and Food: First changes to the Rural Development Programme of the Republic of Slovenia for 2014–2020 approved. Retrived from http://www.mkgp.gov.si/en/media_room/news/archive/2016/3/select/sporocilo_za_javnost/article/12447/8686/

Parameters of agriculture sustainable development , Retrived from http://www.lgd-geografi.si/uploads/dokumenti/GV_140311.pdf

Final report about results of the targeted research - 2012 (Parameters of agriculture sustainable development , Retrived from [file:///C:/Users/Uporabnik%204/Downloads/Parametri_URN-NBN-SI-DOC-VKQKEWKE%20\(2\).pdf](file:///C:/Users/Uporabnik%204/Downloads/Parametri_URN-NBN-SI-DOC-VKQKEWKE%20(2).pdf)

Study on Investment in Agricultural Research: Review for Slovenia. Retrived from http://www.impresa-project.eu/fileadmin/user_upload/IMPRESA/Filesharing/IMPRESA_country_report_Slovenia.pdf
[http://www.irdo.si/skupni-cd/cdji/cd-irdo-2015/referati/28-martina-bavec-in-drugi-\(dp.pdf](http://www.irdo.si/skupni-cd/cdji/cd-irdo-2015/referati/28-martina-bavec-in-drugi-(dp.pdf)

SURS (2012). The 2010 Agricultural Census - Every Farm Counts! Statistical Office of the Republic of Slovenia. <http://www.stat.si/doc/pub/15-RP141-1202.pdf>

References

Graham, B. (2010). *Permaculture garden*. Ljubljana: ARA Publisher.

Green, M. (2012). Place, Sustainability and Literacy in Environmental Education: Frameworks for Teaching and Learning. *RIGEO Review of International Geographical Education Online* ISBN: 2146-0353, p. 326-346.

Dunphy, A., Spellman, G. (2009). Geography fieldwork, fieldwork value and learning styles. *International Research in Geographical and Environmental Education* 18:1, 19-28. DOI:10.1080/10382040802591522.

Jakešova, L., Vaishar, A. (2012). Sustainable inner peripheries? A case study of the Olešnice micro-region (Czech Republic). *Moravian Geographical Reports*, Vol. 20, No. 4, p. 13-25.

Praterious, P. (2006). A Permaculture School Garden. *Teaching green*. Nr. 78, pg. 6 – 10.

Piercea, J. (1990). *The food resource*. New York, Longman Scientific & Technicl, 334 pg.

Plut, D. (2012). Prehranska varnost sveta in Slovenije. *Dela* 38, p. 5-23. Ljubljana.

Raman, S. (2006). *Agricultural sustainability – principles, processes and prospects*. New York: Food products Press, 474 pg.

Stutz, F. Warf, B. (2005). *World economy. Resources, location, trade and development*. Upper Saddle River, N.J., Pearson/Prentice Hall, 543 pg.

Tal, T., Morag, O. (2009). *Reflective Practice as a Means for Preparing to Teach Outdoors in an Ecological Garden, Teacher Education*. London: Springer Science, 2009, pp. 242 – 265.

Sage, C., (2012). *Environment and food*. Routledge, 320 pg.

Whitefield, P. (2012). *Permaculture in a Nutshell*. Permanent Publications. London: Permaculture Association.

Permaculture institute (2013). Retrieved from:
(http://www.permaculture.org/nm/index.php/site/key_concepts/#sthash.Nosg7Nlc.dpuf)

Permaculture Free Presse (2013). Retrieved from: <http://permaculturefreepress.com/?p=401>.
Classroom in nature (2013). Retrieved from: www.ucilnicavnaravi.si