sciendo

Eastern European Countryside

DOI: https://doi.org/10.12775/EEC.2024.006

30' 2024

*Wojciech Knieć**

# Regenerative agriculture. An innovative approach towards mitigation of climate change through multi-tier learning

Report on the academic conference

The development of regenerative agriculture has been attracting particular attention from the scientific community for almost a decade, both from researchers in the agricultural sciences and the natural and social sciences, as well as from agro-technologists, ecologists, and agricultural consultants. Nothing is surprising about this. This is essentially a grassroots type of agricultural production which, on the one hand, is based on state-of-the-art agro-technical solutions (e.g. precision farming or modern forms of cultivation, sowing, etc.) while, on the other hand, making use of former cultivation and animal husbandry techniques stemming from the rural production system. This is further compounded by the latest ecological research revealing the interactions between plants and animals to avoid or drastically reduce the share of chemicals in agricultural production. Farmers engaged in this type of production group together in networks of cooperation and knowledge exchange, creating a social movement that is very interesting for social researchers.

* Institute of Sociology, Nicolaus Copernicus University, ORCID 0000-0002-5500-3749, kniec@umk.pl

The need to re-direct agriculture towards innovative approaches that would help to mitigate climate change is urgent and pressing. Regenerative agriculture (RA) proposes new farming techniques that supersede the current concept of conventional agriculture and proposes sustainable soil management with significant environmental and economic benefits, especially suitable for arable crops, thus offering farmers the means to conserve and make more efficient use of natural resources. What is regenerative agriculture anyway? In simplest terms, it is a type of agrotechnical practice aimed not only at minimising or ultimately excluding the destruction of the natural environment by agricultural activity (as is the case, for instance, in organic farming) but through the appropriate choice of tools and techniques, such farming restores the ecologically desirable condition. Examples of such methods include but are not limited to no-till technology, minimising the use of machinery to avoid soil compaction and reduce soil permeability, increasing plant diversity (avoiding monocultures), cover cropping, crop rotation, composting, silvopasture, reintroduction of livestock to agricultural crops, instead of keeping them separate etc. This farming regenerates the natural environment, improving the soil to a condition typical of natural soil. It excludes conditions favourable for soil erosion, restores plant and animal habitats, having a positive impact on biodiversity, and excludes environmental pressures on the surroundings of agricultural land, such as baulks and green belts, ponds, lakes, rivers, mid-field woodlots and forests. It, therefore, positively impacts the environment not only in terms of its protection but also in terms of its regeneration. Being a regenerative farmer is a kind of worldview statement, a form of active pro-environmental stance stemming from broader ethical and philosophical premises. This, per se, constitutes a fascinating theme for social research.

This farming practice is particularly well suited to small and medium-sized family farms. Indeed, it is an economic activity characterised by significant time consumption, involving extraordinary labour resources, in addition to often being based on arduous practices that exclude the use of machinery. From this perspective, it represents an enjoyable alternative to agriculture in Central and Eastern Europe, in those countries where a fragmented agrarian structure based on small family farms prevails. These include countries such as Poland, Hungary, Slovenia, Croatia, Serbia and Kosovo.

On 3–4 October 2024, the academic conference 'Regenerative Agriculture' was held at Szechenyi Istvan University in Gyor, Hungary. The conference was

devoted to a comprehensive approach to developing this innovative form of agriculture. The conference summarised an exceptionally interesting educational project implemented between 2020 and 2024 by the REGINA scientific and educational consortium comprising the following institutions: Széchenyi István University in Gyor, Hungary as the leader and partners: Euracademy Association from Athens, Slovenian Association for Conservation Agriculture, Forestry and Wood Technology School, Postojna, Slovenia, South and East Cork Area Development CLG, Ireland, University of Florence, Italy and two agricultural schools from Hungary. The project was founded on the premise that students in the fields of agronomy, agroforestry and rural development should be suitably equipped to look at such innovative approaches, which often stem from traditional methods, suitably revisited and redefined, so that they can lead, as professionals, the effort towards mitigating climate change. At the same time, farmers should also be helped, through non-formal and informal learning, to understand how they can change their farming methods to make them more environmentally sensitive, using natural resources wisely without losing income. The overall aim of this project was to create learning material in the form of courses that can be taught face-to-face and online to agronomy students (and related fields of study) at the university level, to vocational secondary education students of agriculture (and related fields) and farmers and farmers' advisors.

The conference was a forum for the exchange of knowledge from specialists in various fields on the conditions (social and political) and financial incentives for the development of regenerative agriculture, the presentation of good practices and case studies from specific farms from all over Europe, and finally the discussion of the socio-cultural background to the development of this type of agricultural innovation. Due to evident reasons, particular attention was devoted to the potential for developing regenerative agriculture in Central and Eastern European countries.

The first papers and discussion addressed the broader conditions for developing regenerative agriculture. Wojciech Knieć from the Institute of Sociology at NCU in Toruń illustrated the impact of cultural and social changes on the phenomenon concerned. Firstly, he highlighted changes in the lifestyles of Western societies, including an increased awareness of the impact of consumers on the environment through dietary practices and an increased level of understanding of the concept of saving small farms as public goods pro-

viders. Secondly, he showed the transformations in farmers' self-definition through the example of selected Central European countries. These changes generally reveal new types of farmer identities, including those where a sense of environmental or broader social mission emerges. This was followed by a paper by Abdul M. Mouazen of the Department of Environment, Ghent University (Belgium) on the 'Multi-Sensor Data-Fusion approach for Precision Management of Farming Input Resources'. He linked the principles of precision agriculture to regenerative agriculture. Namely, he showcased the possibilities of using state-of-the-art tillage techniques to achieve an environmental regeneration effect. He presented empirical data, e.g. from Hungarian farms, where not only the effect of protection but also the effect of restoration of soil quality can be observed with the use of machinery using precision sensors and precise GPS systems. Professor Mouazen, in conclusion, formulated the thesis that shortly it will be possible to successfully combine traditional, post-peasant, environmentally friendly agro-technologies with super-modern tools. This was followed by Rok Mihelic from the University of Ljubljana, Biotechnical Faculty (Slovenia), with the topic of soil regeneration following conservation agriculture principles. In a concise form, he presented empirical evidence of soil revival following conservative agriculture techniques. It is essential to distinguish this type of agriculture from regenerative agriculture. Conservation agriculture emphasises the preservation (protection) and maintenance. Regenerative agriculture emphasises restoration (reparation) and rebuilding of soil. Mihelic, presenting data from a study in Slovenia, showed that the two types of agriculture are virtually indistinguishable in certain situations – the practices of conservative agriculture de facto lead to the effects desired by somewhat more restrictive regenerative agriculture. Andrea Uszkai, from the HUN-REN CERS Institute for Regional Studies (Hungary), presented the fourth paper in this part of the conference. It was entitled 'Knowledge Transfer Organisations and Networks for Promoting Sustainable Agriculture in Hungary'. Her fascinating and informative speech presented several examples from Hungary on the emergence and functioning of cooperation networks between regenerative farmers and networks promoting this type of agricultural activity. At least several networks linking farmers and consumers of regenerative agriculture products into short food chains are now in operation in Hungary, as well as networks for the ongoing exchange of information and experience between farmers, with the participation of

experts. The author presented the results of a content analysis of online forums, the cornerstone of these networks. In turn, Michele Pisante from the Department of Biosciences and Agro-Food and Environmental Technology, University of Teramo (Italy) presented the state of development of regenerative agriculture in Italy. She demonstrated a relatively long tradition of agrotechnological initiatives in Italy, which aimed to continue to mitigate climate change on agricultural production.

The second part of the conference debated the importance of education in the development of regenerative agriculture. It should be emphasised that the issue of promoting knowledge and socialising students at agricultural schools on environmental issues is currently one of the crucial elements in building a 'sustainable' model of the European farmer. Regenerative agriculture requires, on the one hand, the abandonment of an industrial and strictly capitalist approach to production, but, on the other hand, the prospect of a decent income for the farmer is paramount. Understanding this complex relationship involves acquiring a certain degree of knowledge and developing an appropriate worldview. Demetris Mylonas of the Euracademy Association of Greece presented the results of a pan-European survey of young people studying in agricultural schools on their knowledge of various forms of environmental protection in agriculture and sustainable farming. Furthermore, it should be emphasised that students and young farmers from Central and Eastern European countries (students from Hungary and Slovenia were surveyed) are less inclined to use a regenerative agricultural model than their counterparts from Ireland, Italy or Greece. This is driven by the fear of abandoning traditional (industrial) working models associated with insufficient knowledge. This has not been received from the agricultural advisory centres or the agribusiness side, nor has it been debated in the forums of farmers' organisations. Demetris Mylonas remarked that the lack of an institutional support framework from national policies or within the Common Agricultural Policy did not aid the mainstreaming of this type of agriculture. In the opinion of the young farmers surveyed, particularly those from Central and Eastern Europe, this agricultural culture is economically demanding yet socially desirable. It is, therefore, evident to them that its wider use is a form of 'deal' between the farmer and the environment and society, which the state should pay for.

The following few presentations were devoted to the structure, functionality and feedback from users of the e-learning platform developed for the re-

generative agriculture course. Admittedly, the solutions exhibited are innovative, pragmatic and ergonomic in handling.

Practitioners were granted a speaking slot in the third part of the conference. Mate Hajzser, an agronomist from the agricultural company Rábapordányi Mezőgazdasági in Hungary, was the first to speak. This is an incredibly interesting and rare case of a farm, or rather an agricultural enterprise, where regenerative farming methods have been employed on a large scale. The rules of soil regeneration and the protection of biodiversity and the environment attributed to the principles of regenerative agriculture have been gradually introduced on more than 3,000 hectares over the past decade. The effects of soil restoration and growing biodiversity have been empirically confirmed. Interestingly, the main driving force for applying these according-to-management techniques to this mega-farm was not environmental issues but a concern to avoid climate taxes, which was ultimately successfully achieved. However, the high labour intensity of this methodology was highlighted but offset by state-of-the-art agricultural tools. Ioanna Michail from Aristotle University of Thessaloniki (Greece) presented regenerative farming practices on an example of Greek olive orchards. She displayed the challenges and dilemmas facing regenerative farms in a fascinating three case studies. This is the time- and labour intensity mentioned above, but also the difficulty of integrating different directions of nature conservation (e.g. grazing horses between olive trees instead of using machinery to remove grasses and weeds). On the other hand, as she aptly pointed out, these hardships and costs are or can be successfully offset by the increased added value of products from regenerative production. An interesting issue involved the brakes applied to methods of this type of agriculture, with lack of water at the forefront. Similar tone cases were shown in a presentation by Katie Kearns of the SECAD Partnership from Ireland.

The conference concluded with an engaging panel discussion, during which the future of regenerative agriculture was considered. Participants unanimously acknowledged the abundant and substantial empirical evidence of the positive environmental impact of regenerative agriculture presented at this academic event, which is much more profound than the impact of organic farming.

It was acknowledged that if the guiding principle of development in the European Union is, and is to be, sustainable development, a framework for

financial support for regenerative packages must be developed within the Common Agricultural Policy. In particular, introducing such subsidies into the package of agro-environmental measures of the CAP should be explored. As an aside, a reflection occurs to me as to the nature of the subsidies that can or must be incorporated into the Common Agricultural Policy offer. Considering the relatively widespread effects of regenerative techniques over time, they must, as far as I am concerned, adopt the form found in afforestation programmes for agricultural land. Therefore, supporting a farmer who switches to a regenerative agriculture package should include time to convert the farm (presume a minimum period of 5 years) and achieve regenerative effects (assuming the next 20 years). The long-term implementation of this practice guarantees a regenerative, lasting impact. Also, it ensures that the next generation of farmers succeeding in the farm will be obliged and, at the same time, motivated to continue these practices. Without economic stimulation, no pro-environmental agriculture can escape its current economic niche. Furthermore, at least several studies presented evidence of this at this conference.

The numerous challenges that emerge with the application of regenerative agriculture are highlighted – its time- and labour-intensive nature predisposes it instead to application on small family farms. These are farming practices of a rather peculiar nature, as they have been described as 'extreme in their ecological expression' and, therefore, relatively difficult to adopt by farmers accustomed for several generations to treating the environment instrumentally and looking suspiciously at all sorts of 'eco-trends'. The contestation of the idea of a 'Green Deal', demonstrated so loudly and collectively during this year's agricultural protests in Europe, especially in the central part (Poland, Romania, Hungary, Czech Republic), is a worrying sign of the rejection of the idea of sustainability by a large part of the social stratum of farmers. However, I believe, and the discussants recognised, that the introduction of appropriate labelling schemes for regenerative agriculture products would provide an exceptionally high added value to the products originating from such agriculture. As evidenced by numerous studies, consumers are becoming increasingly aware of their food choices, reading labels and certificates more carefully. Appropriate labelling linked to the accession of this type of farm-to-farm direct sales system ('from farm to fork') could be an essential factor in motivating farmers to switch to the methods described.

Currently, this type of agriculture is practised almost without exception by farmers whose primary motivations are ideological, ethical or even treated as a mission. These are people who strongly believe in the need to stop climate change and environmental degradation. For obvious reasons, they are a faint minority of agricultural producers. In this context, exhibiting other values that support regenerative agriculture appears equally essential. I also refer to those prevalent in industrial agriculture – profit, which in this case can be much higher, assuring farmers a higher income for their families. This can only be achieved if the aforementioned multiple conditions are adhered to: the introduction of a genuine, pan-European, recognisable labelling system for the products of regenerative agriculture, the widespread use of tools to offset its high time and labour intensity (including precision farming tools and AI in agriculture), the integration of farms engaged in this type of production into alternative farm-to-fork networks and, finally, the introduction of a financial incentive in the form of subsidies.

A vast volume of empirical evidence shows that climate change, caused by man's predatory economy, is an undeniable fact. Evidence from various scientific disciplines has been gathered to illustrate that these changes are having a profound and overwhelmingly negative impact on agriculture, regardless of latitude. The most serious are soil degradation, water disruption (lack of water) and production risks associated with unexpected and violent weather phenomena and their consequences (frosts, heavy rainfall and flooding, droughts, storms and windstorms). At least these first two factors can, in a relatively rapid and profound way, not only be halted but also reversed by employing the principles of regenerative agriculture. With this in mind, it is therefore necessary to promote awareness of it, exercise appropriate political lobbying for its benefit and gain public support. I believe the conference in Gyor provides a good foundation for this.