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THE USE OF PURIFIED WASTE WATER FOR AGRICULTURAL IRRIGATION

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Agricultural production is highly dependent on water and is also the largest consumer. In developing countries, on the other hand, rapid urbanisation has led to increased volumes of wastewater being used as a low-cost alternative to conventional irrigation, turning a 'waste' into a new resource to support local agriculture. The re-use of water could thus potentially reduce the need for supplementary applications of inorganic fertiliser. End-users should be informed of the nutrient content of purified water.In the field of purified wastewater, it is not only necessary to make the use of this new resource possible, but also to increase social acceptability by overcoming technical, economic, political and social barriers in order to make greater use possible. Government and research activities should demonstrate the benefits of using purified wastewater and the limitations of doing so, although again such efforts would need to be funded. European geography and climate lead to a disparity in the distribution of water in the EU, in fact we observe a European Union in two gears, a Central Europe rich in water resources and therefore without commercial economic interests in recycling residual water, while a Southern Europe at risk of desertification and interested in a clear, rational and pragmatic regulation of water resources to minimize waste. More than 60% of the water used in Southern Europe is for irrigation, with extraction peaks of up to 80% in some watersheds. The opportunity to use purified urban and industrial wastewater for agricultural irrigation is therefore the most effective strategy to combat drought, a consequence of climate change. Currently, the practice of water reuse is established in only a few Member States and is implemented far below its potential. To facilitate and stimulate the reuse of water for agricultural irrigation, the EU has issued the Regulation on Minimum Requirements for Reuse, setting minimum requirements for purified water quality and monitoring, assigning crucial risk management tasks, and introducing a harmonized approach for the reuse of irrigation water across the EU. The new rules will increase legal certainty in this field, where currently the rules vary widely from one Member State to another.

Keywords: waste water; water resource; reuse; agriculture; irrigation; EU; requirement for reuse.

I. Waste water as a resource for agriculture

The use of wastewater for irrigating fields is a centuries-old practice with a tradition that begins in Greek and Roman history.

Towards the end of the Middle Ages, private individuals in Europe began to have collection tanks built for domestic sewage, which, when full, were emptied and the sewage removed was poured over abandoned land or used to fertilise fields. In modern times, examples include the German 'sewage farms' of almost 500 years ago, the Milanese 'marcite' and the agricultural areas of Mexico and Chile. Since the

1990s, the most advanced countries have been regulating the use of wastewater in order to stem the spread of wastewater-related diseases. The countries most experienced in the reuse of purified wastewater are the United States, in particular California and Texas, and the State of Israel. In the United States, regardless of the end use of the treated wastewater, The National Pollutant Discharge Elimination System (NPDES), a component of the CLEAN WATER ACT (CWA), requires a domestic wastewater treatment plant to be licensed by the United States Environmental Protection Agency (EPA); in general, each State is required to establish and submit its own treated wastewater quality standards to the EPA, which will monitor and approve them based on the minimum requirements.

In developing countries, on the other hand, rapid urbanisation has led to increased volumes of wastewater being used as a low-cost alternative to conventional irrigation, turning a 'waste' into a new resource to support local agriculture. However, the main problem in developing countries is the lack of regulation in the use of wastewater; wastewater treatment and disposal is inadequate or non-existent and can pose a greater threat to public health, food safety and the environment.

As environmental awareness grows and in response to the pressing need to increase the amount of water that can be used in agriculture, industry and for drinking purposes, the use of purified wastewater, resulting from the treatment of civil wastewater and then disposed of in the receiving water bodies, has become an issue of great attention even in countries with larger quantities of primary water available. This water represents an alternative source, and its reuse would allow a significant recovery of treatment and disposal costs, since the purified wastewater would be reused and not discharged into the sea.

II. The European regulation on the use of wastewater for agricultural irrigation

In Europe, there is a worrying imbalance between the increasing demand for fresh water and its availability. In particular, climate change, which also brings periods of drought in many countries, increasing urbanisation, and pressures on EU water resources are leading to water scarcity and quality deterioration and have emerged as one of the most urgent 21st century problems to be solved.

Agriculture is the sector that uses the largest volume of water in most countries, currently accounting for 70% of global water abstraction, while a significant expansion of irrigated fields is expected in the coming decades.

The search for sustainable solutions to this situation is now focusing on a possible alternative source of supply: the reuse of wastewater from domestic, agricultural and industrial use, which is discharged into the environment every day and which, if treated, can become a valuable resource to meet the needs of the agricultural sector. The re-use of purified wastewater contributes to the qualitative and quantitative protection of the water resource, to the achievement of the EU's circular economy objectives and to contributing to the achievement of the UN 2030 Agenda's sustainable development goals. Purified water is a largely under-exploited resource that can be used many times over; its re-use promotes the competitiveness of the EU water sector in line with Directive 2000/60/EC of the European Parliament and of the Council which mentions the re-use of water, together with the promotion of the use of water-efficient technologies and water-saving irrigation techniques in industry. Council Directive 91/271/EEC, on the other hand, stipulates that waste water, which has undergone treatment, must be re-used whenever appropriate. In order to facilitate throughout the EU the reuse of purified wastewater for agricultural irrigation purposes, the European Commission proposed a European regulation in May 2018 with a large majority of 588 votes in favour, 23 against and 66 abstentions, the European Parliament adopted this draft regulation in plenary session.

The text of the regulation sets minimum requirements for the re-use of wastewater from urban wastewater treatment plants, with reference to both microbiological elements and other representative parameters (BOD and SST), to ensure that purified water produced in accordance with the new standards is safe for irrigation. The regulatory approach is called 'fit for purpose' because it provides for several tables that can be applied depending on the type of crop to be irrigated or the use of purified water. The Commission and the Parliament have considered that recycled water could be considered for all purposes as fertiliser. There is, therefore, no economic advantage in "purifying" wastewater by removing certain substances deemed to be "contaminated" when these substances are nutrients with agronomic value. In the regulation there are also monitoring requirements focusing on frequency of controls and validation monitoring. A Competent Authority will have to be appointed to verify compliance of the controlled water and assess any environmental and health risks. To ensure greater transparency, it is expected that the results of controls will have to be published once a year on dedicated websites in the respective Member States.

Agricultural irrigation refers to the irrigation of the following types of crops:

- Food crops for raw consumption, i.e. crops whose products are intended for human consumption in a raw or unprocessed state;

- Processed food crops, i.e. crops whose products are not intended for human consumption in the raw state but after a transformation process (cooking or industrial processing);
- Non-food crops, i.e. crops whose products are not intended for human consumption (e.g. pasture, fodder, fibre, ornamental, seed, energy and turf crops).

The regulation also aims at overcoming two of the main barriers that have so far hindered the dissemination of the practice of re-use: the limited awareness of the potential benefits among stakeholders and the general population, the lack of a coherent and supportive framework for water re-use.

III Difficulties in using wastewater in agriculture

The problem with large-scale wastewater use is public opposition, which can block public and private projects. According to several researchers, barriers to large-scale use of purified wastewater for irrigation purposes and new investments include lack of social acceptance due to unfamiliarity between the farmer and the resource, lack of sensitivity to the problem of water scarcity, and poor perception of risks and benefits. Therefore, a careful advertising and information campaign aimed at supporting the use of purified wastewater would be useful.

Other barriers are technical, economic and political.

Technical barriers can be divided into three categories: limited availability of the resource, logistical problems for distribution and lack of training in maintenance.

Economic barriers are lack of finance, financial obstacles, market failures, poverty, high initial costs and lack of capital among farmers.

Political barriers refer to the lack of institutional capacity in the management of sanitation, the monitoring and control system, and more generally the lack of political capacity.

However, this practice raises health concerns in those cases where the water contains pathogens that can contaminate crops.

CONCLUSIONS

Water re-use is a promising alternative for Europe, but although this technique has a lower environmental impact than other alternative water irrigation methods, such as water transfers or desalination, it is only used by a few Member States that have adopted national legislation or standards. The new regulation of the European Parliament and the Council has the legal aim of encouraging a greater spread of this practice, where appropriate and cost-effective, by introducing a minimum level of harmonisation between European states through the definition of minimum quality requirements for purified water intended for agricultural irrigation. However, the new European regulation is not immediately applicable in all Member States as enforcement procedures and a three-year transitional period are required. Considering that geographic and climatic conditions vary widely across Europe, a Member State may decide that it is not appropriate to use reclaimed water for agricultural irrigation in part or all of its territory; any decision not to reuse water should be duly justified on the basis of the criteria set out in this Regulation and reviewed periodically. A country could also consider not using this resource for agricultural irrigation due to the high cost of the wastewater reuse system or due to the lack of common environmental and health standards in the EU for water reuse, the fear of potential health risks and potential obstacles to the free circulation of agricultural products irrigated with purified water. Promoting the re-use of water for agricultural irrigation would require awareness-raising campaigns in the Member States, as well as the promotion of the circular economy by recovering nutrients from treated water and applying them to crops through fertigation techniques. The re-use of water could thus potentially reduce the need for supplementary applications of inorganic fertiliser. End-users should be informed of the nutrient content of purified water.

In the field of purified wastewater, it is not only necessary to make the use of this new resource possible, but also to increase social acceptability by overcoming technical, economic, political and social barriers in order to make greater use possible.

Government and research activities should demonstrate the benefits of using purified wastewater and the limitations of doing so, although again such efforts would need to be funded.

Agricultural production is highly dependent on water and is also the largest consumer. European geography and climate lead to a disparity in the distribution of water in the EU, in fact we observe a European Union in two gears, a Central Europe rich in water resources and therefore without commercial economic interests in recycling residual water, while a Southern Europe at risk of desertification and interested in a clear, rational and pragmatic regulation of water resources to minimize waste. More than 60% of the water used in Southern Europe is for irrigation, with extraction peaks of up to 80% in some watersheds. The opportunity to use purified urban and industrial wastewater for agricultural irrigation is therefore the most effective strategy to combat drought, a consequence of climate change. Currently, the practice of water reuse is established in only a few Member States and is implemented far below its potential. To facilitate and stimulate the reuse of water for agricultural irrigation, the EU has issued the Regulation on Minimum Requirements for Reuse, setting minimum requirements for purified water quality and monitoring, assigning crucial risk management tasks, and introducing a harmonized approach for the reuse of

irrigation water across the EU. The new rules will increase legal certainty in this field, where currently the rules vary widely from one Member State to another.

Література:

1. Review of the legislation on the re-use of purified water, ARPA BASILICATA (December 2006).
2. U.S. Enutl. Prot. Agency, EPA/625/R-04/108, Guidelines for water reuse 178 (rev. 2004).
3. Wastewater Use in Irrigated Agriculture, C.A SCOTT, N.I. FARAQUI and L. RASCHID SALLY (CAB International 2004).
4. Interpreting Farmers Perceptions of Risks and Benefits Concerning Wastewater reuse for irrigation : A cause study in Emilia Romagna, Melania Michetti, Meri Raggi, Elisa Guerra and Davide Viaggi.
5. The reuse of water in agriculture in Apulia. IRSA-CNR-Istituto di Ricerca sulle Acque.
6. Wastewater reuse: strategy and regulations. ISPRA, Francesco Mundo.
7. Lisbon Strategy.
8. Directive 2000/60/EC of the EP and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327 of 22/12/2000).
9. Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment (OJ L 135 of 30/05/1991).
10. Proposal for an EP and Council Regulation establishing minimum requirements for the re-use of water (COM (2018) 337 Final of 28/05/2018).
11. Zhen-Yu Zhao, 2016, Benjamin K., 2011, Bell M. 2014, Basnyat S. 2007.