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UNLEASHING THE POTENTIAL OF PRECISION AGRICULTURE

ABSTRACT BOOK



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UNLEASHING THE POTENTIAL OF PRECISION AGRICULTURE

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Book of Abstracts (Posters)

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Abstract

The 14th European Conference on Precision Agriculture will showcase the ongoing research and applications in precision agriculture. Organized by the Department of Agricultural and Food Sciences of the University of Bologna, under the auspices of the International Society of Precision Agriculture (ISPA), the ECPA sessions will present Precision Agriculture from the perspective of scientists, crop consultants, advisors, extension personnel, agronomists, producers, and other practitioners.

This volume collects the 2-page extended abstracts of the Posters and Side-event contributions presented at the conference, which took place in Bologna, Italy, from July 2-6, 2023.

The oral presentations are published in full in an edited book published by Wageningen Academic Publishers.

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ECPA Posters

P13 - The aerial application of pesticides by drones: challenges and regulatory issues

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Introduction

Unmanned aircraft systems (UAS), commonly known as drones, have great potential in precision agriculture. The literature has acknowledged the benefits of their use, ranging from remote sensing applications to the delivery of material (pesticides, biological control agents, etc.) [1-3]. However, at the same time, it has also underlined a series of risks (in terms of safety, security, human health and environmental protection, crop residues, data protection, etc.) stemming from the use of the drone itself or the activity carried out (e.g. crop spraying), different from those associated with established methods of application [4]. These risks may increase depending on the drone's size, the operation's complexity, and location.

Therefore, policymakers must balance the will to promote their positive potential while preventing the risks of their use. This is a challenging task, as shown by the aerial application of pesticides which is, among the possible agronomic applications of drones, the one currently attracting the most attention from a legal point of view.

Objectives

Our study aimed to analyse the regulatory issues concerning the aerial application of pesticides by drones, considering the EU legal framework on pesticides (specifically on plant protection products, PPPs), some relevant national regulatory experiences, and private standards for unmanned aerial spraying systems.

Results

In the EU, there are notable legal challenges related to drone pesticide spraying. According to Art. 9, par. 1 of Directive 2009/128/EC on sustainable use of pesticides, also known as SUD, applying pesticides by aircraft (including drones) is generally prohibited. Although the SUD clarifies that "aircraft" means planes and helicopters, it must be interpreted as encompassing drones since they are equated to other air vehicles [5].

However, according to Art. 9 par. 2 of the SUD, Member States may grant derogations for applying pesticides by aircraft: exemptions are possible if clear benefits for human health or the environment can be demonstrated and when other viable alternatives are not available. Against this background, drone interest has prompted some Member States to launch specific initiatives.

Spanish Minister of Agriculture has adopted specific requirements for aerial spraying of pesticides by drones, in the case it is possible to grant a derogation according to art. 9 of the SUD.

In France, in 2018, drones were allowed to be used for a 3-year experimental period to spray pesticides to assess risks and benefits. Indeed, thanks to the approval of deregulation established by article 82 of Law n. 2018-938 to the Code Rural et de la pêche maritime (article L. 253-8), drones were allowed to spray PPPs which can be used in organic farming or in the context of a certified high environmental value farm. These operations could be carried out only in agricultural areas with a slope greater than or equal to 30%. This time frame served to collect data and decide whether to confirm unmanned aircraft use and extend it to other crops and contexts. Since October 2021, the end date of the trial period, aerial spraying of PPPs with drones has been prohibited again in France.

In 2022, the French Agency for Food, Environmental and Occupational Health & Safety (ANSES) published a note describing the experimentation results. According to the preliminary results (which must be interpreted with caution given the limited dataset), the ANSES concluded that, even though the performance of drones for spraying purposes seems to be lower than conventional sprayers, the use of UASs appears to reduce the operator exposure to the PPPs, especially during the application phase, and to lower the level of aerial drift. It is interesting to notice that, in light of the ANSES note and the results of the experimentation, in January 2023, a bill to the

Assemblée Nationale was presented to allow the aerial spraying of PPPs authorised in organic farming in areas that are difficult to access, by UASs equipped with anti-drift nozzles.

The experimental use of aerial crop spraying is also under consideration in Italy. The draft of the new National Action Plan (NAP) for the sustainable use of PPPs, which is being developed, explicitly refers to the experimentation of using drones for application purposes in the context of sustainable use of pesticides. Specifically, point A.4 of the NAP draft states that, even though aerial spraying is forbidden, a derogation may be granted when aerial spraying has evident benefits regarding the reduced impact on human health and the environment.

Moreover, on 8 January 2021, a bill to the Chamber was presented for introducing a 3-year authorisation for spraying PPPs with drones if the applicants demonstrate that these techniques have clear advantages in reducing the impact on human health and the environment.

At the international level, drone interest has resulted in the drafting of a specific ISO standard for aerial spraying, which is under development. The standard ISO 23117 consists of two parts, under the general title Agricultural and forestry machinery — Unmanned Aerial Spraying Systems: Part 1: Environmental requirements; Part 2: Test methods to assess the horizontal transverse spray deposition. When finally published, the ISO standard will be a pivotal reference also for EU operators.

Discussion and conclusions

The potential benefits and risks of using UASs for pesticide spraying in the EU results in significant legal challenges.

Nowadays, the aerial application of pesticides is generally prohibited by EU Member States, according to Art. 9.1 of the SUD. The initiatives launched by Member States, along with the bills presented, highlight the importance of adequately regulating the specific use of drones in precision agriculture for aerial spraying purposes, avoiding general prohibitions that can be detrimental to innovation and the achievement of some ambitious sustainability goals.

In this context, it must be underlined that legislative reforms are on the horizon. In 2020, the EU Commission launched a revision of the SUD for achieving the Farm to Fork Strategy (F2F) targets on pesticides, specifically the reduction by 50% of the use and risks of chemical pesticides and more hazardous chemicals pesticides by 2030. On 22 June 2022, the Commission presented a proposal for a new Regulation replacing the SUD, which will have binding legal force and be uniformly applicable to all EU Member States. The new Regulation aims at establishing rules to reduce the EU's environmental footprint in line with the F2F Strategy, for example, by defining legally binding targets. The proposal also sets criteria for exempting certain UASs from the prohibition of aerial application, considering that UASs are likely to help reduce the use of PPPs due to targeted application, lowering the risks to human health and the environment.

However, the Commission considers it appropriate to “defer the application of this exemption for three years given the current state of scientific uncertainty”, therefore postponing the possibility for EU operators to use drones for spraying purposes unless Member States decide to permit aerial applications by way of derogation.

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