Name and surname:	Jacek Twardowski
Academic Degree:	dr hab. inż. (DSc.)
Institute/Department:	Department of Plant Protection
e-mail address:	jacek.twardowski@upwr.edu.pl
ORCID:	0000-0003-2412-8992
UPWr Base of Knowledge - link:	https://bazawiedzy.upwr.edu.pl/info/author/UPWr60cd5845bd2b495cbdc571c54121deee/Profil%2Bosoby%2B%25E2%2580%2593%2BJacek%2BTwardowski%2B%25E2%2580%2593%2BUniwersytet%2BPrzyrodniczy%2Bwe%2BWroc%25C5%2582awiu?r=author&tab=&lang=pl
Researchgate:	https://www.researchgate.net/profile/Jacek-Twardowski
Personal website / Working group website:	
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	1. Project “NATO Science for Peace and Security Program Multiyear Project G4687 “Phytotechnology For Cleaning Military Sites” (Project was granted as Multiyear Research Project by NATO Science for Peace and Security Program (SPS). Beginning of the project: April 28, 2016, End of the project: April 27, 2018 – Wroclaw University of Environmental and Life Sciences was Liasoning Institution, wykonawca. 2. The impact of a mixture of flowering plants on the fauna of agricultural fields in the Kietrz agricultural farm and the Żórawina farm, Agreement with BASF for the performance of scientific and research works, 2018 - 01-B090/0027/18, kierownik. 3. Innovation voucher. Developing an innovative Hermetia illucens breeding technology . Agreement of August 1, 2019 No. WOI.NI.4211.UKP.23/TŻŻ/2019 entitled Preliminary development of breeding and drying conditions and testing the nutritional properties of Hermetia illucens fly larvae as an additive to poultry feed, wykonawca. 4. Effect of Phonon Entropy Reducer™ (FRE™) on fruit fly survival. Research financed by Metanel sp. z o.o. 2022, wykonawca.
Do you plan to engage support of second supervisor or auxiliary supervisor?	YES
Name and surname:	Auxiliary supervisor
Academic Degree:	dr (Dr.)
Faculty, Institute/Department:	Department of Plant Protection
e-mail address:	iwona.gruss@upwr.edu.pl
ORCID:	0000-0002-3562-5962
UPWr Base of Knowledge - link or most important publications from last 3 year (JCR) / patents from last 3 years (maximum 5):	https://bazawiedzy.upwr.edu.pl/info.seam?id=UPWr52de048f59f449d48f18e0f1e6eb8ce9&lang=en
Researchgate:	https://www.researchgate.net/profile/Iwona-Gruss-2
Personal website / Working group website:	
Projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	1. Project “NATO Science for Peace and Security Program Multiyear Project G4687 “Phytotechnology For Cleaning Military Sites” (Project was granted as Multiyear Research Project by NATO Science for Peace and Security Program (SPS). Beginning of the project: April 28, 2016, End of the project: April 27, 2018 – Wroclaw University of Environmental and Life Sciences was Liasoning Institution, wykonawca. 2. Innovation voucher. Developing an innovative Hermetia illucens breeding technology . Agreement of August 1, 2019 No. WOI.NI.4211.UKP.23/TŻŻ/2019 entitled Preliminary development of breeding and drying conditions and testing the nutritional properties of Hermetia illucens fly larvae as an additive to poultry feed, wykonawca. 3. Effect of Phonon Entropy Reducer™ (FRE™) on fruit fly survival. Research financed by Metanel sp. z o.o. 2022, kierownik. 4. Impact of climate change on soil organisms and plant communities in mountain pastures. Project N040/0005/21 – Support for Leading Research Teams of UPWR (internal funding). Years of implementation: 2021-2022, wykonawca.
PhD topic:	Search for new methods useful for assessing the toxicity of various chemical substances for springtails (Collembola)
Research discipline in Doctoral School:	Agriculture and Horticulture
Short description of the research problem to be solved in the PhD (minimum 1000 characters):	Springtails are an important group of soil arthropods that are directly exposed to soil contaminants such as pesticides and heavy metals. One of the tools for assessing the ecological risk associated with soil contamination is the use of springtails as model organisms in ecotoxicological tests. Currently, two standard tests are available, including the OECD 232 test, which tests the inhibition of reproductive springtails, and ISO 17512-2: 2011, which verify the avoidance of a toxic substance, both using the test species Folsomia candida and Folsomia fimetaria. Each of these tests has its limitations and is suitable for slightly different applications. In the case of the OECD 232 test, the greatest disadvantage is the high labour intensity associated with counting the number of offspring, exceeding hundreds of individuals, while the avoidance test is based mainly on the repellent properties of tested substances. Therefore, new methods that would allow the assessment of soil toxicity with the use of this important group of organisms. In this research, it is planned to develop new methodologies based on the use of growth and feeding inhibition of springtail as a symptom of toxicity.
Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters):	Master's degree in environmental/agricultural/biological science, Written and oral communication skills in English, Writing scientific papers (at least 1 published article), Critical and creative thinking skills, Work in a team effectively, Technical skills and ability to operate basic laboratory equipment, such as a microscope, The ability to interpret complex information and identify relevant data, Ability to use statistical programs as SPSS, Statistica etc., Extended knowledge of zoology, especially soil organism, Breeding of arthropods, Openness to cooperation, Scientific reliability
a) Project title:	
b) Agreement number:	
c) Number of months in the project to support PhD (in months; starting from 1st of October 2022):	
Project website:	