

<b>Parte A. PERSONAL DATA</b>		<b>Fecha del CVA</b>	21-05-2024
Nombre y apellidos	JOSÉ MARIA BECERRIL SOTO		
DNI/NIE/pasaporte		Edad	
Núm. identificación del investigador	Researcher ID	H-1560-2015	
	Código Orcid	orcid.org/0000-0001-6216-3508	

**A.1. POSITION**

Organismo	UNIVERSIDAD DEL PAIS VASCO		
Dpto./Centro	FACULTAD DE CIENCIA Y TECNOLOGÍA		
Dirección	APTDO. 644, 48060 , BILBAO		
Teléfono	946015328	correo electrónico	<a href="mailto:josemaria.becerril@ehu.es">josemaria.becerril@ehu.es</a>
Categoría profesional	CATEDRATICO DE UNIVERSIDAD	Fecha inicio	6-11- 2001
Espec. cód. UNESCO	241719-241717 -310106		
Palabras clave	Soil contamination, phytoremediation, environmental toxicology, plant ecophysiology, metal toxicity, herbicide mode of action, plant stress		

**A.2. FORMATION** (*título, institución, fecha*)

Licenciatura/Grado/Doctorado	Universidad	Año
Licenciado en Ciencias Biológicas	Universidad del País Vasco/EHU	1983
Doctor en Ciencias Biológicas	Universidad del País Vasco/EHU	1987

**A.3. QUALITY INDICATORS OF SCIENTIFIC AND TEACHING PRODUCTION**

- **h index: 51**
- **7 Research evaluation for Sexennia (6 research+1 transfer of research)**
- **6 Teaching evaluation for Quinquennia**
- **Supervisor of 9 PhD**
- **Total Publications (WoS): 148**
- **Total Publications (Q1): 118**
- **6188 Total Citation en WOS**

**PART B. FREE SUMMARY OF THE CURRICULUM**

Dr. Becerril graduate in Biology (UPV/EHU,1983), and PhD in Biology (CSIC-UPV/EHU, 1987). As a Fulbright fellow he spent 2 years (1988-1989) as a Postdoc in the Southern Weed Science Laboratory(SWSL), ARS, USDA, Mississippi, USA with Dr. Stephen O. Duke working on mode of action of pesticide and ecotoxicity of agrochemicals. After that he has been in contact with SWSL twice as visiting professor. From 2001 he is Full Professor of Plant Physiology in the Dpt. Plant Biology and Ecology, Faculty of Science & Technology, University of the Basque Country. Dr. Becerril has been the head of the Research group EKOFISKO (Plant Stress Ecophysiology & Contamination) from 1990-2022 (<https://www.ehu.eus/es/web/ekofisko/aurkezpena>). He was the head of the Oficial Master "Environmental Agrobiology" (UPV/EHU and UPNA) from 2006- 2020 and the Doctorate Program "Environmental Agrobiology" from 2003 to 2013. He is the Principal Investigator at

various related projects funded both by public entities: CE (Interreg-Europe), (Spanish Ministry, Basque Administration, City Hall of Vitoria) and by private companies (IHOBE, Dow Chemical). Dr. Becerril focuses his research activity to study and develop a variety of methodological tools: (i) determination of plant/crop stress biomarkers, mainly related to environmental stress; (ii) set up of plant toxicity bioassays to determine the ecotoxicological effects of metals, organic contaminants and agrochemicals in soils; (iii) implementation of physiological parameters to evaluate phytotoxicity or tolerance caused by abiotic/ biotic stress; (iv) genomic methodologies with emphasis in differential gene expression to assess and to monitor soil health and soil toxicity; (v) herbicide mode of action. All these methodologies have been implemented in several areas of more applied research: (i) determination of the role of photoprotective compounds and tolerance of plants to abiotic stress; (ii) use of plants for ecological restoration of degraded environments, specially polluted soils through; (iii) bio/phytoremediation (phytostabilization, phytoextraction and rhizoremediation). (iv) assessment and monitoring soil health with biological indicators.

## **Parte C. OTHER SCIENTIFIC ACHIEVEMENTS**

### **C.1. Publications (max 10)**

- 1.- HIDALGOJ, ARTETXE U, **BECERRIL JM**, GOMEZ-SAGASTI MT, EPELDE L, VILELA J, AND GARBISY C. Biological remediation treatments improve the health of a mixed contaminated soil before significantly reducing contaminant levels. ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH 31: 6010-6024. Doi: 10.1007/s11356-023-31550-0. 2024.
- 2.- GOMEZ-SAGASTI MT, LOPEZ-POZO, ARTETXE U, **BECERRIL JM**, HERNANDEZ A, GARCIA-PLAZAOLA JI, ESTEBAN R. Carotenoids and their derivatives: A “swiss army knife-like” multifunctional tool for fine-tuning plant-environment interactions. ENVIRONMENTAL AND EXPERIMENTAL BOTANY. 207: 105229. Doi:10.1016/j.envexpbot.2023.105229. 2023
- 3.-GÓMEZ-SAGASTI, MT; GARBISU, C; URRÁ, J; MÍGUEZ, F; ARTETXE, U; HERNÁNDEZ, A; VILELA, J; ALKORTA, I; **BECERRIL, JM**. Mycorrhizal-assisted phytoremediation and intercropping strategies improved the health of contaminated soil in a peri-urban area. FRONTIERS IN PLANT SCIENCE. Doi:10.3389/fpls.2021.693044. 2021
- 4.- LACALLE, RG; GÓMEZ-SAGASTI, MT; GARBISU, C; **BECERRIL JM**. The degradation of fatty acid methyl esters improved the health of soils simultaneously polluted with metals and biodiesel blends FUEL 29:-120158. Doi.org/10.1016/j.fuel.2021.120158. 2021
- 5.- APARICIO JD; LACALLE RG; ARTETXE U; URIONABARRENETXEA E; **BECERRIL JM**; PÓLIT; GARBISU C; SOTO M. Successful remediation of soils with mixed contamination of chromium and lindane: Integration of biological and physico-chemical strategies. ENVIRONMENTAL RESEARCH 194: 110666. DOI: 10.1016/j.envres.2020.110666. 2021
- 6- URIONABARRENETXEA E ; GARCIA-VELASCO; ANZA M; ARTETXE U; LACALLE RG; SOTO M; GARBISU C; **BECERRIL JM**; SOTO M. Application of in situ biorremediation strategies in soils attended with sewage sludges. SCIENCE OF THE TOTAL ENVIRONMENT 766: 144099. Doi: 10.1016/j.scitotenv.2020.144099. 2021.
- 7.- BURGUES A; OUSTRIERE N; GALENDE M; MARCHAND L; BES CM; PAIDJAN E; PUSCHENREITER M; **BECERRIL JM** & MENCH M. Phytomanagement with grassy species, compost and dolomitic limestone rehabilitates a meadow at a wood preservation site.

ECOLOGICAL ENGINEERING 160: 106132. Doi 10.1016/j.ecoleng.2020.106132. 2021

8.- BURGUES, A.; FIEVET, V.; OUSTRIERE, N.; EPELDE, J.; GARBISU, C. AND **BECERRIL, J.M.** and MENCH, M. Long-term phytomanagement with compost and a sunflower - Tobacco rotation influences the structural microbial diversity of a Cu-contaminated soil. SCIENCE OF THE TOTAL ENVIRONMENT 700: 134529. 2020.

9.- LACALLE, R.G.; GARBISU, C. AND **BECERRIL, J.M.** Effects of the application of an organic amendment and nanoscale zero-valent iron particles on soil Cr(VI) remediation. ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH 27: 31726-31736: 2020.

10.- MIGUEZ, F.; GOMEZ-SAGASTI, M.T.; HERNADEZ, A.; ARTETXE, U.; BLANCO, F.; CASRANEDA, J.; LOZANO, J.V.; GARBISU, C. and **BECERRIL, J.M.** In situ phytomanagement with Brassica napus and bio-stabilised municipal solid wastes is a suitable strategy for redevelopment of vacant urban land. URBAN FORESTRY & URBAN GREENING 47: 126550. 2020.

### **C.2. Projects (5)**

1.- TITLE: “PHYT2SUDOE – Avanzando en la aplicación de estrategias innovadoras defitogestión en zonas contaminadas del espacio Sudoe (SOE4/P5/E1021)  
ORGANISM: INTERREG-SUDOE, EU  
FROM: 01/11/2020 TO: 30/4/2023 FUNDS: 88.875 €  
PRINCIPAL INVESTIGATOR: IP Grupo UPV/EHU L **Manuel Soto**

2.- TITLE: “PHYTOSUDOE – Demostración de la mejora en la biodiversidad edáfica, funcionalidad y servicios ecosistémicos en terrenos contaminados y degradados mediante fitogestión dentro de la región Interreg-Sudoe (SOE1/P5/EO0189)  
ORGANISM: INTERREG-SUDOE, EU  
FROM: 01/07/2016 TO: 31/10/2018 FUNDS: 87.129 €  
PRINCIPAL INVESTIGATOR: IP Grupo UPV/EHU L **José M<sup>a</sup> Becerril Soto**

3.- TITLE: IMPACTO DE RESIDUOS DE PESTICIDAS EN LA EMERGENCIA Y DISEMINACION DE LA RESISTENCIA A ANTIBIOTICOS EN CULTIVOS TRATADOS CON ENMIENDAS ORGANICAS  
ORGANISM: MINECO (PRADA- PID2019-110055RB-C22,)  
FROM: 1-1-2020 TO 31-12-2024. FUNDS: 137,000 €  
PRINCIPAL INVESTIGATOR: **José M<sup>a</sup> Becerril Soto**

4.- TITLE: NANORRIZOREM – Rizorremediación asistida con nanopartículas para la recuperación de suelos con contaminación mixta (AGL2015-64481-C2-1-R)  
ORGANISM: MINECO  
FROM: 2016 TO: 2019 FUNDS: 96.800€  
PRINCIPAL INVESTIGATOR

5.- TITLE: FITOMINA - Fitoestabilización asistida de entornos mineros contaminados con metales (AGL2012-39715-C03-01)  
ORGANISM: Ministerio de Economía y Competitividad  
FROM: 2013 TO: 2015 FUNDS: 58.500€  
PRINCIPAL INVESTIGATOR: **Jose M<sup>a</sup> Becerril**, UPV/EHU

### **C.3. Contracts and transference projects**

Contracts UPV/EHU-NEIKER. PLANTOX-Desarrollo de bioensayos innovadores para la evaluación ecotoxicológica del suelo basada en biomarcadores precoces de estrés en plantas. 1/1/2013 a 31/12/2015. 31.000 €

PRINCIPAL INVESTIGATOR: **José M<sup>a</sup> Becerril Soto**

Contracts UPV/EHU- Dow Chemical, S.L.: Evaluación de movilidad de metales y su impacto en vegetación nativa: implicaciones para fitoextracción de metales. 07/06/2013 - 07/12/2013, 54.348 €

PRINCIPAL INVESTIGATOR: **José M<sup>a</sup> Becerril Soto**

Contracts UPV/EHU- NEIKER-Tecnalia: Desarrollo de un RNA-microarray para el diagnóstico del impacto de la contaminación sobre la salud del suelo. 02/06/2010 - 31/05/2011. 117.872 €

PRINCIPAL INVESTIGATOR: **José M<sup>a</sup> Becerril Soto**

### **C5. Undergraduate and postgraduate formation**

- Coordinator of Master in Environmental Agrobiology (AGROBIOLOGIA AMBIENTAL) (2006-2020)
- Coordinator of Doctorate Program in Environmental Agrobiology (AGROBIOLOGIA AMBIENTAL “Mención hacia la Excelencia” del MEC) ( 2006- 2013)

#### **Undergraduate formation**

- Teaching for undergraduates: Fisiología Vegetal, Biotecnología Vegetal
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#### **Postgraduate formation**

- Teaching in Master AGROBIOLOGIA AMBIENTAL: Contaminación y Recuperación de Suelos, Tendencias Actuales en Agrobiología Ambiental, Biomarcadores de Estrés en Plantas.
- Teaching in Master CONTAMINACIÓN Y TOXICOLOGÍA AMBIENTALES: Research Pollution and Environmental toxicology, Soil Pollution and Toxicology
- Teaching in Master MEDIO AMBIENTE, SOSTENIBILIDAD Y OGS: Desarrollo Sostenible, Diversidad Natural y Servicios de los Ecosistemas.
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### **C.6 Other merits: congresses**

- Organization: VII Simposio Nacional sobre Control de la Degradación y Restauración de Suelos. 2015
- 170 communications en congresos

### **C.7. Other merits: Journals and Programs evaluator**

Agency Evaluator: ANEP, UNIBASQUE, CCAA

Scientific Journals: Science of the Total Environment, Plant and Soil, Journal of Plant Physiology, Journal of Hazardous Materials, Plant Science, Chemosphere, New Phytologist, Photosynthesis Research, etc.