

### 1. Project title

Herbicide resistances and epigenetic mechanisms

### 2. Proposer

Surname	Brusoni
Name	Maura

### 3. Research Unit

Surname	Name	Institution
Brusoni	Maura	Università di Pavia, Dipartimento di Scienze della Terra e dell'Ambiente
Capelli	Enrica	Università di Pavia, Dipartimento di Scienze della Terra e dell'Ambiente
Picco	Anna Maria	Università di Pavia, Dipartimento di Scienze della Terra e dell'Ambiente
Pozzi	Tiziano	Agricola 2000
Panzarasa	Andrea	Distretto Agricolo delle Risaie Lomelline
Russu Mancini	Riccardo Marco	Accademia dei Georgofili
Barozzi	Flavio	Società Agraria di Lombardia
Cenghialta	Cesare	DowAgroSciences Italia srl
Caporrella	Giuseppe	Innova-Tech srl

### 4. Key words

(Max. 5 – at least 2)

Herbicide resistance, plant stress response, climate change, agro-sustainability.

### 5. Abstract

(Max. 1.500 characters with spaces)

Weed control has become a great problem in recent decades as a consequence of the evolution of herbicide-resistant biotypes. Intense herbicide use but over time even sublethal herbicide doses cause a reduction in herbicide sensitivity at the population level and leads to the appearance of herbicide resistances. It is extremely important to implement management strategies that minimize the risks of pesticide resistance. To program herbicide treatments correctly and improve agroecosystem sustainability it is therefore necessary assessing herbicide resistance mechanisms. It is important to consider genetic and environment interactions to predict and properly monitor the evolution of herbicide resistance distinguishing target-site-resistance (TSR) and non target-site-resistance (NTSR) from epigenetic mechanisms, regulators of plant-environment interactions, mainly associated with stress adaptation. Given that herbicides induce a strong abiotic stress, it is likely that weeds respond by activating stress-signaling networks that reprogram gene expression. We hypothesize that this involves epigenetic regulation of gene function that could contribute to herbicide



UNIVERSITÀ  
DI PAVIA

Dipartimento di Scienze della Terra e dell'Ambiente

resistance as implicated in weed adaptation to other stresses. Herbicide resistances will be monitored in rice field environments.