# Resistance characterization to downy mildew in wild rocket crop

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## What is a rocket plant ?

It's a baby leaf vegetable belonging to Brassicaceae family, much appreciated for its organoleptic characteristics. It has a typical bitter and spicy taste and a pungent aroma due to the presence of flavonoids and glucosinolates, beneficial compounds for Human health. Traditionally, it has been used in Mediterranean cuisine for fresh consumption, as a component of packaged salads or as garnish.

*Diplotaxis tenuifolia* (L.) DC. (wild rocket) species is the most consumed in Europe, North America and Australia. It is easily recognized by consumers due to its distinct lobate leaf shape. It is an ancestral plant, native from Mediterranean region, and a successful example of recent domestication of a plant species. In the last two decades, it has greatly diffused and currently has an increasing economic relevance worldwide including Portugal.

## Rocket infection with downy mildew

Downy mildew disease is a great threat for rocket production, especially in temperate and humid climate regions. It is caused by the obligate oomycete *Hyaloperonospora* sp. that attacks rocket leaves, reducing drastically crop yield and quality. In the most severe cases the crop is completely destroyed.

*Hyaloperonospora* sp. sporulation on infected rocket cotyledon

## Objective of the project

The REMIRUCULA project aims to study the high susceptibility to downy mildew disease found in commercial rocket varieties. This project is an opportunity to improve knowledge about downy mildew disease in rocket, and to overcome one of the main problems of the crop, contributing for a sustainable rocket production.

Rocket susceptible to downy mildew (21 days)

## Final expected results

- Constitution of a rocket seed collection, evaluation of downy mildew resistance and selection of the most promising genotypes.
- Histological characterization of *D. tenuifolia-Hyaloperonospora* sp. interaction, and lipid profile evaluation of genotypes with contrasting downy mildew responses.
- Identification of molecular markers linked to wild rocket and *Hyaloperonospora* sp. pathogen.
- Characterisation of metabolomic profile in rocket and correlation with downy mildew resistance response.

Rocket resistant to downy mildew (21 days)

Field production of wild rocket

Inflorescence of ***Eruca*** sp. (cultivated rocket)

Inflorescence of *Diplotaxis tenuifolia* (wild rocket)

Partners

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