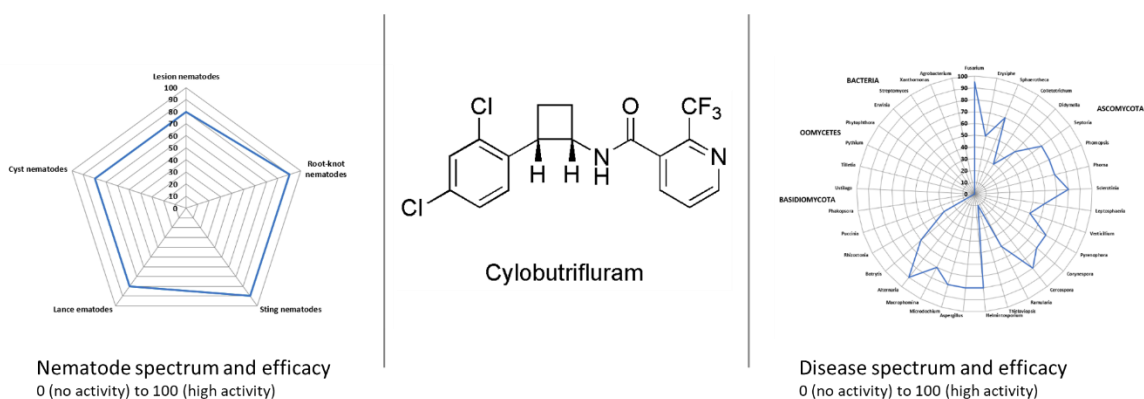


TYMIRIUM® technology: The discovery of cyclobutrifluram

Olivier Loiseleur, Raphaël Dumeunier

Syngenta Crop Protection Research, Schaffhauserstrasse 101, Stein CH-4332, Switzerland
 olivier.loiseleur@syngenta.com

The damaging impact of plant-parasitic nematodes (PPNs) on global agricultural yields prompted Syngenta to launch a nematicide discovery program. This effort led to the development of TYMIRIUM® technology, a nematicide and fungicide solution containing Cyclobutrifluram as its active ingredient. In 2022, this innovative solution received its first registrations.



Cyclobutrifluram, a chiral phenyl-cyclobutyl-pyridineamide, demonstrates wide-ranging effectiveness against all economically important plant parasitic nematodes and several soil-borne diseases, particularly those caused by *Fusarium* species. The discovery of this molecule involved hit identification, lead exploration, and optimization stages, which made use of various methods such as phenotypic nematicide screening platforms, targeted screening libraries, rapid target identification through biochemical and genetic approaches, in vitro assays for structure-activity relationship (SAR) analysis, and homology models for structure-based design. This multi-disciplinary approach led to the successful identification of Cyclobutrifluram as the key component in TYMIRIUM® technology.