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Syngenta unveils EXORT Technology to boost crop yields through plant microRNAs

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Syngenta is developing a new class of biological crop solutions based on naturally occurring microRNAs, with the company reporting yield gains across rice, soybean, corn, cotton, vegetables and fruits in multi-year field programmes

Syngenta has unveiled EXORT technology, a new biological platform designed to influence plant growth and performance by using naturally occurring molecular signals within plants. The technology is based on microRNAs, tiny molecules that help regulate how genetic instructions are translated into biological processes. Syngenta is developing the platform to deliver selected naturally occurring microRNAs to crops at very low doses through foliar applications, with the aim of helping plants make more effective use of their own biological mechanisms.

The company says the approach could open a new category of biological agricultural inputs focused not on supplying conventional nutrients or directly controlling pests and diseases, but on influencing the plant's own regulatory systems. Syngenta plans to launch the first products based on EXORT technology from 2027, followed by a phased introduction across approximately 20 countries and multiple crops.

From plant biology to field application

The central proposition behind EXORT is relatively simple: plants already possess sophisticated mechanisms for regulating growth, development and responses to environmental conditions. MicroRNAs are part of that regulatory system. These naturally occurring molecules act as molecular signals that influence the expression of biological instructions within plants. Syngenta's research aims to identify beneficial microRNAs and apply them externally at field scale.

The company says products incorporating EXORT technology will be applied to leaves at very low doses and are designed to work with biological processes that plants already use. That distinguishes the platform from conventional crop protection chemistry. Instead of targeting a pathogen, insect or weed directly, the technology seeks to influence the crop's own biological processes.

Camilla Corsi, Syngenta's Head of Crop Protection Research & Development, said advances in genomics, bioinformatics and plant science have enabled researchers to identify and apply naturally occurring microRNAs with greater precision. The company views the technology as an example of how advances in fundamental biology can be translated into agricultural

applications.

Yield is the commercial test

The scientific novelty of the platform ultimately has to translate into measurable performance in farmers' fields. Syngenta said its EXORT programme has been tested in one of the company's largest biological field programmes, with trials conducted over multiple years and across different geographies. According to the company, the technology has produced consistent yield gains across rice, soybean, corn, cotton, vegetables and fruits.

Syngenta also says the technology can help produce larger grains and improve the quality of certain fruits and vegetables. The claims will face their most important test as the technology moves from company-led field programmes into commercial products and wider farmer use. Performance will need to remain consistent across different varieties, environments, agronomic practices and levels of environmental stress. The first commercial products are expected from 2027, providing the next stage of validation for the platform.

A biological platform rather than a single product

Syngenta is positioning EXORT as a technology platform with applications across multiple crops rather than as a single crop-specific product. That could give the company a broader development pathway if individual microRNAs can be matched to specific crop traits, growth processes or environmental responses.

The platform's proposed applications span major field crops as well as high-value horticultural crops. Rice, soybean, corn and cotton could provide scale, while vegetables and fruits could offer applications where yield, size and quality have significant commercial value. The planned rollout across approximately 20 countries suggests Syngenta is also seeking to build a global biological platform rather than limit the technology to a particular agricultural market.

MicroRNA research enters agriculture's commercial pipeline

The science underpinning EXORT has gained wider recognition in recent years. MicroRNAs have become an important area of biological research because of their role in regulating gene activity. The significance of microRNA research was highlighted by the 2024 Nobel Prize in Physiology or Medicine, awarded for discoveries concerning microRNA and its role in post-transcriptional gene regulation.

Syngenta says it has invested in microRNA research for years and is now attempting to translate that scientific understanding into agricultural applications. The commercial challenge is substantial. Moving a biological mechanism from controlled research environments to open-field agriculture requires reproducible delivery, stability, appropriate application rates and consistent performance under highly variable growing conditions.

The technology also needs to deliver sufficient agronomic and economic value for farmers to incorporate it into existing production systems.

The next generation of biologicals

The EXORT announcement comes as agricultural input companies expand beyond traditional chemical crop protection into biological products and technologies that interact more directly with plant and soil biology. For Syngenta, EXORT represents a potentially different direction within that transition. Its proposed mechanism is based on naturally occurring plant molecules and aims to influence the crop's own biological regulation.

The company believes the technology could become a foundational platform for a new generation of biological solutions. The first commercial launches from 2027 will determine how successfully that scientific proposition translates into agricultural value. If the reported field performance can be reproduced at commercial scale, microRNA-based technologies could add a new dimension to the biological input marketâ??one in which the crop's own molecular machinery becomes part of the toolkit for improving productivity.