



ACCELERATE. INNOVATE. COLLABORATE.



TAKING FOREVER PLASTICS OUT OF OUR FORESTS

Growing trees may seem like a very green business - but Rainbow Professional, a leading manufacturer of forestry and horticultural products, wanted to take their sustainability to the next level by finding an alternative to traditional plastic tree guards, which protect saplings from browsing animals and herbicide applications. They got in touch with the Aura Innovation Centre to see if we could help them in their mission to develop innovative, 100% plant-based polymer tree guards.

CASE STUDY: Rainbow Professional

Part funded by



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THE CHALLENGE

You'll have seen them in forests, or by the side of roads - rows of young trees with plastic tree guards protecting them as they establish. Not very sustainable, but essential to keep the young trees safe.

Hull-based Rainbow Professional had developed the Rainbow Bio II, a 100% plant-based tree guard as a sustainable alternative to conventional plastic products which don't break down without impacting the environment. Rainbow wanted the guards to be durable enough to not disintegrate before the trees are established and no longer need their protection.

Rainbow needed to know if their guards would leave any harmful contaminants behind when they degraded. With this knowledge and a proven product, they could confidently tell their clients, such as the Forestry Commission and Woodland Trust, how sustainable their tree guards really are, and have them ready for use on a large scale.

THE SOLUTION

The Aura team worked with the University's researchers - experts in materials analysis - to study the breakdown of the sustainable tree guards. Samples of the tree guards were weathered in realistic conditions - taking into account factors like temperature, moisture and the presence of microbes to make sure the results were accurate. The plant-based plastic was tested in simulated industrial compost conditions, in soil, and even in a river, to simulate the range of places where the tree guards would be found "in the wild" or at the end of their life.

As well as confirming that the tree guards degraded under the right conditions, real-time experiments also checked that the material wasn't toxic in water to plants and fauna. Analysis was done on the water where the plastics had been weathered, and the chemicals found were either non-toxic to aquatic life or were present in such low concentrations that they were no threat.

An additional benefit was that the Aura team was able to link to funding for Rainbow's project through a sister team, SparkFund, also funded through European Regional Development Funding. This enabled the company to benefit from wrap-around innovation support and funding through the University of Hull's different business support programmes, namely the Aura Innovation Centre and SparkFund.

THE RESULT

The results confirmed that the tree guards were sustainable, non-toxic, and can even be reused as compost after they've broken down.

Commenting on the project, Rainbow's Director, Pierre Talpe, said: "The results of the research have given Rainbow extra confidence in our product's benefits and assurance of its performance. We can now explain to customers that the tree guards we produce are more sustainable, and highlight that they have been tested by the University of Hull's experts, underpinned by an independent academic study report".

"We didn't know this type of project was possible, but the Aura Innovation Centre team opened our eyes to what you can learn from experts and from using different kinds of technology that give highly specific, detailed information. Working with the Aura team has helped us set our course for the future by giving us more ideas to explore and innovations to develop."

Rainbow now sell their Bio Spiral Tree Guards to the forestry industry worldwide, and this new sustainable product has been welcomed by customers old and new.



LEAD ACADEMIC/ RESEARCHER

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FIND OUT HOW WE CAN HELP YOUR BUSINESS

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