

MagrowTec - Making More of Less

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MagrowTec: A Tale of Success Rooted in Innovation and R&D

In the realm of precision agriculture, MagrowTec stands as a beacon of innovation and research and development (R&D). The company's journey from its inception to its current success is a compelling narrative of vision, innovation, and perseverance.

The Entrepreneurial Founding Story of MagrowTec

Spraying crops with herbicides, pesticides and fungicides is a vital part of commercial agriculture, but it's a costly one. Existing sprayer technology generates 70% waste, the equivalent of \$42 billion, according to Gary Wickham, CEO of MagrowTec

Aware of this massive problem, Gary Wickham and David Moore identified a big market opportunity and founded MagrowTec (former MagGrow) back in 2013 in Ireland, at Nova UCD, the Centre for New Ventures and Entrepreneurs at University College Dublin (UCD).

Gary knew he needed a science-based approach to develop the technology and built the business around four key pillars – Crop Science, Pure Research (Empirical data), Industrial Research & Engineering, and Customer Data and made partnerships with several academic institutions including Wageningen University in the Netherlands, and Amber, the SFI Research Centre for Advanced Materials and Bioengineering Research, which is based at Trinity College Dublin.

After 5 years and €10m invested in Research, testing, and development, the MagrowTec Boom kit was commercially launched in 2018.



Why does MagrowTec exist?

MISSION

To help farmers & growers across the world be more 'input & time efficient' while being more 'sustainable'

VISION

To be accessible to all farmers and growers who drive to be more productive, more profitable and more sustainable'

MagrowTec – Patented Magnetic Assist Technology

MagrowTec patented magnetic spraying technology that solves the compromise between spray drift and coverage is helping farmers grow more by using less scarce resources such as water, labour, etc.

Built on 10 years of SCIENCE & TECHNOLOGY, MAGROWTEC is a NEW innovative precision assist technology that delivers on a consistent spray profile, reducing drift & chemical waste and providing better crop coverage.

The MagrowTec system helps by creating more of the optimum-sized spray – ensuring that more of the spray goes onto the target weeds or crop, giving better coverage and more protection.

Using the MagrowTec system, growers have seen improved coverage of 20% or more compared to conventional spraying, and reduced drift by up to 70%.

The MagrowTec system has no moving parts, is easy to install and maintain, and can be fitted to a new or existing crop sprayer. It can be moved from sprayer to sprayer and requires no power or internet.

THE PRODUCT:

MagrowTec's Magnetic Boom Kit

MAGNETIC ASSIST SPRAY TECHNOLOGY

The MagrowTec Magnetic Boom Kit is a fluid conditioning system that transforms the spray fluid properties by passing it through magnetic fields containing rare earth magnets, allowing farmers to use the optimum smaller to medium nozzles without the risk of airborne drift. By changing these properties, we get more on target & we also help the solution to adhere better to that target.



MagrowTec's Passive Two-Component system

INTERACT WITH
MAGROWTEC



No Moving Parts. Zero Maintenance.

Only 1% Magnet Deterioration per 15 years

Brand & Product Agnostic

Complimentary to Other Technologies

Install or Move to Any Sprayer.

Easy to Install & Use

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Manifold Stack

Manufactured Unit that's
Mounted on the Sprayer Frame.



Boom Rods

Manufactured Unit that's
Fitted Inside Entire Spray Line.



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How Does MagrowTec Work?



Field comes from the sprayer tank



Field passes through a series of neodymium-containing magnets, which provides the magnetic interaction with the water-based spray medium.



Magnetic rods are fitted inside the entire spray line, which adds to the magnetic interaction and enhances the MagrowTec effect.



The MagrowTec effect changes the characteristics of the field, which in turn determines the properties of the spray droplets - not only size but distribution.



Water-based spray medium, which will determine the spray that is formed.

**Results selection for optimum performance for the MagrowTec effect.

Conventional

MagrowTec

5 Final Result

The MagrowTec effect creates droplets that are the best in class.

More of the right-sized droplets that stick.

How MagrowTec Can Help?



70% of all conventional spray does not reach the target crop and results in drift and run off, wasting countless

Magrow is an accredited

97.5%

drift reduction technology

Source: IFAFRA, 2014. International Association of Agricultural Flight Technicians

Magrow Spray Optimisation



Optimum performance spray makes sure the chemical both reaches and adheres to the target.

Conventional Rate



MagrowTec 100% Rate



MagrowTec 75% Rate



The MagrowTec system helps by creating more of the optimum-sized spray - ensuring that more of the spray goes onto the weeds, crop canopy, buds, flowers, stalk, fruit or vegetable product itself or soil, giving better coverage and more protection.

How Does MagrowTec Work?

1 Risk oil flows from the sprayer tank.

2 Risk passes through a series of magnets, which provides the magnetic interaction with the water-based spray medium.

3 Magnetic rods are fitted inside the entire spray line, which allow for the magnetic interaction and enhance the MagrowTec effect.

4 The MagrowTec effect changes the characteristics of the fluid, which in turn determines the properties of the spray droplets - not only size but distribution.

5 Final Result
The MagrowTec effect creates droplets that are the best in class.
More of the right-sized droplets (100 microns).

How MagrowTec Can Help?

MacGrow is an accredited **97.5%** drift reduction technology.

70% of all conventional spray does not reach the target crop and results in drift and run off, wasting countless resources.

Magrow Spray Optimisation

Optimum performance spray makes sure the chemical both reaches and adheres to the target.

Conventional Rate	MagrowTec 100% Rate	MagrowTec 70% Rate

The Power of the Drop

The MagrowTec system helps by creating more of the optimum-sized spray - ensuring that more of the spray goes onto the weeds, crop canopy, buds, flowers, stalk, fruit or vegetable product itself or soil, giving better coverage and more protection.

R&D, Technology and IP Driving the Road to Success

MagrowTec is bringing new innovative technologies to market, and is recognized as a brand with responsible attention to food security, planetary protection, and humanitarian needs. MagrowTec's commitment to innovation and R&D has led to the development of a unique patented magnetic assist technology that helps farmers be more profitable by being sustainable. There is a third way. MagrowTec creates a win-win for the farmer, dealer, consumer and of course the planet.

MagrowTec is committed to establishing strong scientific foundations for their technology, this is at the heart of their strategically designed research program, which is core to their business success.

The Agri EPI Center in the UK houses Industrial Research, whose function is to develop continuous hypothesis work on the MagrowTec magnetic assist technology and emerging nanotechnology. The team also supports new product development and product enhancements led by Prof. Tony Furness, Chief Scientific Officer of MagrowTec.

The MagrowTec Agricultural Research Centre (MARC) in the UK, supports the Applied Research relating to field trials and Crop Science, and Industrial Research & Engineering Support strengthening the foundations of their technologies and new areas of research activity aligned to MagrowTec's strategic plan for gaining international recognition as a leading application technology company.

The Crop Science team conducts extensive research to make sure the full benefits of the MagrowTec system can be

achieved, every time. This enables growers to quickly regain their initial investment through reduced input costs and increased productivity.

The center hosts some unique equipment that enables us to conduct highly repeatable trials that mimic real-world spray applications. These include a 10m track sprayer capable of reaching speeds of 20kph, and a highly configurable spray unit with working pressures of up to 20bar.

With the track sprayer, the Crop Science team can reproduce any type of spraying done by potential customers, generating valuable supporting data that will enable our customers to achieve the best return on their investment.



Over the last 4 years the MagrowTec Crop Science team have undertaken over 100 field trials using our patented magnetic treatment system. They have worked with growers and independent experts across five continents and more than 26 crop types, including corn, canola, soybeans, wheat and cotton, always looking for the best way to improve spraying efficiency.

70% 

LESS Disease
Reduction in Mildew impact

"With MagrowTec we believe we have found something that meets our criteria of drift reduction and Mildew control."


 Noirmoutier, FR

46% 


MORE Coverage
With reduced rates





 Florida, US

50% 

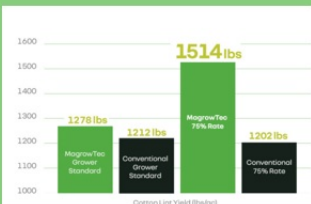
LESS Drift
With reduced rates




 Mt. Gambier, AU

+312
Lbs/acre 

MORE Yield
With 25% reduced rate




 Missouri, Arkansas, Mississippi, US

+8 

MORE Productivity
Cut out 1 spray day/week



 Florida, US

35% 

LESS Water
Increasing productivity by 1/3

"At the end of the day, we've got a lot more work done. It would normally take some 2 days to spray 200 hectares. We can do it in a day and a half. We've saved some fuel and spray, we've got less drift and also saved some water, so that must be good for the environment."

 Pukekohe, NZ

MagrowTec's innovative approach and commitment to R&D have not gone unnoticed.

Since launching to the market, the company has won several awards, including the Thrive Bayer Sustainability 2021 in the scale-up category, Fieldays Innovation award 2020, the 2016 Thrive Accelerator Sustainability award, and others.



As a technology and IP company, MagGrow has been recently rebranded as MagrowTec reflecting its three core technologies, namely Magnetic Assist, Nanotechnology, and the Hybrid of the two. MagrowTec is currently developing product applications for Air Blast, Irrigation, and small farm holders.



Magnetic Assist Technology
(Proven)

- Boom Product
- Greenhouse sprayer
- Airblast
- Golf/Landscape
- Small Farm Holder

Nano Technology
(Emerging)

- Post Crop Harvest
- Sanitisation
- Soil Nutrients
- Medical
- Drones

Hybrid

- Irrigation
- Agriculture
- Medical
- Industrial

Impact in the Market and Customer Success

With more than 300 MagrowTec units installed in 10 countries, the company has raised more than €35m to date, employs over 40 people across 4 territories, built its own agricultural center based in the UK, and has operations in the US, Europe, and Australia.

MagrowTec’s technology has been well-received by customers across different geographies and crop types.

Using the MagrowTec system, growers have seen improved coverage of 20% or more compared to conventional spraying, and reduced drift by up to 70%.

These success stories underscore the effectiveness of MagrowTec’s technology and its commitment to innovation and R&D.

Watch the MagrowTec’s customer testimonials here https://www.youtube.com/playlist?list=PLWeBDYtEIUlpQbgHG0x-mh3M2hKI0u_ev

“ I’m never going back
to spraying more than 5 gallons per acre ever again after my results with MagrowTec ”



KEY RESULTS

- ☑ Increased acres covered from 500 to 1,000 per day
- ☑ Saved \$300K by eliminating a second sprayer
- ☑ Significantly reduced drift by more than 70%
- ☑ Reduced water usage by 50%*
- ☑ Reduced chemical output by more than 33%



“I was able to cut out a \$300,000 sprayer and get everything done with one. I cut my rates and still cover the same amount of acres with one sprayer as I was doing before with two.”

[Watch Fate's Video](#)

GROWER	LOCATION	CROP	FARM SIZE
Fate Sparrow	Lilly, Georgia	Cotton	3,500 acres

* Water savings also significantly decrease water run off

“ We cut the drift by 50%-60%
Increased coverage and increased the productivity of my spraying practices ”



KEY RESULTS

- Increased productivity and efficiency
- Increased acres sprayed per day
- Reduced water usage
- Improved crop coverage
- Significantly reduced drift by 50%-60%

GROWER	LOCATION	CROP
Andrew Kennedy	Mt Gambier, AU	Small seed production

Innovation Journey and Partnership with ReaDI-Watch

Managing innovation is critical in the strategy for developing a technology company. Managerial competence, coupled with entrepreneurial flair, is key to managing the inventive-to-innovation transition. From its early days, MagrowTec recognized the importance of innovation and R&D. In partnership with ReaDI-Watch, the company established an RD&I Board, chaired by Gerry Byrne, to oversee its innovation and R&D initiatives. This strategic decision has been instrumental in driving the company’s growth and success.

Efficiency, cost-effectiveness and quality must be seen as important pillars in conducting R&D, supported with real-time data and information capture in the recording activities, coupled with well-defined procedures for analysis and application. These are unlocked in the business by using ReaDI-Watch Platform.

Sustainable innovation is core to MagrowTec’s vision, thus the need for ideation as a cultural attribute, expressed through a total quality culture that embodies continuous improvement and inclusion is critical for success. In partnership with ReaDI-Watch and spearheaded by a newly appointed RD&I Board, MagrowTec are building a Total Quality Culture every day.

"As a mission-driven technology company, helping farmers to grow more by using less, MagrowTec see Innovation and R&D as central to the company's future. Partnering with ReaDI-Watch gives us a platform to focus, refine and advance our Innovation and R&D activities, to the benefit of the business as a whole, following inclusive & well governed practices. The team, led by Gerry, chairman of the RD&I Board and Dave Byrne, have helped us to translate our technology and unique proposition into robust, defensible RD&I strategies, and accelerate our work with partners, customers and investors alike."

- Gary Wickham, Chief Executive Officer, MagrowTec

This work will help ensure a strong product pipeline to introduce new products and services addressing current and future challenges affecting customer needs and the market.

Sustainability – Making more of less

The company's patented technology significantly reduces waste associated with conventional pesticide spray applications. It increases coverage by 20% + , reduces drift by up to 70%, reduces water usage by up to 50% and chemical usage from 25% .

This results in:

- **Better efficacy – more product on the target; reduced frequency of spray: less labor, chemicals and fuel**
- **Better disease, weed and pest control**
- **Better productivity - more Acres per Gallon; more acres covered per day**
- **Enhances biologics performance**
- **Reduces or eliminates the use of spray-enhancing products (surfactants)**
- **Less waste (save money and protect the environment)**
- **Reduced application rates and/or number of passes**
- **Reduced risks to other crops in rotation, neighbor's crops and the community**
- **Less pollution**, conservation of soil & lakes, rivers and even underground sources of drinking water
- **Less emission per kg of food produced**

The challenges facing today's farmers demand innovative solutions. With higher global demand for food production and resources becoming more scarce and costly, farmers need to do more with less. MagrowTec's technology is a step towards meeting these challenges.

However, to reap all the benefits of this new wave of innovation, collaboration is key. Governments, big corporations, small and large farmers, landowners, and technology companies need to work together to drive innovation and push the industry forward.

MagrowTec Supports the sustainable intensification of global food production. By reducing waste and improving efficiency, the company is helping to create a more sustainable and efficient food production system. The journey of MagrowTec, led by Gary Wickham, is fueled by belief and determination, and continues to revolutionize the agricultural world.

Conclusion & Future Vision

MagrowTec's success story is a powerful testament to the role of innovation and R&D in driving business growth. The company's journey, from its founding to its current success, serves as an inspiration for other organizations in the field. It underscores the power of a strong vision, a commitment to innovation and R&D, and the courage to disrupt traditional practices.

