metagen AUS

Ending the era of one-dimensional farming

2024

Company Overview

Agricultural Biotechnology
Grounded in Hard Science

metagen.com.au
1800 229 994

Under every farm lies a buried treasure with **the power to change the world.** Every handful of soil contains billions of microbial cells belonging to thousands of different species. These native soil residents are the workhorses of **the phytobiome;** the community of macro and microorganisms living amongst, and contributing to the success of our **agricultural ecosystems.**

We search for solutions through a different lens, putting agriculture under the microscope to bring a biological perspective to an **ecological pursuit.**

Our mission is to harness the innate power of the microbiome on Australian farms to build a more resilient, productive and sustainable industry.

01

Section 1

Who We Are

1.1

Our Guiding Principles

Scientific Integrity
Robust Solutions

We only deal in the statistically significant.

We use data to drive development and demystify what's underground. Working at the cutting-edge of research, we build evidence-based pathways towards large-scale, agricultural transformation.

Non-Partisan Agronomy
Grower-Focus

We create win-win scenarios for people & the planet.

We design unbiased, climate-conscious programs where less is more and gains last. Drawing from all corners of the industry, we use innovative technology and grower experience to enhance and simplify existing systems.

Holistic Approach
Precise Systems

We look at the big picture beneath every farm.

We cast a broad net over physical, chemical and biological interactions above and below ground. Pairing three-dimensional thinking with pioneering analytics, we can tailor informed, fit-for-purpose solutions.

1.2

Metagen Leadership

Metagen is a homegrown soil health company led by a team of microbiologists, agronomists and data scientists. We take a multidisciplinary approach to biotechnology, transforming Australian soils through ecological thinking and data-driven insight.

We partner with industry-leading research institutions to formulate robust, practical solutions that put grower outcomes first and enable precise, proactive farming systems.

Currently in Collaboration with syngenta

Shane Fitzgerald
Founder

Dr Neil Wilson
Research

Anthony Dove
Agronomy & Science

Dr Chris Baldock
Data

Dr Ken Fitzgerald
Production

Healthy phytobiomes exhibit greater nutritional efficiency, measurably reduced carbon footprints and heightened environmental resilience.

While standard practice now pushes the limits of our planet, we are pushing the limits in our practices; tapping into the community of macro and microorganisms living amongst, and contributing to the success of our agricultural ecosystems.

02

Section 2

Why Microbes Matter

2.1

Efficiency & Productivity

17%

Nitrogen Efficiency
83% Lost to Environment

10%

Phosphorous Efficiency
90% Lost to Environment

Typical agricultural production depends on very low-efficiency technologies. Nitrogen fertiliser is the industry's single largest contributor to climate change, yet most of what we put into our soils is lost in biologically depleted agroecosystems. While market pressure increases and arable land area declines, growers must look to ecological solutions to address these production inbalances.

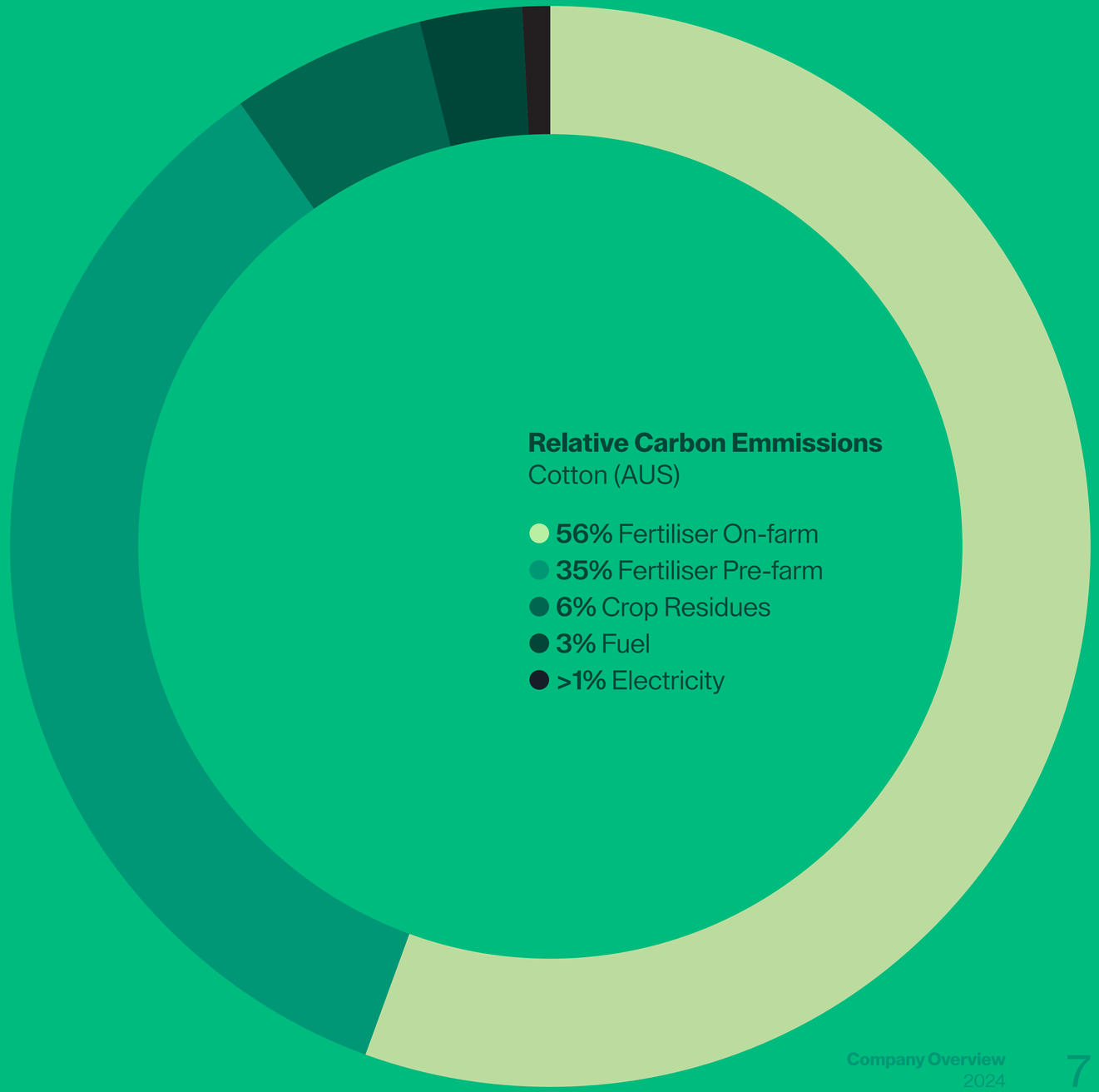
Lopez M.B., Ekonomou A., Eckard R.J. (2023). A Greenhouse Accounting Framework for cotton farms (C-GAF) based on the Australian National Greenhouse Gas Inventory methodology.

2.2

Security & Sustainability

"Currently, almost half of global food production relies on crossing Earth's **environmental boundaries."**

Dieter Gerten
One Earth, Issue 9 (2021)



2.3

Risk & Resilience

Plant pathogens and insects evolve much faster than the rate at which we can develop novel chemical control measures. Nevertheless, conventional practice often replaces integrated pest management with calendar spray programs, increasing exposure risks and the development of chemical resistance.

Industry Spend on Fungicides

2000–2001
$120,691,518

↑311%

2021–2022
$496,506,622

Total Industry Spend on Chemical Products

$5B

2.4

Microbial Modes of Action

Unlike conventional soil and plant health agents, biological formulations have multiple modes of action, rapidly enhancing the reliability and efficiency of cropping systems.

Soil Structure & Biodiversity

Enriched microbiomes accelerate the breakdown of organic matter into active carbon, which in turn improves soil structure and aids the proliferation of fungi, protists, microarthropods, nematodes and earthworms. All species in the soil food web benefit one another, meaning more diverse systems are more resilient and self-regulating.

Water & Root Dynamics

Soil aggregation and porosity is catalysed by microbial activity, which promotes deeper rooting depth and improved water infiltration, holding capacity and drainage. This increases the effectiveness of irrigation systems and ensures consistent performance in overly wet or dry conditions. Healthier roots also exhibit better nodulation and exudate activity.

Nutrient Cycling

Biologically active soils increase nitrogen and phosphorus availability to plants through solubilisation, fixation and mineralisation. When nutrients are cycled via ecological pathways, fewer are leached out of the system. This means yield and crop quality can be improved at a fraction of the typical application rate, significantly reducing nitrogen-related carbon emissions.

Disease Suppressiveness

The disease-suppressive capacity of a crop is largely determined by the productivity of biological communities in the soil. Root exudates mediate plant-microbe interactions, and diverse bacterial and fungal populations outcompete pathogens for available resources. Nutritional solutions to disease control problems dramatically reduce the cost of chemical inputs.

We design and deliver empirical, **biological tools for growers** to harness the microbiome, future-proof their agricultural assets and become more competitive in an **increasingly demanding world.**

Our integrated, paddock-to-lab-to-paddock (PLP) approach affords growers complete visibility over their cropping system, enabling proactive diagnosis, tracking and attunement.

03

Section 3

Our Capabilities

3.1

The Soil DNA Lab

Our lab is **transforming Australian soil,** exposing the underutilised wisdom buried beneath our farmland.

We developed **Australia's first** laboratory using modern molecular biology techniques to bring scientific rigor to product development and vital insight into agroecology and its blindspots.

3.2

Agroecology Programs

Soil health programs for **productive phytobiomes** and precise, sustainable cropping systems.

① Manage Risk

Identify and respond to disease pressures and imbalances.

② Grow Profits

Measure performance and uncover production opportunities.

③ Reduce Footprint

Optimise chemical inputs and lower carbon emissions.

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3.3

Metagen Formulations

Our biostimulants increase the abundance and activity of **untapped microorganisms** already present in the soil.

① Soil Health

- Digestor NP

② Plant Health

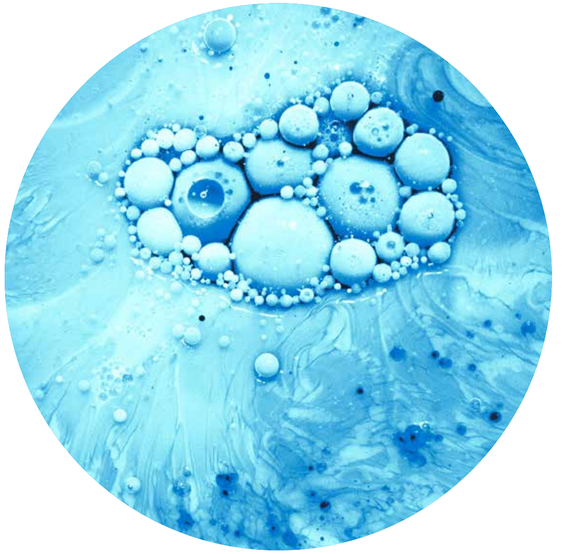
- Setbest ATP
- Lipoguard

③ Plant Nutrition

- Metabolt Micronutrient Range

3.4

Bumper Biomes



Resilience

Building more reliable cropping systems and fortifying your soil's biological defences.

Activating the protective power of the microbiome helps crops bounce back much faster. Our farmers benefit from lower disease incidence, improved climate hardiness and stress tolerance, taking the pressure off alternative, labour-intensive plant health regimes.

1. Enhance disease prevention & recovery
2. Improve moisture retention & drainage
3. Strengthen crop durability & longevity

Productivity

Unearthing the dormant potential in your microbiome and adding more value per hectare.

Our tailored, data-driven programs support acutely economical farming systems. Biodiverse agroecosystems are higher-yielding, require less inputs and perform consistently in harsh conditions when market supply is limited and efficiency is the top priority.

1. Boost crop quality and yield
2. Minimise chemical and irrigation costs
3. Meet demand in high-stress seasons

Sustainability

Restoring the land's natural fertility and building climate solutions into your crop.

Biologically balanced cropping systems have a greater capacity to be self-sustaining, are less reliant on harmful, chemical conventions and create an industry-wide opportunity to scale back dependence on our largest contributors to carbon emissions and fungicide resistance.

1. Reduce nitrogen-related CO_2 emissions
2. Curb run-off and collateral exposure to chemicals
3. Preserve the effectiveness of fungicides

Leading growers are currently implementing the Metagen system across over **30,000 hectares of cropping** ranging from; dryland and irrigated cotton; horticulture, trees and vines; to improved grazing systems in Gippsland and FNQ.

For over 6 years we have been going on farms and into the lab to measure the success stories in each sector, of growers tapping into the microbiome.

04

Section 4

Case Studies

Avocado Farm
In-Field Trial

100HA
Queensland (AUS)

Phytophthora Suppression in Avocado Trees

An trial was commenced in 2017 on one-year-old replanted trees at a site that was fallowed due to high *Phytophthora* disease incidence. Metagen's Digestor NP biostimulant was applied at the site every 6 months before a DNA-based analysis was conducted to measure improvements in soil and plant health.

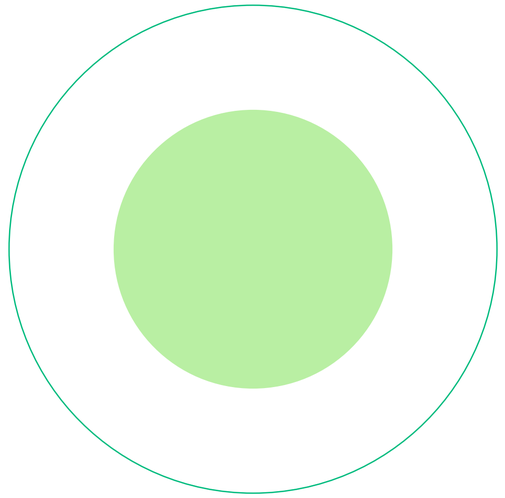
Untreated Area

***Phytophthora* Abundance**

↓300%

Increase in Canopy Volume

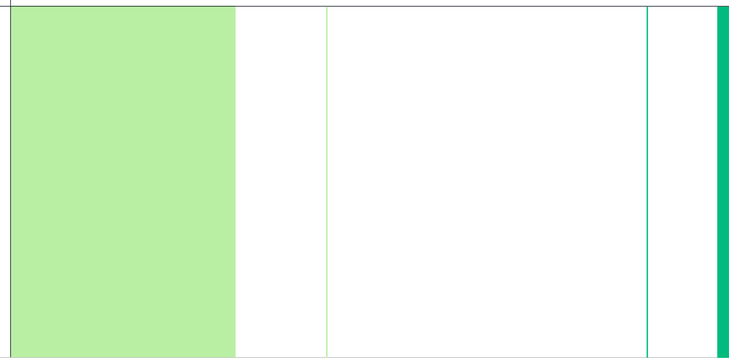
Untreated **(8m²)**
Treated **(14m²)**



↑75%

Beneficial Mycorrhizal Fungi Abundance

Untreated **(↑70%)**
Treated **(↑120%)**



Earthworm Abundance

Untreated
Treated

↑320%

Sugarcane Farm
Dore & Co

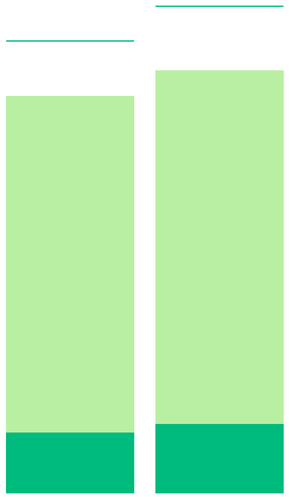
100HA
Queensland (AUS)

More Value Per Hectare for Queensland Sugarcane

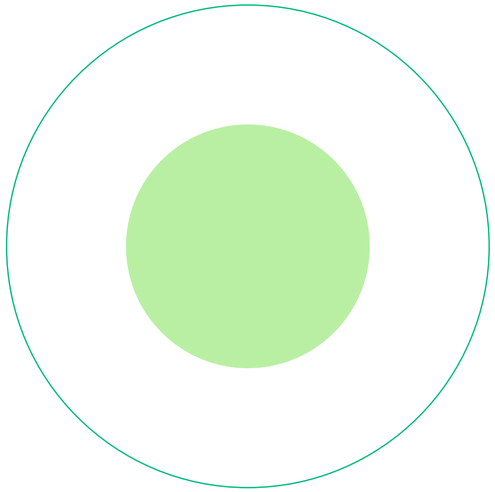
Jamie, Greg and Brian Dore engaged their agronomist Dr Charissa Rixon to assess the potential of Metagen's Evergrow biostimulant to increase production and nutrient efficiency in the 2022 season. The Evergrow plots saw gains in both CCS and tonnes, even at 20kg/ha less nitrogen.

↑1.3 tonnes/ha at $20/ha

Return on Investment
Treatment cost reduced from $56/ha, based on Nitrogen input savings (Urea @ $800/t)



Yield Gains
- Whole Stalk Yield **↑7.9t/ha**
- Clean Cane Stalk Yield **↑6.37t/ha**
- Actual Sugar Yield **↑1.3t/ha**



Nitrogen Efficiency
- Metagen System **21kg/ha**
- Standard Crop **41kg/ha**

CCS ↑0.34

50% N

Cauliflower Farm
Brad Giggins

100HA
Queensland (AUS)

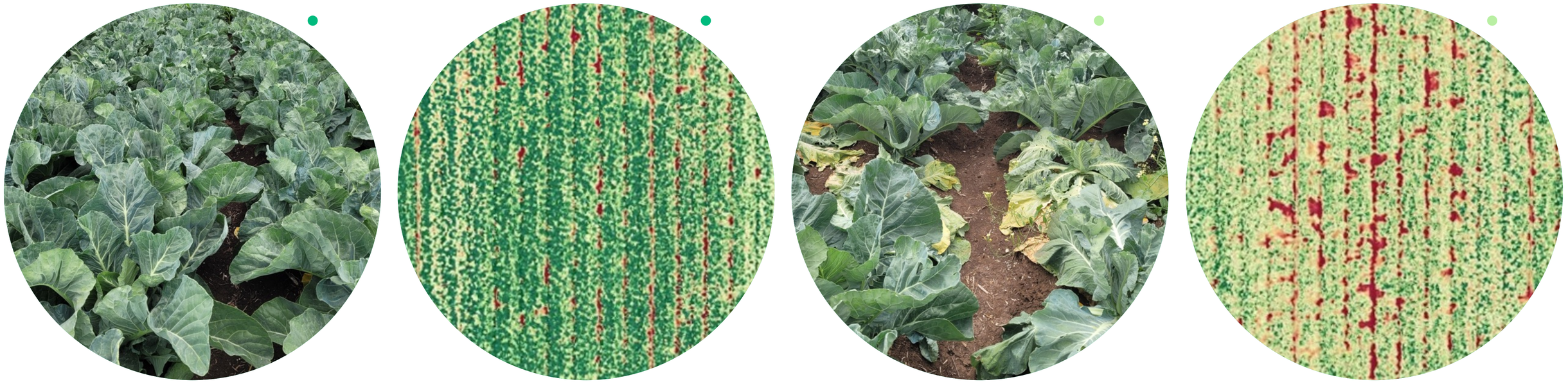
End-of-Season Disease Pressure in Cauliflower

Agronomist Brad Giggins conducted a trial with Metagen on an end-of-season cauliflower crop at Parchet's Creekside Fresh. Digestor NP was boom-sprayed onto the crop prior to transplanting. In the last month of growth, treated areas saw substantially decreased disease incidence caused by *Pythium* compared to untreated sections.

***Pythium* Disease Incidence**
(NDVI Imaging)

- Treated Area
- Untreated Area

↑ Photosynthetic Activity
↓ Plant Losses



Banana Farm
Adrian Crema

80HA
Queensland (AUS)

Reducing Inputs on Queensland Banana Farm

Adrian manages Crema Bananas with a keen implementation of science and family experience. His farm was one of the first adopters of the Metagen biostimulant range and has seen significant improvements in long-term production, nutrient efficiency and crop health.

Fungicide Applications
- Industry Standard **26 sprays/yr**

5/year

Annual Yield
- Industry Standard **28t/ha**

40 tonnes/ha

Nitrogen Efficiency
- Permitted Standard **400kg/ha**
- Metagen System **220kg/ha**

(↓**1.1t/ha** reduction in CO_2)

↑43% at 55% N

18 years

Phosphorous Efficiency
- Permitted Standard **60 units/year**

since last P application.

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Contact us today
and start putting your micromanagers to work.

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Grounded in Hard Science

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