
Biodel **AG**

Tools for Microbial Soil Reclamation™

Investor Deck



We envision a world where...

Agriculture experts create Grower- & Consumer- Friendly Products to

- Push Higher Crop Yields & Replace Synthetic Fertilizers
- Rebuild Soil Health & Manage Soil Salt Build-Up
- Deploy Sustainable Regenerative Agriculture Practices
- Drive Soil Storage of GHGs to combat Climate Change while Building Farm Revenues
- **How Do We do This? – Microbial Soil Reclamation™ using Sequester®**



Introducing Sequester[®] Soil Amendment



Sequester[®]'s Cyanoblend[™] formulation rapidly restores soil health, reduces water & fertilizer use, manages salts, & rebuilds soil carbon

Sequester[®] Soil Amendment is a **Micro Cover Crop[™]** where conventional cover crops are impractical or *during* crop cycles to rebuild soil health

Biodel is formulating extensions to the **Sequester[®]** line including granular & liquid biofertilizers and dust control products

Problems In Agriculture & Landscape

Problem

- Depleted Soils Reduce Yields & Revenue
- Rising Input Prices, especially Nitrogen fertilizers
- Limited Water availability & higher salt levels
- Soil Carbon values increasing, but market participation confusing
- Consumers want both thriving gardens & less environmental impact

Innovation

- **Sequester**[®] Restores Soil Health
- **Sequester**[®] significantly reduces the need for synthetic fertilizers
- **Sequester**[®] increases soil water storage and lowers salts
- **Sequester**[®] accelerates the formation of soil microbial biomass & organic matter
- **Sequester**[®] works well on ornamental and garden plants, & is easy to use

Application

- **Sequester**[®] helps orchestrate Regenerative Agriculture tools into a more productive program
- Multi-year **Regenerative Transition Contracts**[™] support Grower adoption
- **Sequester**[®] is easy to use, non-toxic & useful for conventional & organic growers
- **Sequester**[®] is available for home/garden, landscaping, small & large commercial Growers

Cyanobacteria – A Key Regenerative Agriculture Tool

Cyanobacteria are natural soil microbes that

- Are Autotrophic (Photosynthetic) & Nitrogen Fixing
- Improve Soil Structure & Water Use Efficiency
- Drive Exchange of Soil Salts to Less Harmful Compounds
- Build Soil Capacity to Sequester Atmospheric CO₂
- Use root exudates for food (heterotrophism) when deeper in soil profile

Powerful Attributes of Cyanobacteria in select Peer Review Journals:

- Cyanobacteria: Role In Agriculture – A Review, 2019, Usharani and Naik, *Trends in Biosciences*, 12(1), pp. 15 -26
 - Cyanobacteria as Potential Options for Environmental Sustainability – Promises & Challenges, 2008, Prasana *et al*, *Indian Journal of Microbiology*, (48), pp. 89-94
 - The Beneficial Effects of Cyanobacterial Co-Culture on Plant Growth, 2022, Kollmen and Strieth, *Life*, (12), pp. 223 -243
 - Cyanobacteria Inoculation Improves Soil Stability and Fertility on Different Textured Soils: Gaining Insights for Applicability in Soil Restoration, 2018, Camizio *et al*, *Frontiers in Environmental Science*, (6), Article 49
 - Current States and Challenges of Salt-Affected Soil Remediation by Cyanobacteria, 2019, Li *et al*, *Science of the Total Environment*, (669), pp. 258 -272
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Cyanobacteria Not Broadly Used – Until **Sequester**®!

Sequester® for Regenerative Agriculture Captures the Power of *Cyanobacteria*

- Cyanobacteria under utilized due to uneconomic production methods
- **Biodel** mastered formulating & packaging *Cyanoblend*™ (a proprietary blend of *Cyanobacteria*) allowing every Grower, Landscaper, & Homeowner to use the power of *Cyanobacteria* directly, easily – and economically at application rates capable of having strong biological impacts!

Sequester® - protected by 2 US Patent Applications, with more to follow

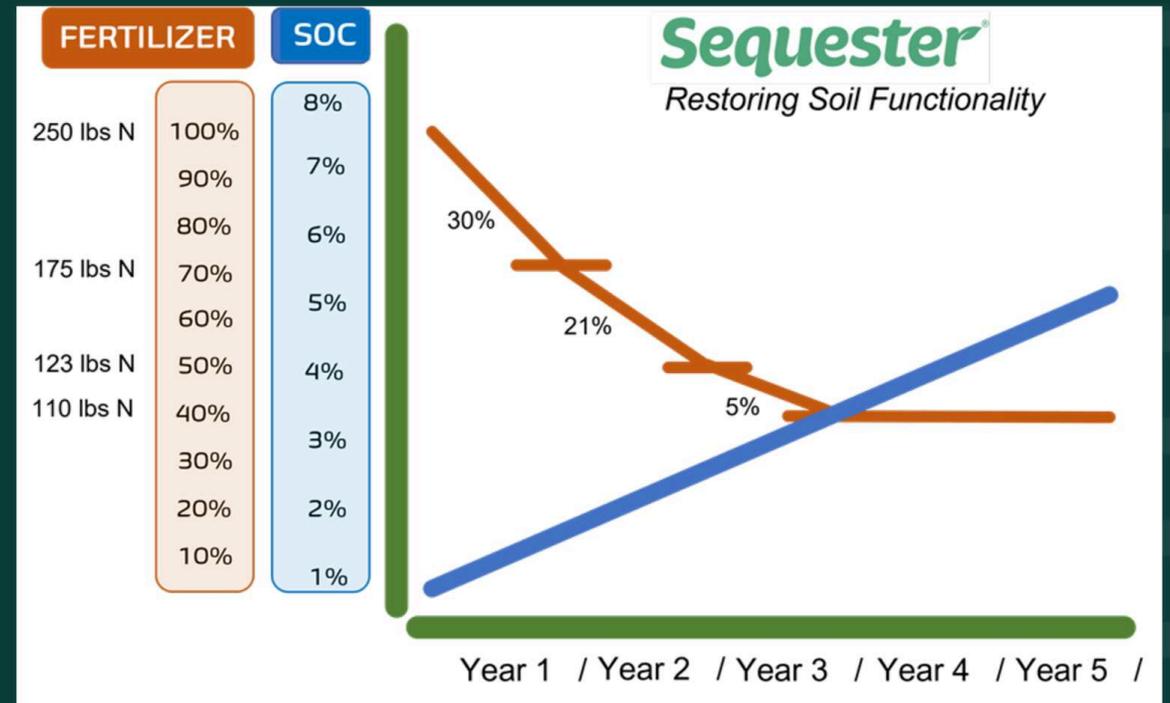


Nitrogen

When carbon and nutrient cycling is restored, fertility costs go down as a higher percentage of crop nutrients are available from the soil

Cyanoblend™ organisms fix nitrogen from the atmosphere, further reducing crop needs for nitrogen

“Cyanobacteria, as carbon and nitrogen fixers, can contribute to the improvement of soil nutrient status of organic carbon and nitrogen in arid soils.”
 –Cyanobacteria: Role in Agriculture, Usharani et al, *Trends in Biosciences*, 12(1), pp. 15 – 26, 2019



These are projected trends – actual results may differ

Salts

Cyanobacteria can play a strong role in reclamation of salt-affected soils as in the table at right. Standard nutrients were used on the “Untreated” samples while Cyanoblend™ was used on the “Treated” samples. The Treated samples show a reduction of 75% in Na⁺ levels. Cyanobacteria adapt to higher salt levels, so they are available to help the soil and plant without damage.

Water restrictions for farms & homes make salt management even more important – besides better soil health, lowered salts don’t need extra water to flush them away!



Sample Name	Lab ID	pH	Calcium (Ca) ppm	Magnesium (Mg) ppm	Sodium (Na) ppm
Turnip 1365 Untreated A	21E0246-01		7830 VH	540 VH	920 VH
Turnip 1365 Treated A	21E0246-02		6560 VH	424 VH	233 H
Turnip 1635 Untreated B	21E0246-03		6760 VH	376 H	1430 VH
Turnip 1635 Treated B	21E0246-04		6250 VH	360 H	268 H
New Spruce 7 Untreated A	21E0246-05		8430 VH	699 VH	1230 VH
New Spruce 7 Treated A	21E0246-06		9060 VH	592 VH	306 VH
New Spruce 7 Untreated B	21E0246-07		8150 VH	536 VH	1500 VH
New Spruce 7 Treated B	21E0246-08		8380 VH	530 VH	309 VH
Spruce 41 Untreated A	21E0246-09		8690 VH	786 VH	857 VH
Spruce 41 Treated A	21E0246-10		9280 VH	815 VH	286 H
Spruce 41 Untreated B	21E0246-11		9680 VH	796 VH	1230 VH
Spruce 41 Treated B	21E0246-12		10000 VH	866 VH	358 VH

Sodium
 - 75% Reduction
 - 82% Reduction
 - 75% Reduction
 - 79% Reduction
 - 57% Reduction
 - 71% Reduction

Water

A Compelling Reason to Use **Microbial Soil Reclamation**[™] - its impact on the water holding capacity & permeability of soil

Depleted soils lack the structure that enables water retention, contributing to erosion, and water & nutrient run-off

Cyanobacteria – such as *Cyanoblend*[™] in **Sequester**[®] - restore soil's ability to hold water by improving the structure of soil particles. These particles can then aggregate, creating a space permeable to water & dissolved oxygen

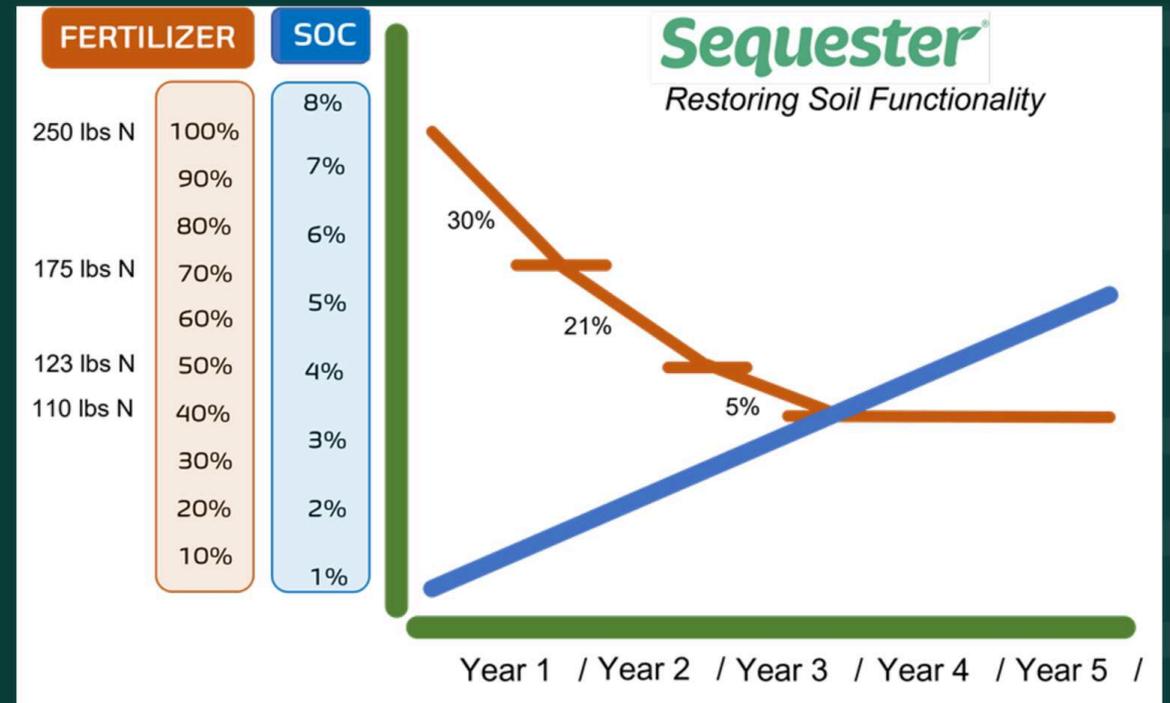
As drought, run-off, & salinity impact water supplies, these issues become more & more important. *McKinsey Global Institute* cites a potential decline of 25% in fresh water supplies by 2050

Carbon

SOC (soil organic carbon) increases annually, creating an opportunity for the sale of carbon credits.

Liquid Carbon Pathway - "Not only is rebuilding carbon-rich topsoil a practical and beneficial option for productively removing billions of tonnes of excess carbon dioxide from the atmosphere, but when soils gain in carbon, they also improve in structure, water-holding capacity and nutrient availability." -

Liquid Carbon Pathway Unrecognized, July 2008, *Christine Jones PhD, Australian Farm Journal*, pp. 15 - 17



These are projected trends – actual results may differ

Isoprenoid Amino Complex[®]

Biodel researchers discovered Isoprenoid Amino Complex[®] (IAC), a proprietary extract from a desert plant that shows remarkable effects in several areas:

- As a growth stimulant & nutrient absorption aide
- As an abiotic stress reliever in cold, heat *and* drought conditions
- Pesticidal applications have been tested

IAC is distributed though an exclusive Licensee with strength in both Turf/Landscape and Agriculture, with Sales increasing 87% year-to-year

IAC is protected by 3 US Patents and 2 International Patents, with 9 Patent Applications in Process

IAC is used on row crops, produce crops, permanent crops, and turf. IAC carries organic registrations (OMRI & CDFA)

Business Model

Necessary Annual Consumables

- ❖ For World's Largest Manufacturing Industry – Agriculture (Plus Landscape, Home/Garden)
- ❖ Repeat Annual Purchases

Target Markets – B2B & B2C

- ❖ 1.4 Billion Acres Farm & Privately Held Range Land (US)
- ❖ 40 Million Acres of Managed Turf
- ❖ 83 Million Detached Single-Family Homes (US)
- ❖ \$13 Billion 'Ag Biologicals' Market Growing at 14% thru 2027 (Markets & Markets, 3/22)

Manufacturing Model

- ❖ Gross Margin > 60%
 - ❖ Production Uses Widespread Technology, Easily Scalable
 - ❖ Distribution Thru 3-Channel Model for Sequester® thru Licensee for IAC
 - ❖ Intellectual Property Portfolio includes 5 Issued Patents, 11 Patent Applications
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Market Channels



Direct to Consumer Sales

- Positive Environmental Impact Focus
- **Sequester**[®] online store (6/22 launch) www.sequester.ag



Distributed Ag Market

- Build on eCommerce brand awareness to Crop Consultants
- Conventional 'ag chemical' market
- 2023 emphasis on Distributors



Institutions, Corporations, Utilities, Tribes

- Pursuing Higher Returns & Carbon Credits from farm, forest, & range land
- 5-Year Transition Contracts or Direct Sales & Support

Competitive Landscape

Biological Crop Inputs Competitors:

- 50+ Competitors, both emerging & some established
- Combinations of microbial and fungal species, sea plant extracts, humic acids
- Biostimulants, pesticides, soil amendments, biofertilizers

Biodel AG Competitive Advantage:

- **Sequester**[®] using Cyanoblend[™] inoculates *and* feeds soil microbial biomass & stimulates growth to optimize yields & carbon storage
 - **Sequester**[®] reduces the impact of soil salts *and* helps soils hold water
 - **Sequester**[®] lowers fertilizer costs by restoring nutrient cycling *and* fixing nitrogen
 - **IAC** consistently resolves growth & stress problems
 - Competitive cost with synthetic & organic products
 - Built on **multifunctional** and economical biology
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Leadership



Ben Cloud
CEO

Founder, Algae Biomass
Organization, Agribusiness
Entrepreneur & Grower



Paul Zorner, PhD
Technical Advisor

Scientist & Soil Carbon Expert,
Executive Leader in Multiple
Agribusiness Ventures



Kent Adams, MBA
Technical Advisor

CPG & Microbial Activity Expert,
Chemistry & Physics
Background



Michael Kirksey, MBA
CFO/VP

Finance & Start-Up Executive,
Experience in Agribusiness &
Advanced Materials

Board of Directors

Stephen Butler

International business exe.

Mike Cavanaugh

EVP, Floratine Products Group

Ben Cloud

CEO, Biodel AG

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President, Versalis Americas

Alan Boyce

Exec. Chairman, Materra Farming

Dan Thelander

Partner, Tempe Farming Co.

John Foster

CEO, West Coast Turf



Projections (Medium Scenario)



In Thousands of Dollars

Income	2021	2022 (e)	2023 (e)	2024 (e)	2025 (e)	2026 (e)
IAC Revenue	\$357	\$514	\$2,120	\$5,300	\$13,250	\$26,500
Sequester [®] Revenue	16	158	2,325	7,800	21,150	40,800
Total Revenue	\$373	\$672	\$4,445	\$13,100	\$34,400	\$67,300
COGS	163	227	1,642	5,130	13,660	26,520
Gross Margin	\$210	\$445	\$2,804	\$7,970	\$20,740	\$40,780
Operating Exp.	441	1,426	4,529	5,829	10,292	14,251
EBITDA	(\$231)	(\$981)	\$(1,725)	\$2,141	\$10,448	\$26,529

These Projections are estimates only, and do not guarantee or imply actual results

Treated Acres	2021	2022	2023	2024	2025	2026
IAC	115,000	339,200	1,696,000	4,240,000	10,600,000	21,200,000
Sequester [®]	5,000	6,800	68,000	272,000	816,000	1,632,000
Total Treated Acres	120,000	346,000	1,764,000	4,512,000	11,416,000	22,832,000

Funding

Interim Funding - 2022: Convertible Note – 20% Discount to Preferred On Conversion

\$1.5M

- Brand Rollout & Market Awareness of Sequester®
- E-Commerce Capability
- Process & Lab Equipment

“B” Round - 2023:

\$4.0M

Preferred Stock – Voting, 1X Preference

- Market Penetration of Sequester® Brand
- R & D – studies for development and EPA registration
- Expanded Facility & Capacity



Summary

Biodel Develops & Manufactures Sequester® and Isoprenoid Amino Complex® proprietary crop/soil nutrient products reducing water and fertilizer use while increasing yields and GHG storage

Products are Revenue Stage and poised for deeper market penetration

Market Size is multi-billion \$ and growing rapidly

Leadership is experienced in Industry and Business Growth

Biodel seeks - \$1.5 Million in Convertible Notes in 2022

- \$4.0 Million in "B" Round in 2023



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