

Soileos

Bio-released Micronutrients for Agriculture



Lucent BioSciences, Inc.

Climate change is depleting our vital resources, making feeding a growing population increasingly difficult*

We need to enrich the soil to increase food production and its nutrient value.



*FAO of the United Nations estimates global food demand will increase 50% by 2050

Soileos is the solution.



Our mission is to provide sustainable solutions to address climate impact on global food security and nutrition.



The micronutrient deficiency problem:

Micronutrient zinc, iron, boron and manganese deficiency results in low crop yields.



Micronutrient deficiency impacts millions, and is especially problematic in alkaline soils



Current micronutrient solutions prove challenging for farmers

Farmers that currently apply micronutrients run into several issues:

It's labour intensive and it requires precise application in both timing and concentrations.

Current micronutrients are expensive

- They must be applied multiple times a year
- They are cost & labour intensive
- Inefficient dosing is wasted time, money & effort

Current micronutrients are ineffective

- Micronutrient dosing needs to be precise but mistakes are common and frequent
- Incorrect dosing has either no effect or can be toxic, reducing crop yields
- Micronutrient effectiveness is limited by the local environments, particularly pH. In neutral to alkaline soils micronutrients released to the environment are chemically altered and essentially bio-unavailable

Current micronutrients are pollutants

- Inaccurate dosing of micronutrients can result in toxicity for plants
- Micronutrients can wash-out and pollute the groundwater and local environment

Children are especially at risk of micronutrient deficiency



The Center for Disease Control & Prevention sites...

“At least half of children worldwide ages 6 months to 5 years suffer from one or more micronutrient deficiency, and globally more than 2 billion people are affected”*

Sam Meyers of Harvard has noted that micronutrient deficiency can lead to compromised immune systems, increased death rates in childbirth, higher infant mortality, reduced IQs, chronic stunting and wasting in children, and reduced work capacity in adults.

*<https://www.cdc.gov/impact/micronutrients/index.html>

Micronutrient deficiency is worsening due to climate change



“Based on population estimates for 2050 and an expected rise of carbon dioxide, nutrient deficiencies of those already suffering will worsen, and 175 million more people could join the 1.2 billion who are Zinc deficient”*

*<https://www.smithsonianmag.com/smart-news/climate-change-could-lead-nutrient-deficiency-hundreds-millions-180970149/#VvZrmFoJd2joDCSz.99>



Farmers around the world need a revolutionary micronutrient fertilizer.



Soileos increases crop yields and delivers essential micronutrients at lower costs.

Soileos will transform the way the world farms



*Covering the micronutrient formulation and manufacturing

What sets Soileos apart

Biological On Demand Release - means that when micronutrients are not available to the local environment a plant is still able to absorb the micronutrients as needed. A single application can last a long time – sometimes 1-2 years depending on soil pH

The patented formula and manufacturing process for Soileos binds micronutrients in their bioavailable forms to a natural substrate. The chemical bond is strong enough to prevent leaching of the micronutrient into the local environment, but is weak enough for plants to access the micronutrients on demand.

Hemp seed, rice, coconut husks or straw are used as natural substrates to deliver valuable micronutrients.



Soileos micronutrient solutions



**Mixed
Micronutrients**

**Zinc, Iron, Boron,
and Manganese**

**Custom blends
for any application**

In independent research at the University of British Columbia

**Soileos generated positive results and
visible signs of healthier plants.**

Comparative test results show the advantage

Both test tubes were treated with high concentrations of manganese. The test tube on the right was treated with traditional manganese chelate product while the test tube on the left was treated with Soileos Manganese.

As concentrations of micronutrients increase, plant health starts to decrease with traditional micronutrient chelates.

With Soileos, plants show healthy growth over a wide range of concentrations.



Soileos saves farmers time and money

	Soileos	Other Products
• Biological on-demand released	Yes	No
• Works in alkaline soils	Yes	No
• Groundwater safe	Yes	No
• Non-toxic	Yes	No
• EDTA-free	Yes	No
• Easy dosing	Yes	No
• Can be applied in bad weather	Yes	No
• Crop yields increase	Yes	No
• Application frequency	1x per year	3-6x per year
• Labor costs per hectare/year	Low	High



A man with dark hair, wearing a blue jacket and a grey hood, is leaning over a row of green plants in a greenhouse. He is holding a tablet in his left hand and touching a plant with his right hand. The greenhouse has a glass roof and metal frame, with other rows of plants visible in the background.

The Soileos plan:

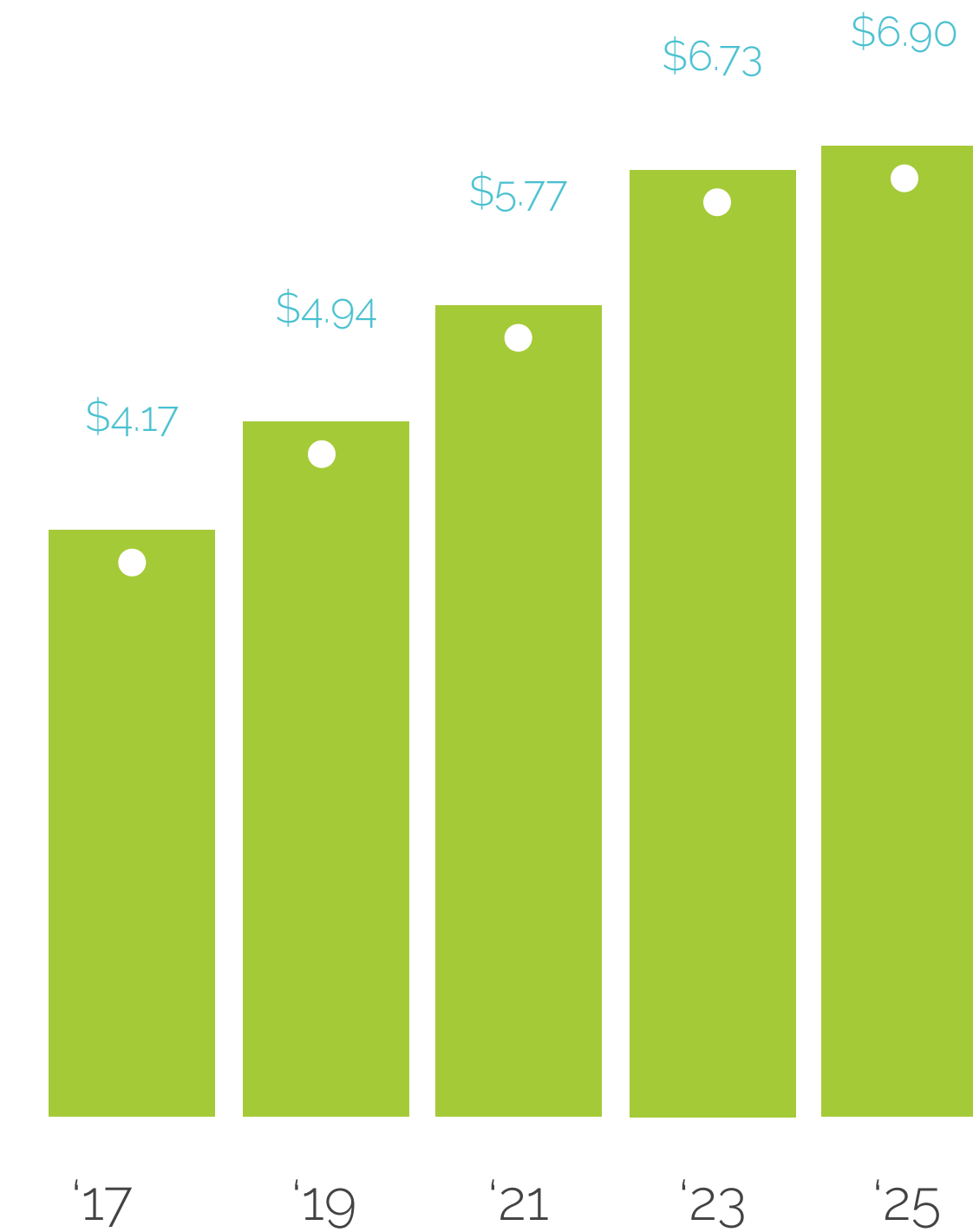
The market will grow \$2 billion in the next 3 years

In 2017 micronutrient sales in the US exceed \$4.17 billion, farmer demand is expected to drive that number to \$6.9 billion by 2025.

Government support including per tonne subsidies for boron and zinc in India, and continued support from Chinese and African governments, will further grow the market for micronutrients in years to come.

- 2017 micronutrient market sales – USD \$4.17 billion
- Estimated growth to USD \$6.9 billion by 2025
- Largest micronutrient markets: China, USA, India, and Brazil
- Expected to grow at CAGR of 8.2%

U.S. micronutrient market forecast in billions

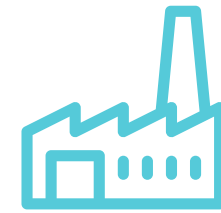


How Soileos gets into the hands of those who need it



Product

- Pre-mixed micronutrients
- Single nutrient variations: Zinc, Iron, Boron, Manganese
- Small scale manufacturing plants with IP license



Manufacturing

- Regional subcontracted manufacturing



Customers

- B2B – fertilizer distributors, retailers
- B2C - end users / farmers, major applications in industrial field agriculture and greenhouses



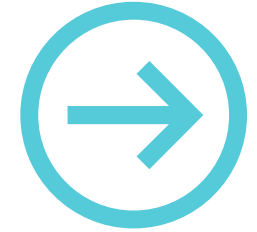
Potential Uses:

- Berries
- Legumes
- Soy beans
- Alfalfa
- Wheat
- Potatoes
- Rice
- Cotton



Distribution

- Through fertilizer & farmer supply channels
- Direct to consumer online



Go-to-Market Roadmap

1. BC: green houses, berry farms
2. Canada wide: field crops
3. USA: field crops
4. Global

From testing to global use in 3 years

2019

Validation and Go-to-Market

- Q1: Field trials
- Scale-up via manufacturing partner
- Prepare branding and website
- Obtain regulatory approval
- Q4: Go-to-market with BC berry farms

2020

Scale

- Q1: Expand in Canada
- Canada: field crops
- USA: field crops

2021

Global

- India
- Asia



Finance and Financials

Manufacturing Cost

\$1,050/ton

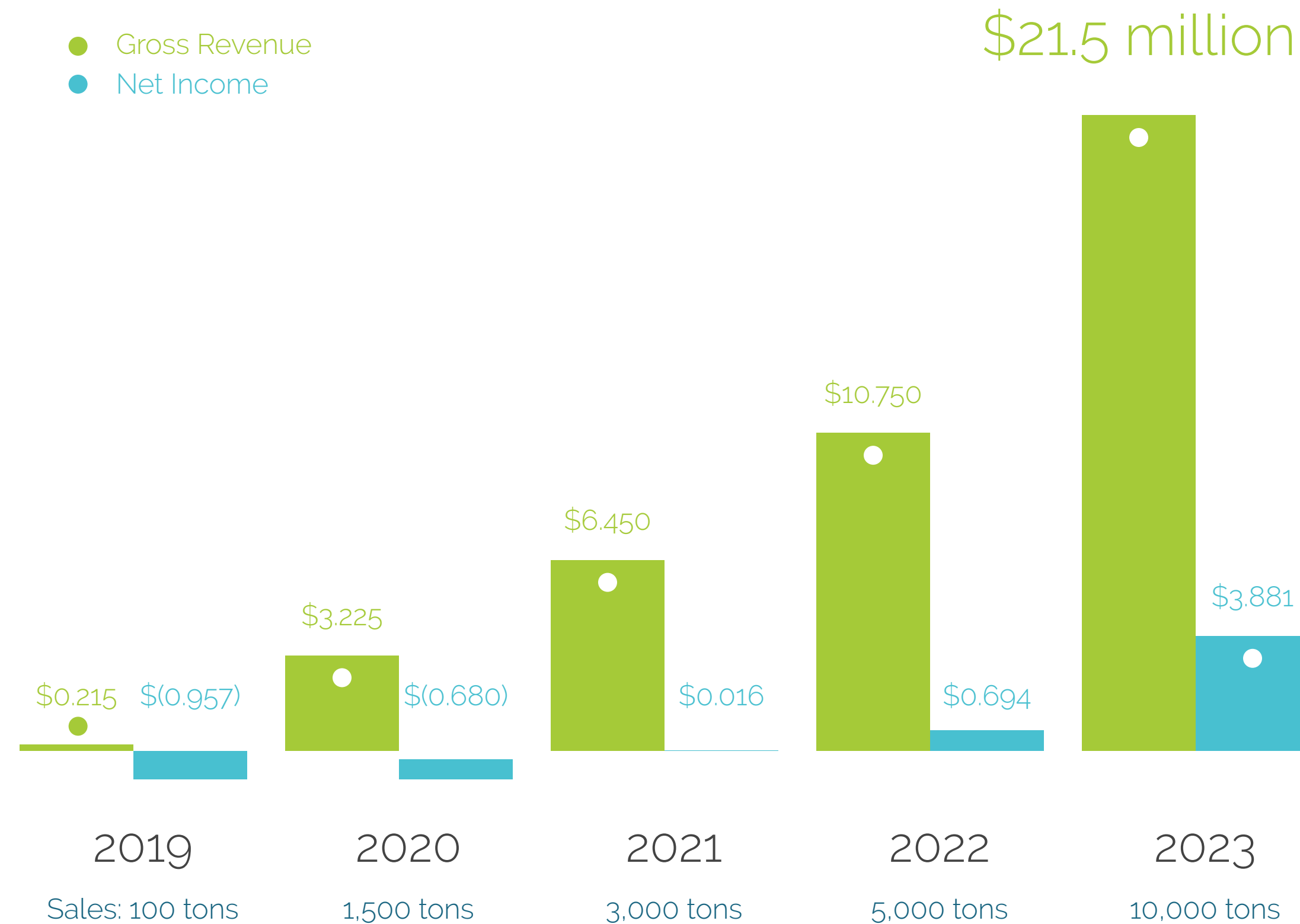
Wholesale Price

\$2150/ton

Retail Price

\$3,225/ton

Financial forecast 2019-2023 in millions of CAD dollars



A person wearing a denim shirt is holding a wooden crate filled with fresh vegetables. The crate contains a variety of produce including lettuce, tomatoes, cucumbers, and peppers. The background shows a field of crops under a warm, golden sunset sky.

The Soileos team:

The Lucent BioSciences Soileos Team & Advisors



Michael Riedijk
President & CEO

Serial Entrepreneur, Investor 2 successful start-ups, 20 years of exec experience, M.Sc Industrial Design Engineering



Peter Gross
Chief Technology Officer

Engineer with 20+years corporate R&D, 10+ years intellectual property management, M.Sc Physics, B.Tech Engineering



Jose Godoy Toku
Director Business
Development

18 years of international business development experience, Law degree



Dr. Farah Nour
Head of Lab Research

15 years of experience in material research & Associate Professor PhD in Organic Chemistry



Pieter Dorsman
Chief Financial Officer

Finance Executive, Numerous successful tech start-ups, 25 years of exec experience, MA in Economic History

Board of Advisors

Prof. Neil Branda

Canada Research Chair in Materials Chemistry, 4D Labs, Simon Fraser University

Dr Deborah Henderson

Director of the Institute for Sustainable Horticulture, Kwantlen Polytechnic University

A wide-angle photograph of a lush green field, likely a crop field, stretching to the horizon. The sky is bright and hazy, suggesting a sunrise or sunset. The foreground shows individual blades of grass in sharp focus, while the background is softly blurred.

Your investment opportunity:

You can help revolutionize farming, and fight global food insecurity

We're seeking \$1.5 million to fund field studies, scale-up, and go-to-market.

~\$350K

Field Studies

~\$500K

Scale-Up

~\$650K

Go-to-Market

Exit opportunities include going public, or a strategic sale to a large fertilizer company like Nutrien, AkzoNobel, Yara, or Mosaic.

Lucent BioSciences is applying for an additional \$1M SDTC government grant.



Contact Lucent BioSciences to invest

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