Market Opportunity

Burge Environmental, Inc. has identified significant market opportunities for the technology developed in this scope of work:

1. Precision Agricultural
    - Soil amendment and chemical nutrient optimization utilizing rhizosphere microbial response.
    - Real-time substrate monitoring for controlled environment agriculture
    - Automated Sensor for determining the fate and transport of chemicals (fertilizers, pesticides) in the rhizosphere.

2. Plant Health Monitoring
    - Automated sensor for determining the health and/or stresses caused by environmental factors on the plant growth.

3. Ecosystem Monitoring
    - Remote monitoring of tundras, forests, grasslands, and watersheds.

The proposed system could be easily applied to any of the above market segments. There are no current, low cost, automated technologies on the market capable of this long-term in-situ potentiometric monitoring of a variety of unsaturated environments.

The precision agriculture market is a multi-billion-dollar market that has been growing between a 13%[1] and 16%[2] compounded annual growth rate. Using smart technology addresses the growing problem of increased input costs, (fertilizer prices have tripled since 2001[3]) reduce the resource and energy intensity, and mitigate topsoil loss of modern farming.

Real-time soil health and rhizosphere monitoring sensor technology could greatly expand the size of the precision agricultural market as current sensor technologies are limited to existing moisture, pH, salinity, and standard weather sensors. These are all indirect measurements that can be used with expensive lab soil reports and expert analyses and are done after a problem has already been discovered. Real-time rhizosphere monitoring could help identify problems before significant costs are accrued and in time to avoid yield losses as well as find optimal growth inducing nutrient and soil amendment application methods to further increase crop and economic yields.

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[1] https://www.marketsandmarkets.com/Market-Reports/precision-farming-market-1243.html
[2] http://www.businesswire.com/news/home/20170201005545/en/Global-Precision-Agriculture-Market-Growth-CAGR-16
[3] https://www.ers.usda.gov/data-products/fertilizer-use-and-price/

Plant health monitoring and Ecosystem monitoring are ancillary market opportunities on track to be worth upwards of $11 billion[4], and $20 billion[5] by 2022 and 2020, respectively.

Company/Team

The management team for Burge Environmental Inc. is composed of [redacted]. Both have been involved with the environmental consulting, laboratory and instrumentation markets since 1985. The team has performed over 1500 site assessments and environmental restorations during this period. Since 1995 the team has designed, fabricated and marketed several types of environmental monitoring instrumentation in niche analytical markets (e.g. Strontium-90 and Technetium 99 monitoring systems).

[redacted] lead an experienced interdisciplinary science and technology product development team composed of [redacted] a Ph. D in Biochemistry with over 10 years of experience in biopharmaceutical lab product development and sales, [redacted], an Electrical Engineer with multiple decades of experience developing custom circuitry and logic systems for advanced technologies, and [redacted], an experienced bio-technology inventor and entrepreneur whom founded, led, and exited a multi-million dollar bio-reactor technology company that produces microbial bio-stimulant soil amendment products for agricultural markets.

Intellectual Property

Two patent applications and several provision patents were submitted to the USPTO for the design and use of the microbial sensors for deployment in aquatic and saturated environments. One provisional patents was filed for the preliminary design of a microbial sensor deployed in soils and unsaturated environments. We will prepare patent applications if, during the scope of work, and new inventions reduced to practice. We believe the current patents will allow us to initially enter the field with minimal competition from potential competitors.

Revenue Forecast

Burge Environmental Inc. estimates direct annual sales revenue of $3 to $6 million within the first 10 years of commercialization from the precision agricultural market alone with our inexpensive device as a service sensor + cloud data model enabling low-risk adoption by farmers.

The greater precision agriculture market could also grow substantially through an industry halo effect of increasing the value of existing sensor technologies and agronomist services used in conjunction with the real-time soil and rhizosphere data from this technology.

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[4] https://www.marketsandmarkets.com/Market-Reports/smart-agriculture-market-239736790.html

[5] https://www.marketsandmarkets.com/PressReleases/environmental-monitoring.asp