Innovative Clean and Green Fertilizers with High NUE (Nutrient Use Efficiency)

The world today is facing severe and systemic issues with food shortage as a result of a growing population and limited land use for agriculture. This impact is magnified by decades of over-relying on chemical fertilizers, resulting in significant land degradation and pollution. Escalating fuel costs, costs of fertilizers and transportation costs in the distribution of crops and produce have also made margins in farming thinner than ever. These concerns are addressed through the “clean and green” technology innovation that is friendlier to the environment, ensures a sustainable soil ecosystem and promotes competitive crop yields.

This innovation is a breakthrough plant nutrient technology process that delivers water-insoluble but highly bio-available minerals to plants. It optimizes absorption of nutrients by plants, and hence maximizes benefits to plants. It uses abundant, renewable, nutrient-rich resources as its starting material to produce novel, new generation liquid fertilizers. Benefits such as increased crop yield and quality, increased starch and sugar content and improved root and shoot growth on rice, industrial crops (e.g. oil palm, sugarcane, corn), tuber crops (e.g. potato, sweet potato, cassava) and top fruits (e.g. apple, citrus, banana) have been consistently demonstrated in fields and plantations.

Potential Applications

The need to boost agricultural production worldwide is stimulating global fertilizer production and consumption. This is also fuelled by strong, sustained demand from bioenergy crops. The technology produces liquid fertilizers that are friendly to the environment, nurtures the land (soil) and ensures consistent and competitive crop yields and productivity.

The fertilizers can be applied on:

- Edible crops
- Field crops
- Glass/plastic house cultivation
- Plantations
- Plantation crops
- Lawns
- Landscape
- Turf

Customer Benefits

The product innovation offers a cheaper, safer, better and sustainable solution to the plant industry for use in agriculture, landscape and turf.

- Economical for the grower as its use rate is 10 – 20 times lower than conventional chemical fertilizers with only one application per season
- Environmentally-friendly as it does not run-off or leach into the environment, even under rain or irrigation
- Consistent results in enhancing crop yield and quality at farms and plantations
- Safe to crops as it does not cause fertilizer burn, a risk of chemical fertilizer overuse
- Easy to use with conventional methods of soil drenching, foliar spray and fertigation
- Novel use for seed treatment, tuber treatment and stem dipping of seedlings
- Long-term economic and environmental advantage when used to reduce or replace chemical fertilizers
- Saves transport and warehouse costs as it is a low volume product
- Saves manufacturing costs as it is produced with an energy-efficient manufacturing process

Technology Features & Specifications

- High NUE (nutrient use efficiency)
- Liquid formulation
- Optimized and smaller particle size
- Uses renewable resources as its starting material
- Water-insoluble minerals but highly bio-available to plants
- Slow release with long-lasting continuous performance

Market Trends and Opportunities

Globally, there is a growing industry trend to reduce chemical inputs in agriculture by introducing product innovations that are friendlier to the environment and maintain the long-term ecological balance of the soil ecosystem. Overuse of chemicals damages land and depletes soil fertility, causing crop yields to decline through time.

There are numerous IP opportunities to extend the
technology. The IP started as a plant nutrient delivery innovation and can be extended through co-formulations with plant protection ingredients, enhancing its profile as a nutri-pharma solution. Nutri-pharma refers to dual functions that not only help plant growth and nutrition but also protect against disease or insect pests. This will add value and capture new markets by expanding the technology from crop production to include crop protection. Another potential IP extension is in seed treatment with a crop protection function targeting global large scale, mono-cropping plantations.

For more information on technologies we have to offer, please visit our website at https://www.ipi-singapore.org or enquire at techscout@www.ipi-singapore.org