What We Do -

Agricultural Products

Plants have long been used for the benefit of humans - useful plants and plant-derived products touch every aspect of our lives. The recent spike in energy prices and our growing awareness of the need to mitigate greenhouse gas emissions have resulted in a renewed interest in plants that can be grown for fuel or biomass production. Modern advances in genome sequencing, plant genetics, transgenesis and cultivation of plant-associated microbes are allowing rapid improvements to be made in crops that have seen little enhancement in the past. Using these methods, SGI is developing high-yielding, more disease resistant and economic plant feedstocks that are supplemented with efficient and environmentally friendly microbes to replace chemical fertilizers and confer disease and stress resistance.

Improved Plant Feedstocks

Oil Palm and Jatropha - *Collaboration with Asiatic Centre for Genome Technology (ACGT)*

SGI has a multi-year, research and development collaboration and commercial joint-venture with the Asiatic Centre for Genome Technology (ACGT) focused on the genomic understanding and improvement of oil palm and jatropha, two of the most productive and promising oil-producing crops.

Oil Palm

Oil palm (Elaeis guineensis) is the highest-yielding oilseed crop in the world. Demand for palm oil has steadily increased over the last two decades. The current palm oil market is approximately 40 million metric tons (almost $20 billion market size), and the 4% predicted annual growth over the next decade may result in palm oil becoming the leading internationally traded edible oil. Malaysia and Indonesia account for about 80% of world palm oil production, and represent the main target markets for SGI and ACGT's improvement efforts. The two companies completed the oil palm genome in May 2008 and are working towards achieving dramatic yield gains through genetic improvement efforts based on marker-assisted breeding.

Jatropha

Jatropha (Jatropha curcas) is considered to be one of the most promising dedicated bioenergy crops. SGI and ACGT have focused on Jatropha for several reasons: it is a tropical tree with the potential to become one of the highest yielding oilseed plants in the world; it can be grown on marginal, non-food producing lands; it has a very short generation time allowing rapid improvement by marker-assisted breeding; its seed oil has desirable properties for biofuel production. Jatropha is a non-domesticated, non-food plant and an excellent candidate for enhancement though genetics and genetic engineering. SGI and ACGT completed the jatropha genome in May 2009 and are preparing to launch a broad jatropha

improvement program aimed at developing elite varieties for planting in the tropical and sub-tropical world.

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Biofertilizers and Disease-Control Agents

Plant-associated microbes play an important role in the health of the plants through their ability to improve the availability and uptake of nutrients and by promoting plant health and growth. SGI is using high-throughput methods to isolate and characterize large numbers of microbes and screen them for beneficial effects on plants. Our goal is to develop the best strains as biofertilizers and as disease-control agents, to reduce the application of chemical fertilizers and pesticides and enable effective disease control for long-lived perennial tree crops.

Oil Palm and Jatropha - *Collaboration with Asiatic Centre for Genome Technology (ACGT)*

In collaboration with the Asiatic Centre for Genome Technology (ACGT), SGI is evaluating microbes isolated from oil palm and jatropha roots and other tissues for use as biofertilizers and disease-control agents. We are specifically targeting fungal diseases that can affect oil palm plantations and are causing widespread economic losses. In addition to disease control, the application of our microbes to plantations has the potential to raise plant yields while reducing fertilizer applications, and will greatly contribute to the productivity and economic value of oil palm and jatropha.

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What We Do

Our Science & Capabilities

Next Generation Fuels & Chemicals

Hydrocarbon Recovery & Conversion

Agricultural Products

- Improved Plant Feedstocks

- Biofertilizers and Disease Control

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