Sandia National Laboratories

The Trojan horse Project Biorefinery in Plant

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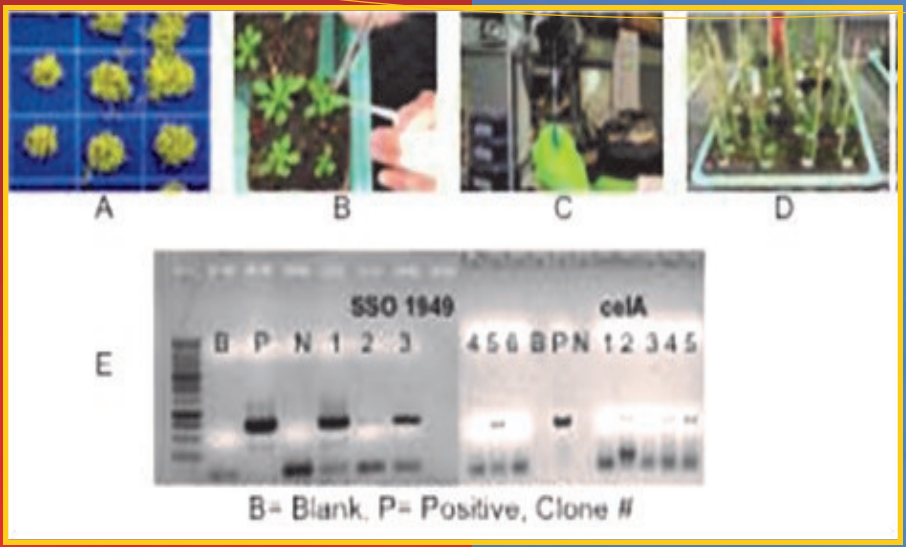

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TECHNOLOGY SUMMARY

Sandia researchers have developed a technology that could potentially turn agricultural waste, weeds and other plant products that are typically discarded or destroyed into fuel. The idea is to create consolidated biorefinery process inside plant cells.

This project seeks to embed into the plant cells synthetic circuits constructed using parts from extremophilic organisms that can break down the complex carbohydrates. The unique aspects of Sandia's approach are the rationally engineered enzymes that are prepared and integrated into plant cells by multiple transformation techniques to become "Trojan Horses" during pretreatment conditions.

BENEFITS

Significant reduction in the cost and complexity of the processes to deconstruct biomass for biofuels processing.

Dedicated biofuel crops will not compete with agricultural crops used for human and/or animal use.

Synthetic biology is not being done on food-source plants.

Enzyme will not be expressed in the grain, it will only be in the stalks and leaves (which is not used for livestock).

POTENTIAL MARKET APPLICATIONS

Sustainable production of fuel materials from renewable resources, chemicals, biopolymers.

Developing dedicated energy crops with significant advantages in a consolidated bio-processing system

TECHNOLOGY READINESS LEVEL

Sandia estimates this technology at approximately TRL 9. Application of the technology is in its final form and under mission conditions such as those encountered in operational test and evaluation.

INTELLECTUAL PROPERTY:

US Patent Pending

Licensing & Partnering Status:

Various licensing and partnering options are available. Please contact the intellectual Property Department to discuss.

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