

CETS, LLC: A Whole New Field

A mini-interview with minituber guru, Dr. Ray Bula

by Tamas Houlihan, Managing Editor

Editor's Note: As Wisconsin celebrates 100 years of seed potato certification, we've taken a long look back at the history of seed potato production in the Badger State. But in honor of the progressive nature of the potato growers in the state with the oldest certification program in the country, we also want to take a look ahead to see what the future may have in store for seed potato producers.

Space age technology. There can be no denying that AstroTubers™ are just that.

CETS, LLC, also known as Controlled Environment Technology Systems, has been a U.S. registered company since 2003. It was formed to develop, market, and facilitate the operation of its patented AstroTuber™ technology worldwide.

With a Ph.D. from the University of Wisconsin-Madison, CETS Co-Owner Dr. Ray Bula has over 50 years of experience in the field of agricultural science and technology. The former Director of the NASA Center at UW-Madison, Bula, was the principal investigator for a high-profile project that grew potatoes in space. He worked closely with a team led by horticulture professor Theodore Tibbitts

that produced the first food (potatoes) ever grown in orbit. Norland potato plants, which spent 16 days circling Earth aboard Space Shuttle Columbia, had indeed developed tubers in the microgravity environment of space. Bula was inducted into the Space Technology Hall of Fame, Space Foundation in 2000.

In the following mini-interview, Dr. Bula explains how his company is on the cutting edge of minituber production technology.

What are AstroTubers™?

AstroTubers™ are a type of disease-free seed potato used in the earliest field generation of potato production. CETS' high-quality AstroTubers™ can be propagated at a much faster rate than any other system used for seed potato propagation. Tissue culture plantlets are used as the source material for the production of the AstroTubers™. Disease-free tissue culture plantlets are obtained from the Wisconsin Certified Seed Potato Program, University of Wisconsin-Madison, other state and federal potato improvement programs, and the World Potato Genebank in Sturgeon Bay, Wisconsin. In this way, it is possible to obtain essentially any potato



Ray Bula

variety in the world. The AstroTubers™ are planted in the field for the production of the first generation high quality, low pathogen seed potatoes.

Starting with the seed, what are some of the benefits that CETS offers?

CETS can provide seed potatoes derived from AstroTubers™ that meet or exceed Wisconsin certified and foundation class requirements. CETS is also highly flexible. Besides providing AstroTubers™ technology, we can supply seed stocks of any potato variety specific to a grower's request, even organic. The CETS controlled environment system allows you to simultaneously grow different quantities of more than one variety. CETS will work with you to customize your seed potato crop and explore new growing strategies with a much smaller assumption of risk than with traditional methods.

What else does CETS offer potato growers?

CETS will give you the tools to grow—from technology, to training, to support. This includes a license for the use of

of Seed Potato Production



This growth chamber features LED lighting which produces a significant energy savings in the production of minitubers.

Ray Bula looks over a phytotron growth chamber used for the production of disease-free seed potato plants.



the proprietary controlled environment software and technology. You will also get all CETS technology advancements and updates, specifications and guidelines for housing and equipment. We also offer extensive hands-on training on systems, growing strategies, harvest and technical knowledge at our production facility in Grand Marsh, Wisconsin. To ensure your success we provide support for our systems throughout the startup period.

What are the primary benefits of your patented phytotron chambers?

“ The key to the future of the potato industry is improved varieties. ”

We use phytotrons, or controlled environment chambers, to house the mother plants which are the source of the stem-cutting planting material for the

production of minitubers. All phytotrons are connected to a computer from which you can set the parameters of the
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Seed potatoes derived from AstroTubers™ are harvested at Bula-Gieringer Farms near Grand Marsh, Wisconsin.

environment, depending on the specific stage of plant development. The unique environmental conditions sequence program coupled with a proprietary computer program is designed to maintain the optimum environmental parameters to support growth and development of plants throughout the production cycle. There is little need for any maintenance or staff; and in the event of a power failure, the plants can endure without consequences up to 48 hours. This system, which requires very little space for nuclear stock production, also provides the ability to quickly propagate a potato variety currently in the highest demand.

How does CETS Tech compare to current methods of seed potato production?

Utilizing this computer-controlled environment, the CETS patented technology makes possible the ultra-high-speed propagation of up to six AstroTubers™ harvests per year in any climate, anywhere in the world. Essential to our pioneer technology is the original software we've developed to regulate the consistent production of seed potato stocks 50-60 days from planting.

Current greenhouse and screen house methods are limited and contain a high



A tray of AstroTubers™ are ready for planting. AstroTubers™ are planted in the field for the production of the first generation high quality, low pathogen seed potatoes.

probability of inadvertent insect and/or virus infestation. CETS offers a much faster, more dramatic advancement over traditional methods. This production system produces minitubers that break dormancy in less than two months, which is much faster than typical minitubers that could take six months or longer to initiate sprouting.

Where do you see CETS heading in the future?

The key to the future of the potato industry is improved varieties. New or improved varieties offer huge potential to address current industry challenges such as obesity or acrylamides, and new industrial uses of potato starch and protein. They also create new opportunities for better tasting, more nutritious or unique potato dining experiences. We are able to obtain test-

tube plantlets of virtually any variety that are absolutely clean of pathogens, to be used as mother plants. These high-quality new potato cultivars can be rapidly increased to commercial quantities. Long-standing, traditional potato varieties are also available, as well as organic or genetically-modified materials.

Not only does this technology offer dramatic new possibilities in commercial potato enterprises, it opens the door to future applications in other agri-bio areas and products, including medical applications.

Where can growers learn more about CETS?

Feel free to contact CETS CEO Janina Petrick at 262-246-1799; or email her at: j_petrick@gbms.us. You can also visit our website at: www.cetstech.com. **CT**