

Controlled Environment Agriculture Global Association
100 Quentin Roosevelt Boulevard, Suite 1010, Garden City, NY 11530

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CEA Global's Response to NIFA Listens

Over the past two years, Cornell University has been convening a Controlled Environment Agriculture (CEA) Advisory Group and I am thankful for the leadership that they demonstrated in bringing us all together. The CEA sector, including greenhouse vegetable production, has been a rapidly growing industry in the U.S. as consumers increasingly value local, fresh food. On November 3, this group formally established CEA Global a membership association for individuals and businesses across the CEA supply chain. I am honored to be its first president and represent the group's views through this NIFA Listens program.

The meeting was attended by almost 100 individuals representing the full supply chain including established growers, entrepreneurs interested in establishing CEA businesses, suppliers, retailers and investors.

Given that the group is focused on Controlled Environment Agriculture, we clearly believe that the emergence of more affordable, energy efficient lighting and heating systems, combined with new technologies to quickly develop crops for this year round growing environment are among the most promising science opportunities for advancement of food and agricultural sciences.

We believe that the opportunity presented by CEA is significant. The development of this industry can help ensure food security in light of a changing climate while providing new opportunities for growers. This letter recaps the discussion of research priorities from the November 3 meeting as well as results from a follow-up survey of meeting attendees.

There is much to be learned in this nascent field. The initial discussion was broad ranging and included everything from infrastructure systems to plant breeding for successful CEA crops. There was a strong acknowledgement of the need for best management practices to help growers understand the differences in operating under cover versus an open field. Development of these practices would help growers successfully build their enterprises while minimizing food safety risks.

In addition to the development of overall best practices, there was a strong desire for crop specific practices as well as best management practices for organic as well as conventional operations.

There was a very strong consensus about the need to understand the nutritional value of CEA crops to ensure that consumers are able to purchase healthy, nutrient dense food. Many were also interested in a better understanding of phytochemical production and extraction process. Still others expressed interest in understanding the pros and cons of carbon dioxide enrichment practices to reduce energy costs for lighting with expressed need to understand more the implications for nutrient density.

Our association is also eager for a CEA breeding program to identify which varieties will grow best, as well as focused attention on breeding plants for specific traits that will flourish in both hydroponic and soil based environments.

The cost benefits of various growing mediums; biochar, compost and other recycled materials also prompted much discussion. A better understanding of biostimulants was also thought to be important.

With the rapid development of nanotechnology tools in growing systems, some felt that a full understanding of the safety profile of nanoparticles was an important need.

All agreed that it is critical to understand any effects of LED lighting systems on human health to ensure the health of our workforce. We also need to understand the beneficial role that LED lights can play in managing pests and disease.

Our growers are also interested in understanding the relationship of production practices to increased shelf life of products to increase efficiency and potentially reduce food waste.

Thank you for the *NIFA Listens* initiative. The questions prompted thoughtful conversation among our group. I am hopeful that our input will help NIFA increase its support of CEA research.

All the best,

Timothy Madden
President, CEA Global Association