

# Controlled Environment Agriculture Knowledge Alliance in North-East America

Presentation Seed Money Project (SMP)

11 December 2024, Peter Ravensbergen



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# The objective:

to explore whether there is support

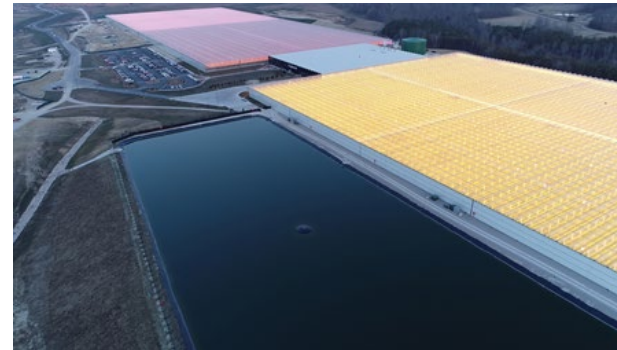
- among US knowledge parties and companies to build, in cooperation with Dutch knowledge parties and companies,
- for a long-term strategic international knowledge alliance
- in the field of knowledge development and technology application in Controlled Environment Agriculture in North-eastern US states (Maryland, Pennsylvania, Ohio, Michigan, Kentucky, Virginia, North Carolina),
- aimed at food security of affordable fresh produce that is also produced sustainably.

Consortium:

- Priva
- Koppert Partners with Nature
- Rijk Zwaan
- Keystone Agritech
- University of Kentucky
- University of North Carolina



Greenhouse tunnel, Kentucky



Former Appharvest greenhouse in Morehead, Kentucky

# Existing CEA areas (Ha) (1 Ha = 2.5 acres)



Funded by the European Union

Netherlands Enterprise Agency

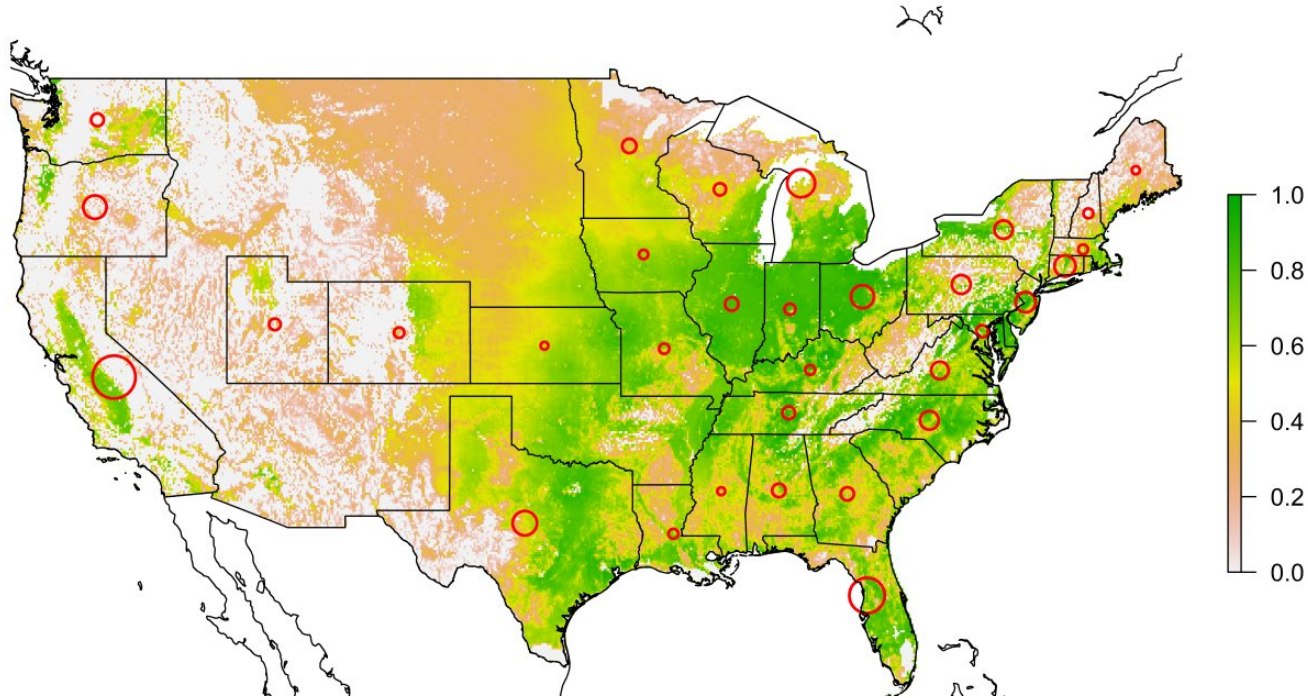
	Total CEA (ha)
China	1.894.215
Turkey	81.088
Spain	73.115
Republic of Korea	56.467
Mexico	51.853
Egypt	51.350
Japan	42.164
Morocco	23.770
Algeria	21.025
India	14.366
The Netherlands	10.640
Ukraine	10.325
France	9.834
<b>United States</b>	<b>9.201</b>
Greece	8.404
Tunisia	7.740
Ecuador	6.783
Argentina	6.517
Germany	5.883
Poland	5.574

	Total high-tech (ha)
China	??
Mexico	15.214
The Netherlands	10.540
Turkey	5.963
Belgium	2.726
Germany	2.262
Spain	1.989
Japan	1.595
Poland	1.573
Uzbekistan	1.500
Canada	1.426
Egypt	1.350
Australia	1.153
<b>United States</b>	<b>1.008</b>
Azerbaijan	500
Republic of Korea	367
India	357
Ukraine	335
Romania	316
Tunisia	250

	Total mid-tech (ha)
China	??
Turkey	75.125
Spain	71.126
Republic of Korea	56.100
Egypt	50.000
Japan	40.569
Mexico	36.639
Morocco	??
Algeria	21.025
India	14.009
Ukraine	9.989
Greece	8.264
<b>United States</b>	<b>7.212</b>
France	??
Tunisia	7.490
Ecuador	??
Argentina	??
Colombia	??
Poland	4.001
Germany	3.621

# Potential High-tech CEA

Potential Hightech [0,1] and area with range: 51 to 1540 ha



# Challenges

- Market pull and technology push should be hand in hand
- Competitiveness: disruption potential to small farms and local food systems
- Available skilled working force
- Sustainability: emission of CO<sub>2</sub>, waste, light
- Spatial planning: location for clusters
- More involved public and private stakeholders
- Public opinion

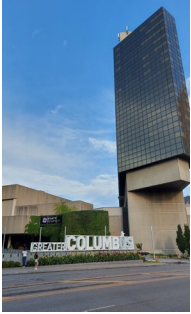


# Approach

- Identifying stakeholders
- Organising a knowledge symposium
- Inventory of consortia and possibilities for follow-up projects

## Activities

- Meetings with US delegations: North Carolina, Virginia, Ohio
- GreenTech 2024 – meeting GCEAC
- Cultivate Ohio and OHCEAC Conference 2025
- Visit Kentucky and Pennsylvania
- Support FFAR/NWO call “Greenhouses in Transition”
- Preparations for knowledge symposium in Q1 2025



# My findings sofar

- Currently stagnation of CEA projects in US (financial issues, elections). There seems more activity in Canada.
- Large scale projects funded by private equity run entirely on NL technology and knowhow f.e. Little leaf, Bosch brothers
- Small scale projects are built by Canadian / US greenhouse builders
- Large scale projects by Dutch greenhouse builders
- Focus large scale on vegetables; focus small scale on ornamentals or local-for-local veggies



# Knowledge infrastructure

- Developments in greenhouse constructions at universities: among others Kentucky, Ohio, Alabama
- Great willingness among US states and US knowledge parties to cooperate with Dutch knowledge partners and companies
- Universities focus on the development of scientific knowledge and less on practical applicability (science for impact): demand articulation from private industry is limited
- There is a need for a middle and higher vocational training facility (similar to Ceickor in Mexico)





# Identified Knowledge partners

State	Organisation
Kentucky	University of Kentucky
	University of Pikeville
Ohio	University of Ohio
Pennsylvania	Pennsylvania State University
	Harrisburg University
	Carnegie Mellon University
	Pittsburgh Robotics Network
	Resource Innovation Institute
Michigan	Michigan State University
Maryland	University of Maryland
Virginia	Virginia Tech
North Carolina	University of NC
Alabama	Auburn University
Arkansas	University of Arkansas
Florida	University of Florida

SMP Members	Dutch companies	US companies	Others
Priva	VB group	Prins USA	Westbrook Greenhouse Systems (Can)
Koppert	Delphy	Legacy labor	GGs Structures (Can)
Rijk Zwaan	MPS	Viscon	JGS Structures (Can)
Keystone Agritech	Debet Schalke	Van Wingerden Greenhouse Comp.	
	Dutch Agro Systems	AdeptAg	
	Ridder	BFG Supply	
	Stolze	Bridge City Global	
	Van der Bosch	American Mushroom Institute	
	Hoogendoorn	South Mill champs	
	Lumniforte	ScynceLED	
	Certhon	Little Leaf	

# What is my aim for the next year?

Month 2025	Actions
January	<ul style="list-style-type: none"><li>● Outcome FFAR/NWO call Greenhouses in transition</li><li>● Publication Hillenraad Marketstudy potential CEA in the US</li><li>● WUR meeting internally US strategy</li></ul>
February	<ul style="list-style-type: none"><li>● First synergy workshop FFAR/NWO in the Netherlands</li></ul>
March	<ul style="list-style-type: none"><li>● FFAR/NWO Synergy workshops in NL and US</li><li>● 1<sup>st</sup> Knowledge Alliance meeting</li></ul>
May	<ul style="list-style-type: none"><li>● FFAR/NWO Synergy workshop in US</li></ul>
June	<ul style="list-style-type: none"><li>● FFAR/NWO Submittance final proposals</li></ul>
November	<ul style="list-style-type: none"><li>● Outcome FFAR/NOW call</li></ul>

# Thank you for your attention



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