



Terra-Fresh

Connecting Small Growers to Fresh Produce Markets

January 14, 2022

[The FFAR team](#)

International Logistics and Productivity Improvement Laboratory
Arizona State University

<http://ilpil.asu.edu>, www.terra-fresh.com



Agenda

- Introductions
- House keeping issues
- Objectives
- Definitions
- Vision of Technology Enabled Rapid Response Fresh Supply Chains
- Identification of areas of activities
- Presentations
- Engagement opportunities

House Keeping

- All the attendees will be muted by default
- If you have a question or comment, please unmute yourself and participate
- Once you make your comments, please mute yourself again
- All the materials used in the presentations are available at:
 - <https://labs.engineering.asu.edu/ilpil/jan-14th-2022-workshop-terra-fresh-symposium/>
- In the presentations we will be referring to concepts introduced in previous events. You can access information on these concepts in the following sites:
 - <https://labs.engineering.asu.edu/ilpil/march-31st-workshop/>
 - <https://labs.engineering.asu.edu/ilpil/november-20th-workshop/>
- If for any reason you need to contact us during the presentations, please send an email to: fquijad3@asu.edu or rulloa1@asu.edu.
- Also, all the previous materials can also be found at the demonstration platform: <https://terra-fresh.com>

Objectives of the Symposium

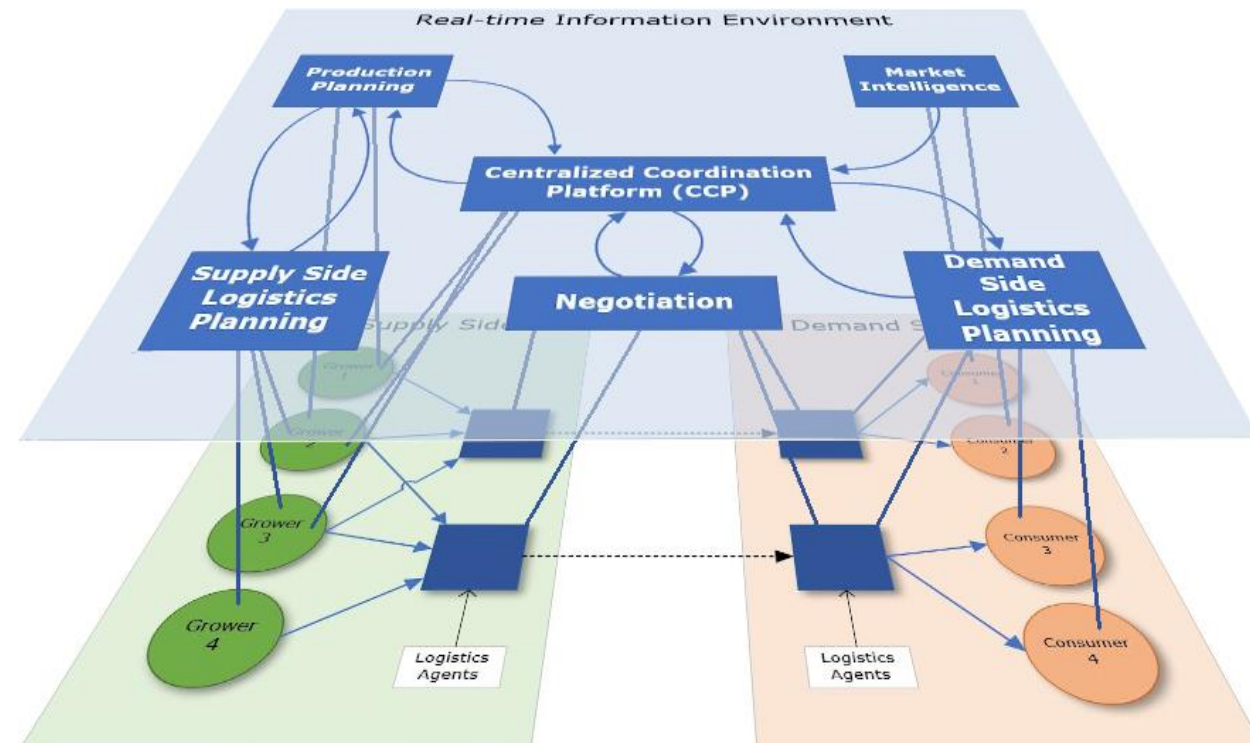
- To show the advances made in the formulation of the vision of Technology-Enabled Rapid Response Fresh Supply Chains (TERRa-Fresh)
- To present the progress made through a practical case study based on three southwest states and representative fresh-produce crops
- To present some of the concepts being proposed for the flexible association of growers in complementary regions to respond to specific opportunities
- To identify growers and other supply chain stakeholders willing to participate in the project (providing data, validation of models, potential pilot)
- To start building a community around the concept of using technology for taking advantage of the new realities to improve the current state of small farmers and the consumers of fresh food while minimizing food waste

Introduction and Motivation

Arizona State and New Mexico State Universities, with the support of the Foundation for Food & Agriculture Research, are developing decision support tools whose aims are:

1. Provide growers of fresh produce with market intelligence tools to identify the best crops to plant according to the demand of the markets and local conditions
2. Provide small growers with tools to plan the crops, planting and harvesting timing to reach the most profitable markets at the right time with the right product;
3. Develop automated decision support tools that allow the virtual aggregation of growers' crops and resources to efficiently reach the final consumer;
4. Provide an assessment of the profitability and associated risks associated with the identified opportunities;

These tools are encapsulated in an integrated environment known as "TERRa-Fresh": www.terra-fresh.com.



Definition and Objectives of TERRa-Fresh

TERRa-Fresh stands for: **T**echnology-**E**nabled **R**apid-**R**esponse **F**resh supply chains. It is a cloud-based environment of information clearing house, integrated market intelligence, planning, coordination and marketplace tools.

Some of its objectives are:



Provide the market intelligence and decision support tools to **enable** (small and entrant) **farmers to sell their products directly in the most attractive markets**, increasing the margin of the value chain captured by them.



Leverage real-time information, obtained from all the components of the supply chain, to empower the grower to make the **best decisions** in terms of **what** to grow, **when to grow** it and **what markets to target**.



Provide the tools for growers to **associate around specific opportunities** to create **critical masses** to have better access to **market opportunities**, infrastructure and **logistics services**.



Provide a marketplace for the buyers to make direct connections with the growers.

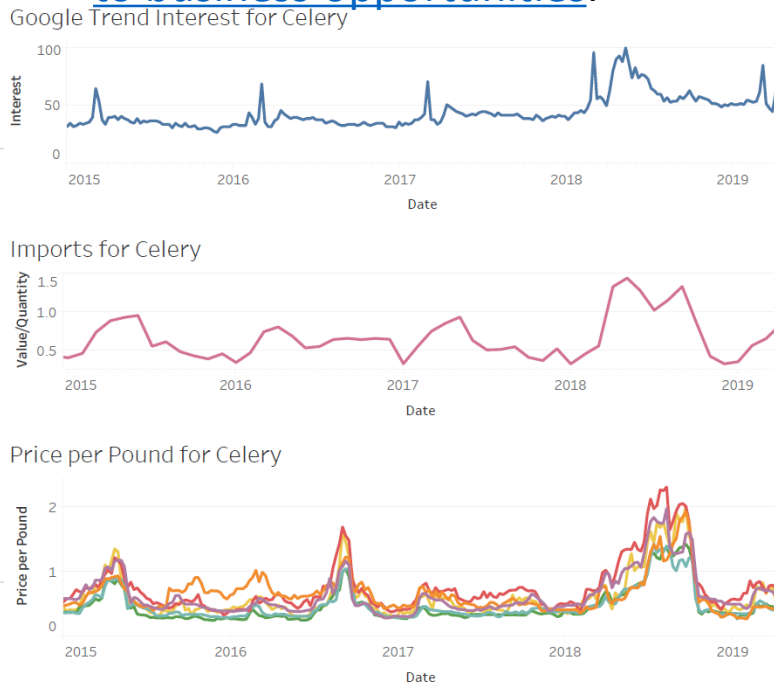
Characteristics of the Environment

- Continuously identify and get **relevant data** from available sources of data and information
- Enable **efficient** grower-to-market transactions
- Provide a platform that serves as a **fresh food trade information-clearing house**
- Give growers and their logistics agents access to the same supply chain information → **Transparency**
- Provide detailed traceability information to **empower the consumer**
- Enable the emergence of **agents** to provide the services needed by small growers to access **efficient logistics**

Stages in Opportunity Development

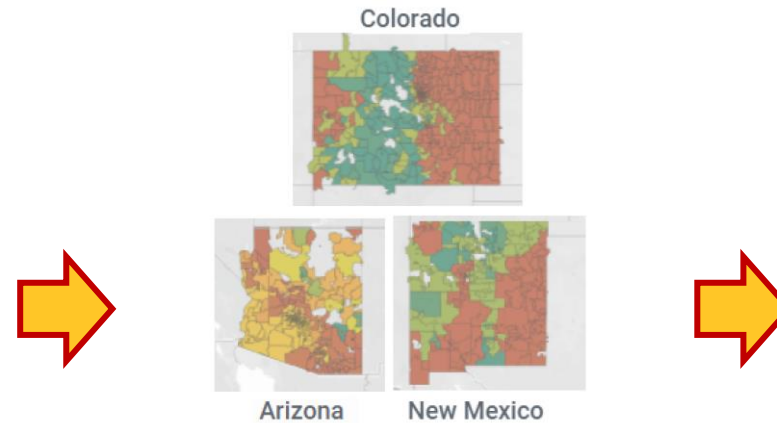
1. Discovery of market opportunity

Continuous monitoring of different data sources to identify trends that can lead to business opportunities.



2. Determination of its "technical" feasibility

Matching potential supplying locations to identified opportunities through planning and coordination models.



	Zone 1	Zone 2	Zone 3	Zone 4
Land Availability	✓	✓		✓
Agronomic Potential	✓		✓	✓
Labor Availability	✓	✓	✓	✓
Adequate Logistics			✓	✓
Capital Availability	✓	✓		✓

3. Determination of its financial feasibility

Estimation of expected profits, ROI, level of financial risk associated technically feasible opportunities.

Opportunity Financial Assessment			
Initial Investment	\$1,450,000		
Opportunity Window	08/2021 - 11/2021		
Opportunity Duration	3 mo.		
Scenario Accuracy	Expected Income	Expected Profit	ROI
95%	\$1,500,000	\$50,000	3.4%
80%	\$1,580,000	\$130,000	9.0%
65%	\$1,620,000	\$170,000	11.7%
50%	\$1,690,000	\$240,000	16.6%



Stages in Opportunity Development

4. Identification of investors and associated financial resources

Identifying external investors that can provide capital for executing identified opportunities.



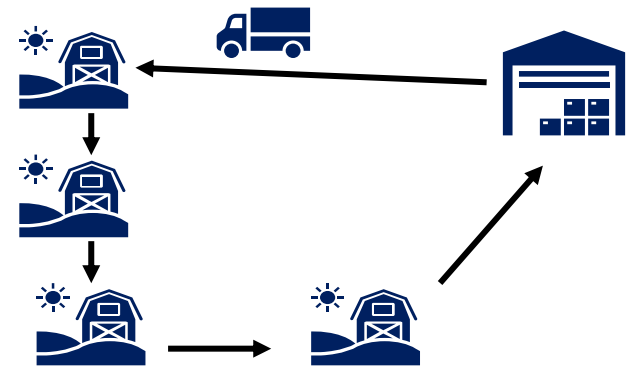
5. Formation of virtual enterprise to capture opportunity

Forming a spin-off entity to capture the identified opportunity.

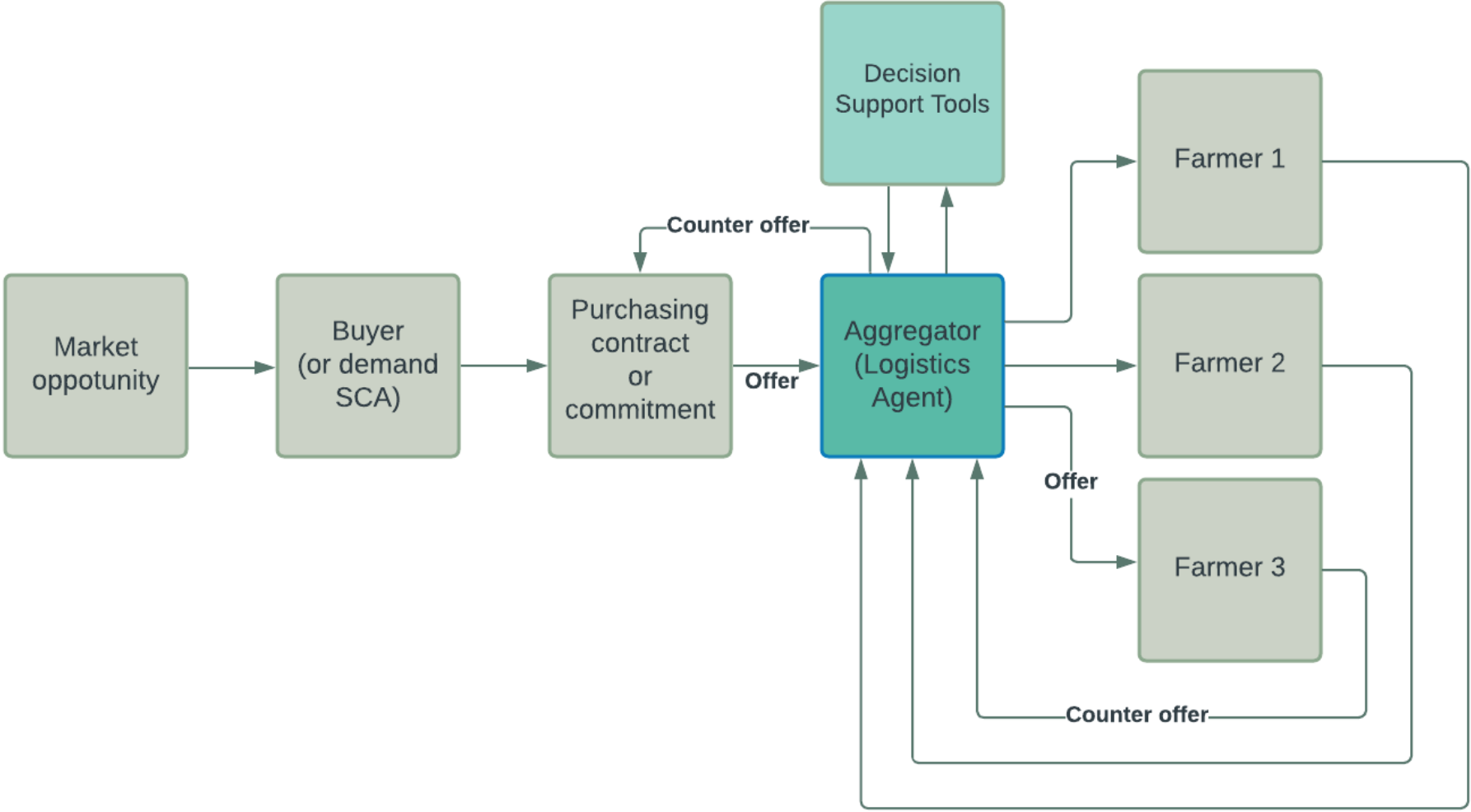


6. **Deployment of planning, monitoring, SC improvement**

Deploying execution and support tools to ensure the completion of the goals of the virtual enterprise.



Building soft alliances for capturing opportunities



The Expanded Role of the Logistics Agents

- In the vision of Terra-fresh, the logistics agents will have an expanded role
- We call this new agent, a supply chain articulator (SCA).
- The SCA who has a fiduciary responsibility with the growers and is the responsible party for planning and implementation of the overall logistics strategy, including:
 - Planning of planting schedules allocation “contracts” with growers
 - Entering in contracts with collection fleets, processing centers, and cold storage
 - Being responsible for the implementation of the programs supported by a Supply Side Decision Support Platform to automate planning, bidding, tracking
 - Providing the main interface with demand side logistics agents, central platform and Opportunity Coordinators
- Thus, the supply-chain articulator is the designer, implementer and coordinator of the expanded logistics strategies

Objective of today's presentation update

- Introduce the advances in the development of Terra-Fresh
- Re-introduce the concept of mini-containers to access efficient logistics
- Show the benefits of Terra-Fresh for the growers with a concrete case study
- Entice the participation of the different stakeholders in the development and validation of the different tools and platforms,
- Start the conversation about the formation of a community around the issues discussed

Agenda

- 9:00 – 9:15 AM Case Study: Setting the stage

Market Intelligence, Climate Informed Growing, and Demand Fulfillment

- 9:15 – 9:45 AM Taking advantage of Market Intelligence
- 9:45 – 10:00 AM Building alliances in complementary regions
- 10:00 – 10:20 AM Finding best partnerships to meet demand
- 10:20 – 10:30 AM Participants' feedback
- 10:30 – 10:40 AM Break

Supply Chain Coordination and Logistics

- 10:40 – 11:00 AM Coordinating growers for effective collaboration
- 11:00 – 11:20 AM Addressing small farmers logistics problems (Mini-containers)
- 11:20 – 11:40 AM Designing logistics under regular and disrupted conditions

Community Discussions and Closing

- 11:40 – 11:50 AM Validation and engagement (Representative farms)
- 11:50 – 12:00 AM Wrap up and Q&As

Optional Program

- 1:00 – 2:00 PM Small Growers Forum
- 2:00 – 3:00 PM Supply Chain Articulators Forum
- 3:00 – 3:30 PM Next Steps and Conclusions

What do we need from you???



Terra-Fresh

We need your help...

Step 1. Contribute to initial “Representative Farm” Design

Step 2. Participate in “Representative Farm Profile”

Step 3. Pilot Implementation Project

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Terra-Fresh

Q&A Session



Terra-Fresh

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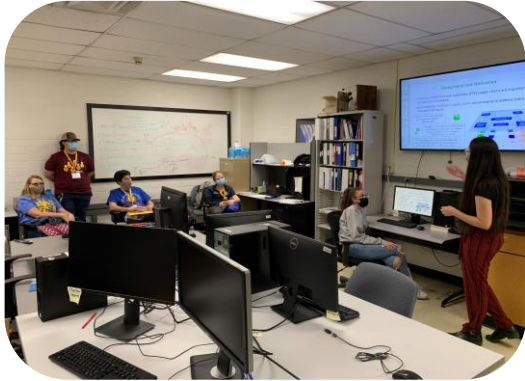


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TERRa-Fresh web site: www.TERRa-Fresh.com

Acknowledgements



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