Crops of the Future: Higher Yields and Zero Waste

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Foundation for Food and Agriculture Research | April 2, 2017

The pace of science continues to accelerate. Open data and open science contributes greatly to this acceleration.

Our ability to feed a growing world population and end hunger will depend on our ability to keep up the pace.

The FFAR Model

We build unique partnerships to support innovative science addressing today's food and agriculture challenges.

U.S. Perspective on a Global Challenge: Reducing Waste, Increasing Yields to Feed the World

Increasing Yields

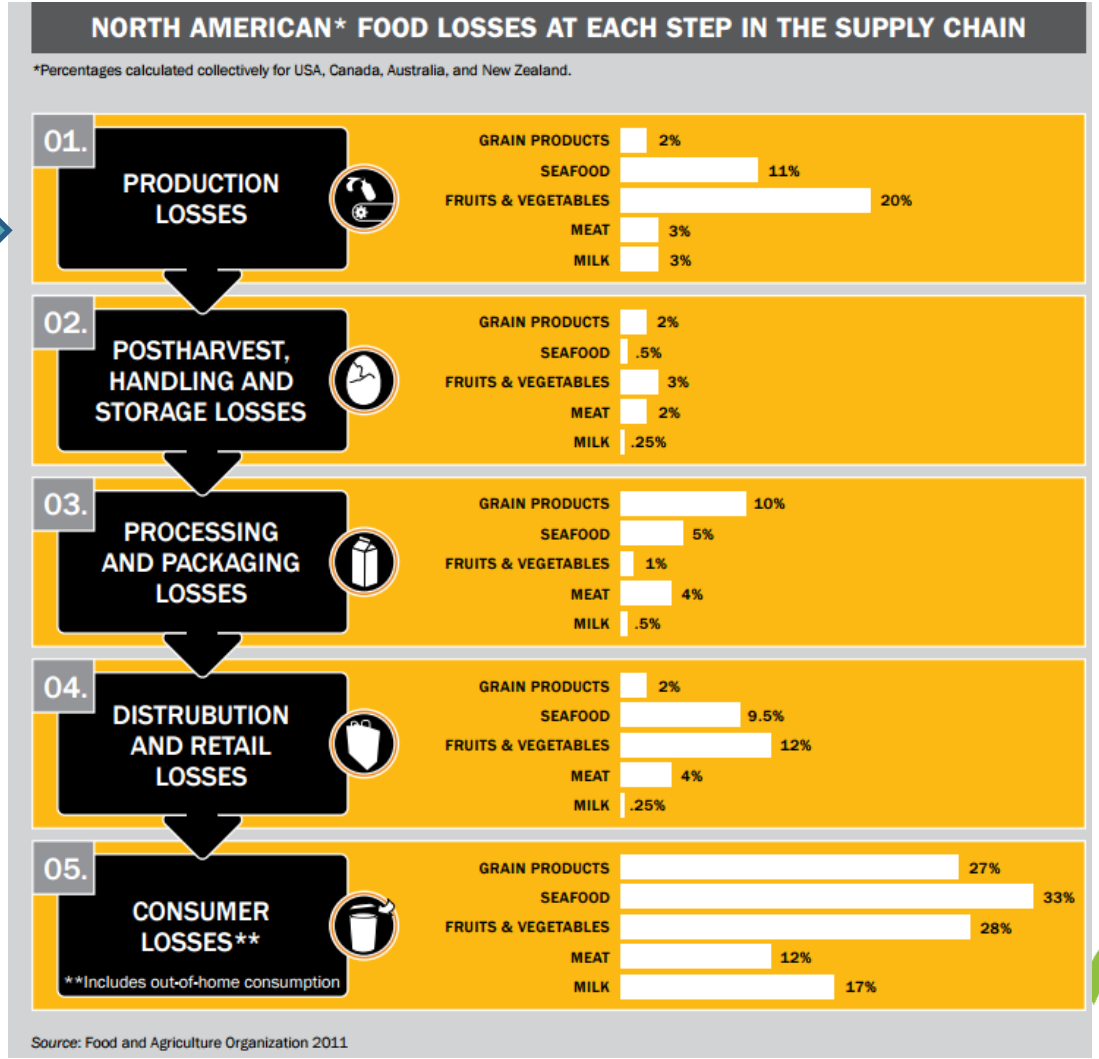
- Crop production must double to feed our growing global population.
- U.S. farmers help feed the world:
  - U.S. is #1 soybean and corn producer
  - $300+ billion U.S. farm economy

Reducing Food Waste and Loss

- **40% of food** in the U.S., or **$165 billion** each year, is wasted
- U.S. Goal: In 2015, U.S. Agriculture Secretary Tom Vilsack announced the first-ever U.S. food loss and waste goal, calling for a 50-percent reduction by 2030.

Production level

Consumer Level



Graphic: Natural Resources Defense Council

Food Loss Challenges

Type of Loss	Causes
Pre-harvest	Pests, disease, weather
Food lost between harvest and sale	Spoilage, economics, transportation, quality, overstocking
Consumer	Overbuying, inaccurate/unclear labels

Food Waste and Loss

FFAR Challenge: Reduce the social, economic, and environmental impacts from food waste and food loss along the entire food chain.

Initial Research Focus

Ground truth model of food loss across the value chain.

The Opportunity:
What do Crops of the Future Look Like?

Breeding for certain traits will reduce crop loss and increase productivity and sustainability.

- Higher yields
- Increased nutritional quality
- Resistance to disease, pests, and pathogens
- Resilience against changing climate

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Pre-Competitive Space

Pooling resources for public benefit.

Accomplishing more, together.

Precompetitive Space

How to define?

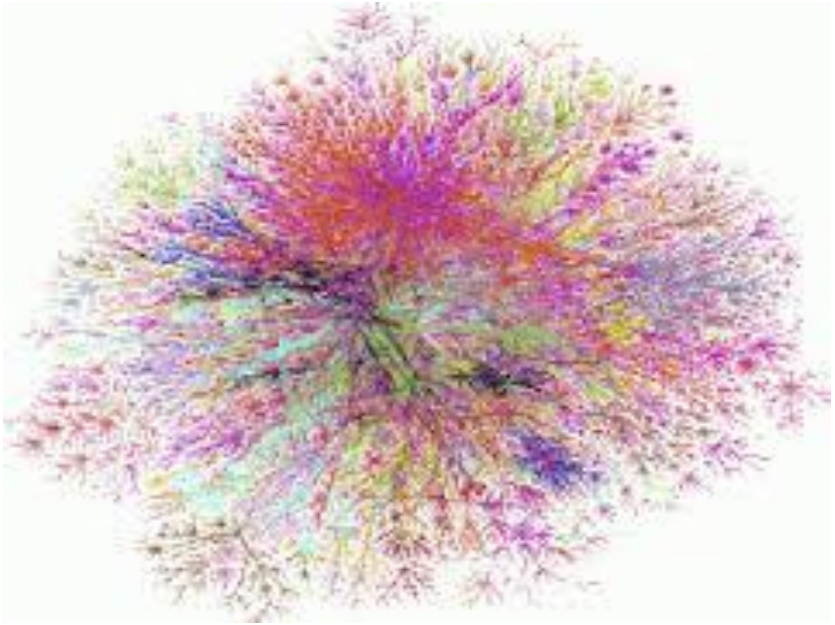
Areas of business in which a firm feels comfortable against competitive pressures, on the basis of its cost advantage and/or technological leadership.

Areas of business in which a firm feels uncomfortable against unambitious relaxation, on the basis of its cost disadvantage and/or technological inferiority.

Precompetitive Space
Definition

Area of research where outcomes offer no particular advantage relative to peers and where there is ***potential to positively impact all parties****.*

Allows resources and ***data*** *to be* ***readily shared*** *in order to reach an end goal.*



IN ORDER TO WORK:

Industry agrees to allow data and publication that result from mutually funded projects in the precompetitive space to be open and accessible, but the commercial endeavors resulting from the application of these data by industry is proprietary.

The Key:

Find the precompetitive space and the projects within!

Other FFAR Efforts

Crops of the Future Collaborative
Urban Food Systems Challenge

Crops of the Future

Systematic identification of genes that give rise to traits important now and in the future

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Crops of the Future

Crop Characteristic

Trait

>3

Identify

Gene(s)

Many genes

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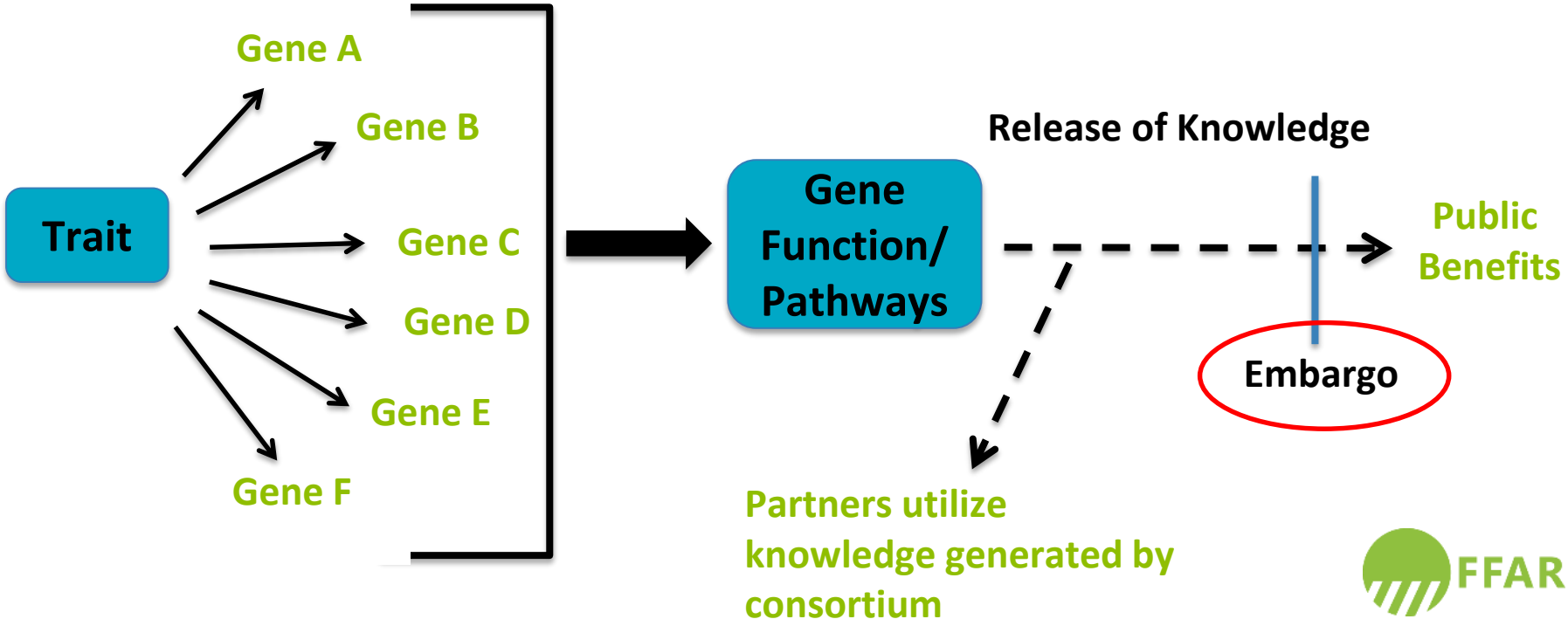
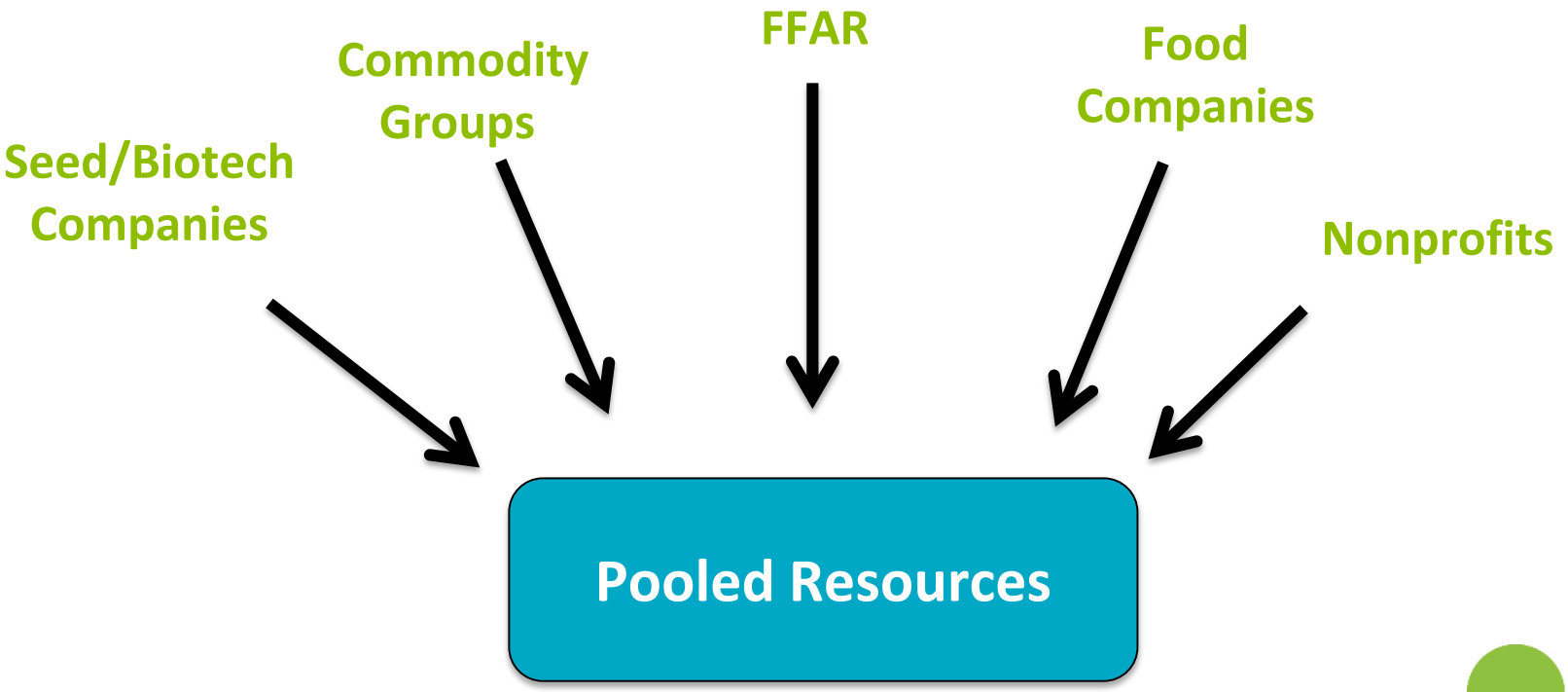
Crops of the Future

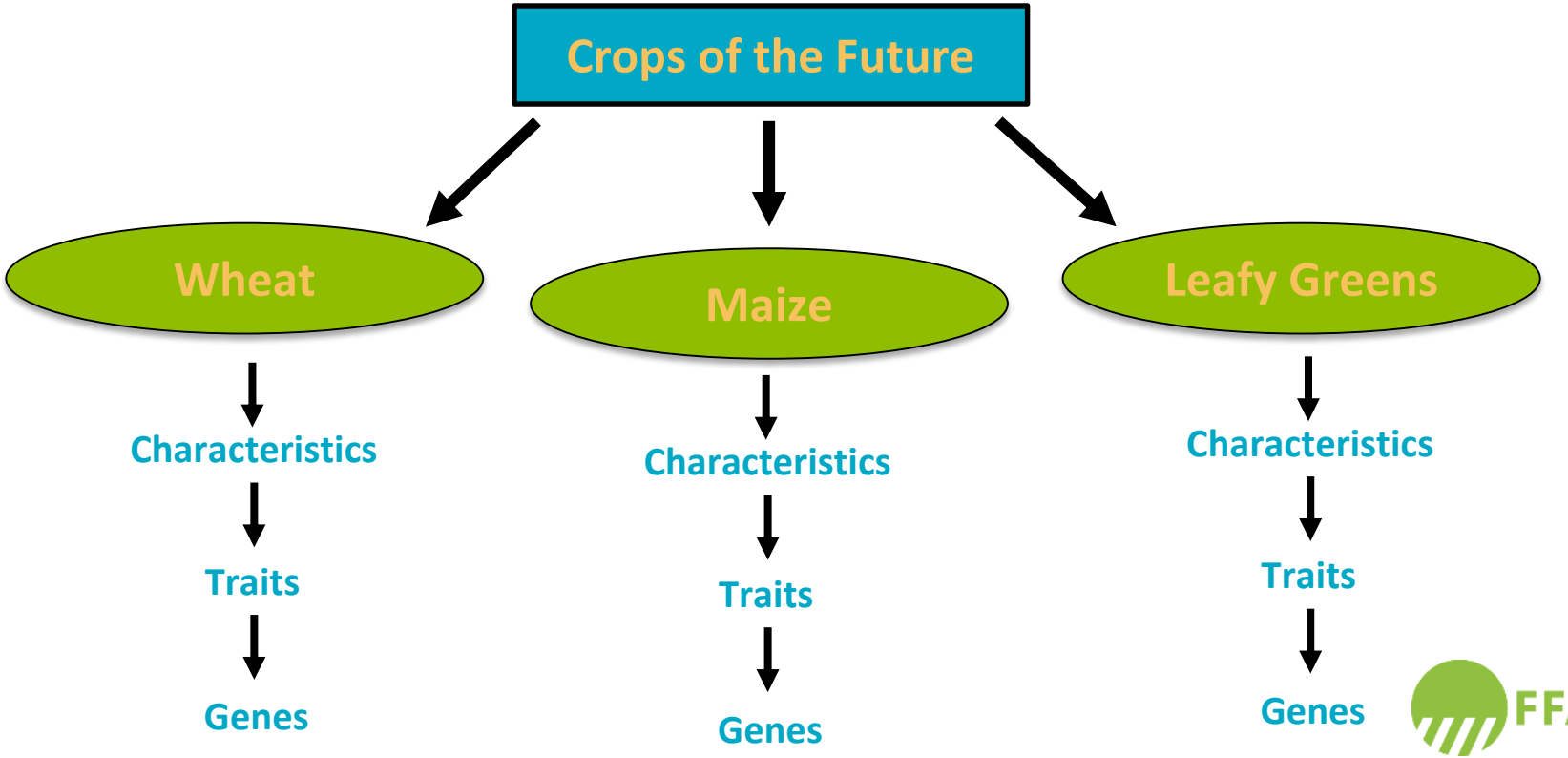


How?

Partnerships

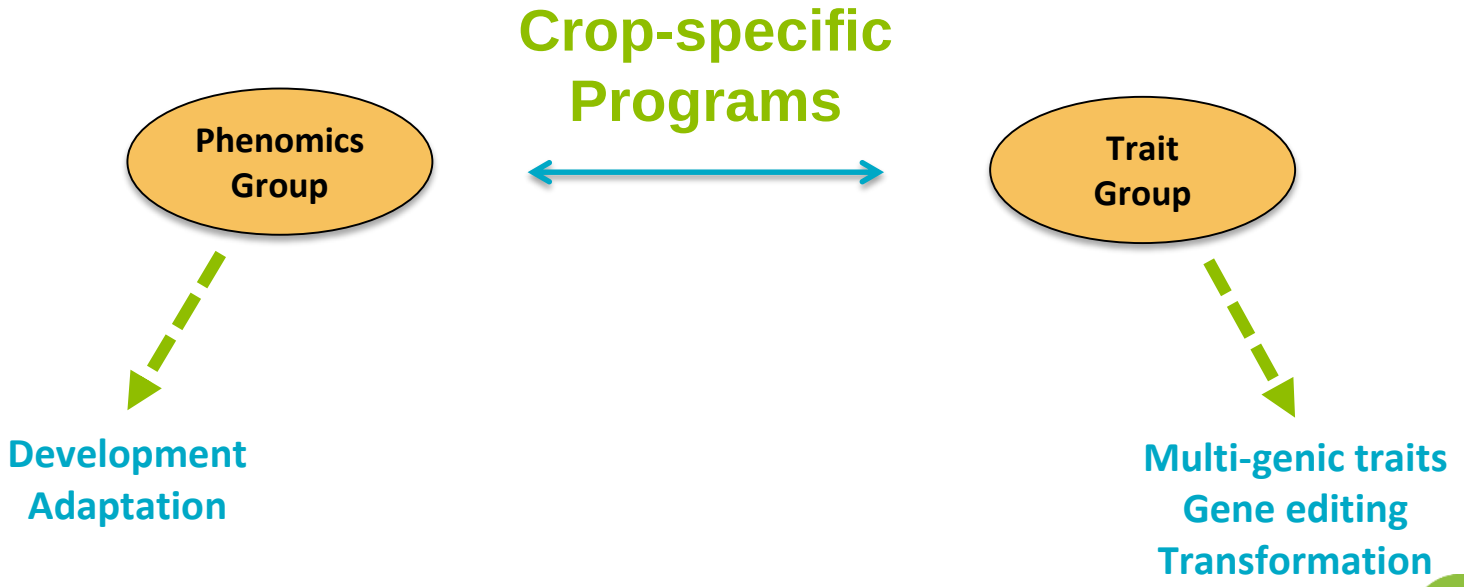


Programs


Crops of the Future
Wheat
Maize
Leafy Greens
Characteristics
Traits
Genes
Characteristics
Traits
Genes
Characteristics
Traits
Genes

Technology Adaptation/Development

An avenue to advance and translate relevant science and technology



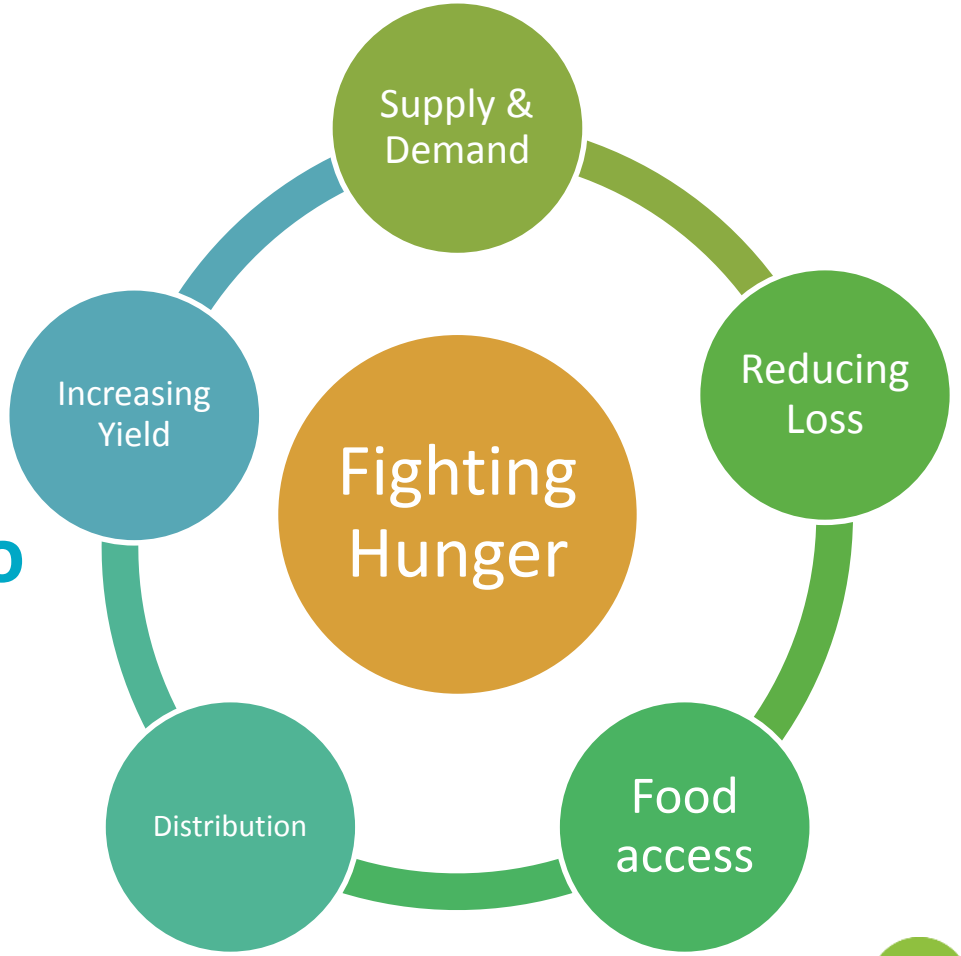
Benefits

- **Amplification of financial investment**
- **Shared development, adaptation, and transfer of technologies between Crop-specific programs as needed**
- **Early access to data that can lead to product development**
- **Additional knowledge created by public research**

Timeline


June 2017
Founding Members
July/August
Executive Committee
September
Consortium Director
October
Invite Project Plan
January 2018
Programs Begin

Breeding resilient, productive crop varieties is one small part of the complex solution to reducing hunger and improving nutrition.



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Urban Food Systems Challenge

Augmenting the food system to feed urban populations

- Majority of the world now lives in urban areas
- Producing food close to/within urban centers—access to nutritious foods
- Many urban production systems are not economically sustainable

Urban Foods Systems Convening Event

Crops for urban production systems

- What crops can be grown in urban productions systems?
  - Crop development for urban systems
  - Increasing economic viability
  - Increasing access to healthy foods

- How do we increase the nutritional qualities and other food-based properties of crops for urban production systems?

In Development for Fall 2017

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FFAR Challenge Areas

Food Waste and Loss

Healthy Soils, Thriving Farms

Overcoming Water Scarcity

Protein Challenge

Making “My Plate” Your Plate

Urban Food Systems

Forging the Innovation Pathway

Offer Input: www.foundationfar.org/challenge

Thank You

Join Us

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