Solutions from the Land Presentation & Discussion

June 2021 Round Table Meeting

Remember: Round Table is off the record.

Farm Foundation®

Ernie Shea

MODERATOR
SOLUTIONS FROM THE LAND

Solutions from the Land

Land Based Solutions to Global Challenges

Farm Foundation Roundtable
June 17, 2021

SOLUTIONS FROM THE LAND

SfL Timeline

2004 - organized as the 25x'25 Alliance explore clean energy solutions from agriculture

2007 - broadened to address climate change challenges

2010 - evolved into the Solutions from the Land "Dialogue"

(United Nations Foundation, Farm Foundation NFP, The Nature Conservancy, Conservation International)

2013 - SfL "Pathways" Report released

2014 - Stand alone not-for-profit focused on agricultural solutions to global challenges

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Shared Foundational Leaders

Bill Richards
Allen Rider
Sara Wyant
Nathan Rudgers
Robert Foster
John Hardin
Craig Yonker
Neil Conklin

Barry Flinchbaugh
Richard Hahn
Jack Block
Gale Buchanan
Bobby Moser
Jay Vroom
Larkin Martin
Dan Smalley

Duane Acker
Don Villwock
AG Kawamura
Gary MacDonald
Jim Mosley
Dan Dooley
Jack Payne
Ernie Shea

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SfL's International Work Program

UNFCCC

- Koronivia Joint Work on Agriculture

FAO

- Committee on Food Security
- Global Alliance for Climate Smart Agriculture
- Guidelines on Agroecology and other Innovative Approaches

Food Systems Summit

- Action Track submissions
- U.S. Producer Dialogue
- Global Farmer Dialogue

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SfL's Domestic Program

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solutionsfromtheland.org

Join us in advancing our vision!

A.G. Kawamura

SOLUTIONS FROM THE LAND
ORANGE COUNTY PRODUCE

Solutions from the Land

21st Century Agriculture Renaissance:
Solutions from the Land

SOLUTIONS
FROM THE LAND

https://solutionsfromtheland.org/renaissance-report//


1 NO POVERTY
2 NO HUNGER
3 GOOD HEALTH
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 RENEWABLE ENERGY
8 GOOD JOBS AND ECONOMIC GROWTH
9 INNOVATION AND INFRASTRUCTURE
010 011
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE AND JUSTICE
17 PARTNERSHIPS FOR THE GOALS
THE GLOBAL GOALS

Abundance Provides the Spice for Life

Lois Wright Morton

OUTWASH TERRACE FARM

Envisioning the Future of Climate Smart Agriculture

SOLUTIONS FROM THE LAND

Farm Foundation Round Table 2021 June 17th Solutions from the Land Session

Lois Wright Morton, Outwash Terrace Farm Pierpont, Ohio United States

Specialty crops, not quantity but premium quality

"No spray" blueberries. Fine mesh exclusion net to manage pests (SWD) in blueberries and English cucumbers.

Red raspberries, asparagus, cut flowers, and honey.

Producing healthy, nutritious foods and diverse ecosystems.

* Small scale, diversified production system and local markets;
* Specialty crops for wholesale and farmers' markets;
* Managed hardwood forestland, in a hardwood forest landscape of many landowners;
* Corn-soy commodities cost-share partnership with brother (livestock-cropping system).

KEY SOCIAL and ECONOMIC OUTCOMES that agriculture and forestry are essential partners in accomplishing

1) **Reduce hunger and improve nutrition** by significantly enhancing farmers & fishers access to capacity building, knowledge dissemination, technologies, research and innovation of fruits, vegetables, animal proteins, fish and food-grade grains;

2) **Create jobs and generate quality livelihoods and economic growth in rural communities** by diversification and sustainable production systems and processing of agricultural products; and

3) **Ensure the integrity of soil, water, forests and other ecosystems' resources** as they are essential to agriculture, healthy food production, societal well-being, and a resilient agricultural sector.

Key attributes of the future

…episodic change, unpredictability, increased uncertainty, conflicting social values and interests about land and water uses, and contested views about managing the earth's resources

Need for new models of human-natural systems

the integration of knowledge and actions and human social learning are key processes in responding to uncertainties of system shocks and disturbances

Learning that increases capacities to experiment, innovate and find new paths to address productivity of the food system; profitability for those participating in the food system; and retain, recycle and enhance the integrity of our natural resources

Sustainability-Resilience-Anti-fragility

Solutions from the Land

21st Century Agriculture Renaissance:
Solutions from the Land

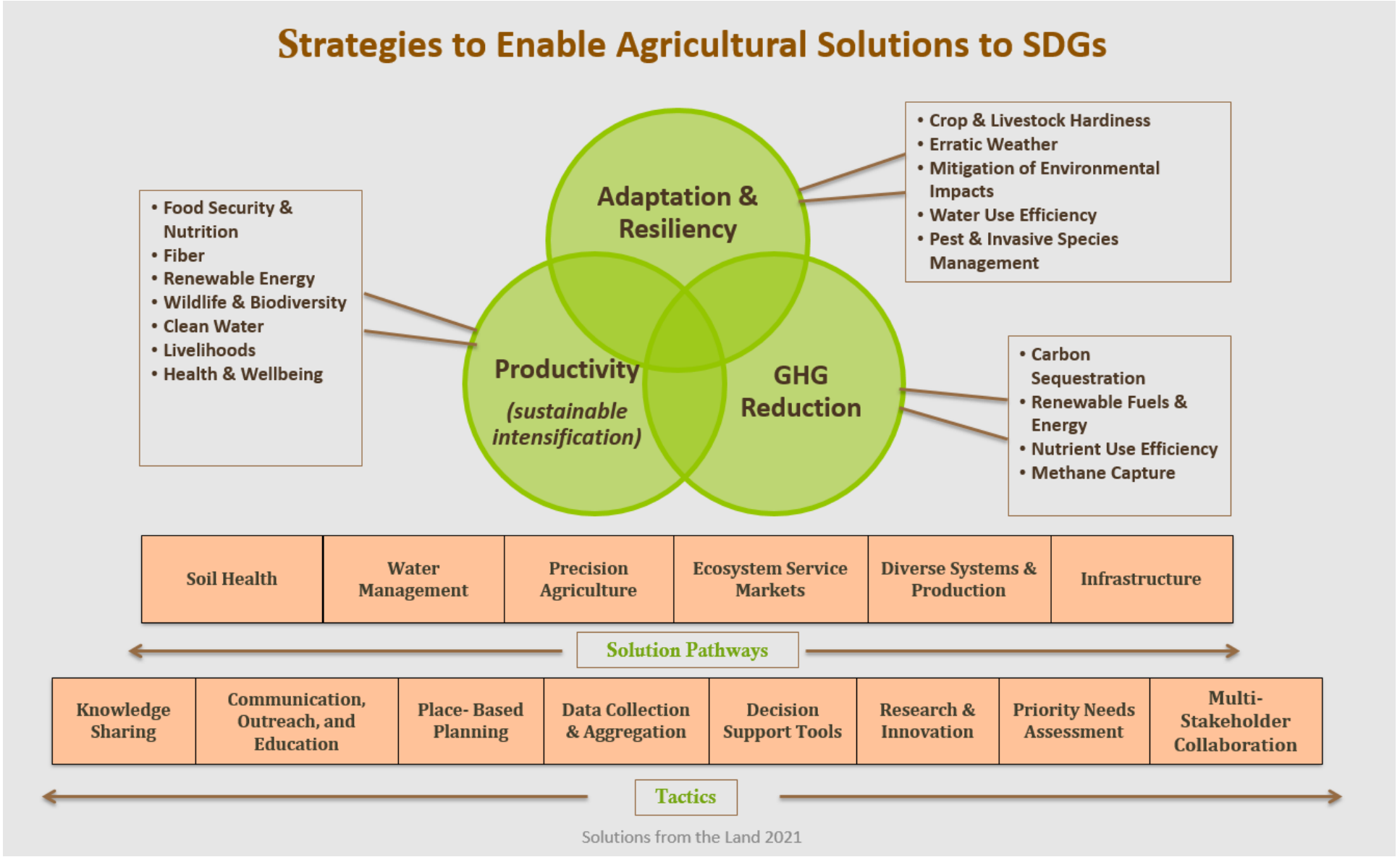
SOLUTIONS
FROM THE LAND

https://solutionsfromtheland.org/renaissance-report//

SfL VISION STATEMENT

Our vision is an Agricultural Renaissance led by innovative and entrepreneurial farmers, ranchers, and foresters constructing sustainable, profitable, and resilient systems that lay the foundation for a world of abundance on many scales; capable of producing nutritious food, feed, fiber, clean energy, healthy ecosystems, quality livelihoods and strong rural economies.

The phrase, “farmers, ranchers and foresters” encompasses farmers, ranchers, foresters, orchardists, graziers, aquaculturalists, and all those who are stewards of working landscapes. Working landscapes are agricultural croplands, grasslands, orchards and forests, vineyards, fisheries, and other lands and waters that are managed for livelihoods and the production of food, fiber, energy, and ecosystem services.



A Vision for Working Landscapes of the Future

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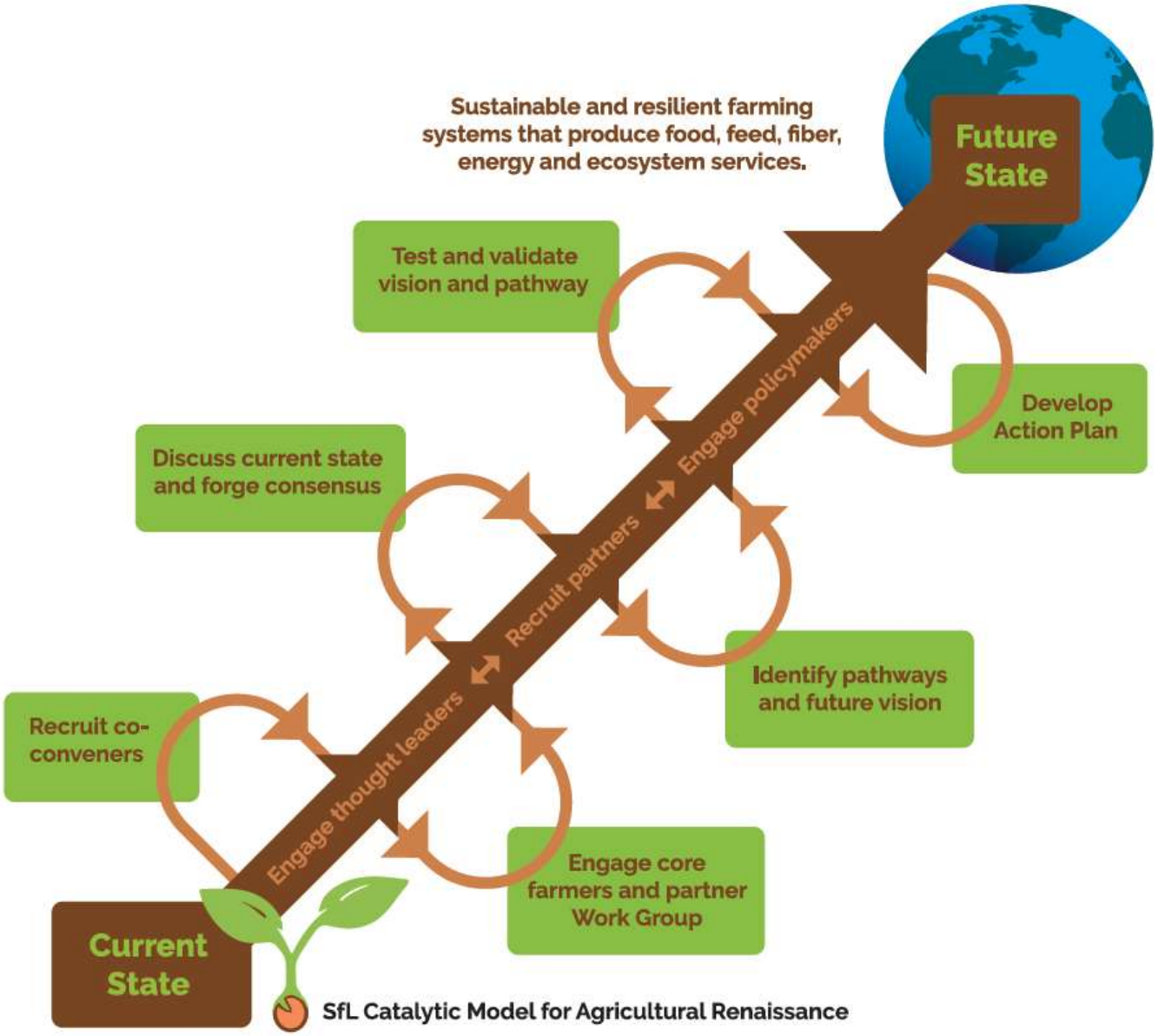
How do we accomplish the vision?



SfL Catalytic Model for Agricultural Renaissance

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Farmers Implementing a Systems Approach

- Context-specific priorities and solutions
- Profitability as a central component
- Uncommon collaboration
- Farmers, ranchers and foresters at the center of discussions
  and decisions
- Systems approaches that are scalable
- Science in conjunction with farmers' experiential knowledge and indigenous innovation

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High Priority System-Level Actions

- Develop diversified and sustainable ag intensification strategies
- Manage the water cycle
- Integrate CSA with special attention to food crops
- Grow nutritious foods
- Create markets for ecosystem services
- Use outcome goals and metrics
- Provide financial and technical assistance
- Integrate indigenous and science-based knowledge
- Involve farmers in research development
- Transform and modernize info networks

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Already Underway!

https://solutionsfromtheland.org/renaissance-report//

Yet, there is so much yet to do. We need farmers at all scales engaged, capacities to make a living, realistic policies, scientific research to ground practices and new tools, to increase agroecosystem integrity and to guide markets and public policies so that we better realize the potentials of agriculture to produce multiple nature-positive benefits

Howard-Yana Shapiro

RESILIENT LANDSCAPES

Climate Smart Agriculture Round Table
17 June 2021

The Speed of Change is Faster Than Our Ability to Respond

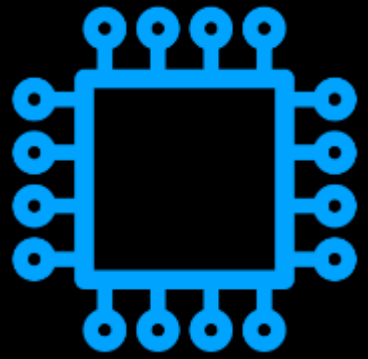
The 21st Century Agriculture Renaissance

Howard-Yana Shapiro, PhD
Distinguished Senior Fellow,
Resilient Landscapes CIFOR-ICRAF
Senior Fellow, University of California Davis
Board Member, Solutions From the Land
Principal, Double Helix Consulting
Advisor, The Periodic Table of Food
The Rockefeller Foundation

“wicked”

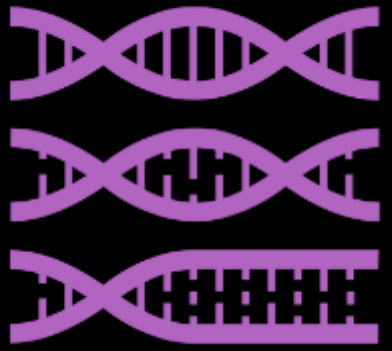
“big, systematic, far-reaching”
“global, interdependent”
“non-linear”
“economic, environmental”
“personal, shared, human”

A convergence of technologies enables us to work with biology in entirely new ways



Computing

Analysis

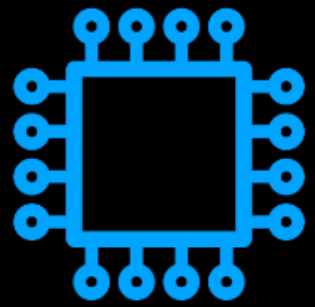


Genetics

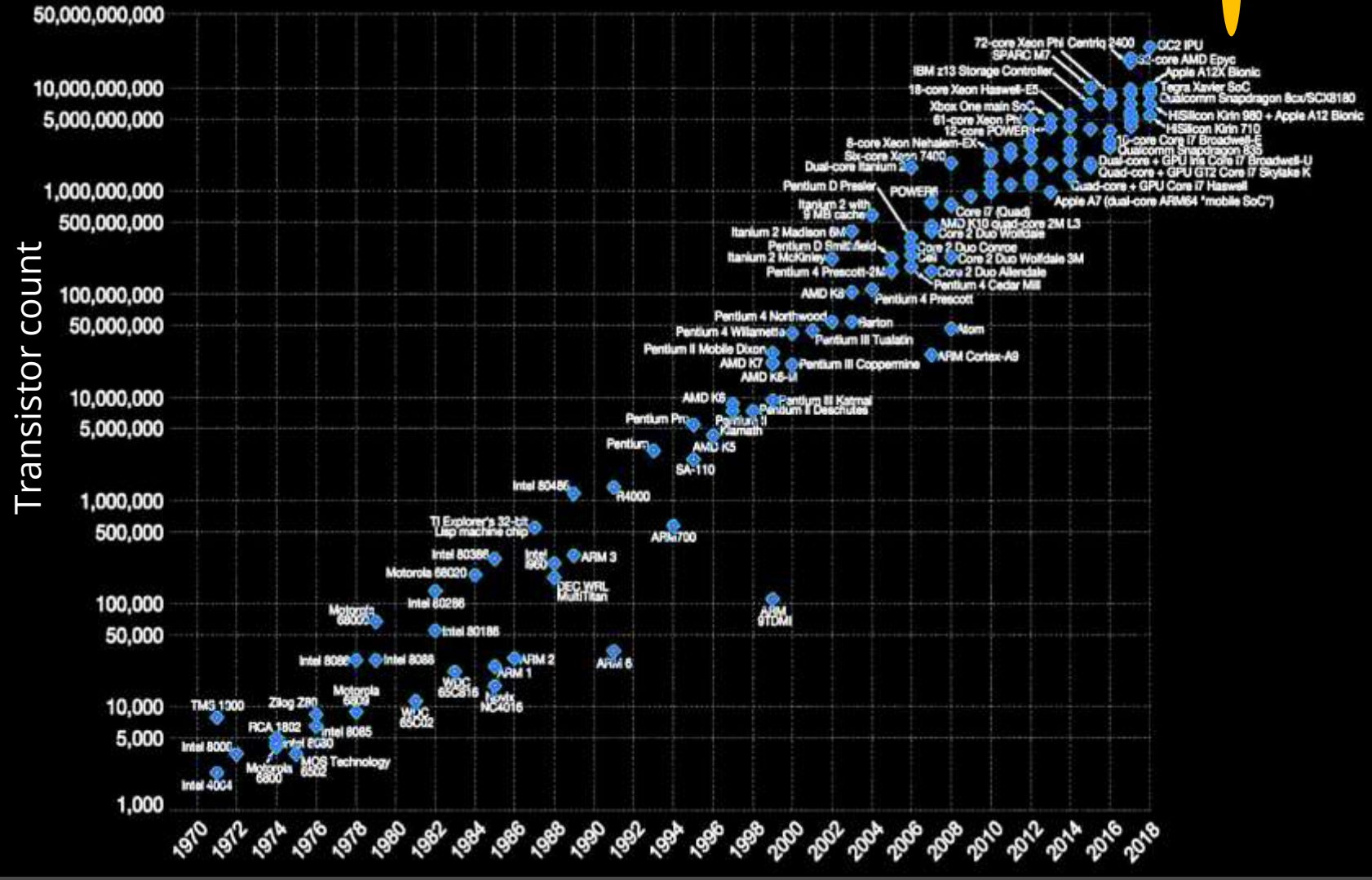
A chip that rivals the human brain

Cerebras

In 2019, Cerebras Systems unveiled a record 1.2-trillion-transistor chip. This is about 10 times more transistors than neurons in a human brain!



Computing



Analyzing biological systems at the molecular level

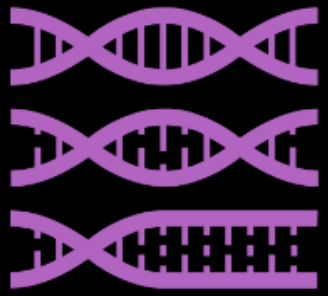
Advances in mass spectrometry allow us to readily see almost every molecule in a biological system.

Analysis

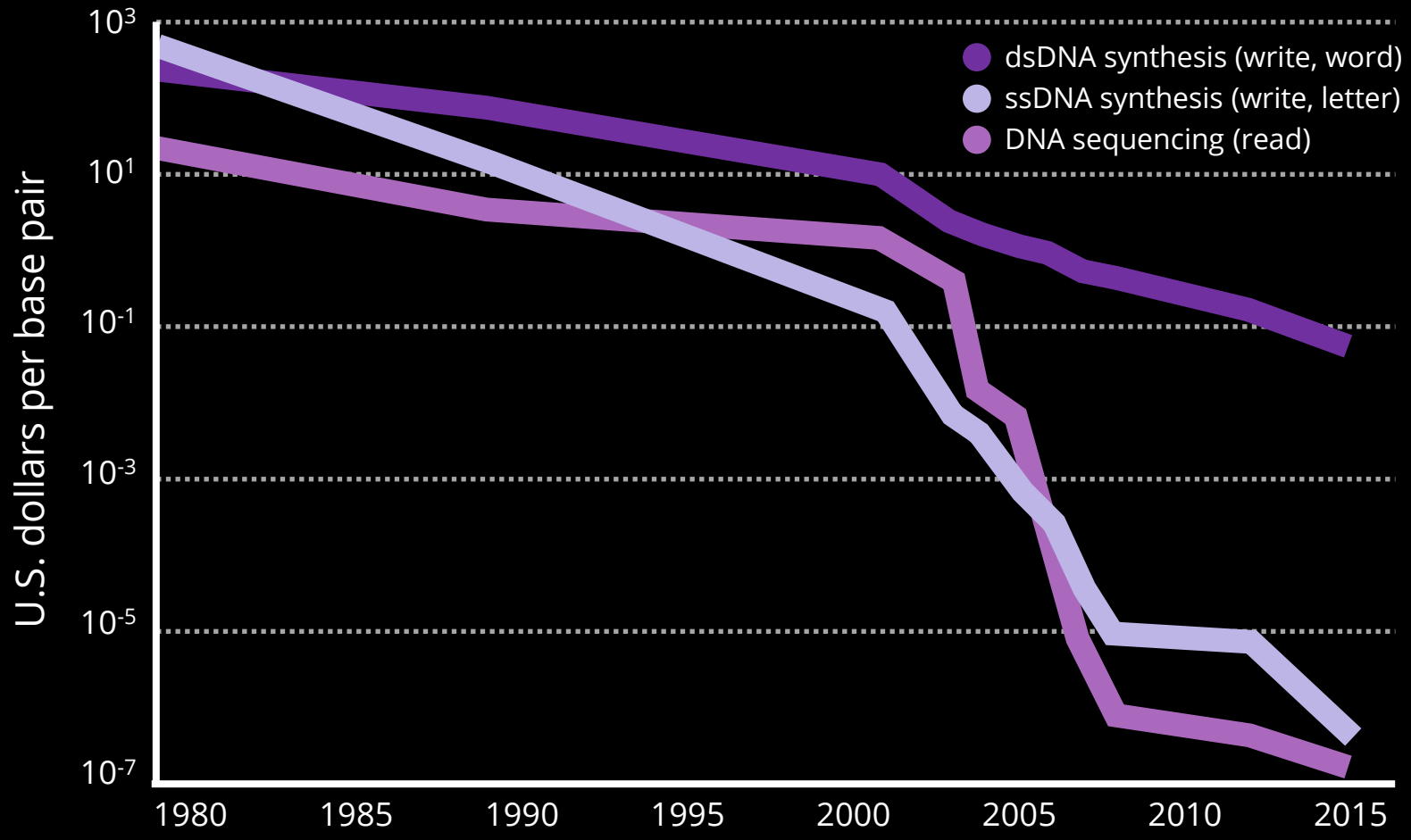
Adapted from *Global chemical analysis of biology by mass spectrometry*; Nature

Genetic technologies are now more accessible than ever

Advances in genetic technologies now allow everyone to read and write in the language of biology.



Genetics



Food production is the biggest threat to the planet

The global food problem isn't what you think

Gerald C. Nelson
The Washington Post
January 2, 2019

"...food security to the nearly 10 billion people who will inhabit the globe by 2030 is one of the key issues of the 21st century... you might think the international community would be able to agree on how to define the problem."

Unfortunately, you would be wrong.

"We must shift our emphasis from food security to *nutrition security*."

The Washington Post

HUD cuts anti-bias efforts in housing

Carson disdains power on systemic discrimination, pursues individual cases

Populist takes the helm in Brazil

BOLSONARO HAS VOWED CHANGE

For nation, inauguration marks sharp turn to right

The grime and the grandeur

National parks fend for themselves as toilets overflow and garbage piles up during the shutdown

Between history and hate: A thin line for Nazi artifacts

NASA spacecraft visits farthest object ever explored

Scientists hope study of ancient Ultima Thule will offer insight on formation of the planets

Global food production by the numbers

70% of biodiversity loss

70% of freshwater use

25% of GHG emissions

85% of marine stocks fully exploited

Most chemical use

50% of topsoil loss

We have no idea yet how to feed the planet without frying it

The Washington Post
August 12, 2019

"A study released last month … found that if agriculture gets no more efficient before mid-century, humans will have to wipe out most of the rest of the world's forests, kill off countless species and blow past dangerous global warming thresholds to feed the expanding population…"

Humans have to get much better at *growing more* on less land.


The Washington Post

Epstein's death puts a spotlight on friend

Some of sex offender's accusers say woman recruited girls for him

UAE tilts away from U.S. policies

MAJOR ALLY'S AMBITIONS BACKFIRE

On the front line of Washington-Iran tension

The trade war's casualties

Global tensions have left Minnesota farmers fighting for their livelihoods, and their struggles reverberate throughout their communities.

President strains to shake label of 'racist'

Getting nowhere

Angry and fearful, Americans struggle to have a productive conversation about guns and race

We need solutions to fix food

Jason Clay, World Wildlife Fund
Trust in Food Farm Journal Initiative
January 31, 2019

We face a difficult reality: today's global food system is not sustainable. Fixing it is a complex problem. There is no silver bullet or single diet… but with **7.5 billion food experts** on the planet we can be assured that those choices will vary considerably.

No single actor, or publication, will make the global food system more sustainable.

Guest Commentary by Jason Clay
January 2019

TRUST IN FOOD
A FARM JOURNAL INITIATIVE

We need solutions to fix food.

Today, agriculture is responsible for up to 25 percent of human GHG emissions. It is already responsible for 70 percent of biodiversity loss and is projected to drive the loss of another 70 percent of what's left on land. Efforts to feed people have pushed the Earth beyond key "planetary boundaries" critical for the survival of all species — including humans. By 2050, the global population will be more than 9 billion and demand for food will increase.

Animal protein consumption alone is forecast to increase by 70 percent over 2010 levels. In developing countries, demand will double. The EAT–Lancet Commission on healthy diets from sustainable food systems offers a possible solution: a new "planetary health diet" for the world that advocates increased fruits, nuts, vegetables and plant-based protein, less meat, and a smaller ecological footprint. While dietary shifts are necessary for the health of people and the planet, there is nothing simple or singular about them.

Jason Clay, World Wildlife Fund US Senior Vice President, Food & Markets and Executive Director, Markets Institute

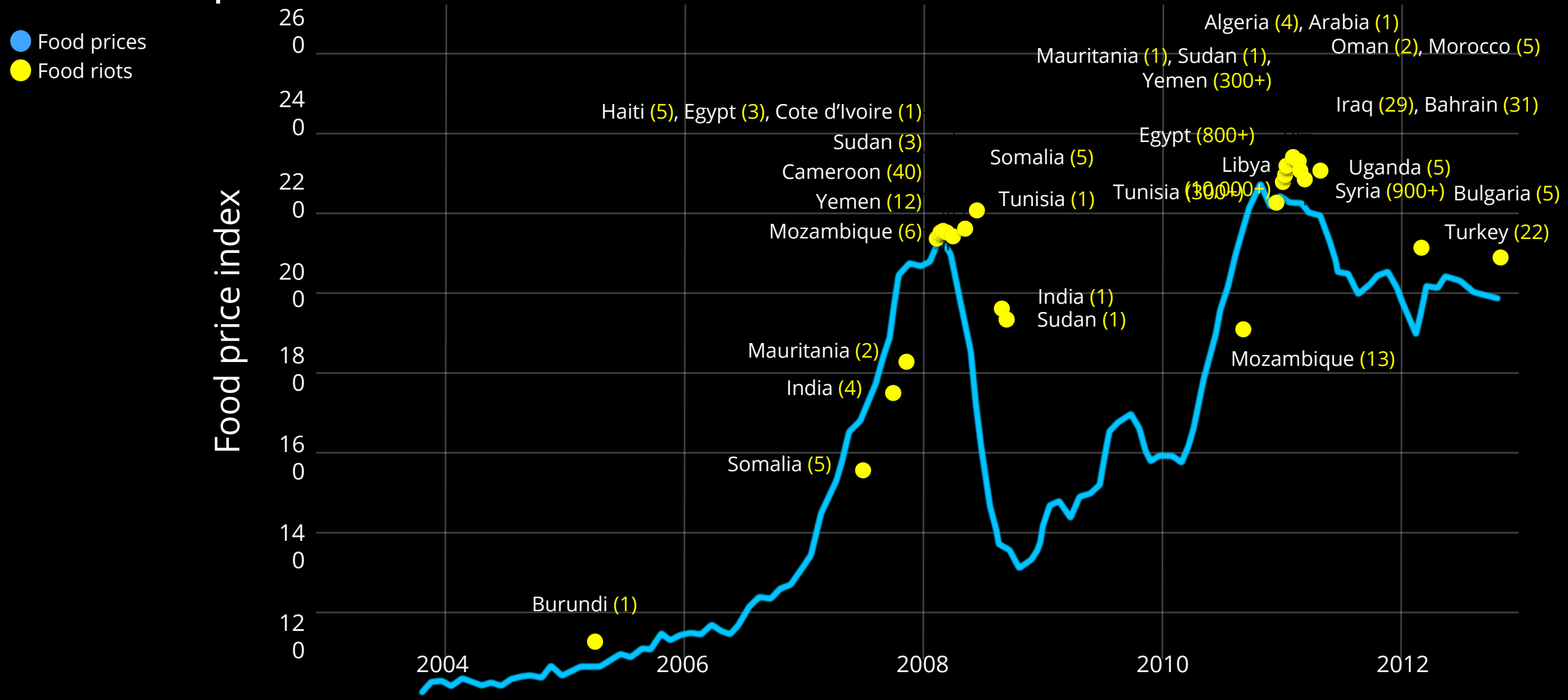
First, an ideal diet for one may be inaccessible, culturall unacceptable or even detrimental to another. While half the world's population consumes 50 percent more protein than they need, more than 800 million have less than they need and 128 million in 51 countries are stunted and face nutrient deficits. And for many cultures — from Africa to Uzbekistan and to ranchers in Australia, Brazil or the U.S. — livestock are not just a way of life, they are family and community traditions passed from one generation to the next. They are "banks," a family's wealth.

Second, switching from animal proteins to other proteins is not a panacea — for people or nature. Not all proteins are equal—equally nutritious or impactful. All food production has impacts. We need to avoid top-down assumptions about shifting between food groups, particularly when calculating global need. Proteins like seafood, tree nuts, milk and soy or other pulses all come with potential negative environmental impacts. More than 90 percent of marine stocks are fished at or beyond capacity. Poorly managed aquaculture can be unsustainable too. Almonds, and all tree nuts, take enormous amounts of water and will be hard to adapt to shifting weather conditions. Milk production has high methane and manure emissions and requires feed that has its own impacts. Soy and pulses, which have increasing importance in our diets through feed and alternative protein products, are the second largest driver of deforestation and grassland conversion globally.

The good news: shifting diets isn't the only way to change our food system, it's just a piece of the equation. We also need a dramatic reduction in food loss and waste and major improvements in how we produce food. We know that we can reduce the impacts of animal and plant protein production by 50 percent. We think this can happen by 2030 in the U.S.

Producers are already doing it. WWF and others work with row crop producers in the Midwest and ranchers in the Northern Great Plains to encourage more sustainable production practices. They have already measurably reduced CO2e emissions per gram of protein. But there is room

Food prices and food riots, 2004-13



Chicago Council on Global Affairs, *Advancing Global Food Security in the Face of a Changing Climate*, Gerald C. Nelson, March 2014

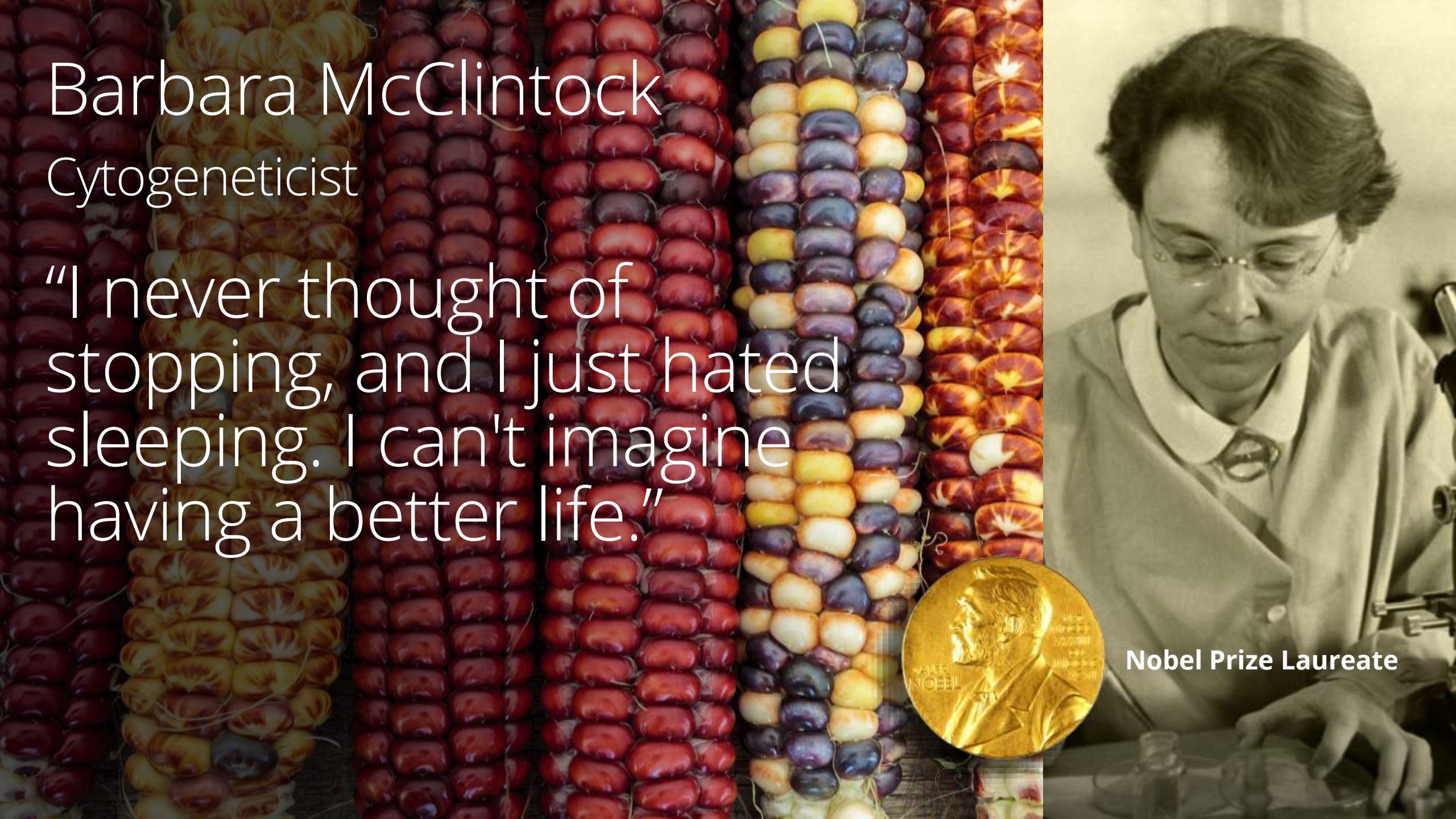
Photo: John Doebley

Heroines and Heroes

Barbara McClintock

Cytogeneticist

"I never thought of stopping, and I just hated sleeping. I can't imagine having a better life."



Nobel Prize Laureate

Jumping genes and *transposons*

First evidence for wandering DNA segments came from McClintock's experiments with Native American maize.

She identified changes in the color of kernels that made sense only by postulating that some genetic elements move from other genome locations into the genes for kernel color.

These transposable elements move from one site to another in a cell's DNA; they are present in both prokaryotes and eukaryotes.

Nobel Prize Laureate

Gurdev Khush

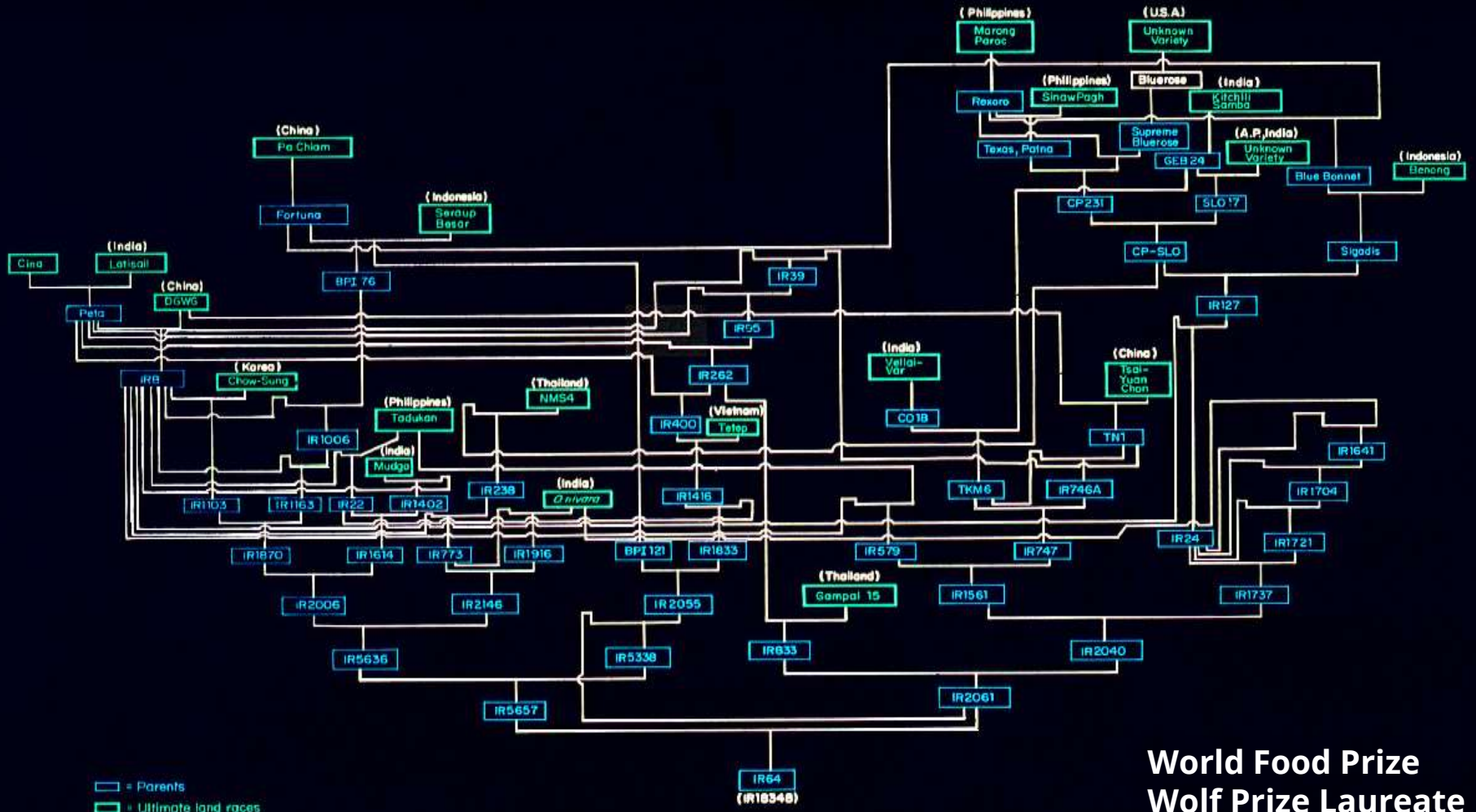
Agronomist and geneticist

Human hunger and desires are elastic but land is non-elastic. Population growth continues to outsmart food production.

Agriculture scientists and geneticists need to work overtime to meet the ever-growing human need for food and to alleviate hunger and poverty.

World Food Prize &
Wolf Prize Laureate

IR-64: a high-quality, high-yielding mega variety



World Food Prize
Wolf Prize Laureate

Norman Borlaug

Agronomist

“Man seems to insist on ignoring the lessons available from history.”

Nobel Prize Laureate

The Green Revolution

In the early 1960s, M.S. Swaminathan and Norman Borlaug introduced a program of new agricultural practices including high yield seed varieties, increased fertilizer use and irrigation advances.

This “Green Revolution” helped Mexico, India and Pakistan move toward food grain self-sufficiency.

Nobel Prize Laureate

Jennifer Doudna

Biochemist

“Just because we are not ready for scientific progress does not mean it won’t happen.”

Nobel Prize Laureate

Wolf Prize Laureate

Gene editing and CRISPR

“Tomatoes that can sit in the pantry slowly ripening for months without rotting. Plants that can better weather climate change. Mosquitoes that are unable to transmit malaria. Ultra-muscular dogs that make fearsome partners for police and soldiers. Cows that no longer grow horns. These organisms might sound far-fetched, but in fact, they already exist, thanks to gene editing. And they’re only the beginning. As I write this, the world around us is being revolutionized by CRISPR, whether we’re ready for it or not.”

“The power to control our species’ genetic future is awesome and terrifying. Deciding how to handle it may be the biggest challenge we have ever faced.”

Jennifer Doudna

Nobel Prize Laureate

Wolf Prize Laureate

No matter how many expert opinions you line up, you can't vote nonsense into truth!

Kevin Cameron
Editor, Cycle World

Farm Foundation®