



RENEGADE FARMERS AND THE FUTURE OF FOOD IN AMERICA

"Elevates the oft-ignored legume to heroic game changer . . .
An important contribution to the sustainable agricultural genre."

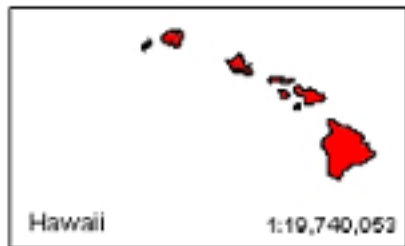
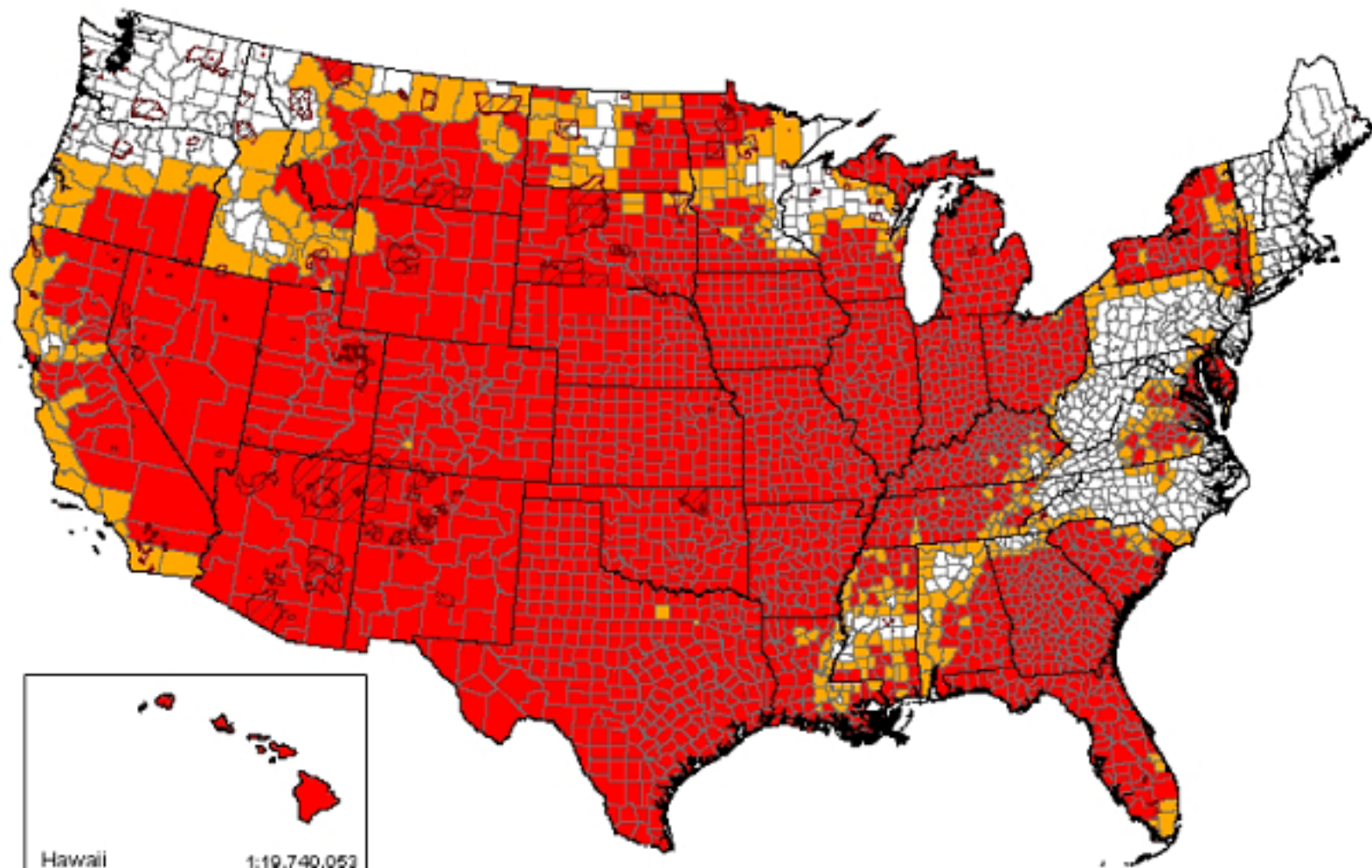
—THE SAN FRANCISCO CHRONICLE



LENTIL UNDERGROUND






LIZ CARLISLE

with a new foreword by Frederick L. Kirschenmann,
author of *Cultivating an Ecological Conscience*



Hawaii 1:19,740,053

All Drought Disaster Incidents as of 12/12/2012

-  State Boundary
-  County Boundary
-  Tribal Lands
-  Primary Counties
-  Contiguous Counties

1:23,520,203



USDA Farm Service Agency
 Production, Emergencies and Compliance Division
 Washington, D.C.
 December 12, 2012



CANADA



Montana

Helena

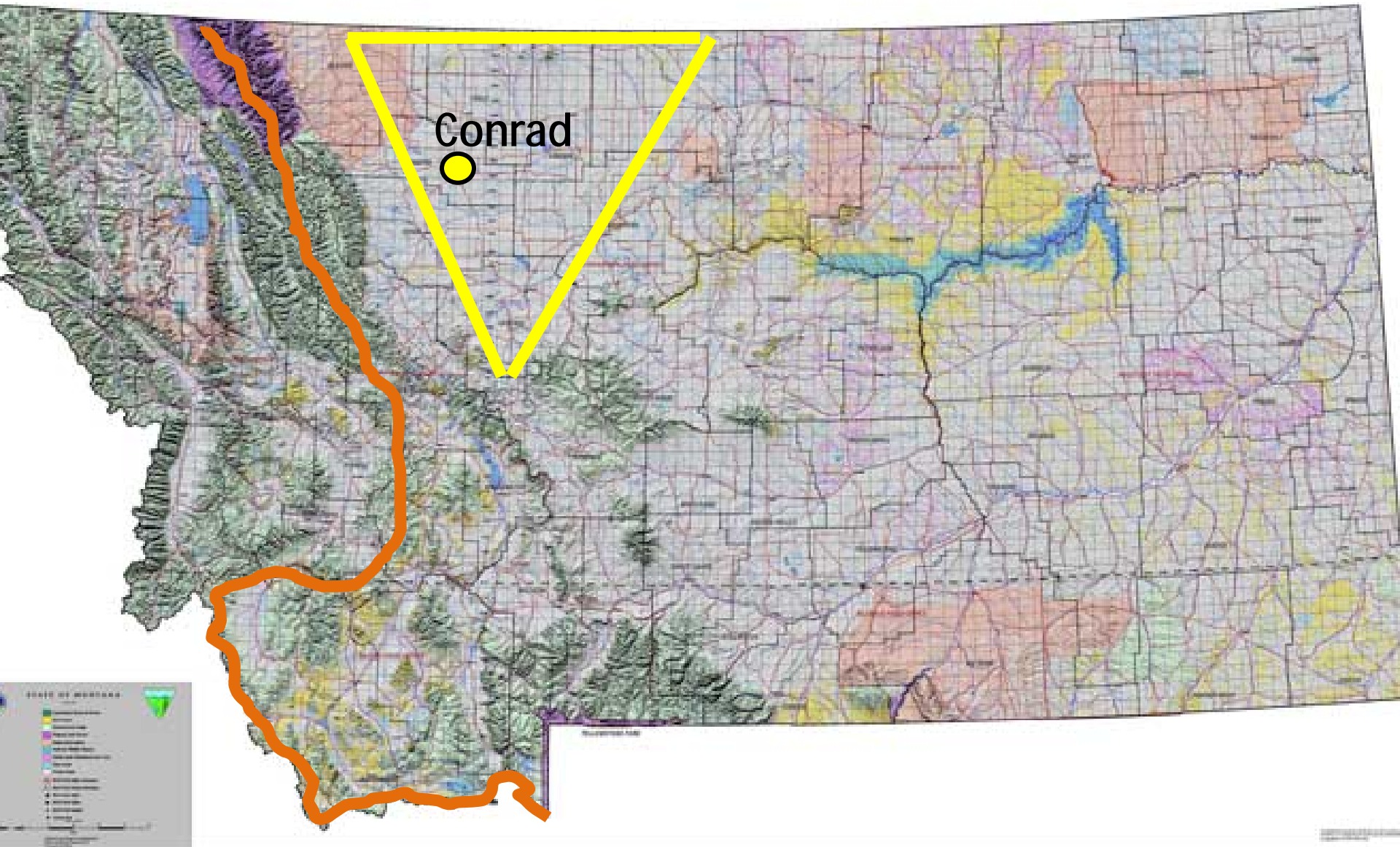
★ National capital
 U.S. State
 ● State capital

Scale 1:13,500,000
 Albers Equal-Area Projection

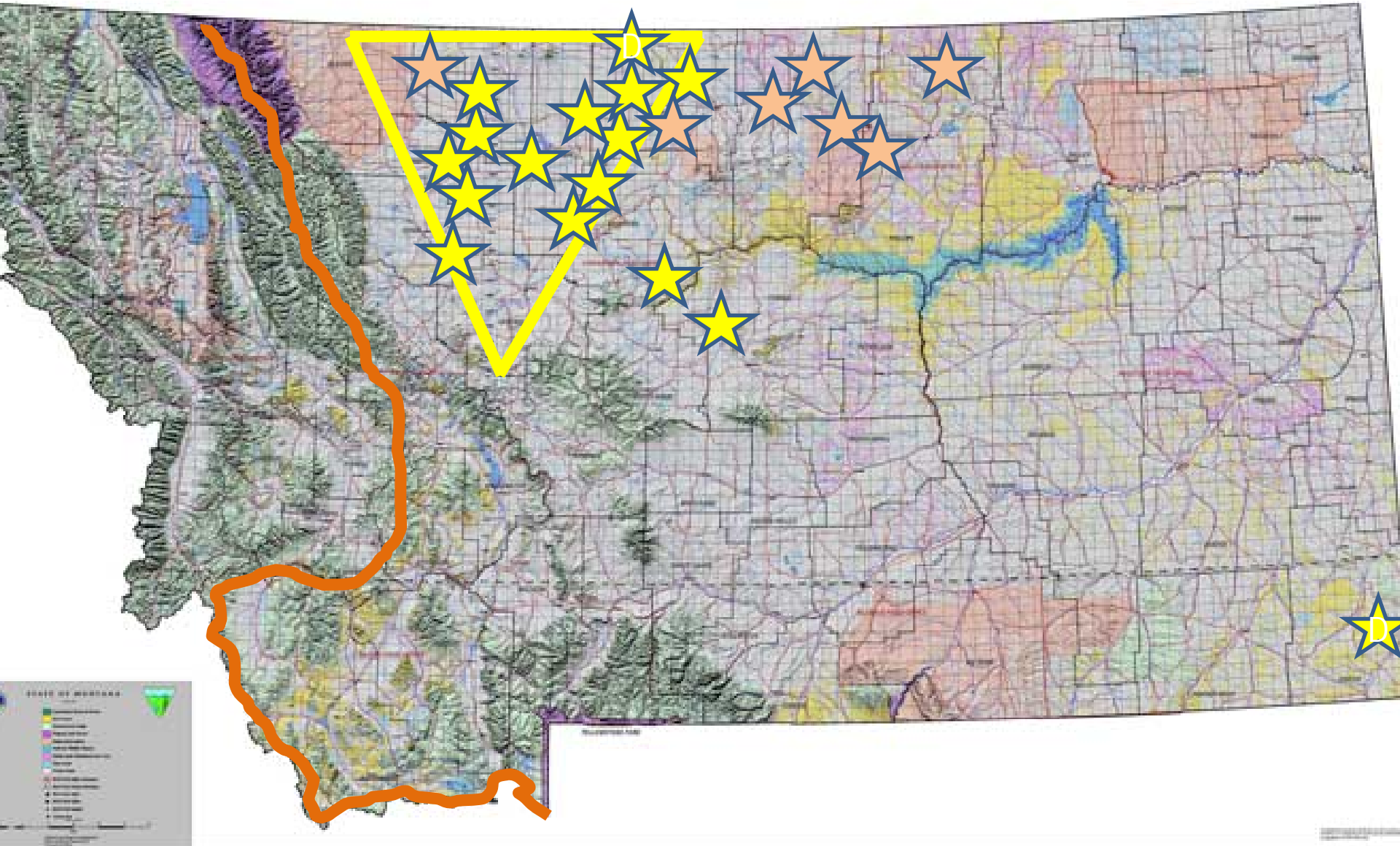
0 500 Kilometers
 0 500 Miles

THE BAHAMAS
Nassau

Montana's Golden Triangle



Case Study Farms



Research Partners





Great Plains

Treeless

Gently rolling

Semi-arid



Mechanical Cultivation Seeding Harvest





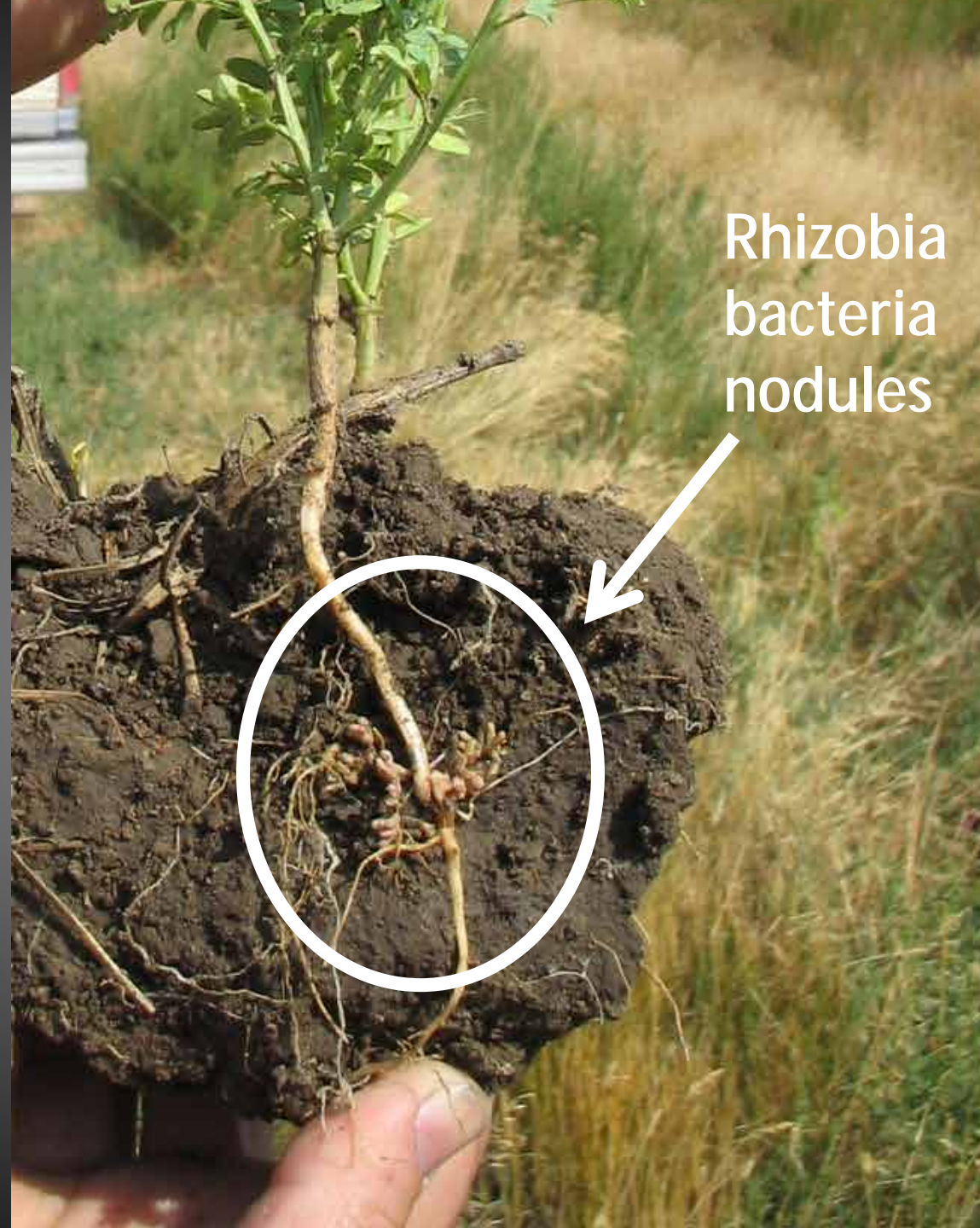
Broad Scale Agriculture - 800 to 10,000 acres/farm





LENTILS

Fix Nitrogen
Biologically
for
themselves
And leave
some for
following
crop



LENTILS

Drought Tolerant

Frost Hardy

Shallow rooted vs.
cereal grains

Short in Stature
12" to 16" tall

Dryland crop
10" - 18" rainfall zone



LENTILS

Short Season Annual

100 Days from Planting
to Harvest

One Crop/Year

March or April Seeding

July or August Harvest



LENTILS

Biodiversity in Cereal
Grain Rotations

Break Cereal Grain Pest
Cycles

Ground Shading vs.
Cultivated Fallow

Build Organic Matter
& Biological Activity in
the Soil



LENTILS

High Value Rotational Crop for Farmers



TIMELESS
SEEDS, INC.



1987 - 1994 On David Oien's farm



Sweat Equity
Production from 4 farms

1994-2006 Old grain elevator in Conrad, MT



**"Crowd Funded" by 12 friends & family
3 staff (sometimes paid) 6 farmers**

2006- present Ulm , MT



Slow Money support

12 employees

20 farmers

21 shareholders

Retail Line

- § Natural Food Stores
- § Specialty Markets
- § Organic Restaurants
- § E-commerce



25 lb., 50 lb., 25 kg., Bags 2000 lb. totes

- § Natural Food Stores
- § Restaurants
- § Organic Food
Manufacturers
- § Farm to School
- § Campus Dining
- § Hospital & Health
Care Facilities



5% Montana 85% domestic 10% export

LENTIL NUTRITION

22% - 28 % Protein

0% Cholesterol

Excellent Alternative to Meat

High in Dietary Fiber

Highest Natural Source for Folates

Loaded with Minerals

Very Low Glycemic Index

Gluten Free

High in Antioxidants

Nutrition Facts

Serving size ¼ cup (50 g)

Amount per Serving

Calories 145 Calories from Fat 4

	% Daily Value
Total Fat < 1g	<1%
Saturated Fat 0g	0%
Trans Fat 0g	0%
Cholesterol 0mg	0%
Sodium 3mg	0%
Total Carbohydrate 25g	8%
Dietary Fiber 10g	40%
Soluble Fiber 2g	.
Insoluble Fiber 8g	.
Sugars 2g	.
Protein 11g	22%

Iron 4mg 25%

Zinc 2mg 13%

Folate 27mg 56%

Magnesium 45mg 11%

Anti-Oxidant Values

Table 7: Antioxidant Capacity of Different Foods

Food Items (100g) ORAC values (μ mol TE/100g)

- **Blueberries, raw** **4,669**
- Apple, fuji, with skin 2,589
- Bread, multi-grain 1,421
- Banana, raw 795
- Tomatoes, plum, raw 546

Anti-Oxidant Values

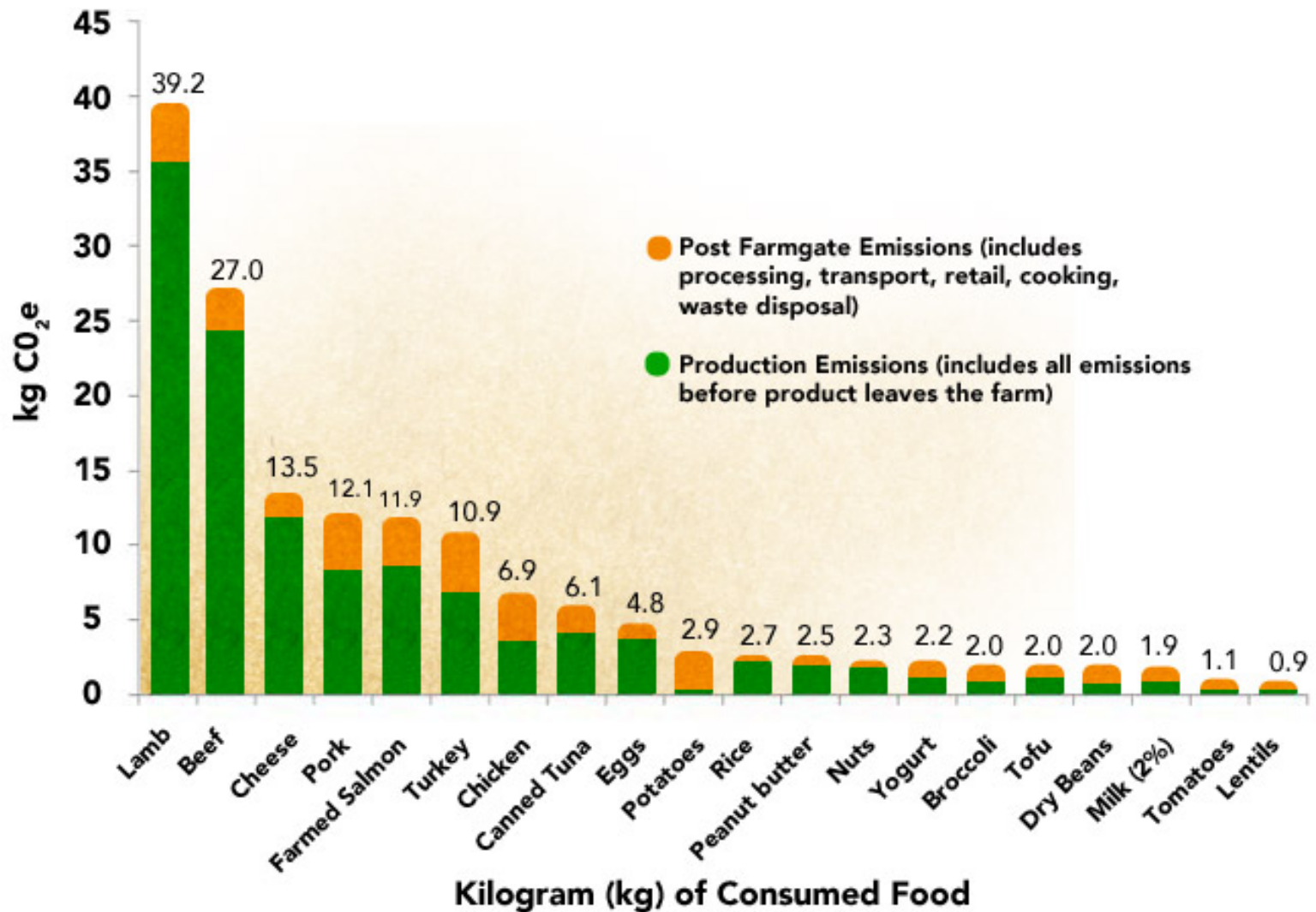
Table 7: Antioxidant Capacity of Different Foods

Food Items (100g) ORAC values (μ mol TE/100g)

- **Lentils, raw** **7,282**
- Basil, fresh 4,805
- **Blueberries, raw** **4,669**
- Apple, fuji, with skin 2,589
- Bread, multi-grain 1,421
- Banana, raw 795
- Tomatoes, plum, raw 546

LENTILS have 56% greater anti-oxidant value than Blueberries!

Carbon footprint of your food



LEGUMES and legume-based pastures
use **35 to 60 PERCENT LESS** fossil energy
than chemically fertilized grains.





OR



THANK YOU

- All of you, for attending
- Mary Fund and KRC, for the invitation
- The farmers, ranchers, nonprofit staff, public servants, and researchers who have collaborated with me
- My mentors, colleagues, and students at UC Berkeley and Stanford
- My mentors and colleagues in the Office of Senator Tester
- The organizations that funded this research: The National Science Foundation, The PEO, Soroptimist International, and the Charles Redd Center
- My editors and advocates in New York who helped turn this story into a book
- My friends and family

Annual U.S. Consumption per Capita for Lentils?

MEAT- 190 LBS/PERSON

WHEAT- 170 LBS/PERSON

LENTILS - 10 OZ/PERSON

