GARDENING FOR THE FUTURE

REGENERATIVE AGRICULTURE IN YOUR LEARNING GARDEN

BIG GREEN
REAL FOOD GROWS HERE

&

ARTISAN GRAIN
COLLABORATIVE
WORKSHOP AGENDA

1. Introductions & Workshop Overview
2. Our Agricultural Systems w/ Harold Wilken
3. Soil Experiment
4. Crop Rotation Garden Plan
5. Nutrition of Small Grains
6. Cooking Demonstration w/ Chef Mel
7. Wrap Up & Evaluations
Our Mission
Big Green connects kids to real food through a nationwide network of Learning Gardens and food literacy programs

Gardening for the Future
How can Learning Gardens implement regenerative agricultural practices?
Artisan Grain Collaborative

A collective of bakers, chefs, nonprofits, farmers, millers, distributors, agriculture researchers, market developers, entrepreneurs, food system venture investors, and school nutrition experts working together to promote a regenerative food system.
FARMING’S IMPACT ON THE ENVIRONMENT

Conventional Agriculture

• **Production**: Monocropping, Heavy Fertilizer Use, Frequent cultivation of soil

• **Processing & Transportation**: Food harvested early, spends several days on trucks and in storage

• **Consumption**: Heavy consumption of meat, culture of food waste, lack of nutritional value
What Is Regenerative Agriculture?

Regenerative agriculture is a system of farming that rejuvenates topsoil by using practices that build soil health.

• Reduced or no-tilling
• Crop rotation & cover crop use
• Use of compost instead of synthetic fertilizer
REGENERATIVE AGRICULTURE SHIFTS THE PARADIGM

Compete with Nature ➔ Partner with Nature
Disturb Soil ➔ Protect Soil
Monoculture ➔ Diversity
Reductionist ➔ Holistic
**BENEFITS**

- Reduced erosion
- Soil holds carbon that would otherwise be released as CO2
- Reduced reliance on synthetic fertilizers and pesticides
INTRODUCING HAROLD WILKEN
Farm to Mill to You

Shop Now
COVER CROPS AND PARTNERS IN SOIL HEALTH
KEEPING GROWING PLANTS ON THE SOIL
KEEPING GROWING PLANTS ON THE SOIL
SOIL RUNOFF EXPERIMENT

Materials:
- 3 half-gallon milk cartons, with one panel cut out of each.
- Soil to fill all 3 milk cartons.
- Mulch to cover 1 milk carton.
- Cover crop seeds to plant in 1 milk carton.
- 1 large seedling tray to house all 3 milk cartons.
- 1-inch high piece of wood to serve as incline plane.
- 3 water collection containers.
- Water as needed.

Procedure:
- Fill all 3 milk cartons with soil.
- Label your cartons as #1, #2, and #3.
- In each carton:
  - Carton #1, plant cover crop seeds in carton #1 (allow 1-2 weeks for seedlings to grow.)
  - Carton #2, cover soil with mulch
  - Carton #3, leave soil bare.
- Place all 3 cartons in a large seed tray.
- Place 1-inch piece of wood under all 3 cartons so they are evenly inclined.
- Place water collection containers in front of each milk carton.
- Add the same amount of water to each milk carton and observe.
URBAN AND AGRICULTURAL RUNOFF
Crop Rotation Garden Plan

Year 1:
A1: Kale Peas Lettuce Flowers
   Spinach Garlic/Peas Garlic/Peas Buckwheat
   Radishes Peas Pea Shoots 3 Sisters
A2: Kale Peas Lettuce Flowers
   Arugula Garlic/Peas Garlic/Peas Buckwheat
A3: Perennials
A4: Perennials

Year 2:
A1: Radishes Peas Pea Shoots 3 Sisters
A2: Kale Peas Lettuce Flowers
A3: Perennials
A4: Perennials

Year 3:
A1: Kale Peas Lettuce Flowers
A2: Kale Peas Lettuce Flowers
A3: Perennials
A4: Perennials
SMALL GRAIN HISTORY

- Whole Grain — bran, germ, endosperm
- Invention of Roller Mills
  - Refined grains
  - Leaves softer, more digestible endosperm (white rice)
- 1940’s: Enriched Flour
- Impacts on Nutrition
  - Processing strips away vitamins B and E, and the fiber
SMALL GRAIN NUTRITION

Whole Wheat Flour (100% of nutrients):

- Vitamin E: 8%
- Vitamin B6: 11%
- Magnesium: 16%
- Thiamin (B1): 24% (155% compared to Refined Wheat Flour)
- Riboflavin (B2): 24% (299% compared to Refined Wheat Flour)
- Niacin (B3): 25% (119% compared to Refined Wheat Flour)
- Fiber: 25%
- Potassium: 29%
- Iron: 33% (129% compared to Refined Wheat Flour)
- Folate: 59% (661% compared to Enriched Wheat Flour)
- Protein: 78%

Comparisons:
- Refined Wheat Flour
- Enriched Wheat Flour
# Small Grain Nutrition

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Brown Rice (one cup)</th>
<th>White Rice (one cup)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>232</td>
<td>223</td>
</tr>
<tr>
<td>Protein</td>
<td>4.88 g</td>
<td>4.10 g</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>49.7 g</td>
<td>49.6 g</td>
</tr>
<tr>
<td>Fat</td>
<td>1.17 g</td>
<td>0.205 g</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>3.32 g</td>
<td>0.74 g</td>
</tr>
<tr>
<td>Thiamin (B1)</td>
<td>0.176 g</td>
<td>0.223 g</td>
</tr>
<tr>
<td>Riboflavin (B2)</td>
<td>0.039 mg</td>
<td>0.021 mg</td>
</tr>
<tr>
<td>Niacin (B3)</td>
<td>2.730 mg</td>
<td>2.050 mg</td>
</tr>
<tr>
<td>Vitamin B6</td>
<td>0.294 mg</td>
<td>0.103 mg</td>
</tr>
<tr>
<td>Folacin</td>
<td>10 μg</td>
<td>4.1 μg</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>1.4 mg</td>
<td>0.462 mg</td>
</tr>
<tr>
<td>Magnesium</td>
<td>72.2 mg</td>
<td>22.6 mg</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>142 mg</td>
<td>57.4 mg</td>
</tr>
<tr>
<td>Potassium</td>
<td>137 mg</td>
<td>57.4 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>26 mg</td>
<td>19 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>1.05 mg</td>
<td>0.841 mg</td>
</tr>
</tbody>
</table>
# Finding Whole Grains

<table>
<thead>
<tr>
<th>Refined Grain</th>
<th>Whole Grain</th>
</tr>
</thead>
<tbody>
<tr>
<td>White rice</td>
<td>Brown rice</td>
</tr>
<tr>
<td>Cornbread</td>
<td>Whole grain cornmeal</td>
</tr>
<tr>
<td>Corn tortillas</td>
<td>Oatmeal</td>
</tr>
<tr>
<td>Flour tortillas</td>
<td>Popcorn</td>
</tr>
<tr>
<td>White pasta</td>
<td>Whole wheat tortillas</td>
</tr>
<tr>
<td>White pita</td>
<td>Whole wheat pasta</td>
</tr>
<tr>
<td>Pretzel</td>
<td>Wild rice</td>
</tr>
<tr>
<td>White bread</td>
<td>Whole wheat bread</td>
</tr>
</tbody>
</table>
Finding Whole Grains

How many whole grains do you see?
Finding Whole Grains

Lesson 7

INGREDIENTS: ENRICHED WHEAT FLOUR, BARLEY MALT, NIACIN, IRON, THIAMIN MONONOITRATE, RIBOFLAVIN, FOLIC ACID, WATER, CORN SYRUP, YEAST, CONTAINS 2% OR LESS OF THE FOLLOWING: SOYBEAN OIL (NON-HYDROGENATED), SALT, DOUGH CONDITIONERS (MONOGLYCERIDES, SODIUM STEAROYL LACTYLATE, ASCORBIC ACID, CALCIUM PEROXIDE, AZODICARBONAMIDE), WHEAT GLUTEN, CALCIUM PROPIONATE (TO RETAIN FRESHNESS), YEAST NUTRIENTS (CALCIUM SULFATE, MONOCALCIUM PHOSPHATE), WHEAT STARCH, SOY LECITHIN.

CONTAINS: WHEAT, SOY.

INGREDIENTS: WHOLE WHEAT FLOUR, WATER, CORN SYRUP, YEAST, WHEAT GLUTEN, CONTAINS 2% OR LESS OF THE FOLLOWING: SOYBEAN OIL, CULTURED WHEAT FLOUR, VINEGAR, SALT, HONEY, DOUGH CONDITIONERS (MONOGLYCERIDES, SODIUM STEAROYL LACTYLATE, ETHOXYLATED MONO & DIGLYCERIDES, AZODICARBONAMIDE, ASCORBIC ACID, CALCIUM PEROXIDE), YEAST NUTRIENTS, (CALCIUM SULFATE, AMMONIUM SULFATE), FUMARIC ACID, WHEAT STARCH, SOY LECITHIN.

CONTAINS: WHEAT, SOY.

LEWIS BAKERIES, INC.
GENERAL OFFICES: EVANSVILLE, IN 47710

Allergy Advisory: Produced on the same bakery equipment as baked goods containing milk, eggs, or nuts. Therefore, this product may inadvertently contain milk, eggs, or nuts to which some people may be allergic.
HEALTH BENEFITS OF OATS

- Lowers LDL “bad” cholesterol
- May help reduce risk of heart disease
- Help you feel full longer
- Early introduction into a child’s diet may help reduce their risk of asthma
- Higher in protein and healthy fats, and lower in carbohydrates than most whole grains

This slide is courtesy of Chef Erin Meyer, MSFS, RD
 HEALTH BENEFITS OF OATS

- May help lower blood pressure
- May reduce your risk of type 2 diabetes
- Helps to cut the use of laxatives
- High in beta-glucans, a starch that stimulates the immune system and inhibits tumors
- Strong antioxidant and anti-inflammatory

This slide is courtesy of Chef Erin Meyer, MSFS, RD
HEALTH BENEFITS OF BUCKWHEAT

- Great energy source
- Contains prebiotic benefits
- Help you feel full longer
- Excellent source of magnesium, copper, and manganese
- A complete protein (contains all 9 essential amino acids)

This slide is courtesy of Chef Erin Meyer, MSFS, RD
COOKING DEMO

Grain salad with Chef Mel
THANKS TO...

Chef Erin Meyer, MSFS, RD
Chef Mel Carter
Harold Wilken
Up Next! Spring Learning Garden Workshop
March 17, 18, and 19
4:30-6:30pm

Summer Learning Garden Workshop
May 19, 20, and 21
4:30-6:30pm
March 19th, 2020

Visit plantaseedday.org for more info and to take the pledge!
WRAP UP AND EVALUATIONS

- Don’t forget to complete your evaluation
- Supply pick up – Oat seed

Save the date:
Spring Garden Workshops
March 17, 18, and 19

Thanks for coming!

Follow @BigGreen on social media and get connected to Learning Gardens across the country!