Small-Scale Specialty Grain Production

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LNE17-357 Farmer-generated training and equipment solutions for producing and processing value-added grains
Outline

• Why grow small and specialty grains?
• Case study: Wholesome Acres einkorn
• Other grains
• Essential equipment
• Prices
• For more Information
Small grains and specialty grains

• Wheat
• Barley
• Oats
• Rye
• Buckwheat
• Flax
• OP and Heirloom corn
• Amaranth
The Indispensable Small Grains

Rye roots
Weaver, Root Development Of Field Crops, 1926
Small grains have been low value crops in the Northeast for ~100 years but!!!!

- **Strong consumer demand for locally/regionally grown grains—adds value**
- Growing organically adds value
- Growing rare, delicious, nutritious grains adds value
- Processing grains on farm adds value (e.g., cleaning, dehulling, rolling, milling, puffing, making bread, pasta, snacks)
Agroecosystem benefits + local foods movement

→ sustainable, profitable grain enterprises for farmers
Markets for local/regional small grains

• Strong demand unmet by current production

• Diverse markets
  • Whole grain and milled grain food products
  • Malted and distilled products
  • Feeds
  • Seeds

You can grow to sell to processors/food outlets or sell directly to consumers.
The ancient wheat einkorn (*Triticum monococcum*)
Initial einkorn grow out
Three landraces from the Germplasm Resources Information Network (GRIN)

One of 9 bundles of PI265008 einkorn (collected from Bosnia and Herzegovina) harvested in 2014, early maturing for a winter einkorn (‘Eclipse’)

PI355548 einkorn (collected in Vorarlberg, Austria), tallest of the three varieties, medium maturity; collected 16 bundles (‘Milky Way’)

CiTR14090 (origin unknown), 5 bundles harvested, latest maturing einkorn of the three. (‘Lamar’)

How to grow einkorn

• Seeding rate: 45 lbs/A
• Soil health
• Fertility requirements
• Harvesting
• Storage
Quality testing

- Vomitoxin (deoxynivalenol or DON), produced by *Fusarium graminearum*
- *FDA limit for human consumption: 1 ppm (finished product)*

*All wheat, barley, and rye grown in the NE should be tested for vomitoxin.*

National Quality Inspections
600 6th St SW, Great Falls, MT 59404
(406) 761-6820
Quality testing for seed production

• Pa. Dept of Ag (or NYS Seed Testing Lab)
• Test for Germination and Purity

Lot # RG11BWNYC
Purity: 99.62%
Germination: 97%
Weed seed: 0.00%
Crop seed: 0.00%
Inert Matter: 0.38%
Test date: 5/15/12
Origin: NY

Oxbow Organic Farm
Hunt, NY 14846
oxbow@frontiernet.net
Certified organic by NOFA-NY Certified Organic, LLC
Net wt: 2 lb

Organic Buckwheat
Abrasion-type dehuller, using flail, screen, similar to Horn, Tudor dehullers
Beiler dehulling system: Will dehull einkorn, emmer, spelt. Dehuller can be purchased with or without motor.
Prices and profitability
Latest version of Beiler hammer mill/dehuller: Smaller version of stand-alone dehuller.
Wheats

• Einkorn, diploid (*Triticum monococcum*)
• Emmer, tetraploid (*Triticum turgidum*)
• Spelt, hexaploid (*Triticum aestivum subsp. spelta*)
• Modern wheat, hexaploid (*Triticum aestivum subsp. aestivum*)
Lamar Stauffer, ‘Italian’ einkorn (left) and spelt, New Holland, PA

Lucille Spring emmer, grown at White Frost Farm, Washingtonville, PA

North Dakota Common spring emmer, grown at Oechsner Farms, Newfield NY (photo courtesy of Rachel Lodder)
Wheat

- Spring- and fall-planted
- Types: modern and heritage varieties, ancient wheats

Quality parameters:
- Protein
- Falling number
- Vomitoxin

Steve Gambino, Glenn spring wheat, Villa Milagro, Phillipsburg, NJ

White Frost Farm, fall-planted Red Fife wheat, Danville, PA

Other heirlooms available! Rouge de Bordeaux, Rosa de Sabedo, more—contact OGRIN
Barley
- Spring- and fall planted
- Hulled, hulless (Ethiopian, Purple)
- Malting
- Food

Quality parameters for malting:
- Germination characteristics
- Plumpness
- Protein
Spring Oats,
The Bridge Crop

Thor Oechsner, hulled oat variety (left), Newfield, NY

Steve Gambino, ‘Gehl’ hulless oat (left), Phillipsburg, NJ
Rye
- Fall-planted
- ‘Danko’ food-grade variety

- Protein
- Falling number

Tasting results: Most flavorful as cooked grain

![Bar chart showing the percentage of tasters who chose each grain as most flavorful.]

- Barley: 25%
- Red Fife wheat: 50%
- Rye: 75%
Heirloom corn

Bloody Butcher  95 bu/A  a
Wapsie Valley   92 bu/A  a
Floriani Flint  56 bu/A  b

2018 PA farm trial (Beiler)
Buckwheat

• Grows well in our region
• Multiple agroecosystem benefits
  • weed suppressor
  • beneficial insect refuge/food source
  • break crop for both monocots and dicots
• High market potential for groats
• Needs more product development
• Excellent market for seed
Flax

• Excellent market potential for locally grown in the NE
• Good match for small acreages (amazing Carmen Fernholz!)
  • Major problem in organic systems: very poor competitor
A miraculous field of flax: good seed bed prep, early planting, a bit of luck.
Most essential piece of equipment: Combine (or thresher)
Storage: Insect control

• Sanitation
• Pheromone lures, sticky traps (monitoring)
• Diatomaceous earth
• Cold or Freezing
• CO$_2$, N$_2$
Sample Prices in the local/regional grain economy
(Prices depend on grain quality and seasonal availability.)

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<thead>
<tr>
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<th>Wholesale</th>
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<tbody>
<tr>
<td></td>
<td>Modern wheat</td>
<td>Heirloom Red Fife</td>
<td>Einkorn</td>
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<tr>
<td>Transition</td>
<td>$0.21-$0.30/lb</td>
<td>$0.40-$0.50/lb</td>
<td>$0.80/lb</td>
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<tr>
<td>Organic</td>
<td>$0.27--$0.40/lb</td>
<td>$0.80-$1.00/lb</td>
<td>$1.00 and up</td>
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**Direct to consumer**
Berries/flour/rolled oats: $2-$8/lb
For more information:

On einkorn, einkorn seed, flour, cookbook, and dehuller:
Henry Beiler, 6469 Musser Lane, Watsontown, PA 17777; 570 538 5949

On grains, equipment:
Organic Growers’ Research and Information-Sharing Network (OGRIN)
www.ogrin.org
Dr. Elizabeth Dyck, edyck@ogrin.org, 607 895 6913
Mentoring component

Farmers can get support for growing and equipment needs, including one-on-one mentoring from experts provided by the project.

Contact OGRIN.