

Today's Plan



Carl Majewski –
Field Specialist at UNH Extension



Tyler Murray—
Granite Grains



Dina Wilford—
Vida Tortilla



Sarah Cox—
Tuckaway Farm



Intro to Small Grain
Production in the Northeastern US

Grain Production, Processing, &
Marketing



Grain Production in NH

Carl Majewski

Field Specialist, Food & Agriculture



Extension

Why?

- Higher value crop
- Interest from local bakeries and breweries
- Good fit in rotation with corn and forages

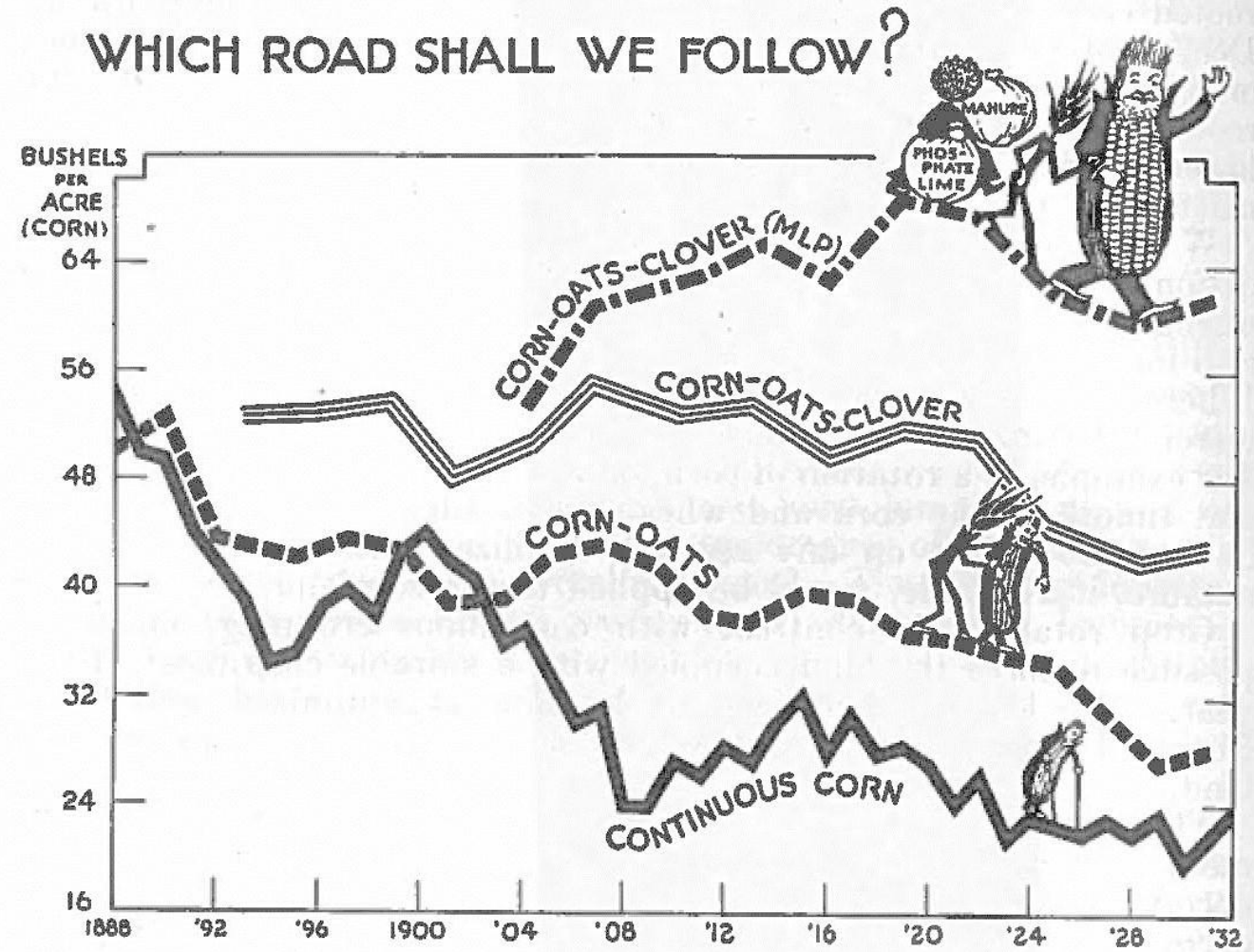
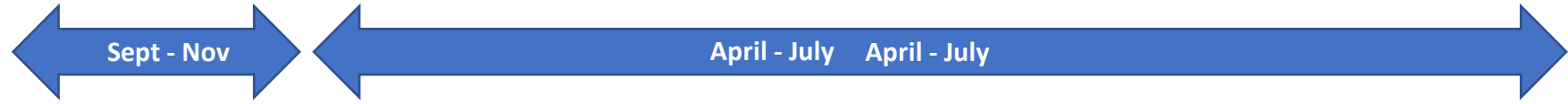
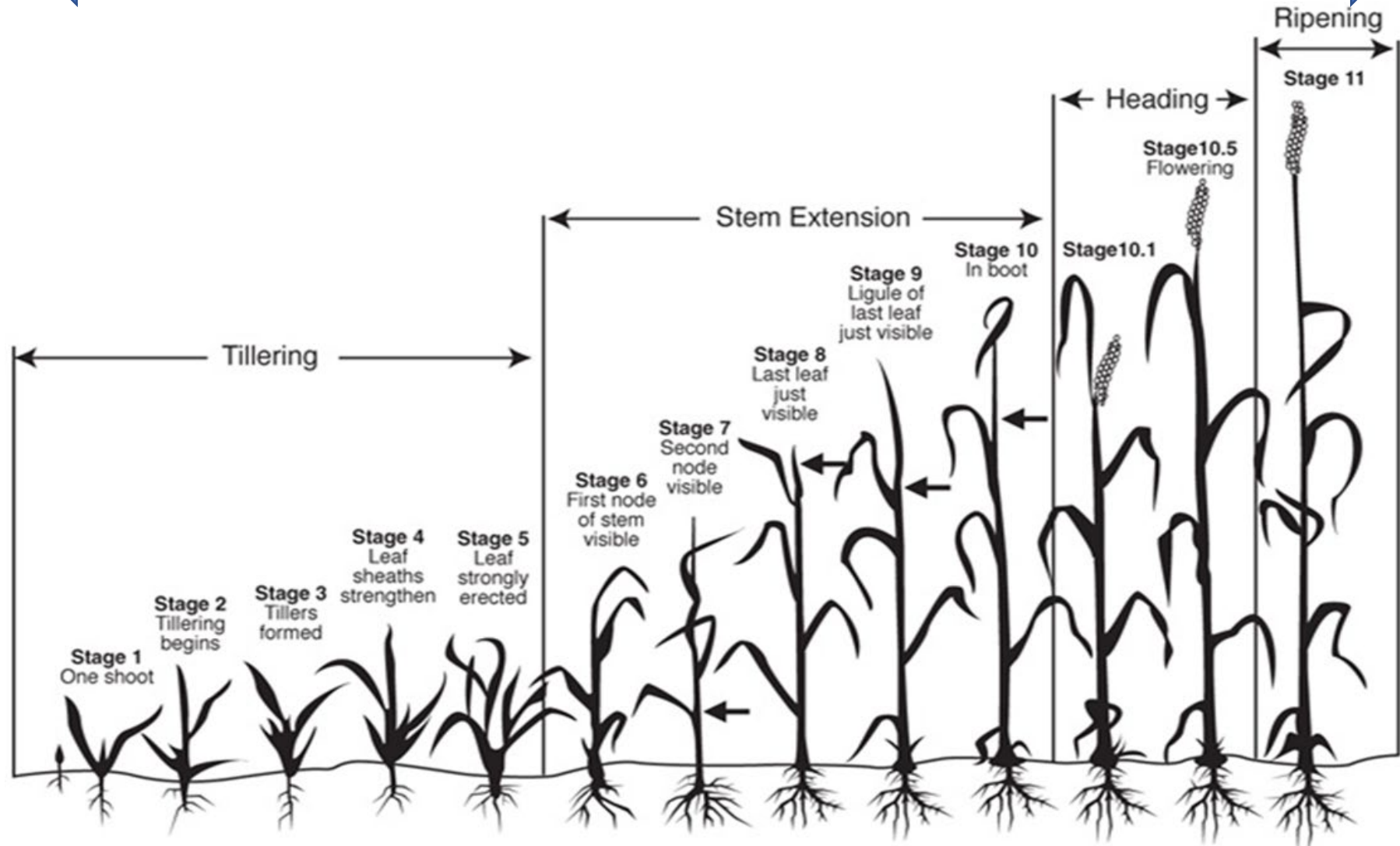
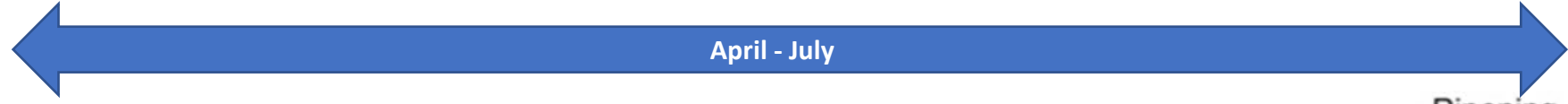


FIGURE 2.—Yields of corn grown continuously; corn grown in a 2-year rotation of corn and oats; and corn grown in a 3-year rotation of corn, oats, and clover, with and without fertilizer, on the Morrow field plots of the University of Illinois.

Winter grains



Spring grains





Other considerations

- Adapted to Northeast conditions
- Malting/baking quality
- Hard vs soft wheat
- Disease resistance

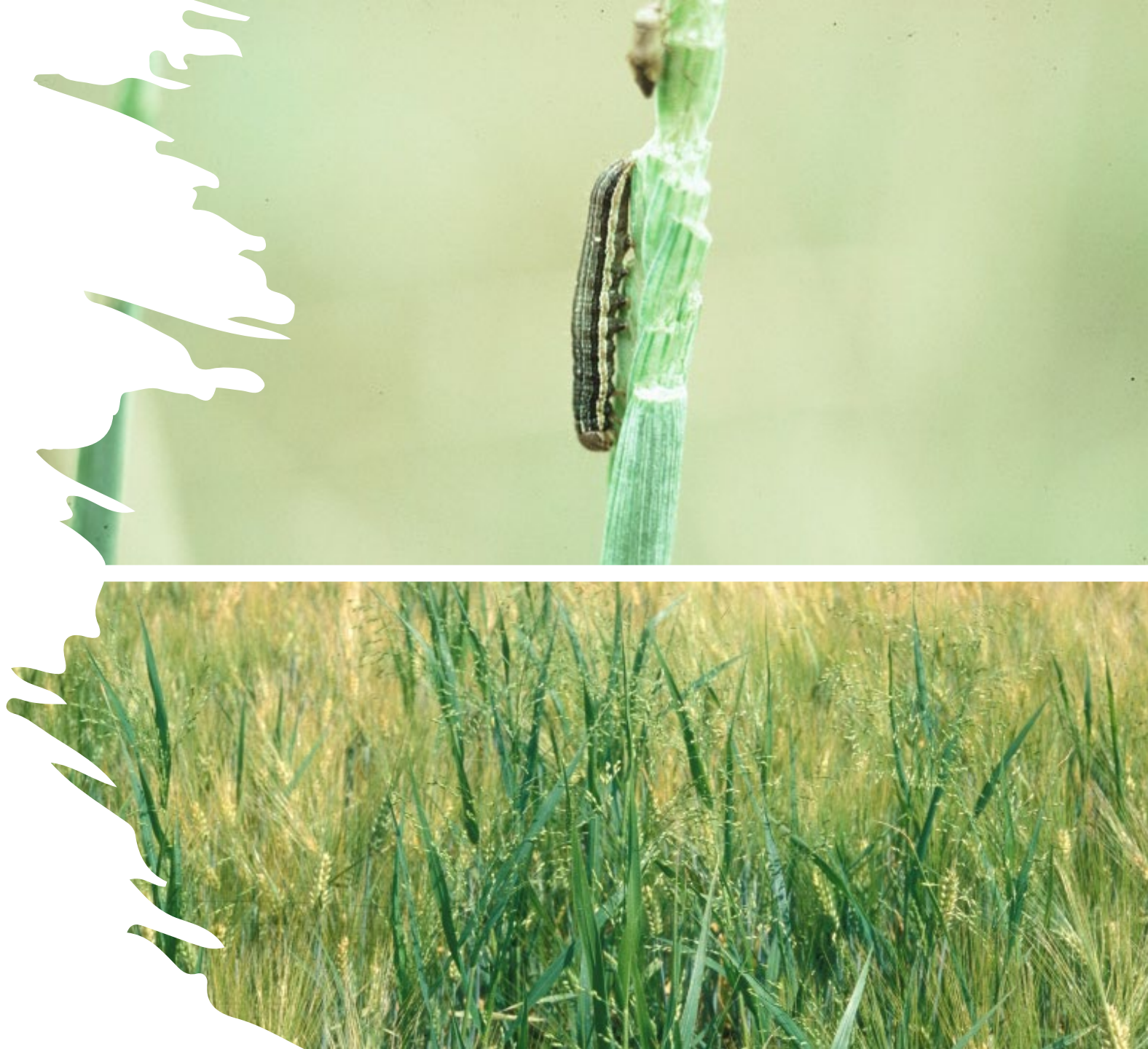
Nutrient (Nitrogen) Management

- pH 6.0-6.5
- Soil test to determine P and K needs
- Overfertilizing N can lead to lodging, quality issues
- 20-40#/A in fall to promote tillering
- Greatest demand in spring at stem elongation



Pest Management

- Occasional insect pests – armyworm, cereal leaf beetle
- Weeds – selective herbicide for broadleaves, grasses more difficult
- Rotation restrictions may affect plans





Diseases

- Rusts & Mildews
- Viral diseases
- Use certified seed, resistant varieties
- Scout fields regularly
- Early fungicide applications often not necessary



Clockwise, from top left: Howard F. Schwartz, Colorado State University, Bugwood.org; Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org; William M. Brown Jr., Bugwood.org



5551670

Fusarium Head Blight

- Produces deoxynivalenol (DON) mycotoxin
- Premature bleaching in head
- Shrunken, discolored grain
- Overwinters on residue
- Spreads in warm, humid conditions
- Higher risk with no-till following corn

Harvesting and Storage



- Physiologically mature, <20% moisture
- Higher moisture reduces losses, pre-harvest sprouting
- <12-13% moisture for storage
- Drying, aeration may be required



Cereal Grain Quality Evaluation Sample Report Form

DATE: 8/5/2022

FROM: NWCS Quality Testing Laboratory
University of Vermont
James M. Jeffords Building
63 Carrigan Dr.
Burlington, VT 05405

Office: 802-524-6501
Fax: 802-524-6062
E-mail: uvmgrain@uvm.edu

TO: Adam Crete
Highway View Farm
100 River Rd
Boscawen, NH 03303

Lab ID	Sample Description	Grain Moisture	Test Weight	Flour Moisture	* As-Is Protein	DM Protein	Falling Number	DON
		%	<u>lbs/bu</u>	%	%	%	sec	ppm
C3366	Warthog	8.7	59.8	10.6	12.8	14.3	485	0.5

* "As-Is" protein value is based on the % flour moisture.

According to the USDA, DON values over 1 ppm are NOT considered safe for human consumption. Results with >5.0 ppm could be much higher than 5 ppm.

Please note: results are representative of the submitted sample only.

For information about our testing procedures please see the reverse side.
Questions? Please contact Hillary Emick at hillary.emick@uvm.edu or Heather Darby at heather.darby@uvm.edu.

Moisture above 14% attracts mold, bacteria, insects

Test weight measures kernel density, should be 56-60 lbs/bu

Higher protein desirable for wheat, should be >12% for malting barley

Falling number measures enzyme activity, should be >350

Deoxynivalenol mycotoxin – must not exceed 1ppm

Kansas

58.1 F
34.5 in.

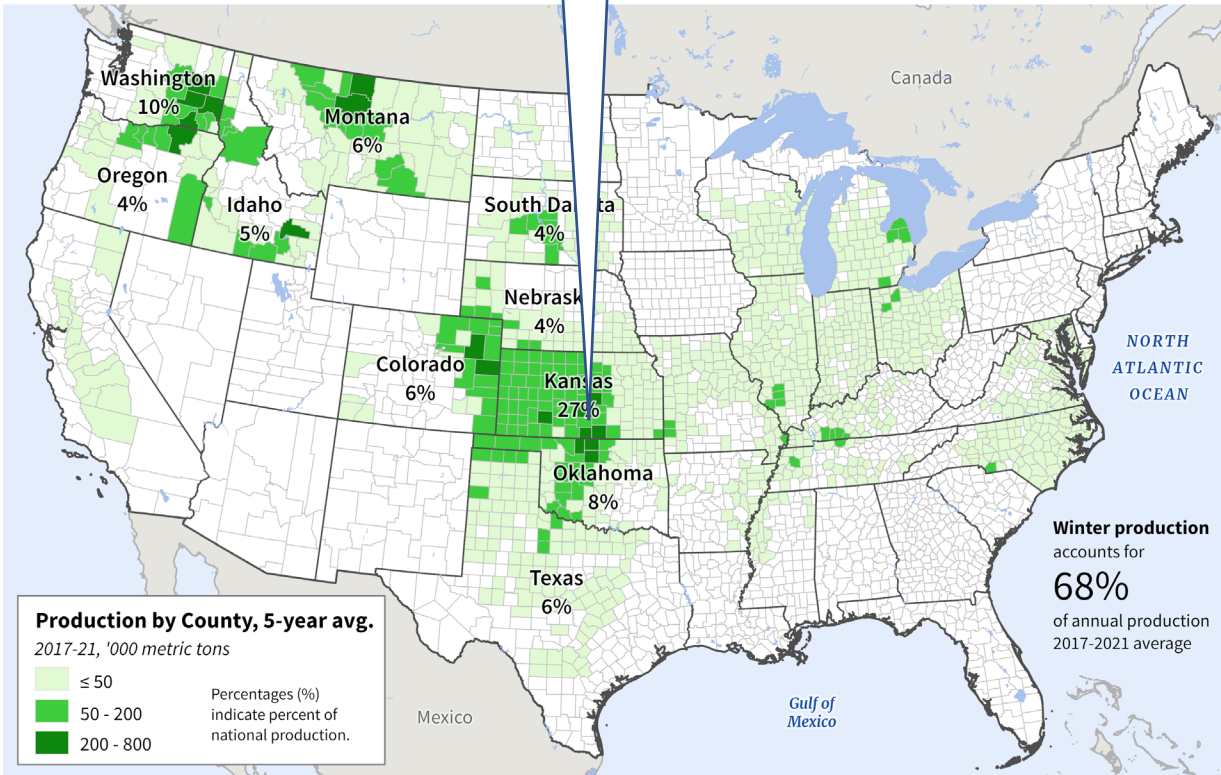
Montana

45.2 F
14.6 in.

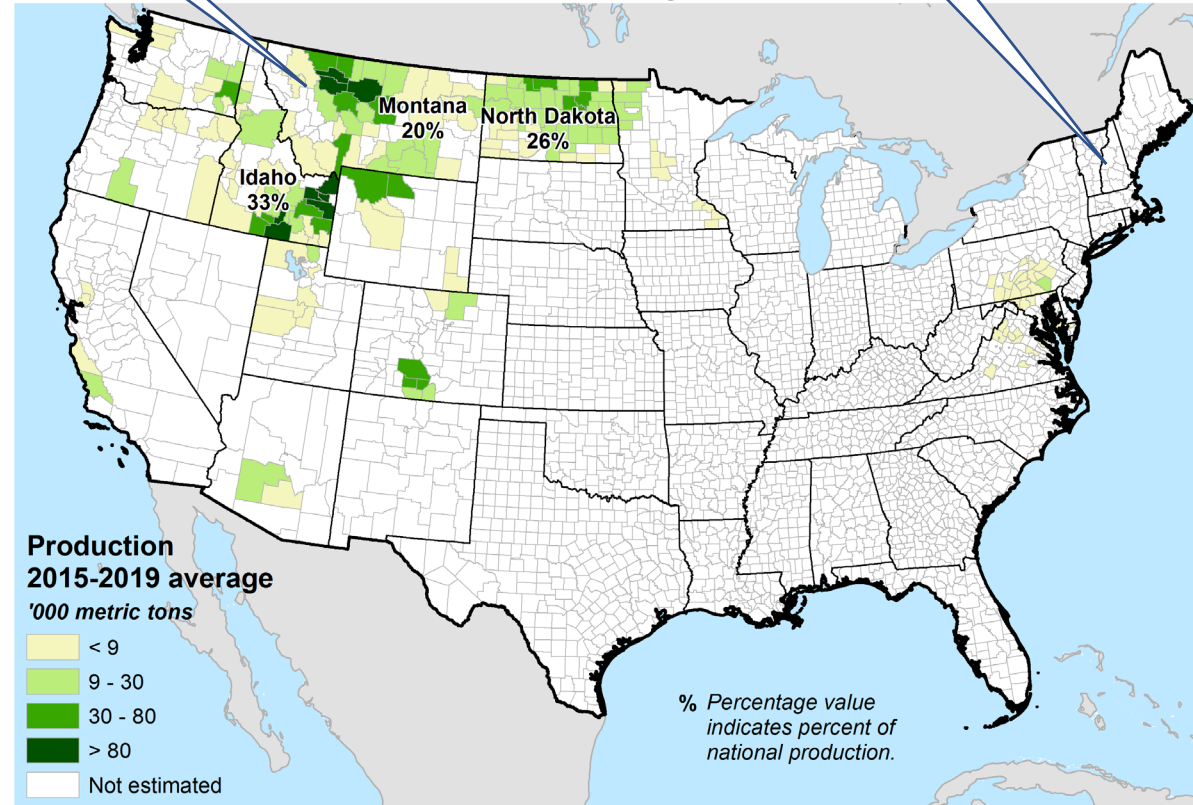
NH

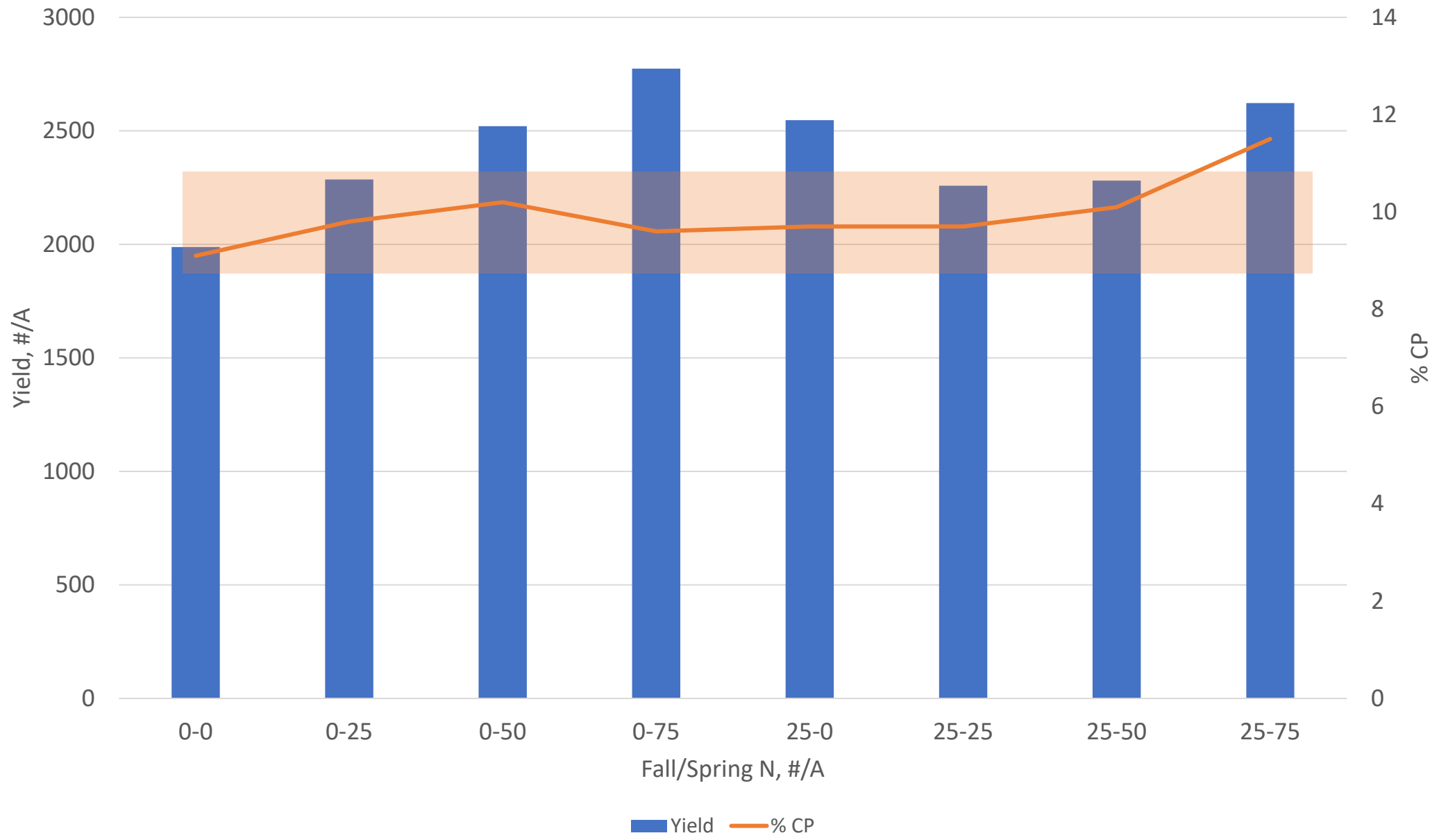
47.3 F
44.0 in.

United States: Winter Wheat Production



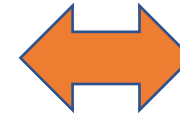
United States: Barley Production



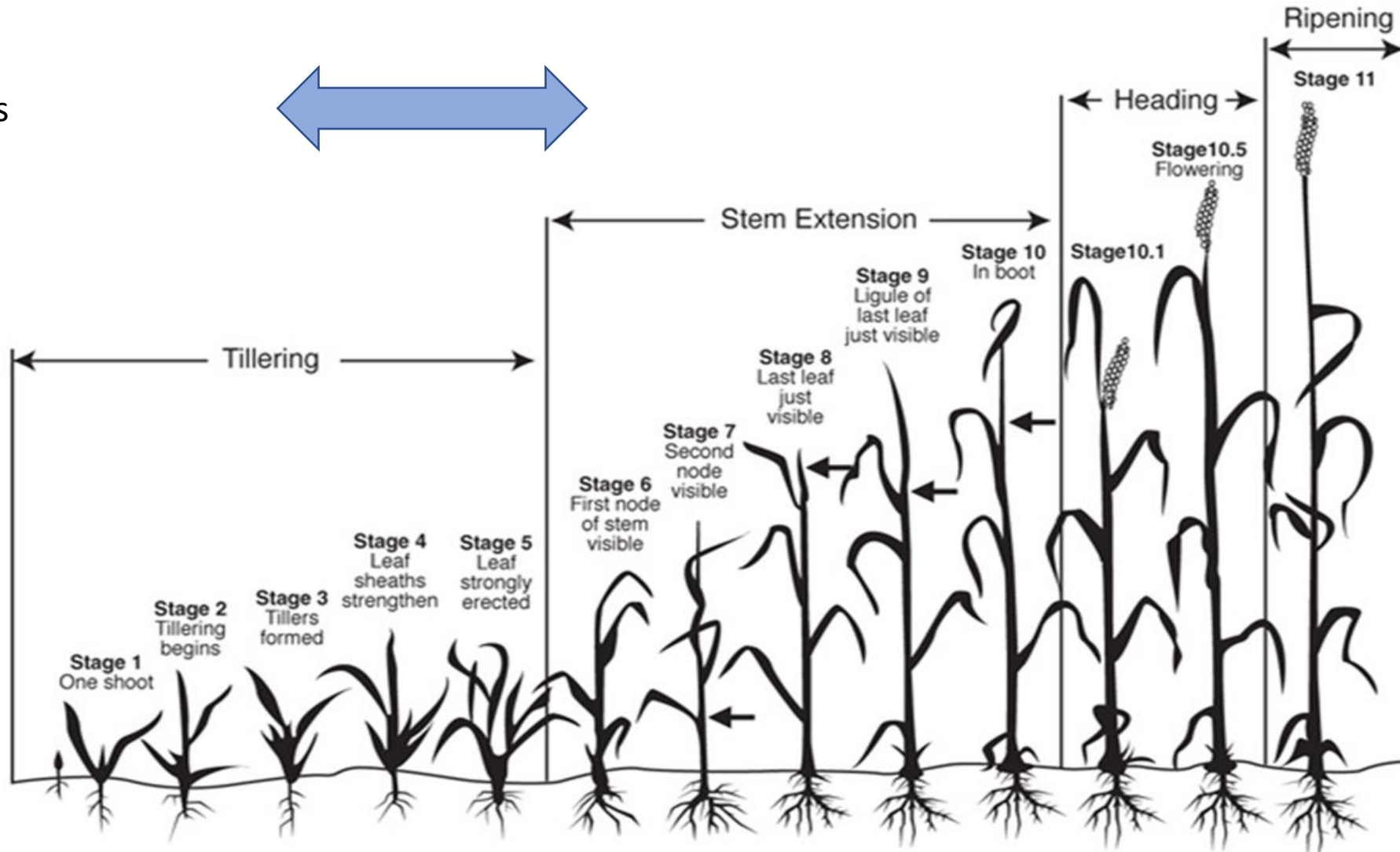


Source: H. Darby et al. 2018 Winter barley Planting Date and Nitrogen Amendment Trial

Fungicides
(Based on scouting)



Herbicides





Photos (clockwise from top left): Howard F. Schwartz, Colorado State University, Bugwood.org; Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org; Howard F. Schwartz, Colorado State University, Bugwood.org; Howard F. Schwartz, Colorado State University, Bugwood.org



Reviving the Local Grainshed



WHAT IS A GRAINSHED?...

The distance from where grain is produced to the place where it is consumed, including the land it grows on, the route it travels, the markets it passes through & the tables it ends up on...

Only ~5% of grain consumed
in New England is grown
in the Northeast







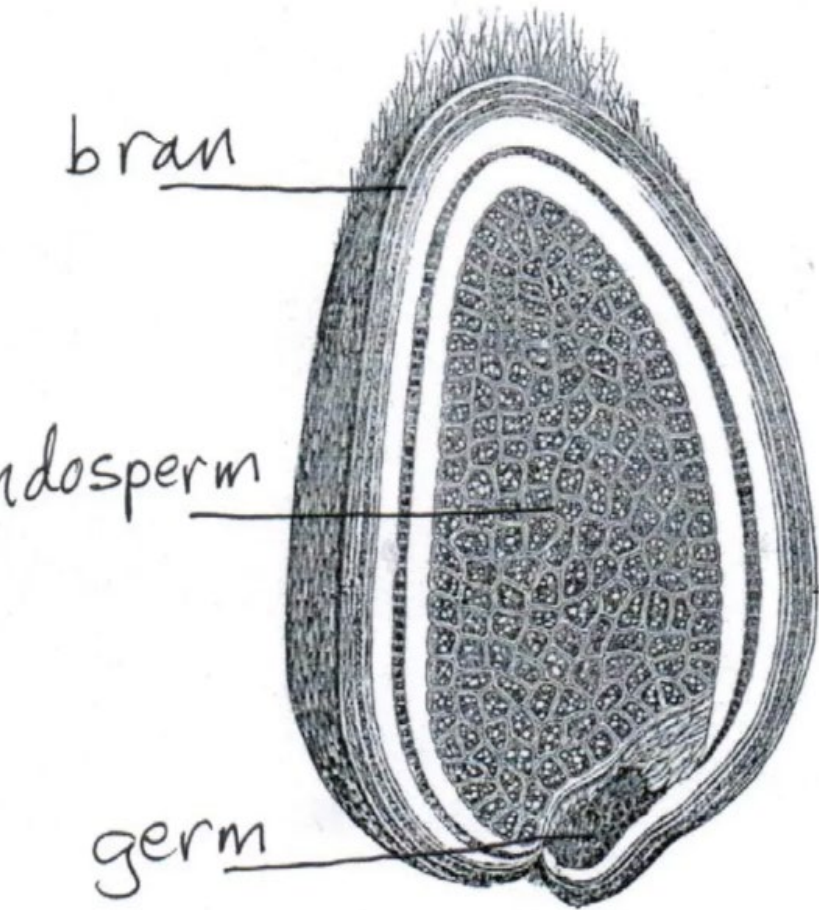


Abenaki Flint Corn, Maine



“Everywhere in the Northeast was its own bread basket at one time”

of
-Amy Halloran, author
The New American Breadbasket



STONE MILL:

- Grinds whole kernel
- Retains nutritional value & flavor (protein, fats, vitamin E, fiber, etc)
- Can be sifted afterwards to obtain different extraction rates
- Oils=shorter shelf life/fresh factor

ROLLER MILL (developed 1870s):

- multi-stream process separates the 3 parts of grain kernel
- Refined white flour = no germ oil or bran fiber = longer shelf life

New American Stone Mill
Morrisville, VT





















Search for Item



Item Antique A.T. Ferrell Clipper No. 1B Grain Seed Cleaner Fanning Mill w/ Screens (image 1/4)
Image 1 of 4
... 1B Grain Se...
... old and us...
... age in my opinio...
... with 4 extra screens in addition to the ones currently Xalled. ♦ The...
... some light surface rust but none of the metal is rusted through which...
... remember, this has always been stored inside on cement so it hasn't...







WHO MAKES UP THE GRAIN CHAIN?

**Growers - Millers - Bakers - Chefs -
Tortilla Makers - Malsters - Distillers -
Consumers...***

***full value chain also includes: animal feed, bedding, cover crops, seed sales... also, distribution channels**











What knowledge do we need (as growers, millers, bakers, etc for best quality product):

Type of Grain (ex. wheat)

Variety, Hard or Soft? Spring or Winter? History?

Tight planting and harvest windows

Soil type, cultivation capacity

Observing/testing for pests & disease

Moisture

Protein Percentage

Falling Number

Extraction Rate

Ash Content

Milling Date - freshness/storage life

What are some of the growing and post-harvest challenges/goals?

- Farmer training/technical assistance
- Seed/variety availability
- Scaled Equipment & Infrastructure:
 - Seed cleaning
 - Storage
 - Dehulling
 - Flaking
- Milling Equipment and Expertise

What are marketing challenges/goals?

- **Equitable price points for all parties**
- **Product consistency**
- **Education for end users**
- **Distribution!**



THE
**ORGANIC
GRAIN
GROWER**

*Small-Scale, Holistic
Grain Production
for the Home and
Market Producer*



JACK LAZOR

Foreword by Eliot Coleman

Research, Workshops, Orgs:

Cornell, UVM, UMaine, UNH, Glynwood Center,
Hudson Valley Grain School, WSU Bread Lab

Northern Grain Growers Association

Northeast Grainshed Alliance

Maine Grains Alliance

Glynwood Center Staple Foods Program

Artisan Grain Collaborative (Midwest)

Colorado Grain Chain

Appalachian Staple Foods Collaborative

Millers Peer Group (spans US)

Growers/Millers/Mentors:

Todd Hardie, Thornhill Farm VT

Klaas & Mary-Howell Marten, Lakeview Organic

Thor Oechsner/Farmer Ground

Jack Lazor (d.2020), Butterworks Farm VT

David Kiesel, Capay Mills CA

Andrew Heyn, New American Stone Mills VT

YOU ARE WHAT YOU EAT. YOU ARE WHAT YOU DRINK.



NORTHEAST
GRAINSHED ALLIANCE



SUPPORT NORTHEAST GROWN GRAIN & GRAIN GOODS

“Bread made with organic, whole grain flour with no additives and fermented slowly with a sourdough starter is a different kind of food.”

- Daniel Leader,
“Living Bread”

