Raising and Marketing Organic Small Grains in the Driftless Area: A Value -Added Approach

John Wepking Meadowlark Organics Ridgeway, WI
john.wepking@gmail.com
608-636-6795


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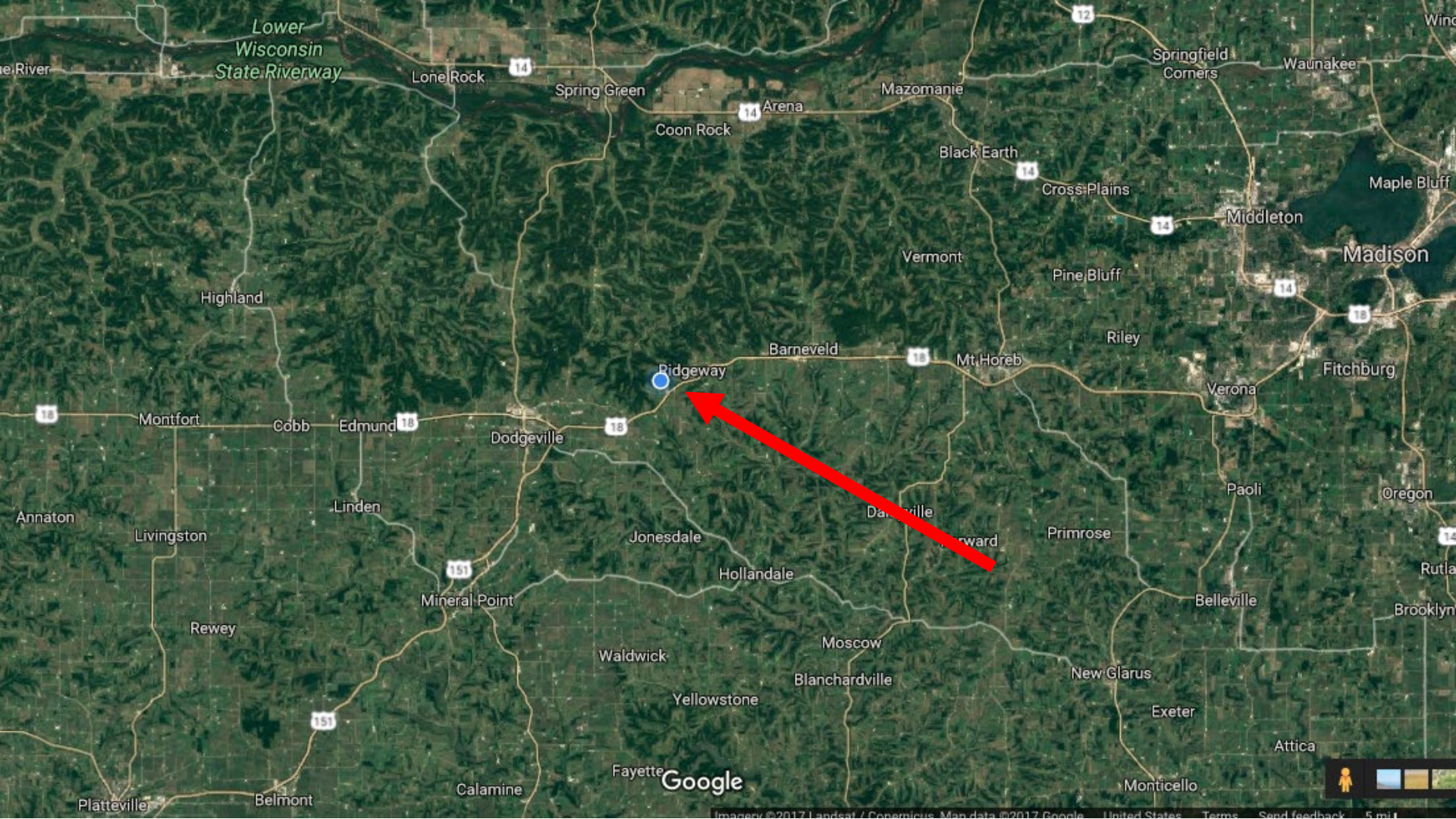
Lower Wisconsin State Riverway
Lone Rock
Spring Green
Arena
Coon Rock
Mazomanie
Springfield Corners
Waunakee
Black Earth
Cross Plains
Middleton
Maple Bluff
Madison
Vermont
Pine Bluff
Highland
Barneveld
Ridgeway
Mt Horeb
Riley
Fitchburg
Verona
Montfort
Cobb
Edmund
Dodgeville
Paoli
Oregon
Annaton
Linden
Livingston
Jonesdale
Primrose
Hollandale
Mineral Point
Belleville
Rewey
Moscow
Waldwick
Blanchardville
New Glarus
Yellowstone
Exeter
Attica
Fayette
Calamine
Monticello
Platteville
Belmont
Google


Ridgeway
Pine Relict
Ridgeway
Main St
Ridgeway Lumber Co
U.S. Highway 151
Main St
U.S. Highway 151
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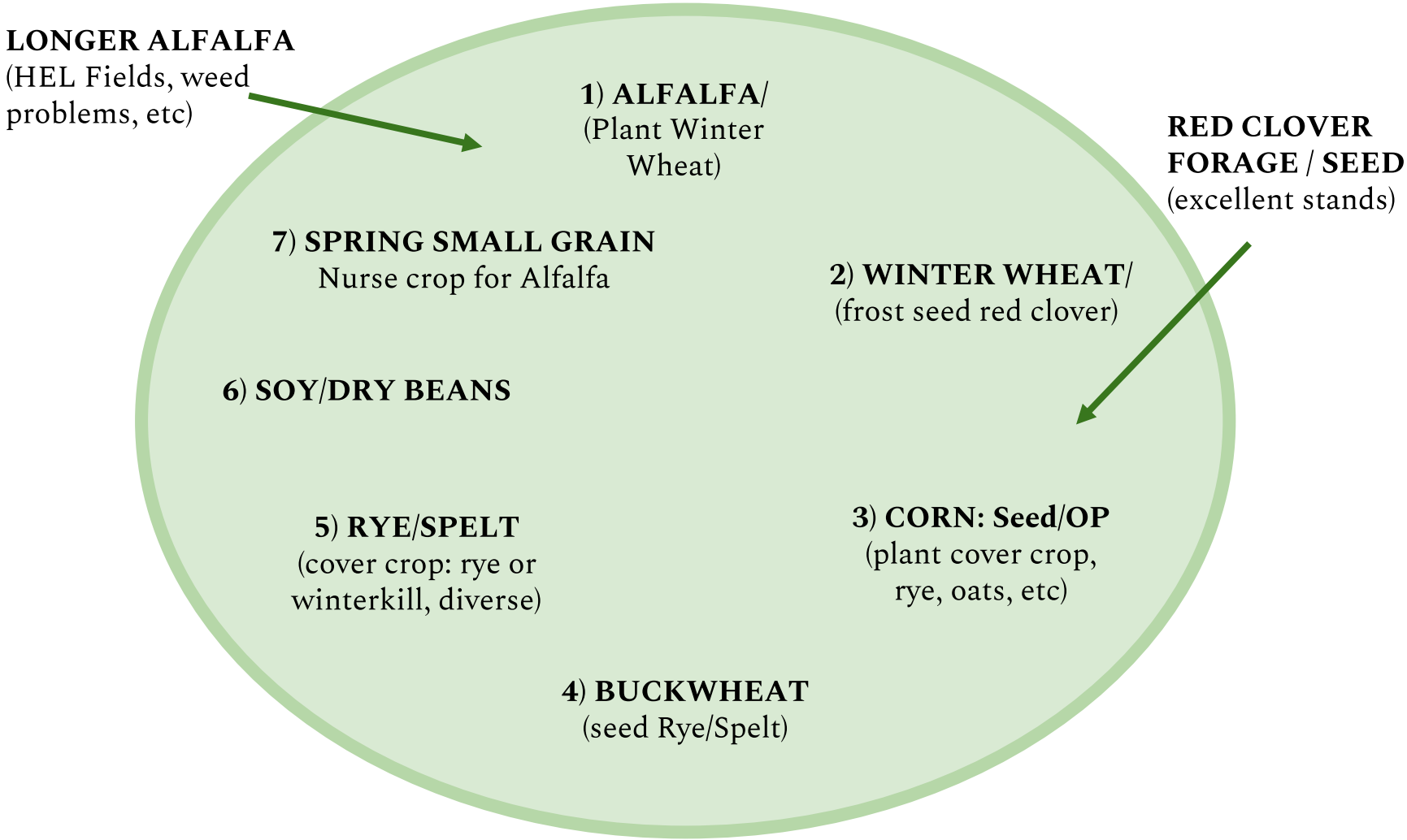
OUR ROTATION

(a work in progress)

PRINCIPLES

- Thoughtful, shallow tillage, commitment to contour farming
- Use rotation for fertility, rather than inputs
- Eliminate grass on grass farming
- Separating similar crops (corn/soy), and extend perennials in rotation to control weed seedbank
- Strike balance between profitability and optimal soil health/conservation
- Net, rather than gross, rotation average for profitability.
- Build/maintain soil organic matter


LONGER ALFALFA
(HEL Fields, weed problems, etc)
1) ALFALFA/
(Plant Winter Wheat)
RED CLOVER FORAGE / SEED
(excellent stands)
7) SPRING SMALL GRAIN
Nurse crop for Alfalfa
2) WINTER WHEAT/
(frost seed red clover)
6) SOY/DRY BEANS
5) RYE/SPELT
(cover crop: rye or winterkill, diverse)
3) CORN: Seed/OP
(plant cover crop, rye, oats, etc)
4) BUCKWHEAT
(seed Rye/Spelt)


Re-integrating livestock.

Essential Tools: TINE WEEDER

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Essential Tools: SWATHER

Small Grain Seed Varieties

Hard Red Winter Wheat: Expedition, Warthog, and Turkey Red

Rye: Danko and Aroostook

Hard Red Spring Wheat: Bolles, Lang, Glenn, and Red Fife

Spelt: Sungold and Maverick

Hull -less Oats: Streaker, Paul, and AC Gehl

Dry Beans: Black (Eclipse), Cranberry (Etna), Jacob’s Cattle, Calypso

Value-added farming: where the harvest is just the beginning...

Post Harvest Cleaning

- **Aspirator** : a lifesaver. We have a Kongskilde. Simple, and very effective at removing light material and fines.
- **Drum cleaners:**
  --Single vs. double drum: sift vs. scalp/sift
  --Screen Changing is a half day job, two people. Damage to screen material (not cheap) is inevitable with repeated changings.
  --We have one set up for beans, one for oats, one for wheat.


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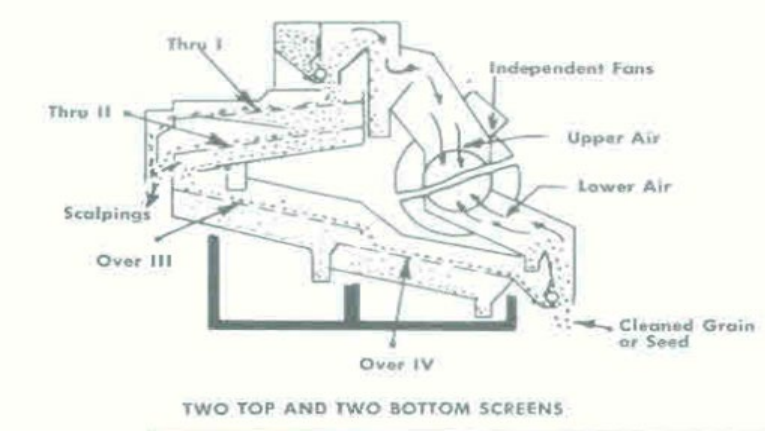
GRAIN DRYING AND STORAGE

CLEANING GRAIN FOR MARKET

- Food grade buyers, in particular buyers that buy by the semi load, have strict standards by which grain is accepted or rejected.
  - –% purity, % plump, no live insects, test weight, presence of disease (aflatoxin, vomitoxin, etc).
  - –Many of these are related to field conditions, rotation, environment, combine management, fertility, etc.
  - –Some can be addressed with cleaning
- Each type of cleaner is built to attack variations in seed from a different approach.
- Some cleaners are realistic on a farm scale, others are likely not as practical.

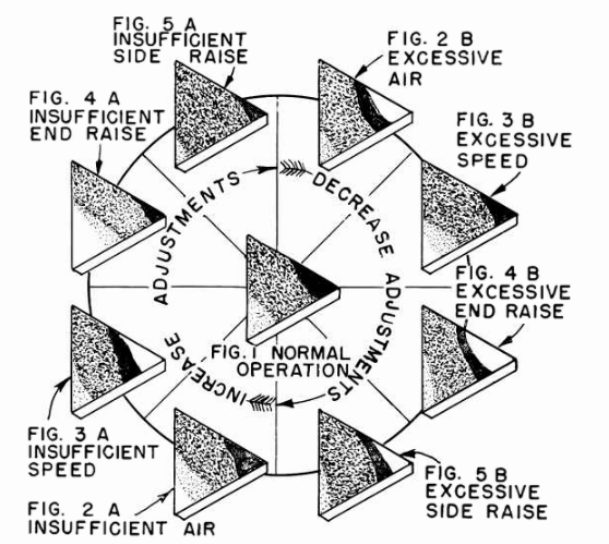
AIR SCREEN CLEANERS

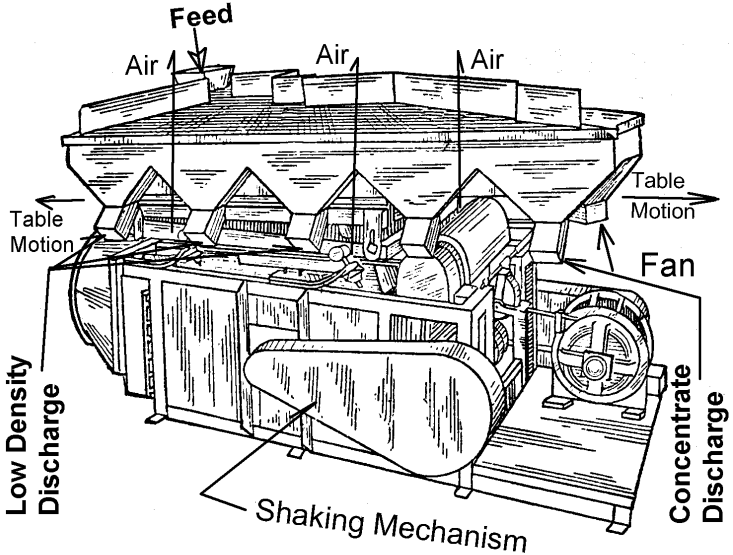
- Fanning mills approach grain cleaning by keying on differences in width or thickness.
- Usually adequate for most applications, especially cleaning seed for planting and most market cleaning.
- Built-in aspiration is critical for removing lighter material that may be able to fit through holes in the screens (chaff, etc.)



GRAVITY TABLES

- Multipurpose cleaners that separate material based on density.
- Deck screen/mesh determines size of grain compatible with cleaner.
- Good at removing light grain (which MAY help reduce DON, etc).
- Expensive, and immobile, generally. Uncommon as farm cleaners.
- Vacuum vs. Pressure. Vacuum has better dust control, but more infrastructure.

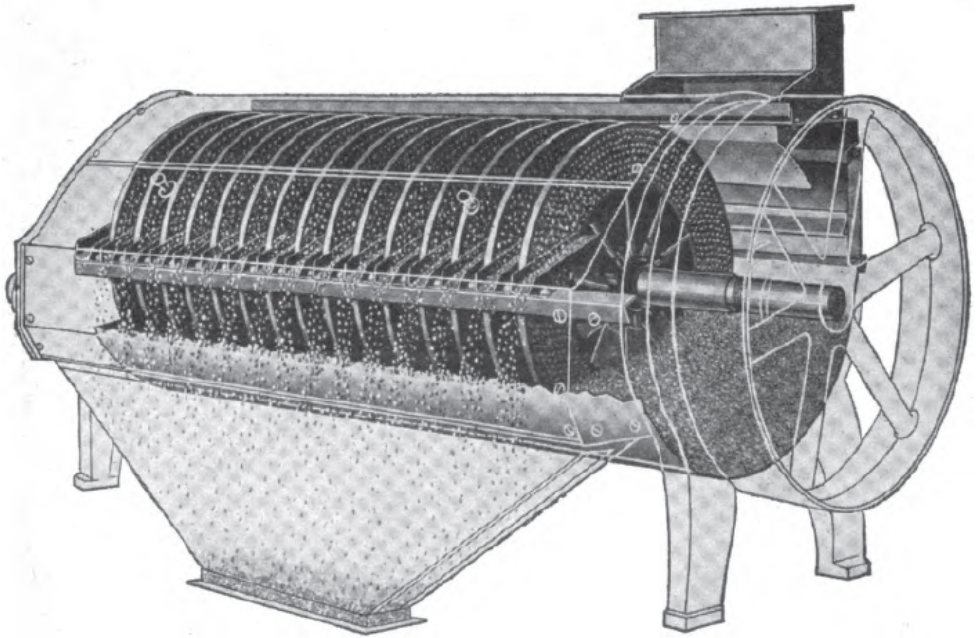




Early Air Table Diagram

SECONDARY: DISC MILLS

- Separates based on length, rather than width.
- May separate rye from wheat, vetch from rye or wheat, etc.
- Slow, and somewhat inflexible. Disc mills are built for a specific length difference.



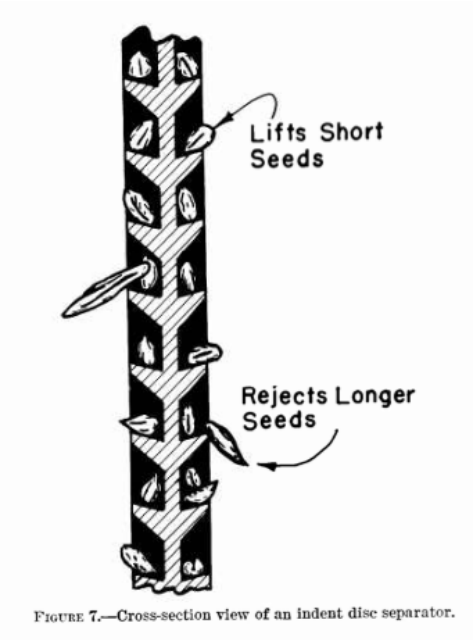
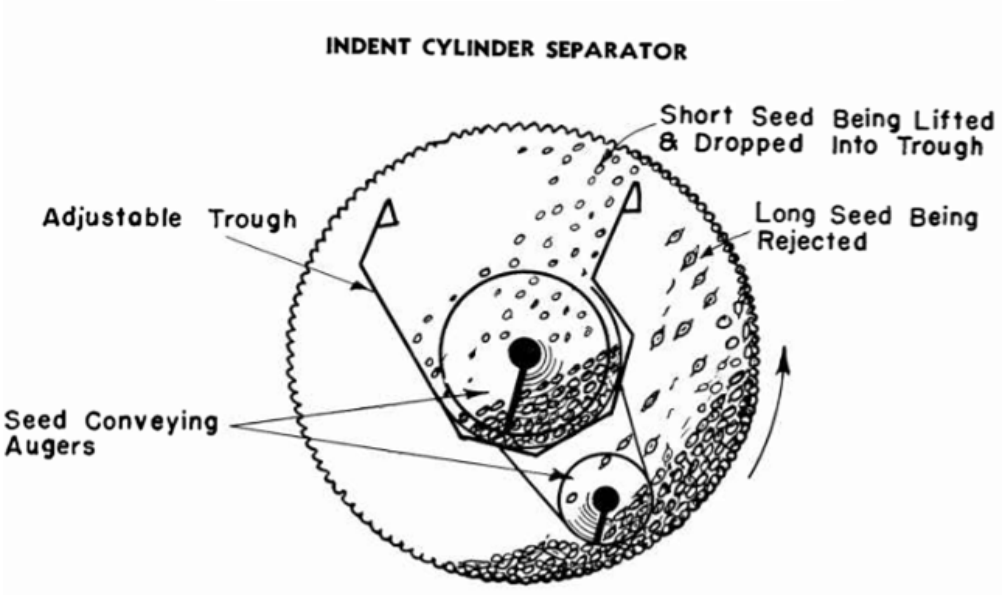


FIGURE 7.—Cross-section view of an indent disc separator.

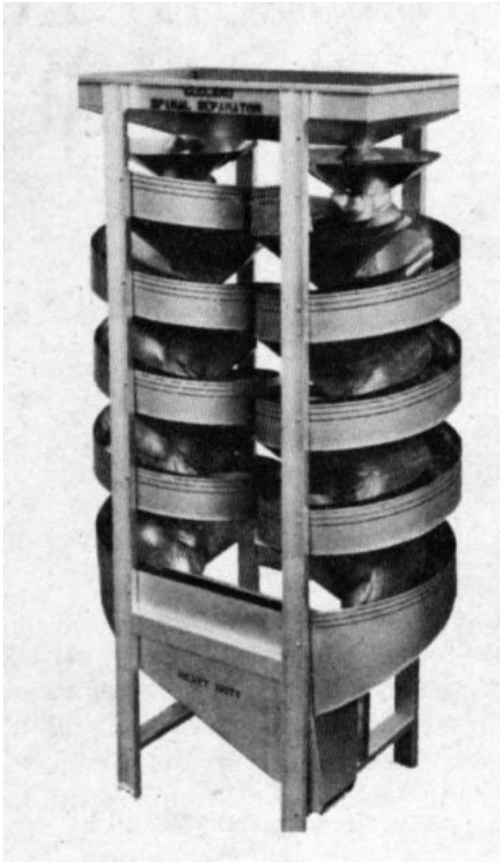
SECONDARY: INDENTS

- Separate based on length, rather than width.
- May separate rye from wheat, vetch from rye/wheat, etc. Used mostly in grading and sizing.
- Slow, and slightly more flexible than disc mills. Indents can change drums, but not a quick process.



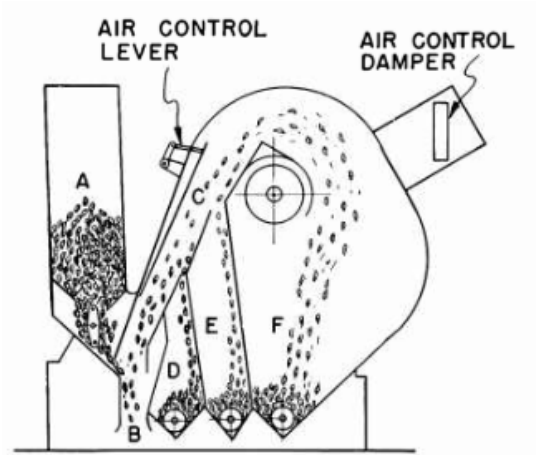
SECONDARY: SPIRAL CLEANERS

- Completely passive cleaner. Relies on gravity alone.
- Slow, but come in different sizes based on thru-put (number of “cores”).
- Separates seed and grain based on shape: round vs. irregular.
- Round seed speeds up as it moves down the spiral, and is ejected out the sides.
- Irregular seeds (small grains, splits, etc) tumble down and remain in the central spirals.
- Good for removing vetch from rye, as well as splits from soy or dry edible beans.

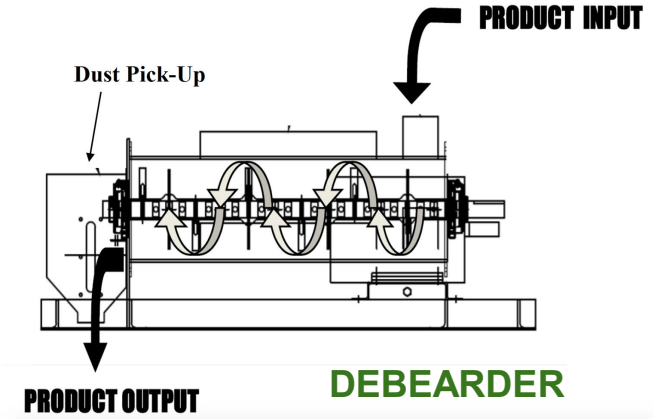


VARIOUS OTHER TOOLS

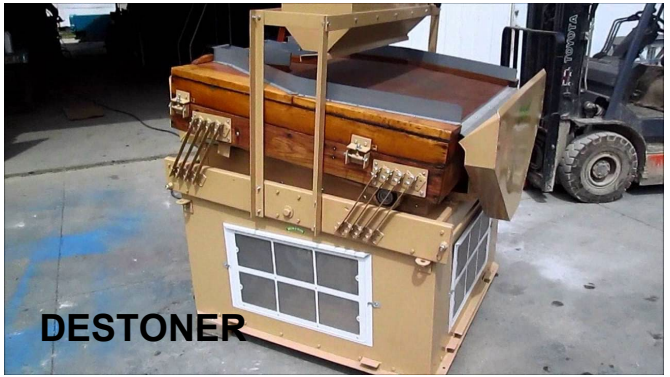
- **SCALPER** - High capacity air screen cleaner. Fast but not precise.
- **DEBEARDER** - Grain pre-conditioner, removes whitecaps, de-awns, breaks up groups of spikelets.
- **ASPIRATOR , SCALPER ASPIRATOR , FRACTIONATING ASPIRATOR** - Many versions and techniques.



FRACTIONATING ASPIRATOR



DEBEARDER


DESTONER

GOOD CONVEYANCE

- Maintaining purity between lots of food grade grain or seed is critical, so cleanout ease is a big factor in system design
- Use bucket elevators, vibratory conveyors, and belt conveyors, rather than augers when possible. This provides gentler handling and much easier cleanouts.
- Pneumatic systems are a possibility, if installed correctly, and allow for more flexible movement of grain.

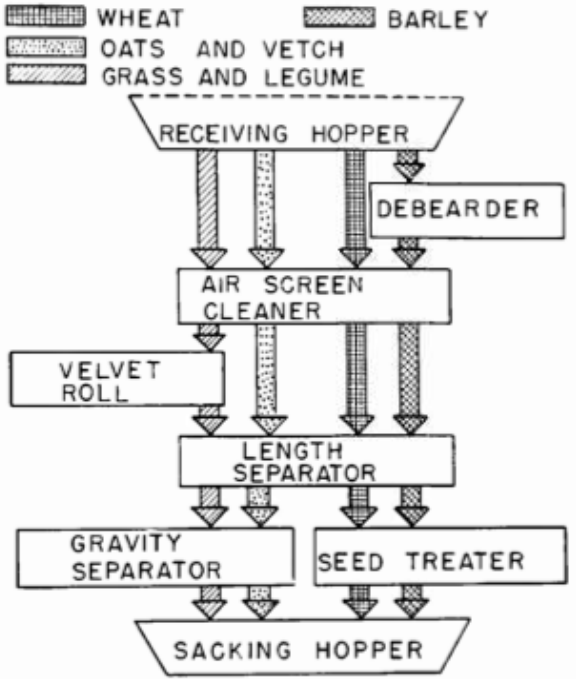


FIGURE 32.—Flow diagram showing steps in the cleaning of wheat, barley, oats and vetch, grass and legume seed.

DEHULLING: Working with ancient grains

- Marketing as feed can be challenging
- Be sure to have hulling lined up, unless you're growing for feed.
- Types of Hullers:
  - –Impact
  - –Hammer
  - –Friction
- No huller is 100% effective, so ability to sort berries from hulled grain is critical.

THE PROBLEM WITH MARKETING ORGANIC SMALL GRAINS

- The enthusiasm to grow small grains has outpaced the marketing opportunities available.
- The feed industry has shifted in recent decades toward an increasing reliance on corn and soybeans
- We all know that small grains are critical in organic rotations, and yet many farmers are leery to grow without profitable markets.
- So...what do we DO about it???

OUR APPROACH TO MARKETING SMALL GRAINS

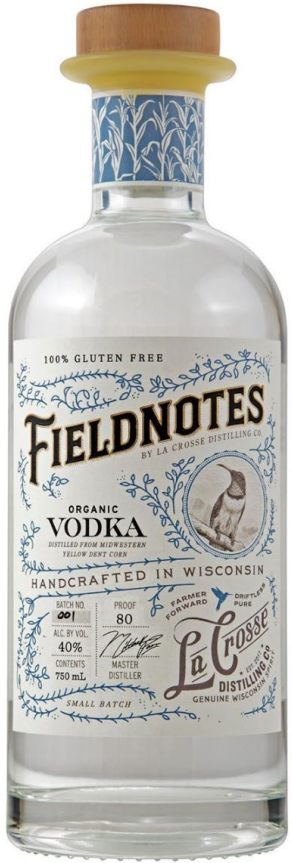
- Clean and dehull grain ourselves to reach more customers; provide these services to other organic farmers.
- Market to end-users when possible: millers, brewers, distillers, maltsters, chefs, institutions.
- Rely on larger buyers to move volume
- Relationships are critical

MEADOWLARK ORGANICS

Farmer-owned whole grains and stoneground flour

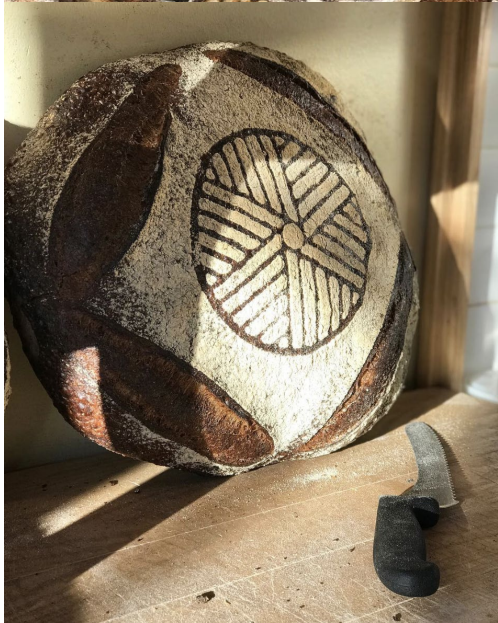
SELLING TO BREWERS/DISTILLERIES

- Distilleries, unlike breweries, use large amounts of raw unmalted grains in their mash bills.
- They can provide an outlet for small grains, especially corn, rye and soft red winter wheat.
- Quality standards are often the same as for the food grade market.
- Some distilleries can mill their own grains, but many require the grain to be milled.
- Milling grain for distilleries requires the same food-grade processing infrastructure as milling flour. In Wisconsin, this needs to be done in a DATCP licensed food-processing facility.



SELLING TO CHEFS, BAKERS, and MILLERS

- Food grade specs are critical (less than 1ppm DON). Bakers/Millers are also interested in ash, falling number and protein.
- Milling quality and consistency key to a good relationship
- Inventory management: making sure you have enough grain for customers.
- Be willing to store grain year round, delay income.



SELLING DIRECTLY TO CONSUMERS

Farmers markets, retail, online.

COOPERATION AND COMMUNITY

- This kind of facility cannot succeed processing only grain off of a single farm.
- Most end-use buyers want farmer narrative, but do not want to call many farmers when they need grain.
- We should find ways to process grain and market collaboratively.
- “Disruption” through farmer cooperation/ownership.
- We would like to see our facility exist to serve the organic farmers in our area, and encourage similar facilities and collaborations in other communities.