On-Farm Seed Cleaning For Enhanced Profitability

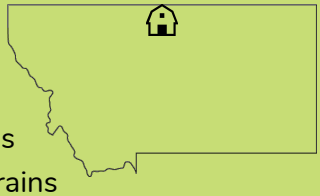
Field Tested is a series of reports about farm tools that have been tested by Montana farmers to enhance their specialty crop production. The reports describe these farmers' findings to help others make informed decisions about their specialty crop businesses. Visit FarmLinkMontana.org/fieldtested to read more Field Tested reports. This project is administered by the Community Food & Agriculture Coalition with funding from the Montana Department of Agriculture Specialty Crop Block Grant Program.

VILICUS FARMS | HAVRE

Paul Neubauer, Operations Foreman
paul@vilicusfarms.com

Vilicus Farms Snapshot

Location: Havre, MT
Operators: Doug Crabtree & Anna Jones-Crabtree
Acres: approx. 10,000 acres
Crops: Pulses and mixed grains



INTRODUCTION

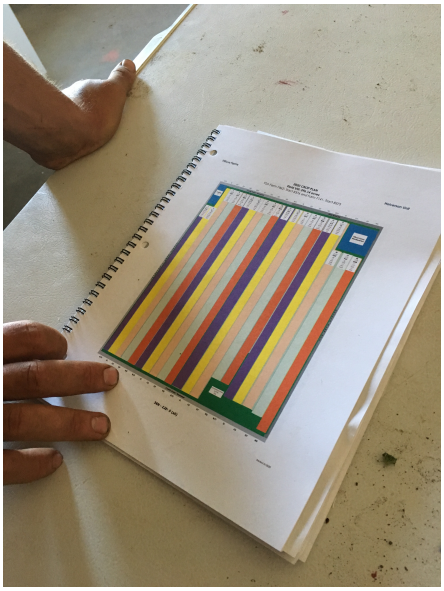
Organic producers of pulses often deal with higher volumes of unwanted material in their harvests, such as chaff, volunteer grains, and weed seed. Crops delivered with a high volume of unwanted material necessitate some dockage from the value of the delivered crop on the part of the buyer. In other words, when the buyer needs to clean the crop for processing after delivery they charge the farm money for this cleaning. Paul Neubauer, Farm Operations Foreman at Vilicus Farms, is working to create an effective system for cleaning pulses on-farm, before delivery. Paul hopes that if he can "help to model an economically viable means of on-farm cleaning of specialty crops, we should be able to positively impact the growth of our sector of the specialty crops industry by showing that these crops can be profitably produced across Montana."

VILICUS FARMS

Vilicus Farms is a nationally recognized certified organic dry land crop farm, primarily growing small grains and pulses. Pulses grown on the farm are primarily peas and lentils. The farm is comprised of about 9,600 acres of land in the north central part of Montana, in Hill county, spread across 4 “units” or clusters of land. Approximately 2,000 acres of farm’s land is maintained in perennial sod and conservation practices such as pollinator habitat and native prairie species mixes.

The farm was founded in 2009 by Doug Crabtree and Anna Jones-Crabtree with a mission to expand organic acreage on the north Great Plains, grow healthful organic food, steward the land to improve soil health and soil organic matter and to provide habitat for a diverse array of wild flora and fauna. Paul Neubauer is the Farm Operations Foreman and has worked at Vilicus for 3 seasons.

STRIP PRODUCTION SYSTEM



Paul explains one of the field maps in the Vilicus Farms Crop Plan. Each planting strip is color coded by crop.

Vilicus Farms grows their crops in a strip system to increase biodiversity across their acreage and to mitigate the impacts of the frequent high winds in their area. The pulses are part of 5 or seven year rotation, and planted in alternating strips across each field block. The five year rotation cycles between 1. Sale Legume, 2. Light Grain, 3. Green Fallow, 4. Heavy Grain, and 5. Broad Leaf Crop. An example of one rotation would be 1. Yellow Pea, 2. Oats, 3. Pea/Vetch, 4. Modern Wheat, then 5. Flax.

Strips on the farm can vary in size depending on specific considerations in each unit. The standard strip size is 240 feet wide and one mile long. Strips are oriented North-South so that the prevailing winds blow across the strips. Between each strip is a 20 foot conservation buffer planted with pollinator species and native perennials. These buffers require a substantial amount of management, taking as many as 6 equipment passes to prepare, seed, and secure the plantings. The farmers at Vilicus

believe that this additional work is worth the effort as it significantly increase the biodiversity on the farm and provides additional wind protection.

Seed Cleaning

Equipment Purchased

- Batco 1535 FLTD Conveyor
- Conveyor Belt

Despite all of the systems that Vilicus has in place to ensure they are producing and harvesting a quality crop, there is always some unwanted material in the crop. This means that the buyer has to clean the pulses upon delivery, and the farm is charged for this service. The cost of cleaning is subtracted from the price paid to the farmer and called dockage. Farms can see dockage due to foreign material and also due to cracked pulses if the crop is not handled carefully.

Paul next to the Big Fat Seed model AG440

To reduce the amount of dockage at delivery, Vilicus Farms purchased a seed cleaner to pre-clean their products before delivery. The Big Fat Seed model AG440 is a farm scale unit that matches well with the size of Vilicus Farms. The cleaner sorts the seed and chaff by dropping the seed in front of a series of fans that blow the different grades out a series of chutes. The product is sorted into top grade, second grade, and chaff/weed seed. After the first cleaning, the second grade seed is cleaned a second time, as some top grade seed can still be sorted out.

Handling the pulses as they are sorted requires multiple conveyors. Pulses are prone to cracking if they are handled too roughly and a grain auger is not appropriate for moving the crop and maintaining high quality. Three conveyors are needed for the cleaning process. One is used to move the unsorted seed into the Big Fat Seed cleaner, and two more are required to carry the top grade and second grade out of the cleaner. The chaff can be moved with an auger as there is no concern with cracking.

To be able to clean pulses on farm, Vilicus Farms purchased a Batco 1535 FLTD conveyor. This conveyor has a 15 inch capacity, which is larger than the other conveyors at Vilicus Farms, and helps to speed up the cleaning of the pulses. The field loader on this conveyor can be used to load pulses out of a standard semi trailer and will provide more versatility as Paul figures out this new seed cleaning system. The Batco 1535 has a shielded belt return which increases the lifespan of the belt by protecting it from the

sun while the conveyor is not in use. Paul recommends the shielded belt to any farm that does not have indoor storage for their conveyors. The belt is one of the most expensive parts on the conveyor and also the part that takes the most wear during use, so protecting the belt will greatly improve the conveyors value.

Seed cleaner and conveyor in position.

IMPACT

The conveyor is a critical part of the pulse cleaning process at Vilicus Farms. Cleaning the harvest on-farm will increase the value that the farm receives at delivery. The cleaning process has several other benefits for the farm, including reduced shipping expense and retaining nutrients on the land.

By cleaning their pulses on-farm, Vilicus Farms will ensure that they only haul top grade product to their buyers. This means that the time they spend driving returns maximum value to the farm. In addition to increasing the value of their driving time, on-farm cleaning will result in the second grade pulses staying on the farm. These second grade products could be sold as organic animal feed and provide an additional revenue stream for the farm. During harvest season, the conveyor will increase efficiency by giving the farm flexibility in storage systems. With production fields spread across four separate units, Vilicus has multiple bin sites to store harvests. The additional conveyor means that the farmers can unload pulses in more locations during a harvest window without having to spend time moving conveyors between bin sites.

Additional Resources

Montana Department of Agriculture Specialty Crop Block Grant Program: The purpose of this program is solely to enhance the competitiveness of specialty crops in Montana. Visit their website to find funding opportunities and more information. Search Montana SCBG.

Field Tested Reports and Videos: Find more reports about other projects and see videos of tools in action at the Field Tested webpage, under Resources on FarmLinkMontana.org