



Stewardship Newsletter Harvest Season 2022

Combining Efforts

Working together to harvest crops and grow habitat in the Golden Triangle



This summer has been hot and dry here at Vilicus Farms. Most days have been in the mid-nineties or above with strong warm winds that make a walk through our fields feel like being in a convection oven. Many of our crops were stunted by the poor growing conditions and some we won't harvest at all. Crops that we weren't able to harvest still helped fix nitrogen in the soil. Some of those crops have become food for this year's custom grazing herd. This helps promote biodiversity on our farm, even though we won't make a profit from crops we couldn't harvest, we are grateful for their service as a part of our ecosystem! Your CSSA purchase allows us the privilege of planting crops that will benefit the ecosystem in larger ways, rather than focusing solely on profits! Still, our crew is kept busy with harvesting the crops that had just the right growing conditions (moisture & temperature & lack of wind) to produce a yield for us!

To harvest our crops, first we run a swather through the fields which cuts down the crop, leaving it lying in long rows. We swath because we choose not to use chemicals to desiccate our crops. We have some weeds, or unwanted plants that are not part of the crop, and allowing them to dry makes harvesting easier. The combine comes behind the swather and picks up the swaths. Combines are incredible, multi-functional machines that revolutionized farming, you can read more about them below in our Seasonal Spotlight section! After the crop is picked up by the combine it can be transported to one of our grain bins to be cleaned and eventually picked up by the buyer.



When we're not harvesting we're working on repairing and maintaining our machines, baling hay, mowing field borders, sharing community meals, and celebrating our crew's many harvest season birthdays with our friend Chef Sarah of Farmer Meets Foodie!



This August we also renewed our Organic Certification! According to the USDA, there are 58.1 million acres of agricultural land in Montana and less than 1% of that is organic. Some of our non-organic neighbors utilize chemicals in their harvest practices by spraying their fields with herbicides like glyphosate to speed up termination of their crops and kill any weeds. In dry climates like ours it can take many years for these harmful chemicals to completely dissipate from the soil, and allow biodiversity to return.



HARVEST SEASON
STEWARDSHIP SPOTLIGHT

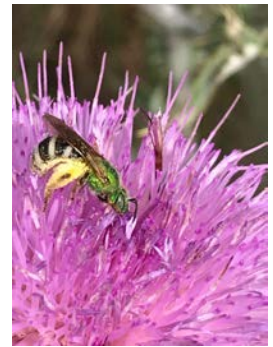


Pollinator Strips

It's late summer in the Golden Triangle and the air is alive with insects! Montana is home to 450 identified species of bee including 28 species of carpenter bee- that's more than any other state!

North Central Montana is currently experiencing a multidecadal drought, the lack of moisture in the soil means that it's difficult for the flowering plants that pollinators rely on to bloom. Farms like ours provide temporary habitat for bees with flowering crops such as flax, buckwheat, chickling vetch and pea, but those crops bloom early in the summer and are ready for harvest by the beginning of August leaving little food for bees and butterflies during some of summer's hottest days. Vilicus Farms plants strips of wildflowers within our fields to provide permanent habitat and food for pollinators. Throughout the farm our pollinator strips account for over 350 acres of intentionally created habitat. This is land that could otherwise have been planted with crops for us to harvest and sell.

Vilicus Farms is proud to be Bee Better Certified™ by the Xerces Society for Invertebrate Conservation! More than 40% of bees are considered vulnerable for extinction and pollinator insects are a critical part of our local and global ecosystems. Pollinators are necessary for the survival of 85% of the world's flowering plants and more than 100 types of crop grown in the US. Pollinators also provide an essential source of food for more than 25% of bird species and many mammals including Grizzly Bears.





Soft White Spring Wheat

Soft White Spring Wheat on the Farm By Doug Crabtree

Soft wheats are used for making pastry flour, or may be blended with other wheat types to enhance the flavor or baking qualities of the blended flours. Pastry flour, as the name implies, is commonly used for baking scones, cookies or other desert items. See a recipe we love using soft white wheat, below!

There are specific markets for soft white wheat, including our primary customer, HB Specialty Foods. Since the majority of wheat is hard (bread wheat) and red, soft white wheat is “special” in two ways. Since there are relatively few growers, we can provide this wheat as an “IP” (identity-preserved) crop to our customers. As a specialty, IP crop, soft white wheat merits a higher price and better contract terms than other, more common, types of wheat.

Soft white wheat fits well in our crop rotation. The rotation includes a category of crops that we refer to as “Lite-feeding Grains,” or LG for short. The LG crops, such as soft white wheat, require relatively less fertility and/or soil moisture than other grain crops. Soft wheat demands less nitrogen than hard wheats, plants use nitrogen to create protein. In

hard wheat, the protein content largely determines the grain's suitability and value for use in bread flour. Since soft wheat is used for "flat" products such as pastries, protein content is much less important. So, soft white wheat can be grown and fits well as in our LG rotation. Other Lite-Feeding grains include rye, oats, barley, and most of the heirloom grains. Look forward to future newsletters to learn about what makes other Lite-Feeding Grains special!

Soft White Spring Wheat in your Kitchen

By Hannah Moser

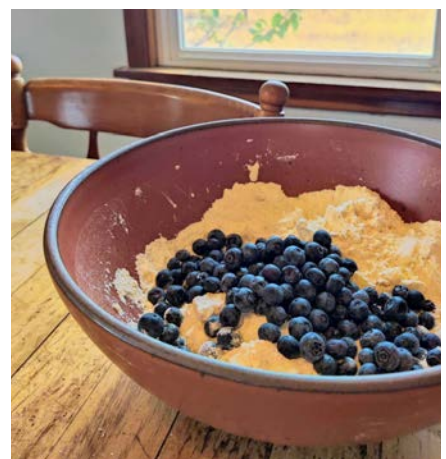
Today is a cool September morning here on the farm, perfect weather for fall baking! Scones are a perfect easy breakfast or snack and can be easily adapted depending on what you have on hand! I adapted this recipe from the one on King Arthur Flour's website.

For a more delicate texture in your baked goods look for flour with a higher ratio of soft wheat flour. Hard wheats have more gluten and will provide a chewy texture.



Blueberry Scones

1. In a large mixing bowl, whisk together **2 ¾ cups flour**, **½ cup sugar**, **1 tablespoon of baking powder**, and a **big pinch of salt**.
2. Use your hands to work **8 tablespoons of cold, unsalted butter** into the flour until the mixture is clumpy and most of the butter is incorporated and coated in flour.
3. Stir in any mix-ins. We used **organic blueberries**, but you can use almost anything, get creative with the seasonal organic ingredients you can source locally!



4. In a separate mixing bowl, whisk together **2 eggs**, $\frac{2}{3}$ **cup milk**, and a **splash of vanilla extract**. *Anna's tip: add two tablespoons of vinegar to your milk about 5 minutes before combining the rest of the wet ingredients for a quick buttermilk substitute that will add even more tenderness to your scones!*
5. Mix together the liquid ingredients and the dry ingredients using a large spoon, stir until the dough is moistened and holds together.
6. Line a baking sheet with parchment and sprinkle with a bit of flour.
7. transfer the dough to the prepared baking sheet and divide in half. Use the heel of your hand to shape the dough into two circles, about 6" across and $\frac{1}{2}$ " to 1" thick.
8. Slice each circle into 6 wedges. Run your knife under cold water to prevent the dough from sticking!
9. For sweet scones, brush each circle with milk, and sprinkle with granulated sugar. Try cheese or garlic butter for a savory twist!
10. Pull the wedges away from the center to separate them just a bit so they don't stick together in the oven.
11. **Preheat the oven to 425°F**. While the oven is heating, stick your scones uncovered in the fridge or freezer to let the butter firm up and rest the gluten in your flour.
12. Bake the scones on an upper rack for **20 minutes**, or until they're a light golden brown.
13. Serve warm and store at room temperature. These blueberry scones are delicious with butter and a drizzle of local organic honey!



HARVEST SEASON
SEASONAL SPOTLIGHT



Combination Harvester

By Benjamin Clark

Each year, as the grains ripen and begin to dry down, the days start to shorten, work here on the farm shifts focus to the final round of fieldwork—the crop harvest! All the efforts leading up to this moment have depended on many different types of tractors, vehicles, and machinery to prepare the ground for seed, to plant the seed, and to nurture the many millions of plant lives that we witness across our acreage to their final stage of ripening into grains, peas, lentils, flax, buckwheat and more. Now we will need to harvest....but it's much more complicated than you may imagine.

Harvesting small grains and pulses (such as peas and lentils) has evolved quite a bit from the sack and sickle days of our ancestors, but the technology we have developed is based on the same simple principles. First, the stalks of grain that hold up the ripened heads will need to be cut- this is called “reaping”. Second, the kernels of grain will need to be separated from the chaff and other parts of the inedible grain head, or “threshed”, and finally the kernels will need to be cleanly separated from all that other plant material using a process called “winnowing”. These tasks have been the challenge throughout history that make growing grains historically so labor intensive, as well as time consuming.

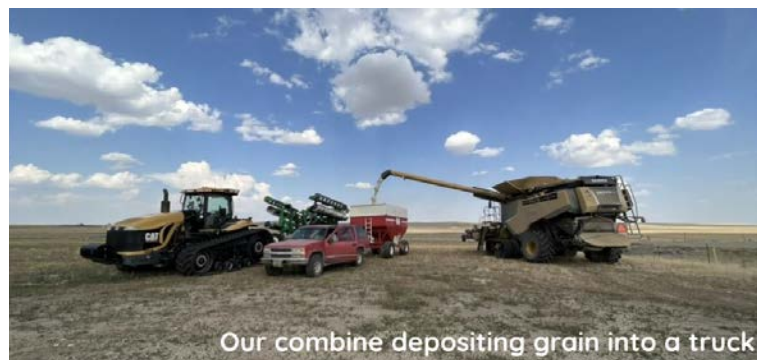
However, the ingenuity of agriculturalists and engineers over time has created the perfect tool to handle this complicated process—the “Combination Harvester”, commonly known today as simply a Combine. In a time not too terribly long ago, each of these processes was handled by hand, and with a large group of people. Some would cut the grain using hand sickles, others would gather it in sheaves to bring to a threshing floor, and then beat the grain out of the heads. Then they would use screens, fans, and other tricks to separate the grain. Today, we use one machine to do all of this work, and can cover far more acreage in far less time.

Our combine we are using this season is a “new to us” Claas Lexion 750- which we have affectionately named “Ferdinand”. From the outside, the clean and simple lines of the giant yellow machine hide a quite complicated interior. But, if you were to be a head of grain patiently waiting to be harvested in our fields, you would get the opportunity to take a wild ride inside...

First, the stalk is cut by the oscillating knife sections of a “draper header”, a 30’ wide platform with two conveyor decks and a razor sharp “cutter bar”. This conveyor deck brings the cut crop from the edge of the platform all the way to the center of the header where it meets the “feeder house”. This is the first moment the crop enters the combine. The feeder house is a ladder-like series of rotating metal bars that pull the crop into the mouth of the machine. From there it enters the “pre-concave” and then the “concave” of the combine. These are horizontal cylinders that have rotating steel drums inside, which scrape the crop across the plates that make up the housing of the cylinder. These plates are perforated, and so the scraping action of the crop between the cylinder walls and the steel drum burst open the grain heads. This rubbing action is the first part of the “threshing” of the crop. Then the crop is divided



after passing through the concave, where it is split into two streams by the “impeller”, each of these streams traveling a long upward journey through what are called the “rotors”. These rotors are acting on the crop in the same way, pulling it upward through a cylinder, or “rotor cage”, while the inner solid drum, the “rotor”, is spinning at a very high speed. At this point, the crop is continually being rubbed against the perforated walls of the cylinder, and the grains are falling down and through the small openings onto the “shaker tables”. The rest of the inedible plant material is brought up and out to the back of the combine where it is chopped and spread onto the field. The material that falls on the shaker tables is shaken back and forth, allowing it to fall through onto the “sieves”, which are adjustable openings that allow certain sized materials to fall, while keeping larger material suspended. These tables and sieves are continually blown through by a fan that is forcing air from the bottom of the combine, up and towards the rear of this table system. This fan action, coupled with the shaking of the sieve tables, cleans up the smaller bits of chaff and dust that have made it through the concave and rotor system along with the grain. The fan blows this to the back of the combine, while the heavier grain kernels finally make their way to the bottom of the combine, where rotating augers bring the grain up to the “grain tank”, the large storage hopper at the top center of the combine, just behind the operator’s cab. Thus, as the combine operator drives the machine, the crop is cut, threshed, winnowed, and stored. If all goes well, a continual stream of grain is pouring into the grain tank while the combine travels nearly 5 MPH down the field. Once the combine



is full, it is ready to visit a nearby grain truck where it will dump the grain, eventually to be brought to a grain bin and stored. Quite the complicated journey for the little kernels!

While this process may seem complicated, it is even more amazing when you sit back and realize all the creativity and design brilliance that makes all those moving parts possible! We love equipment and mechanics, and this particular machine is the “crème de la crème” of the work we do with nature and technology- it is a universe of manufactured parts and inventions all designed to handle the biological manifestations of the species we cultivate!

HARVEST SEASON
SHAREHOLDER SPOTLIGHT!

We are so excited about the global community of Stewardship Shareholders we are building! Since this season’s Stewardship Spotlight featured Vilicus’s pollinator strips, we thought it was fitting to introduce you to one of our shareholders who shares our enthusiasm for pollinators!

Meet Cameron Newell

Cameron is a pollinator conservation specialist and the Bee Better Certified program coordinator at the Xerces Society for Invertebrate Conservation. Cameron grew up on a farm in rural Victoria, Australia. He learnt the value of farming in tune with the land at a very young age and it is due to this strong bond with the land that he chose his career path. He is trained in agriculture, pollination ecology and habitat restoration. At Xerces he works to build market based incentives to encourage pollinator conservation work in agriculture, support farmers and food companies in habitat creation projects and arm farm and food industry partners with the tools to communicate their work. At home he is the father of three of the next generation of conservationists and farmers. He likes to get them out into the wilds as often as he can.



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