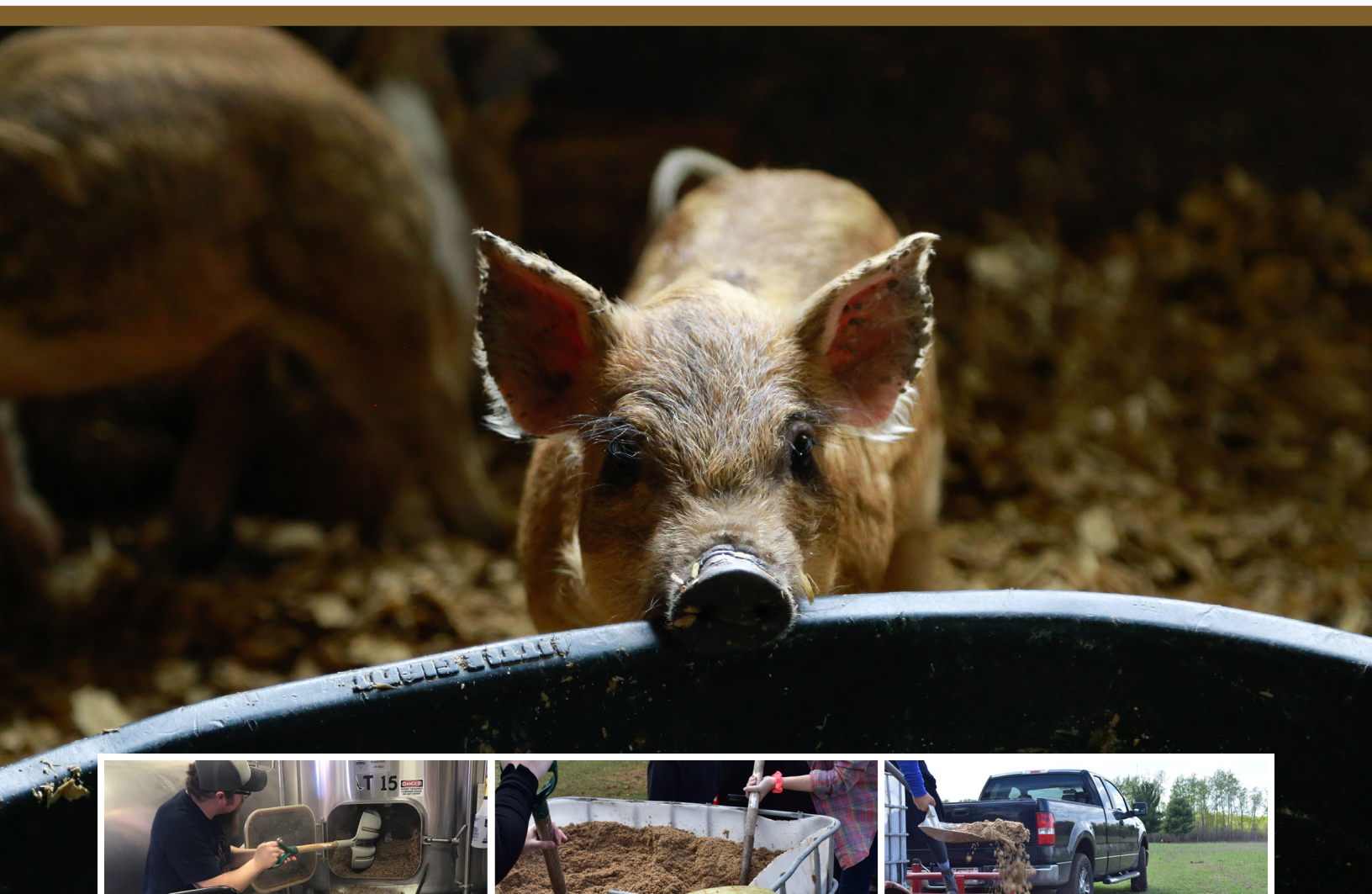


SPENT GRAIN DISPOSAL GUIDE



MINN

CRAFT
BREWERS
GUILD

Environmental
INITIATIVE

Powerful Partnerships, Effective Solutions

INTRODUCTION

Brewing a Sustainable Future works in partnership with the Minnesota Craft Brewers Guild to engage Minnesota's robust craft brewing and distilling industries. We are working to find collective solutions to sustainability issues these businesses face, starting with reliably and effectively managing spent grain disposal.

Spent grain is a nutrient rich byproduct of brewing, but dependable, effective, and sustainable disposal can be challenging. Most breweries and distilleries have a way to get rid of spent grains, but the process can be sporadic, unreliable, expensive, or challenging to implement and maintain.

This guide provides an overview of best practices for spent grain disposal, with a focus on the farmer-brewer relationship. It is based on common practices of Minnesota Craft Brewers Guild members, local distilleries, and other breweries in the state.

PREPARING SPENT GRAIN FOR DISPOSAL

Removal and Collection

During the grain out process, brewers remove the spent grain from the mash tun manually or with the assistance of an automated rake and plow. The use of a rake makes the removal process easier, cutting down on the amount of manual labor required at this stage of brewing. Once a brewery grows large enough, investment in a wet spent grain conveyor and silo system (e.g. Ponndorf auger) may be justified.

The grain is collected in a variety of containers. The best container for your brewery depends on the height of your mash tun, the tools you have available to move the grain, the amount of storage space you have, and the needs of the farmer or other end user. Common container types include 33-gallon Brute Totes, 55-gallon Brute Totes, and modified 275-gallon IBC Totes. Some brewers take a DIY approach, using repurposed bins that other brewing-related supplies come in. The containers used during this process are the same containers that farmers will then have to manage for collection and disposal. This affects who can use the grains, as use often depends on the availability of a forklift, loading dock, and specific type of vehicle for collection.





33-gallon Brute Tote



55-gallon Brute Tote



275-gallon IBC Tote



DIY approach

After the grain is taken from the mash tun, it is moved from the brewing area to a storage space to await pick up. Smaller containers are dragged, rolled, or moved using a hand truck. Larger containers require access to a forklift or pallet jack.

Farmers who pick up spent grain often supply their own containers based on the equipment they have available. If the farmer doesn't supply containers, consider applying for a grant from your local county recycling programs. In the Twin Cities

Metro, all counties have grant funding available to assist with expanding and adding traditional recycling and composting programs. Many of them are run through Waste Wise, a program of the Minnesota Chamber of Commerce, operated by the Minnesota Waste Wise Foundation. In addition to grant dollars, these programs offer assistance in right-sizing bins, providing standardized signage, and education on new initiatives.

Many brewers have double the number of containers they need in rotation. This way, farmers can drop off empty containers when they come to pick up the full ones. This can help ensure brewers don't run out of available containers for grain out, which could disrupt the brewing process. Many farmers are willing to clean out the containers before dropping off the empties.

Did you know?

BizRecycling helps businesses reduce waste and recycle better through free technical assistance, business recycling grants (up to \$10K) and other resources.

Learn more: www.bizrecycling.com

The Hennepin County Business Recycling program offers grants, signage, technical assistance, and case studies to help businesses and organizations in Hennepin County start or improve recycling programs, reduce waste, and donate usable goods.

Learn more: www.hennepin.us/businessrecycling

Other Metro counties are supported with grant funding administered by the **Minnesota Waste Wise Foundation**.

THE FARMER-BREWER CONNECTION

Connecting with a farmer who is able to consistently and reliably pick up spent grain can be difficult. Most brewers find farmers through word of mouth or online platforms. The MN Beer Industry Staff group on Facebook and Craigslist are often used to make spent grain connections. Local organizations, such as **Minnesota Grown**, the **Land Stewardship Project**, and **Women's Environmental Institute** can also be resources for brewers.

Most farmer-brewer relationships are informal, but a small amount of formality and communication can be extremely beneficial for both parties. Here are some things to consider when building a farmer connection:

- **If possible, meet with multiple farmers and take the time to learn about each other's businesses (maybe over a beer?!) to feel out if it would be a good relationship.**
- **Be clear about your ideal arrangement and what they can commit to up front**
 - » What's their capacity? Can they take all of your spent grain?
 - » How often can they pick up? Can they be flexible based on your brewing schedule?
 - » How do they prefer to communicate about pick up, brewing schedule changes, shifting needs, etc.?
 - » Can they take more grain as your business grows?
- **Consider equipment needs**
 - » What equipment do they have available for pick up?
 - » Will they provide containers?
 - If so, what kind? How many?
 - If not, do they have a preferred container that works best with their equipment?
 - » Who is responsible for truck/trailer upgrades?
- **Have a financial conversation**
 - » Do they expect payment?
 - » If so, what will they charge?
 - » Are they interested in bartering (beer for meat)?
- **Discuss other mutually beneficial opportunities, such as:**
 - » Cross-promotion on social media
 - » Co-sponsored events and other event collaboration

Did you know?

The Minnesota Craft Brewers Guild launched a Spent Grain Directory as a resource to help brewers and farmers find each other.

Add your info or look for a connection at mncraftbrew.org/spentgraindirectory/

LIABILITY CONSIDERATIONS

Most brewers don't have a contract with their farmer connection. That said, a simple agreement letter that is not legally binding could help ensure your protection in the case of a dispute. Here is an example, generously provided by a Minnesota Craft Brewer and their farmer.

Dear [farmer name]:

We are thrilled about our new relationship with [farm name] for the recycling of the spent grain from our brewery. I apologize for the formality of this letter, but our lawyers thought it would be prudent for us to clarify some of the legal aspects of our relationship.

First, as we have agreed, we agree to provide you with, at no charge, and you agree to accept, all of the spent grain that we produce as part of our brewing process. We make no assurances about providing any minimum amount of spent grain.

Second, you will accept the spent grain we provide to you in "as is" condition. We make no warranty, express or implied, about the quality of the spent grain, including warranties of merchantability or fitness for a particular purpose. You agree not to hold us liable if the spent grain causes you to suffer or incur any loss, expense, or damage relating to your farm, your animals, or otherwise.

Third, although we have both publicly referred to our arrangement as a "partnership," we want to be clear that we are not intending to create any sort of legal partnership, joint venture, or other profit sharing business arrangement between [brewery name and farm name]. We will remain separate businesses in all respects.

Finally, either party can terminate this arrangement at any time by giving the other party at least 30 days advance written notice.

Please sign below to indicate your agreement to these terms.

Sincerely,

[brewery name]

[signature]

By: [name of brewery representative]

Accepted and Agreed:

[farm name]

[signature]

By: [name of farm representative]

Due to the temperatures reached during the brewing process, a permit from the Board of Animal Health is not required to use spent grain as animal feed.

Food to humans is the top of the waste hierarchy. Though there are some innovative efforts to launch this type of spent grain recovery, the system and the scale are not yet there. The next best use is for animal feed.

Did you know?

Some brewing ingredients aren't good for livestock, or they simply don't like them. Additives like chocolate or pine can be problematic. Consider supplying farmers with an ingredient list.

OTHER DIVERSION OPTIONS

Barthold Farms

- **Background:** Regional farm with more than 2,000 outdoor, free-range pigs and about 400 head of cattle. Barthold's uses recycled food waste (no serviceware, just food), including spent grain, to feed their pigs.
- **Logistics:** Each stop is provided 32-gallon containers with lids that are used for their spent grain and food scraps. Barthold's drivers dump, rinse, and reline the containers on top of their leak-proof trucks. The servicing of the container is all done on-site and the containers are placed right back in action. Depending on the location and production of the brewers, the service dates will vary; however, drivers typically come around three times a week.
- There is a cost associated with this service.

Aspen

- **Background:** Aspen Waste Management is a traditional municipal solid waste (MSW) hauler.
- **Logistics:** Aspen collects spent grain to be transported to compost through the commercial composting network.

Commodity Services Inc.

- **Background:** Commodity trading company that has been brokering spent grain for decades. They work with large producers throughout the U.S. that have too much material for a regional farmer. Commodity Services handles 70 percent of the spent grain in the U.S.
- **Logistics:** Only interested in quantities of a semi-trailer (24 tons) a week.
- **Cost:** Small payment is made to the brewer for the grain; roughly \$5-7/wet ton, depending on the market.

Last Resort: Solid Waste

- Would need to be collected by a traditional hauler. Difficult to manage material that is wet, hot, and best to not be commingled with other trash (smell, residual material). Weight limitations of trucks also make management challenging.
- In addition, processing this material as waste is more expensive and the lowest rank on the hierarchy of uses.

Acknowledgements

We'd like to extend a big thanks to our partners and collaborators for their support with the development of this guide. This includes Iron Shoe Farm, Lupulin Brewing, and members of the Minnesota Craft Brewers Guild.