

HOW TO USE

KERNZA®

*A Technical Guide for Distilling Kernza®
into Unique, Sustainable Whiskey*

With consumers' growing interest in sustainability, uniquely crafted spirits, and product origin, Kernza® is perfectly positioned to help you deliver on key consumer purchase drivers.

► **Sustainability**

Mitigating climate change, protecting water quality, improving soil health, and improving wildlife habitat. Kernza® does all this and so much more.

► **Unique Flavors**

With this new perennial grain, you can unlock unique flavor profiles to help your spirits stand apart.

► **Origin**

With its story of profound environmental benefits and locality, Kernza® perennial grain is well-suited to position your spirits in a premium category.



Photo credit: University of Minnesota

How Does Kernza® Impact Flavor?

It's best compared to wheat whiskey with its floral characteristics, but Kernza® has many unique qualities. Common descriptors include:

- ▶ *Maple syrup-like*
- ▶ *Notes of fruit*
- ▶ *Cherry*
- ▶ *Slightly sweet*
- ▶ *Nutty*
- ▶ *Earthy*

Flavor Tips & Notes:

- To experience the flavor, begin with a batch that uses a high percentage of Kernza® in the grain bill.
- As the whiskey matures, its initial bready wheat character diminishes.
- A 30% Kernza® blend Bourbon had less cherry and more nutty/earthy flavor than a 15% Kernza® blend Bourbon.
- Having other intense flavors in the grist is wise. Lean into the corn because of its sweetness and high starch content.
- Experiment with the flavor profile. You may get different flavors at different vaporization temperatures.

How Much Kernza® Should You Use?

You can use up to 100% Kernza®. The optimal amount depends on your desired end product. Some pioneering distilleries have used these recipes:

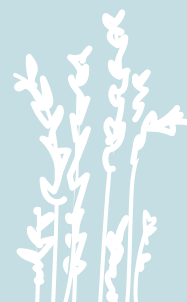
BOURBON

70% corn
20% raw Kernza®
10% malted barley

WHISKEY

90% raw Kernza®
10% malted wheat

Kernza® spirits could also be blended with other spirits. For example, one distillery blended a 100% Kernza® whiskey with a high rye corn whiskey (59% corn, 36% rye, 5% malted barley) and combined them after distillation to get a 15–30% Kernza® whiskey.



Kernza® Flakes Are Another Option for Distillers

Compared to whole grain, the flakes have some pre-gelatinization, offering easier access to starches and an even more pronounced flavor from the heating and flaking process.

Aroma: Toasted bread, fire roasted popcorn, biscuit, and hardtack cracker¹

Flavor: Rustic bread, popcorn kernel, pretzel, and shredded wheat cereal¹

In the grain or mash bill, you can use the flakes as they are or lightly mill them before adding — like you would other flaked grains. Depending on the purchase quantity, suppliers may be able to flake Kernza® at varying moisture and temperature conditions to bring out unique flavors.

What About Malted Kernza®?

Malted Kernza® entered the market in May 2025. Early pilots have shown high-color Kernza® malt creates excellent flavor characteristics in beer, which are expected to be further accentuated with the aging process for whiskey.

For more information, see the *Other Resources* section or contact a malted Kernza® supplier.

Technical Specifications

Gelatinization:

- Gelatinization temperature for raw grain: 140°F – 144°F, like wheat²
- Mash temperature: go up to 190°F
- Length of rest: 90 minutes³

The high mash temperature is to account for corn's high gelatinization temperature and for the difference in starch types between Kernza® and wheat. Kernza® has high amylose content whereas wheat has more amylopectin. Amylose (a linear polymer of glucose) is much more resistant to breakdown by heat than amylopectin and therefore requires the higher temperature.

Brix:

Brix will be lower than standard wheat. Keep in mind that Kernza® behaves like wheat. It has lower starch content than corn, and with Kernza®, you'll get even less sugar than wheat.

The Ratio of Water to Grain:

As a benchmark, for 1500 lbs. of grain (20% of which is Kernza®), one distiller adds 600–650 gallons of water.³

Enzymes:

Adding exogenous enzymes to the malts you include (alpha-amylase and beta-glucanase) is essential. 24 hours from the set point, add saccharification enzymes.

Fermentation and Aging Time:

Kernza® needs 5 days for fermentation, and aging time is like wheat: long aging is ideal. For its true expression, 3–4 years or more is recommended.

Predicted Spirit Yield:

Kernza® has a lower spirit yield compared to other grains. As a reference, Kernza® starch content is 50–53%,⁴ compared to 65% for hard red wheat and 58–65% for malting barley.²

Yeast:

It's important to talk with your yeast provider about a strain that can handle the limited sugars in Kernza®. Ask for a wheat protocol and share your planned percentages and total volume for best results.

Milling:

Kernza® grain must be dehulled before use. If purchasing from a supplier, be sure to buy dehulled grain. If you're sourcing directly from a farm, you'll need to find a dehulling partner and expect to lose 40–60% of the starting weight.

Milling notes:

- Grinding requires a tight setting on the roller mill since the grain is very small. Expect to use 10–15 lbs. to get it set right. Roller mills can sometimes be too wide.
- Hammer mills work well.
- You'll need to find a miller if you usually buy pre-milled ingredients and don't have a mill.
- Once milled, strike-in and cooking are the same as any other milled grain.

Kernza® Supplier Sourcing Information

Please speak directly with your supplier for information about pricing and the ingredient forms they carry (raw grain, flakes, flour, malt). Visit **Kernza.org** to locate a list of suppliers.

Credit to Contributors

These individuals have helped make this guide possible.
We extend to them our sincere gratitude.

Brock Berglund, Ida Graves Distillery

Bentley Gillman, Head Distiller, Tattersall Distilling

Juan Medina Bielski, Rahr Technical Center

Other Resources

Kernza® Perennial Grain: Value-Added Uses for Malting, Brewing, and Distilling.

Agricultural Utilization Research Institute. 2024. To obtain a copy, contact reports@auri.org.

Malting and Wort Production Potential of the Novel Grain Kernza® (*Thinopyrum intermedium*).

Andrew Marcus & Glen Fox. 2022. Journal of the American Society of Brewing Chemists.

DOI: 10.1080/03610470.2022.2026662

¹ Sustain-A-Grain, Sensory Analysis Notes

² Marcus and Fox, 2022

³ Bentley Gillman, Tattersall Distilling

⁴ 2024 Kernza® whole grain tests performed by Great Plains Analytical Laboratory