

EQUIPMENT FOR KERNZA POST-HARVEST HANDLING, STORAGE & TRANSPORT

TRANSPORTING FROM FIELD TO HANDLING FACILITY



Grain Augers - When grain is harvested, an auger transports it from the combine to a grain truck or gravity wagon for transport to the conditioning/storage facility. Also used to transport grain from truck/gravity wagon into storage containers. Very ubiquitous; can find a wide variety of new and used online. Chances are your neighbor has one that you could borrow!



Gravity Wagon - Large metal box on wheels with sloped sides that transports grain from field-edge to grain-bin or storage area and uses gravity to unload its contents. Often used for temporary storage, but not recommended for long-term storage due to variable quality control.

Recommended specs:

- Anything with an auger. Come in different sizes ranging from 200- to 500-bushel capacity



GrainVac/Suction Blower - Compact vacuum that uses suction to draw grain out of containers. May be preferable to auger, because it can serve dual-purposes: (1) transporting grains from combine harvester to grain truck or gravity wagon and (2) out of corners of storage containers.

Recommended specs:

- Can find a wide variety of new and used options online, both tractor- and electric-powered.
- Example:
<https://www.buschequipment.com/media/documents/Brochures%20and%20Literature/121001730%20US%20Grain%20Vacs%20BRO%201007.pdf>

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POST-HARVEST CONDITIONING



ProBoxes - Hard plastic boxes with a conical-type, palletized hopper bottom. Rodent-proof with lid. Use with tube fans. **Grain can be securely stored long-term** and be transported. *Preferred for harvests smaller than a truck-load.*

Recommended specs:

- Buckhorn 57" x 45" x 74" (Hopper bottom ProBox Bulk Seed Container with Lid)
- DuraGreen 57" x 45" x 65" (Hopper bottom collapsible bulk container + cover) from *Bulk Container Express*

Can find used (and sometimes rent) from seed or chemical dealers, and other farmers.



Metal grain bins - Cylindrical metal bins used to hold grain, usually installed on a concrete pad with electricity to power fans. Have perforated false floors for aeration. Fans blow air into the bottom of the bin under the floor, and draw air upwards through the bin and grain being stored.

Recommended specs:

- Hopper bottom + fan, with false floor; holes in false floor must be $\leq 3/54$ in. to prevent grain from falling through.
- Bins with *stirators* are recommended, as it is a good practice to stir Kernza periodically in the bin to avoid mold spots
- Can get metal grain bins used from farmers, at auctions, or new.
- Bins made/sized for small livestock operations may be the right size and at a lower price points than typical grain bins.



Stirator in metal grain bin

Image courtesy of GSI 2023, AGCO Corporation.

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MOISTURE LEVEL MANAGEMENT



Grain moisture testers- Managing moisture levels from harvest through storage is critical to ensure high-quality (and therefore, high-value) product. Grain moisture testers are a great tool to remove the risk of guesswork and range in price from <\$300- >\$1,000.

Look for **models recommended by USDA Federal Crop Insurance Field Offices**, such as the Agratronix MT-16, with **automatic temperature compensation and adjustable scales for different grain sizes** (use smallest grain size equivalent). Can purchase Agratronix MT-16 online from Farm & Home Supply for \$180.



Tube fan head and perforated tube.

Image courtesy of [QC Supply](#), 2023.

Tube Fans- Draws air through the grain to maintain the moisture content at harvest (i.e. grain conditioning). Cannot be used to *dry* the grain (i.e., lower the moisture content of grain post-harvest). **At least one tube fan per ton of grain** should be installed in your storage container.

For small operations (<20 acres), a six-foot hollow tube perforated with holes throughout, with a head on top containing a fan (pictured left) may be sufficient. Pointed “screw-type” bottom can be screwed down into a grain container, then plugged into a typical 120V outlet. Can order via QC Supply. **Make sure to order the fan head AND the perforated tube, which is sold separately:** <https://www.qcsupply.com/grain-aeration-head-only.html>



Tube axial fan. *Image courtesy of [Sofasco](#), 2020.*

For larger grain operations (+20 acres), **tube axial fans** (pictured left) are preferred. Can order via Sofasco: <https://sofasco.com/blogs/article/tube-axial-fan-components-advantages-industrial-applications>

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GRAIN SHIPPING & STORAGE



FIBC bags (Flexible Intermediate Bulk Containers)

- Also called bulk bags, grain totes, or super sacks, FIBC bags are soft, FDA-approved fabric bags that fit on standard pallets and can hold and ship up to 3,000 lb of grain. Used for **short-term storage only** because they are easily infiltrated by rodents and other pests. Learn more from *The New Growers' Guide to Producing Organic Food Grade Grains in the Upper Midwest*:

<https://cropsandsoils.extension.wisc.edu/files/2023/07/The-New-Growers-Guide-to-Producing-Organic-Food-grade-Grains-in-the-Upper-Midwest.pdf>

Recommended specs:

- Baffle Bulk Bags (FIBC)- Duffle top, Spout bottom. Size recommended: 40 x 46 x 52 inch. Recommend www.farnerbag.com
- Depending on dealer, runs ~\$25/each

ProBoxes - Hard plastic boxes with a hopper bottom, conical-type palletized bottom. Rodent-proof with lid. Can be used for both bin-run (uncleaned grain) and cleaned grain. For both shipping and long-term storage. Preferred over FIBC bags.

Recommended specs:

- Buckhorn 57" x 45" x 74" (Hopper bottom ProBox Bulk Seed Container with Lid)
- DuraGreen 57" x 45" x 65" (Hopper bottom collapsible bulk container + cover) from *Bulk Container Express*

To save money, you can buy used (sometimes rent) from seed or chemical dealers, and other farmers.

