

# Kernza® Perennial Grain: Cleaning & Dehulling Process



Agricultural Utilization Research Institute

Kernza from Combine

## Test Grain for: Moisture, Molds and Mycotoxins

Vomitoxin and Aflatoxin  
among the common issues

## Removal of Large Dockage via Shaker Table/ Screens or Indent

3/32" x 1/2" slotted screen; 14mm  
indent

## Removal of Hulls (Aspiration)

Removes hulls and  
smaller dockage  
  
Hulls to be used as  
feed, fuel or bedding

## Grain Separation: Indent Separation or Slotted Screen

Separation of hulled grain from  
grain still in hull 8mm indent (length  
grader) or  
3/64" x 3/8" slotted screen

There are several processing steps which will need to take place in order to clean and prepare Kernza® perennial grain for end users. AURI worked with equipment manufacturers and current cleaners/processors in order to identify the steps and equipment necessary to clean the grain and to remove/separate the hulls resulting in a grain product which can be milled, or supplied directly to end users. These identified processing steps can be seen outlined in the diagram.

Inconsistencies in grain size and quality between various grain lots is currently a significant factor when processing Kernza. As a result, AURI recommends building flexibility into cleaning and processing equipment setups. The University of Minnesota and others are working to improve seed genetics, which will likely impact grain characteristics such as percentage of free threshed grain in the combine and size of individual grain kernels. Therefore, post-harvest dehulling and cleaning of Kernza grain are processes which are likely to change with time.

These steps can be done in conjunction with an air screener or fanning mill type setup

Option 1:  
Dehuller discharge recycled  
to aspiration  
and separation  
until all grain is  
dehulled

Option 2: Dehuller discharge sent to  
separate aspirator and gravity table for  
increased process efficiency

## Dehulling (Impact Huller)

1,000—1,500 RPM  
Stone impact surface  
works best

## Removal of Hulls (Aspiration)

Grain in-hull and hulled grain

## Gravity Table Separation

## Color Sorting

If ergot is an issue, grain will  
need to be run through a color  
sorter

## Cleaned, Dehulled Kernza Grain

Dehulled Kernza Grain

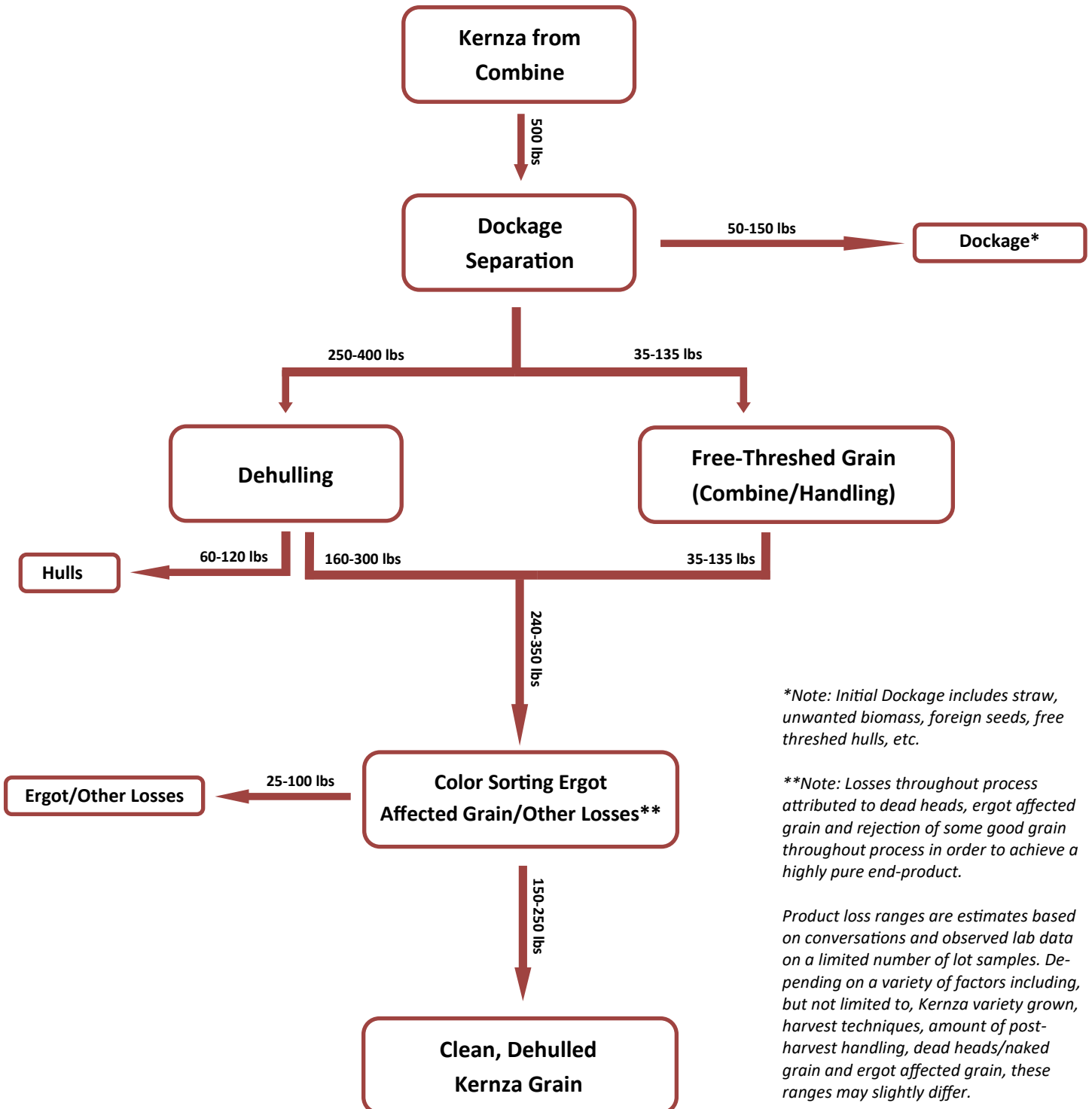


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## Identified Ranges of Product Weights and Losses Throughout Cleaning and Processing Steps – One Acre Example



*\*Note: Initial Dockage includes straw, unwanted biomass, foreign seeds, free threshed hulls, etc.*

*\*\*Note: Losses throughout process attributed to dead heads, ergot affected grain and rejection of some good grain throughout process in order to achieve a highly pure end-product.*

*Product loss ranges are estimates based on conversations and observed lab data on a limited number of lot samples. Depending on a variety of factors including, but not limited to, Kernza variety grown, harvest techniques, amount of post-harvest handling, dead heads/naked grain and ergot affected grain, these ranges may slightly differ.*