

S-Series Combine and Front End Equipment Optimization

“Ready to Harvest” Corn Grain Damage



John Deere Harvester Works

Preface

Enclosed is a checklist of items to inspect for Corn Grain Quality to record machine configurations, settings and crop conditions.

Also enclosed in this material are instructions to help you understand how to measure percent of grain damage and percent of fines in a given sample of corn.

Use this document to edit and answer any questions and also submit this form attached to a DTAC case for follow up if necessary.

Checklist Questions for Grain Quality - Combine and Cornhead

Customer Name _____

Serial number _____

Separator Hours _____

Header Size _____

Configuration:

Concave Round Bar(Y/N)? _____

Deep Tooth DZ Chaffer(Y/N)? _____

Deep Tooth Sieve(Y/N)? _____

Aftermarket parts Installed?

Separator? _____

Cleaning Shoe? _____

Feed Accelerator Wear Strips

Smooth? _____

Sweptback? _____

Standard? _____

Front Tire Size? _____

Settings:

Feederhouse sprocket (22/26/32T)? _____

Feed Accelerator Speed(Low/High)? _____

Rotor Speed? _____

Concave Clearance? _____

Fan Speed? _____

Chaffer Opening? _____

Sieve Opening? _____

Dual Zone Opening? _____

Cornhead:

Deckplate Spacing? _____

Backshaft Speed? _____

Auger up or Down? _____

Ground Speed? _____

Crop and Conditions:

Seed Variety? _____

Yield? _____

Moisture? _____

Test weight? _____

Black Layered (>28%)? _____

Number of kernels around ear? _____

Number of kernels length? _____

Green Leaves? _____

Issue:

Cracked and Broken Kernels (Y/N)? _____

Percentage? _____

Fines(Y/N)? _____

Percentage? _____

Foreign Material (cob, trash) (Y/N)? _____

Percentage? _____

Issue in all varieties(Y/N) _____

1st year this is a problem(Y/N)? _____

Where is damage sample taken from (Y/N)?

Combine? _____

Grain Cart? _____

Truck? _____

Dryer? _____

Dry Bin? _____

Grain Elevator? _____

Corn Grain Damage Grading Procedure

Conducted according to the USDA grain inspection handbook

<http://www.gipsa.usda.gov/fjis/handbook/grain-insp/grbook2/corn.pdf>

Collect a sample by sweeping a bucket under the grain tank or unloading auger with a steady flow.
Target a 1kg (2.2 lbs.) sample size.

Weigh out the total sample. DO NOT separate as fines tend to settle to the bottom.



Shake the sample in a 12/64 inch round hole sieve (USDA standard) for @ 1 minute.



Weigh out what passes through the screen.
This is fines and is considered dockage at the elevator.
 $\text{Weight of the fines} / \text{weight of the sample} = \% \text{ of fines}$



From the original 1kg. (2.2lb.) sample manually separate and weigh kernels that are broken or have a damaged seed coat above the black layer.

$\text{Weight of damaged kernels} / \text{total sample weight} = \% \text{ damage}$



Black Layer



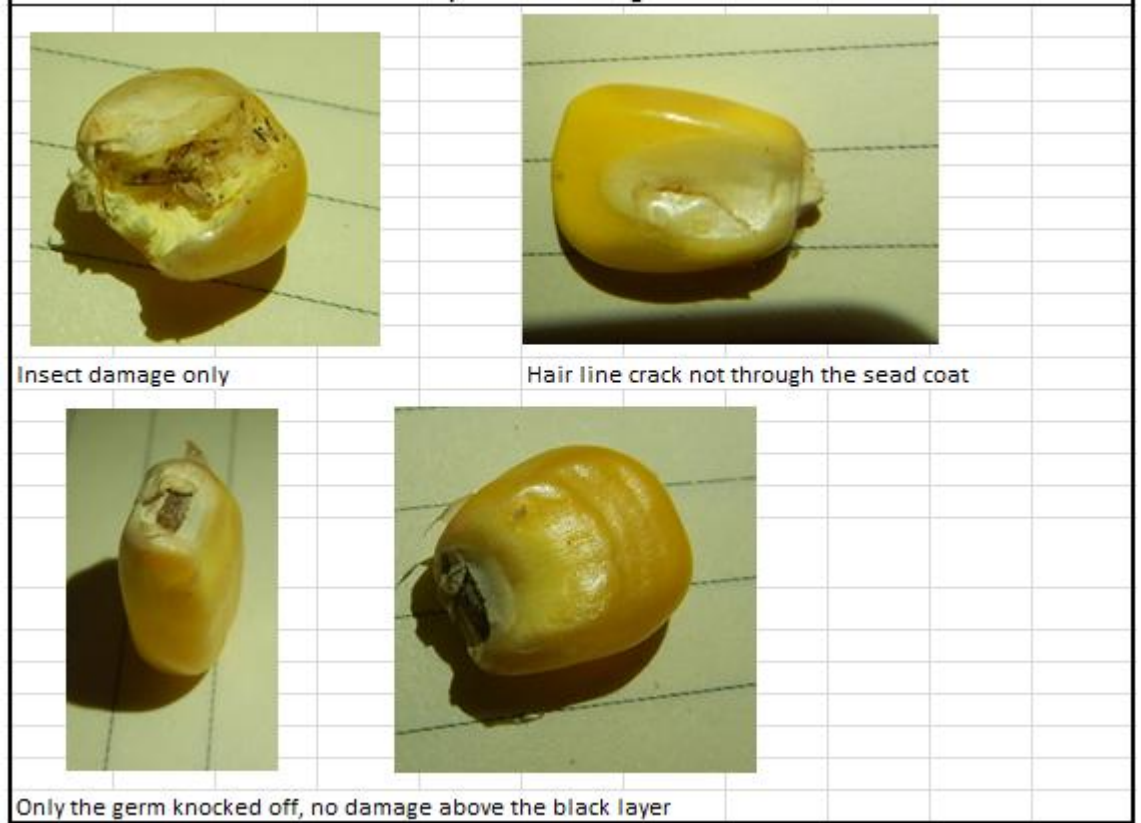
Total damage Fines + Broken Kernels should be 3% or less.

Examples of Damaged Kernels

These are kernels that have mechanical damage above the black layer. Cracks must go through the seed coat enough to cause the kernel to be broken with fingers. Kernels damaged by insects do not count.



Examples of not damaged Kernels



Grades and Grade Requirements

§ 810.404 Grades and grade requirements for corn.

Grade	Minimum test weight per bushel (pounds)	Maximum limits of:		
		Damaged kernels		Broken corn and foreign material (percent)
		Heat damaged kernels (percent)	Total (percent)	
U.S. No. 1	56.0	0.1	3.0	2.0
U.S. No. 2	54.0	0.2	5.0	3.0
U.S. No. 3	52.0	0.5	7.0	4.0
U.S. No. 4	49.0	1.0	10.0	5.0
U.S. No. 5	46.0	3.0	15.0	7.0

Notes
