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SOYBEAN GRADE REQUIREMENTS AND DISCOUNT SCHEDULES

All grain elevators that receive and purchase soybeans from producers have a discount schedule that they apply to each individual load that is delivered to them. These discount schedules vary somewhat from elevator to elevator and from year to year [see below **Table 1**]. They are used to determine the shrinkage of the delivered product that will be applied based on its grade in designated categories. The below narrative lists and explains the various shrink and discount factors that are applied to soybeans at the elevator.

The USDA Federal Grain Inspection Service has established [requirements for U.S. soybean grades](#). They appear in the latest edition of the Federal Register that was published on July 14, 2023. Click [here](#) to access pictures of the various categories of damaged seed. Definitions of the terms or shrinkage elements in **Table 1** and the range of discounts that will be applied for each shrinkage element that exceeds the maximums follow.

Test weight is a measure of density of the seed. The standard test weight for soybeans is 56 lb/bu which is always used to convert the weight of the soybean load to the number of bushels contained in the load. There are no discounts for test weights above 54 lb/bu. Discounts for test weights below 54 lb/bu vary, but generally range from \$0.01 to \$0.02 per bushel for each 1 lb below 54 lb/bu. Some elevators may reject loads with a test weight below 49 lb/bu.

Heat damaged soybeans are those that are materially damaged and discolored [black or dark brown] by heat. This damage can occur when soybeans are stored at moisture levels that are too high [majority of damage] or are dried at too high a drying temperature. Heat damage is considered a separate damage category and is penalized more. Most elevators start assessing discounts for heat damage that is greater than 0.20%, and the discounts are usually assessed on a per bushel basis—e.g. \$0.04 to \$0.10 per bushel for each 1% heat damage. The dockage amount may increase with increasing level of heat damage [see **Table 1**]. A load with more than 1-2% heat damage may be rejected.

Foreign material [FM] is all matter that passes through a 0.125 in. [8/64] round-hole sieve and all matter other than soybeans that remain in the sieved sample. Most elevators deduct foreign matter in excess of 1% from the gross weight of the load. Some elevators will increase the deduction to 1.5 times the gross weight or reject loads when FM is greater than 5%.

Splits are undamaged soybeans with more than 1/4 of the bean removed. Discounts generally start at 20% splits, and

generally range from \$0.01 to \$0.04 per bushel for each 5% increase in split beans. In some cases, the discount increases with increasing level of split beans.

~~Soybeans of other colors are those that have green, black, brown, or bicolored seed coats. Discounts of 0.5% of price or \$0.005 to \$0.01 per bushel are generally applied for each 1% other colors in excess of 1% [Removed as grading factor—see update at end of article].~~

Seed moisture content [see below **Table 1**] is used to determine what producers are paid based on the gross weight of a load minus the shrink discount when seed moisture exceeds 13%. Common discounts for moisture content to convert gross weight to net weight are 1% to 1.50% for each ½% moisture content above 13%. Some elevators will also assess a drying charge on loads with a moisture content above 13%. Also, some elevators reject loads that are above 15% moisture content, while others set the rejection point up to 20%.

Damaged kernels are soybeans and pieces of soybeans that are materially damaged by heat, weather, disease, insects, etc. Damage discounts range from \$0.02 to \$0.05 per bushel for each 1% damage between 2% and 8%. See **Table 1** for example discounts. A load with more than 8% damage may be rejected. This damage category is separate from the heat damage category described above.

In the Midsouth, inclement weather [above-normal/frequent rain concurrent with cloudy weather, hurricanes] just before soybean maturity and during the normal harvest season [when harvest is delayed because of the inclement weather] will result in greater damage to seed. This may cause significant adjustments in a buyer's discount schedule in a given year because of the expected greater volume of damaged seed they will receive. Also, note that 1) loads above 8-10% damage may be rejected, and at the most, they will receive a severely discounted price if they are not outright rejected, and 2) discount schedules are subject to change without notice; this is more likely to happen in an adverse harvest weather year when the amount of damaged product that is delivered may become burdensome to the buyer. See the data in **Table 2** for an example of this occurring in 2018.

Significant weather-related damage to soybean seed can occur before harvest in all locales of the Midsouth [Missouri Bootheel south] if adverse weather conditions at those locales occur over an extended period that will prevent



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timely harvest. These conditions will exist whenever periods of rain and moderate to high temperatures occur simultaneously for extended periods of time and soybeans are near or at harvest maturity. This condition will likely be exacerbated by insect damage that will allow moisture and pathogens to enter the seed before harvest. This was especially so in 2017 when redbanded stink bug [RBSB] infestations were severe in much of the lower Midsouth [see [RBSB White Paper](#) on this website].

Example Discount Schedules. See the data in **Table 1** for example discount schedules for No. 2 yellow soybeans for normal years when most harvested soybeans suffer minimal damage and for years such as 2018 [and to a lesser extent in 2022] when weather events in the Midsouth at time of soybean maturity caused significant damage to soybeans before they could be harvested. As shown on these schedules, several of the discounts changed significantly across the years. Discounts for the various shrink factors that will affect the net payment to the producer will vary among years and elevators as shown in **Table 1**.

Table 1. Example soybean discounts at different Midsouth elevators across years.						
	Elevator A	Elevator B		Elevator C	Elevator D	Elevator E
	-----M onth/year-----					
Category	03/2016 & 09/20/17	09/2017	09/2018	09/2018	09/2018	09/2022
Moisture Content Discount						
≤13%	0	0		0	0	0*
13.1-13.5%	1% of price	1% of price		1% of price	1% shrink	1%
13.6-14.0%	2% of price	2% of price		2% of price	2% shrink	2%
14.1-14.5%	3% of price	3% of price		3% of price	3% shrink	3.3%
14.6-15.0%	4% of price	4% of price		4% of price	4% shrink	4.6%
15.1-15.5%	Subject to rejection	5% of price		5% of price	6% shrink	6.1%
15.6-16.0%	Subject to rejection	6% of price		6% of price	8% shrink	7.6%
16.1-16.5%	Subject to rejection	7% of price		7% of price	12% shrink	9.1%
16.6-17.0%	Subject to rejection	8% of price		8% of price	16% shrink	10.6%
Test Weight Discount						
≥54.0	0	0		0	0	0
53.9-53.5	\$0.01/bu	\$0.005/bu		\$0.01/bu	\$0.01/bu	\$0.01/bu.
53.4-53.0			\$0.02/bu	\$0.02/bu.		
52.9-52.5	\$0.02/bu	\$0.010/bu		\$0.03/bu	\$0.02/bu	\$0.03 bu.
52.4-52.0			\$0.04/bu	\$0.04/bu.		
51.9-51.5	\$0.03/bu	\$0.015/bu		\$0.05/bu	\$0.03/bu	\$0.05/bu.
51.4-51.0			\$0.06/bu	\$0.06/bu.		
50.9-50.5	\$0.04/bu	\$0.020/bu		\$0.07/bu	\$0.04/bu	\$0.07/bu.
50.4-50.0			\$0.08/bu	\$0.08/bu.		
<50 in 0.5 inc.	-----	---		+ \$0.02/bu	---	Add. \$0.02/bu. per ½ point decline
49.9-49.0	-----	\$0.025/bu		---	\$0.05/bu	
48.9-48.0	-----	\$0.030/bu		---	\$0.06/bu	
47.9-47.0	-----	\$0.035/bu		---	\$0.07/bu	
Total Damage Discount						
≤2.0%	0	0		0	0	0
2.01-2.5%	\$0.01/bu	\$0.05/bu		\$0.05/bu	\$0.03/bu	\$0.05/bu
2.51-3.0%	\$0.02/bu				\$0.04/bu	
3.01-3.5%	\$0.03/bu	\$0.10/bu	\$0.35/bu	\$0.35/bu	\$0.05/bu	\$0.20/bu
3.51-4.0%	\$0.04/bu				\$0.06/bu	
4.01-4.5%	\$0.05/bu	\$0.15/bu	\$0.65/bu	\$0.65/bu	\$0.07/bu	\$0.35/bu
4.51-5.0%	\$0.06/bu				\$0.08/bu	



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	Elevator A	Elevator B		Elevator C	Elevator D	Elevator E
	-----M onth/year-----					
Category	03/2016 & 09/20/17	09/2017	09/2018	09/2018	09/2018	09/2022
5.01-5.5%	\$0.10/bu	\$0.22/bu	\$1.22/bu	\$1.22/bu	\$0.09/bu	\$0.55/bu
5.51-6.0%	\$0.12/bu				\$0.11/bu	
6.01-6.5%	\$0.14/bu	\$0.29/bu	\$1.29/bu	\$1.29/bu	\$0.13/bu	\$1.00/bu
6.51-7.0%	\$0.16/bu				\$0.15/bu	
7.01-7.5%	\$0.18/bu	\$0.36/bu	\$1.36/bu	\$1.36/bu	\$0.17/bu	\$1.50/bu
7.51-8.0%	\$0.20/bu				\$0.19/bu	
>8.0%	Subject to rejection	---	---	---	---	---
8.1-9.0	---	\$0.44/bu	\$1.44/bu	\$1.44/bu	---	\$2.00/bu
9.1-10.0	---	\$0.52/bu	\$1.52/bu	\$1.52/bu	---	\$2.25/bu
>10%	---	+\$0.10/bu each 1% >10%			---	\$2.50–\$4.50
Heat Damage Discount						
<0.2%	0	0		0	0	0
0.3-0.5%	---	\$0.04/bu	\$0.05/bu	\$0.10/bu	\$0.02/bu	\$0.05/bu
0.3-1.0%	\$0.04/bu	---	---		---	---
0.60-1.0%	---	\$0.08/bu	\$0.10/bu	---	\$0.04/bu	\$0.10/bu
1.01-1.5%	\$0.08/bu	---	--	---	---	---
1.1-1.5%	---	\$0.14/bu	\$0.15/bu	\$0.15/bu	\$0.06/bu	\$0.15/bu
1.51-2.0%	\$0.12/bu	---	---	---	---	---
1.6-2.0%	---	\$0.20/bu	\$0.25/bu	\$0.20/bu	\$0.08/bu	\$0.25/bu
2.1-2.5%	---	\$0.28/bu	\$0.35/bu	\$0.30/bu	\$0.10/bu	\$0.35/bu
2.6-3.0%	---	\$0.36/bu	\$0.45/bu	\$0.40/bu	\$0.12/bu	\$0.45/bu
3.1-3.5%	---	\$0.44/bu	\$0.55/bu	\$0.50/bu	\$0.14/bu	\$0.55/bu
3.6-4.0%	---	\$0.52/bu	\$0.65/bu	\$0.60/bu	\$0.16/bu	\$0.65/bu
4.1-8.0%	---	---	---	+\$0.15/0.5 pt.	\$0.18–\$0.32/bu	\$0.15/bu per 0.5 pt. over 4%
Splits Discount						
<20%	0	0		0	0	\$0.01 for each 5% or fraction over 20%
20.1-25.0%	\$0.01/bu	\$0.0025/bu		\$0.01/bu	\$0.01/bu	
25.1-30.0%	\$0.02/bu	\$0.0050/bu		\$0.02/bu	\$0.02/bu	
30.1-35.0%	\$0.03/bu	\$0.0075/bu		\$0.03/bu	\$0.04/bu	
35.1-40.0%	\$0.04/bu	\$0.0100/bu		\$0.04/bu	\$0.06/bu	
40.1-45.0%	---	\$0.0125/bu		\$0.05/bu	\$0.10/bu	
45.1-50.0%	---	\$0.0150/bu		\$0.06/bu	\$0.14/bu	
Foreign Matter Discount						
<1%	0	0		0	0	0
1-5%	deducted from gross wt.	deducted from gross wt.				Over 1% deducted from gross wt.
>5%	subject to rejection	deducted from gross wt.			ded. @ 1.5 x wt.	
*Percentages in moisture discount column are % of contract price.						

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Table 2. Example of 2018 in-season change of a Midsouth elevator soybean discount schedule [dollars per bushel] for total and heat damage when weather changes affected quality of seed during same-season harvest [shown as “before weather” and “after weather”].

	Total Damage-%							
Schedule date	<2.0	2.1-3.0	3.1-4.0	4.1-5.0	5.1-6.0	6.1-7.0	7.1-8.0	>8.0
Before weather	0	\$0.04	\$0.08	\$0.12	\$0.20	\$0.28	\$0.36	+\$0.08/bu per 1% >8%
After weather*	0	\$0.05	\$0.35	\$0.65	\$1.22	\$1.29	\$1.36	+\$0.08/bu per 1% >8%**
	Heat Damage-%							
Schedule date	<0.2	0.3-1.0	1.1-1.5	1.6-2.0	2.1-2.5	2.6-3.0	>3.0**	
Before weather	0	\$0.05	\$0.09	\$0.13	\$0.18	\$0.23	\$0.05/bu per ½% >3.0% to max. 10%	
After weather*	0	\$0.10	\$0.15	\$0.25	\$0.35	\$0.45	\$0.10/bu per ½% >3.0% to max. 5%	

*Discount schedule effective Oct. 3, 2018.

**By agreement only.

Total damage and heat damage are the only seed quality categories that changed discounts at this elevator based on weather changes/conditions that affected harvested seed quality during the harvest period in 2018.

The below example shows how all of the above shrinkage and discount factors will affect the net payment for a load of soybeans delivered to the elevator and weighing 54,000 pounds with the following properties.

Test wt.:	52.3 lb/bu	(will be discounted)
Damage:	4.2%	(will be discounted)
FM:	3%	(will be discounted)
Splits:	10%	(no discount)
Grain moisture:	14.9%	(will be discounted)

Shrinkage

FM:	3% FM - 1% allowed = 2% FM shrink 54,000 pounds x 0.02 = 1080 pounds of FM shrinkage
Moisture:	14.9% - 13% = 1.9% above 13% 1.9% / 0.5% = 4 (discount based on each 0.5% above 13%) 4 x 1% = 4% shrinkage (1% discount for each 0.5% above 13%) 54,000 pounds x 0.04 = 2160 pounds of moisture shrink
Marketable bushels:	[Gross wt. - (moisture + FM shrink)] divided by 56 54,000 - (1080 + 2160) = 50,760 pounds 50,760 divided by 56 lb/bu = 906 bushels of dry beans

Gross payment: 906 bushels x \$9.50/bu = \$8607 net receipt

Discounts

Test weight:	Elevators only discount if test weight is <54 lb/bu 52.3 lb/bu = \$0.02/bu deducted
Damage:	4.2% damage - 2% allowed = 2.2% of gross bushels deducted 2.2% damage over allowed = \$0.07/bu discount (low discount) 2.2% damage over allowed = \$0.65/bu discount (high discount) 54,000 divided by 56 lb/bu = 964 gross bushels 964 bushels x \$0.07/bu = \$68 discount for damage (low discount) 964 bushels x \$0.65/bu = \$627 discount for damage (high discount)



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Splitss: No discount since within allowed limit

Drying charge: $14.9\% - 13\% = 1.9\%$ above 13%
 1.9% divided by $0.5\% = 4$
 $4 \times \$0.03/\text{bu}$ for each 0.5% above 13% = \$0.12 per wet bushel
 $54,000$ divided by $56 \text{ lb/bu} = 964$ gross bushels in load
 $964 \times \$0.12$ per bushel = \$116 drying charge

Net payment

\$8607 - \$68 damage discount (low discount for damage) - \$116 drying charge = \$8423

\$8607 - \$627 damage discount (high discount for damage) - \$116 drying charge = \$7864

In some years in the Midsouth, damage to mature soybean seed is above normal across a widespread area that is affected by adverse weather that occurs near or at maturity. This will cause abnormally high damage dockage assessed to many of the soybeans that are harvested after the damaging weather period. For example, using the figures in **Table 1** for a normal year [before weather], a load with 6% damage would be docked \$0.20/bu, a load with 10% damage would be docked \$0.52/bu, and a load with 20% damage [if accepted] could be docked \$1.32/bu. In a weather-affected year [after weather in **Table 2**], a load with 6% damage would be docked \$1.22/bu, a load with 10% damage would be docked \$1.52/bu, and a load with 20% damage [if accepted] would be docked \$2.32/bu. These dockage amounts are much greater than those for the same damage percentages in years when damage is not widespread; i.e., harvested beans with abnormally high damage are a minor amount of product delivered to an elevator. Also, the above discounts for damages above 10% assume that those loads will be accepted by the buyer. In many cases, they may or will be rejected by an elevator when conditions that result in this high damage occur across a large area and the receiving elevators will be inundated with a large quantity of these severely damaged soybeans.

The above dockage amounts for the “after weather” categories will certainly reduce the profit opportunity that was potentially present in any soybean crop before the onset of damage-causing conditions. As stated above, all elevators likely reserve the right to reject any load with high damage/low quality, and this will likely depend on the total amount of damaged soybeans that a given elevator is presented with in a market year.

Producers are not the only part of the soybean supply chain who are negatively affected by the low seed quality dilemma. Buyers who purchase these damaged soybeans at the elevators are saddled with a low quality product that is often difficult to move forward. Thus, they must work diligently to find buyers who can use the damaged product or who have enough high quality product to blend with the low quality

product in order to meet the end user’s requirements. Thus, a solution to this seed damage problem will benefit all members of the soybean industry, from producer to end user.

Producers are encouraged to become familiar with the discounts for each shrinkage component that are applied at their delivery point. This can be critical for obtaining the highest possible price for soybeans that are delivered to the elevator. Also, becoming familiar with the various shrinkage and discount categories and how they are applied will provide valuable guidance for ensuring that the highest quality product is delivered to the buyer.

JULY 2023 UPDATE

On July 14, 2023, USDA’s Agric. Marketing Service [USDA-AMS] published a final rule to the Federal Register that revised the U.S. Standards for Soybeans by removing soybeans of other colors [SBOC] as an official grade-determining factor. **This means that the Federal Grain Inspection Service [FGIS] will only use damaged kernels, foreign material, and splits when assigning a grade to yellow soybeans.** The change becomes effective Sept. 1, 2023 to correspond with the beginning of the new soybean marketing year. In addition, AMS is revising the table of Grade Limits [GL] and Breakpoints [BP] for soybeans to reflect this change. Click [here](#) to access the final rule that was published in the Federal Register along with the table that shows current maximum limits [in percent] for each of the three remaining grading factors.

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