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## DRYING COSTS AND SHRINK LOSSES ARE LARGE IN 2009

Moisture levels on corn are much higher this year than in recent year, with some farmers harvesting corn with moisture levels in the high 20% range. These high moisture levels will result in shrink and drying costs for grain delivered to elevators and processors that could be near \$100 per acre. Higher drying costs will further increase costs in a year in which per acre costs will be significantly above costs in any other year. Moreover, these drying charges may not have been built into budgets as the above average moisture levels were not anticipated at the time of budgeting. Hence, cash flows could be tighter than anticipated.

### Shrink Losses and Drying Charges

Table 1 shows per acre shrink losses and drying costs given that corn yield equals 190 bushels per acre at a 15% moisture level, a typical moisture level corn is shrunk to at commercial elevators (see Appendix Tables for different per acre production levels). Calculations in this table are illustrated for 25% moisture corn. At 25% moisture, 190

**Table 1. Wet Bushels, Sold Bushels, Shrink Losses and Drying Charges given 190 Bushels per Acre of Grain at 15.0% Moisture.**

Grain Moisture Level	Wet Bushels <sup>1</sup>	Sold Bushels <sup>2</sup>	Shrink Loss <sup>3</sup>	Drying Cost <sup>4</sup>	Shrink and Drying <sup>5</sup>
	Bu/Acre	Bu/Acre	\$ per Acre		
35%	249	179	\$37	\$174	\$211
34%	245	180	35	163	198
33%	242	181	32	152	184
32%	238	181	30	142	172
31%	235	182	28	131	159
30%	231	183	25	121	146
29%	228	183	23	112	135
28%	225	184	21	102	123
27%	222	185	19	93	112
26%	219	185	17	84	101
25%	216	186	15	76	91
24%	213	186	13	67	80
23%	210	187	11	59	70
22%	208	187	10	51	61
21%	205	188	8	43	51
20%	202	188	6	35	41
19%	200	189	5	28	33
18%	197	189	3	21	24
17%	195	190	1	14	15
16%	193	190	0	7	7
15%	190	190	0	0	0

<sup>1</sup> After accounting for moisture and handling losses, these wet bushels will cause production to equal 190 bushels per acre at 15.0% moisture. Handling losses equal 0.25% of total wet bushels.

<sup>2</sup> Calculated using a 1.4 shrink factor per point of moisture.

<sup>3</sup> Equals \$3.50 per bushel times bushels lost through shrink (sold bushels - 190 bushels at 15.0% moisture).

<sup>4</sup> Equals grain moisture level minus 15.0% times \$0.0350 per point drying charge.

<sup>5</sup> Equals sum of shrink loss and drying cost.

per acre production levels). Calculations in this table are illustrated for 25% moisture corn. At 25% moisture, 190 bushels of 15% moisture corn will equal 216 bushels of corn as 25% moisture (see Table 1). The 216 bushels accounts for weight losses that will occur when reducing moisture down to 15%. It also includes a .25% handling shrink to account for general drying and handling losses. The .25% handling shrink is applied to total wet bushels

The 216 bushels of 25% moisture will yield 186 bushels at delivery given that corn is shrunk to 15% moisture and a 1.4 per point shrink factor is used (see Table 1). The 1.4 shrink factor is typical for ones used by elevators in central Illinois. The 186 bushels is below the 190 bushels of grain production because the 1.4 shrink factor is over the shrink factor for normal moisture losses (1.176) plus assume handling losses (.25%). This results in shrink losses equal to 4 bushels per acre (190 bushels – 186 bushels). The 4 bushels of lost grain is valued a \$3.50 per bushel, representative of current cash prices for corn, resulting in \$15 of shrink losses per acre (see Table 1). Drying charges for the 25% moisture grain total \$76 per acre (see Table 1). This charge is based on drying grain to 15% moisture and a \$.035 per point drying charge. The \$.035 is representative of drying charges at central Illinois elevators, although many elevators have sliding schedules with decreasing per point drying charges as moisture levels increase.

Given these charges, total shrink losses and drying costs are \$91 per acre. These are much higher than in recent years because of higher moisture levels. A more typical moisture level in recent years is 21%, resulting in \$51 of per acre shrink and drying losses. The \$91 charge at 28% moisture is \$40 higher than charges for a moisture level more typical moisture level.

### **Drying in Field**

Some farmers are considering waiting to harvest grain to allow for more in field dry down. Shrink losses and drying costs will decline as moisture levels decline. A reduction from 32% moisture down to 31% moisture will reduce per acre costs by \$13 per acre (\$172 per acre costs at 32% moisture minus \$159 per acre costs at 31% moisture (see Table 1)). Costs are reduced by \$10 per acre when moisture is reduced from 21% to 20% (\$51 per acre minus \$41 per acre (see Table 1)).

Reductions in shrink losses and drying costs should be weighed against in field losses of grain that may occur by leaving corn standing in the field.

### **Grain Delivery Model**

Elevators have differing ways of calculating drying charges and shrink. Shrink factors can vary across elevators. Moisture levels grain is shrunk to will vary across elevators. Some elevators will use a different moisture level for immediate sale and storage. Some elevators have drying schedules that vary rates given different moisture levels. Other elevators charge the same per point drying charges no matter the moisture level. Some elevators base drying charges on wet bushels while other elevators base drying charges on drying bushels.

The *FAST* series of Microsoft Excel spreadsheets contains a *Grain Delivery* program that calculates drying, storage, and transportation charges for different elevators. Each elevators drying charges, shrink factors, storage charges, and moisture levels can be entered. Then the program calculates costs at each delivery point.

### **Summary**

Drying charges and shrink losses will be much higher in 2009 than in recent years due to high moisture levels of harvested grain. In addition, low test weights and grain quality issues may result in further grain discounts. There is not much farmers can do to reduce these costs. However, farmers may wish to consider these higher costs when planning cash flows and determining operating credit needs.

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**Appendix Table 1. Wet Bushels, Sold Bushels, Shrink Losses and Drying Charges given 210 Bushels per Acre of Grain at 15.0%**

Grain Moisture Level	Wet Bushels <sup>1</sup>	Sold Bushels <sup>2</sup>	Shrink Loss <sup>3</sup>	Drying Cost <sup>4</sup>	Shrink and Drying <sup>5</sup>
	Bu/Acre	Bu/Acre	\$ per Acre		
35%	275	198	\$41	\$193	\$234
34%	271	199	38	180	218
33%	267	200	36	168	204
32%	263	201	33	157	190
31%	259	201	31	145	176
30%	256	202	28	134	162
29%	252	203	26	123	149
28%	249	203	23	113	136
27%	245	204	21	103	124
26%	242	205	19	93	112
25%	239	205	17	84	101
24%	235	206	15	74	89
23%	232	206	13	65	78
22%	229	207	11	56	67
21%	227	207	9	48	57
20%	224	208	7	39	46
19%	221	209	5	31	36
18%	218	209	3	23	26
17%	216	210	2	15	17
16%	213	210	0	7	7
15%	210	210	0	0	0

<sup>1</sup> After accounting for moisture and handling losses, these wet bushels will cause production to equal 210 bushels per acre at 15.0% moisture. Handling losses equal 0.25% of total wet bushels.

<sup>2</sup> Calculated using a 1.4 shrink factor per point of moisture.

<sup>3</sup> Equals \$3.50 per bushel times bushels lost through shrink (sold bushels - 210 bushels at 15.0% moisture).

<sup>4</sup> Equals grain moisture level minus 15.0% times \$0.0350 per point drying charge.

<sup>5</sup> Equals sum of shrink loss and drying cost.

**Appendix Table 2. Wet Bushels, Sold Bushels, Shrink Losses and Drying Charges given 170 Bushels per Acre of Grain at 15.0%**

Grain Moisture Level	Wet Bushels <sup>1</sup>	Sold Bushels <sup>2</sup>	Shrink Loss <sup>3</sup>	Drying Cost <sup>4</sup>	Shrink and Drying <sup>5</sup>
	Bu/Acre	Bu/Acre	\$ per Acre		
35%	223	160	\$33	\$156	\$189
34%	219	161	31	146	177
33%	216	162	29	136	165
32%	213	162	27	127	154
31%	210	163	25	118	143
30%	207	163	23	109	132
29%	204	164	21	100	121
28%	201	165	19	92	111
27%	198	165	17	83	100
26%	196	166	15	75	90
25%	193	166	14	68	82
24%	191	167	12	60	72
23%	188	167	10	53	63
22%	186	168	9	46	55
21%	183	168	7	39	46
20%	181	168	6	32	38
19%	179	169	4	25	29
18%	177	169	3	19	22
17%	175	170	1	12	13
16%	172	170	0	6	6
15%	170	170	0	0	0

<sup>1</sup> After accounting for moisture and handling losses, these wet bushels will cause production to equal 170 bushels per acre at 15.0% moisture. Handling losses equal 0.25% of total wet bushels.

<sup>2</sup> Calculated using a 1.4 shrink factor per point of moisture.

<sup>3</sup> Equals \$3.50 per bushel times bushels lost through shrink (sold bushels - 170 bushels at 15.0% moisture).

<sup>4</sup> Equals grain moisture level minus 15.0% times \$0.0350 per point drying charge.

<sup>5</sup> Equals sum of shrink loss and drying cost.

**Appendix Table 3. Wet Bushels, Sold Bushels, Shrink Losses and Drying Charges given 150 Bushels per Acre of Grain at 15.0%**

Grain Moisture Level	Wet Bushels <sup>1</sup>	Sold Bushels <sup>2</sup>	Shrink Loss <sup>3</sup>	Drying Cost <sup>4</sup>	Shrink and Drying <sup>5</sup>
	Bu/Acre	Bu/Acre	\$ per Acre		
35%	197	142	\$29	\$138	\$167
34%	194	142	27	129	156
33%	191	143	26	120	146
32%	188	143	24	112	136
31%	185	144	22	104	126
30%	183	144	20	96	116
29%	180	145	18	88	106
28%	178	145	17	81	98
27%	175	146	15	74	89
26%	173	146	14	67	81
25%	170	147	12	60	72
24%	168	147	11	53	64
23%	166	147	9	46	55
22%	164	148	8	40	48
21%	162	148	6	34	40
20%	160	149	5	28	33
19%	158	149	4	22	26
18%	156	149	2	16	18
17%	154	150	1	11	12
16%	152	150	0	5	5
15%	150	150	0	0	0

<sup>1</sup> After accounting for moisture and handling losses, these wet bushels will cause production to equal 150 bushels per acre at 15.0% moisture. Handling losses equal 0.25% of total wet bushels.

<sup>2</sup> Calculated using a 1.4 shrink factor per point of moisture.

<sup>3</sup> Equals \$3.50 per bushel times bushels lost through shrink (sold bushels - 150 bushels at 15.0% moisture).

<sup>4</sup> Equals grain moisture level minus 15.0% times \$0.0350 per point drying charge.

<sup>5</sup> Equals sum of shrink loss and drying cost.