A341O

Estimating the Value of Wet Ear Corn

A Suggested Starting Point

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Farmers who feed livestock sometimes buy and sell wet ear corn by the ton. Unfortunately, it's rare to find price information which quotes corn prices in dollars per ton of wet ear corn. But they usually have ready access to the current per-bushel price for dry shelled corn. These shelled corn prices—usually based on corn of 56 pounds per bushel and 15.5 percent moisture—provide a base for estimating the price of wet ear corn per ton.

The procedure suggested here is based on the following logic: an alternative market for wet ear corn is to shell it, dry it and sell it as dry shelled corn. In this case, the value of the ear corn would be what you sell it for, minus what you spent to shell and dry it. To estimate the receipts from selling the corn shelled, you must first estimate how many bushels of dry shelled corn you'll get from a ton of wet ear corn; then you can multiply that by the dry corn price. Then you can estimate what it cost to dry and shell a ton of wet corn and subtract those costs from your receipts. This gives you an estimate of alternative market value for the corn.

In practice it's a little more complicated. To convert tons of wet ear corn to bushels of dry shelled corn, you must consider the corn variety, kernel moisture, cob moisture, moisture of the dry corn and shrinkage in drying. Past attempts to make these conversions have yielded the information in Tables 1 and 2. Table 1 estimates the receipts from the dry corn in one ton of wet ear corn at various combinations of wet corn kernel moisture levels and dry corn prices. Table 2 makes the conversion from one ton of ear corn at various kernel moisture levels to number of bushels of dry corn. By combining the information in Table 2 with any dry corn price, you can estimate the receipts per ton.

You can use the information from Tables 1 and 2 along with drying and shelling costs from your area. In essence the value in Table 1 minus drying cost per ton and minus shelling costs per ton gives the estimated value per ton. Shelling costs vary widely in the state; estimates in the range $0.20 to $0.30 per hundred pounds of ear corn are common. Drying costs also vary widely. Estimates in the range of $0.02 to $0.04 per bushel of grain per point of moisture removed seem reasonable.

The work sheet below gives an example and room for you to work out your own estimate using your own price of dry corn, shelling cost, and drying cost information.

TABLE 1: VALUE OF ONE TON OF WET EAR CORN (shelling and drying costs excluded)

Moisture (%)	Price of 15.5% moisture corn per bushel								
	$1.00	**$1.10**	**$1.20**	**$1.30**	**$1.40**	**$1.50**	**$1.60**	**$1.70**	**$1.80**
15.5	29.22	32.14	35,06	37.99	40.91	43.83	46.75	49.67	52.60
16.0	28.96	31.85	34.75	37.64	40.54	43.44	46.33	49.23	52.12
16.5	28.70	31.57	34.44	37.31	40.18	43.05	45.92	48.79	51.66
17.0	28.44	31.29	34.13	36.98	39.82	42.66	45.51	48.35	51.20
17.5	28.19	31.01	33.83	36.65	39.47	42.29	45.11	47.93	50.74
18.0	27.94	30.74	33.53	36.33	39.12	41.92	44.71	47.50	50.30
18.5	27.70	30.47	33.24	36.01	38.78	41.55	44.32	47.09	49.86
19.0	27.46	30.20	32.95	35.69	38.44	41.19	43.93	46.68	49.42
19.5	27.22	29.94	32.66	35.38	38.11	40.83	43.55	46.27	48.99
20.0	26.98	29.68	32.38	35.08	37.78	40.47	43.17	45.87	48.57
20.5	26.75	29.42	32.10	34.77	37.45	40.12	42.80	45.47	48.15
21.0	26.52	29.17	31.82	34.47	37.12	39.78	42.43	45.08	47.73
21.5	26.29	28.92	31.55	34.18	36.80	39.43	42.06	44.69	47.32
22.0	26.06	28.67	31.28	33.88	36.49	39.09	41.70	44.31	46.91
22.5	25.84	28.42	31.01	33.59	36.17	38.76	41.34	43.93	46.51
23.0	25.62	28.18	30.74	33.30	35.86	38.42	40.99	43.55	46.11
23.5	25.40	27.94	30.48	33.02	35.55	38.09	40.63	43.17	45.71
24.0	25.18	27.70	30.21	32.73	35.25	37.77	40.28	42.80	45.32
24.5	24.96	27.46	29.95	32.45	34.95	37.44	39.94	42.43	44.93
25.0	24.75	27.22	29.70	32.17	34.65	37.12	39.60	42.07	44.54
25.5	24.53	26.99	29.44	31.89	34.35	36.80	39.25	41.71	44.16
26.0	24.32	26.75	29.19	31.62	34.05	36.48	38.92	41.35	43.78
26.5	24.11	26.52	28.94	31.35	33.76	36.17	38.58	40.99	43.40
27.0	23.90	26.30	28.69	31.08	33.47	35.86	38.25	40.64	43.03
27.5	23.70	26.07	28.44	30.81	33.18	35.55	37.92	40.29	42.66
28.0	23.49	25.84	28.19	30.54	32.89	35.24	37.59	39.94	42.29
28.5	23.29	25.62	27.95	30.28	32.60	34.93	37.26	39.59	41.92
29.0	23.09	25.39	27.70	30.01	32.32	34.63	36.94	39.25	41.55
29.5	22.88	25.17	27.46	29.75	32.04	34.33	36.62	38.90	41.19
30.0	22.68	24.95	27.22	29.49	31.76	34.03	36.29	38.56	40.83
30.5	22.49	24.73	26.98	29.23	31.48	33.73	35.98	38.22	40.47
31.0	22.29	24.52	26.74	28.97	31.20	33.43	35.66	37.89	40.12
31.5	22.09	24.30	26.51	28.72	30.93	33.14	35.35	37.55	39.76
32.0	21.90	24.08	26.27	28.46	30.65	32.84	35.03	37.22	39.41
32.5	21.70	23.87	26.04	28.21	30.38	32.55	34.72	36.89	39.06
33.0	21.51	23.66	25.81	27.96	30.11	32.26	34.41	36.56	38.71
33.5	21.31	23.45	25.58	27.71	29.84	31.97	34.10	36.23	38.37
34.0	21.12	23.24	25.35	27.46	29.57	31.68	33.80	35.91	38.02
34.5	20.93	23.03	25.12	27.21	29.31	31.40	33.49	35.58	37.68
35.0	20.74	22.82	24.89	26.97	29.04	31.11	33.19	35.26	37.34

Assumes a market moisture of 15.5 percent.

TABLE 1. VALUE OF ONE TON OF WET EAR CORN (continued)

	Price of 15.5% moisture corn per bushel									
Moisture %	**$1.90**	**$2.00**	**$2.10**	**$2.20**	**$2.30**	**$2.40**	**$2.50**	**$2.60**	**$2.70**	**$2.80**
15.5	55.52	58.44	61.36	64.28	67.21	70.13	73.05	75.97	78.89	81.81
16.0	55.02	57.91	60.81	63.70	66.60	69.50	72.39	75.29	78.18	81.08
16.5	54.53	57.40	60.27	63.14	66.01	68.88	71.74	74.61	77.48	80.35
17.0	54.04	56.89	59.73	62.57	65.42	68.26	71.11	73.95	76.80	79.64
17.5	53.56	56.38	59.20	62.02	64.84	67.66	70.48	73.30	76.12	78.94
18.0	53.09	55.89	58.68	61.48	64.27	67.06	69.86	72.65	75.45	78.24
18.5	52.63	55.40	58.17	60.94	63.71	66.48	69.25	72.02	74.79	77.56
19.0	52.17	54.91	57.66	60.41	63.15	65.90	68.64	71.39	74.13	76.88
19.5	51.71	54.44	57.16	59.88	62.60	65.32	68.05	70.77	73.49	76.21
20.0	51.27	53.96	56.66	59.36	62.06	64.76	67.46	70,15	72.85	75.55
20.5	50.82	53.50	56.17	58.85	61.52	64.20	66.87	69.55	72.22	74.90
21.0	50.38	53.04	55.69	58.34	60.99	63.64	66.29	68.95	71.60	74.25
21.5	49.95	52.58	55.21	57.84	60.46	63.09	65.72	68.35	70.98	73.61
22.0	49.52	52.13	54.73	57.34	59.94	62.55	65.16	67.76	70.37	72.98
22.5	49.09	51.68	54.26	56.84	59.43	62.01	64.60	67.18	69.76	72.35
23.0	48.67	51.23	53.79	56.36	58.92	61.48	64.04	66.60	69.16	71.73
23.5	48.25	50.79	53.33	55.87	58.41	60.95	63.49	66.03	68.57	71.11
24.0	47.84	50.36	52.87	55.39	57.91	60.43	62.94	65.46	67.98	70.50
24.5	47.43	49.92	52.42	54.92	57.41	59.91	62.40	64.90	67.40	69.89
25.0	47.02	49.49	51.97	54.44	56.92	59.39	61.87	64.34	66.82	69.29
25.5	46.61	49.07	51.52	53.97	56.43	58.88	61.33	63.79	66.24	68.70
26.0	46.21	48.65	51.08	53.51	55.94	58.37	60.81	63.24	65.67	68.10
26.5	45.81	48.23	50.64	53.05	55.46	57.87	60.28	62.69	65.10	67.52
27.0	45.42	47.81	50.20	52.59	54.98	57.37	59.76	62.15	64.54	66.93
27.5	45.03	47.40	49.77	52.14	54.51	56.87	59.24	61.61	63.98	66.35
28.0	44.64	46.99	49.33	51.68	54.03	56.38	58.73	61.08	63.43	65.78
28.5	44.25	46.58	48.91	51.23	53.56	55.89	58.22	60.55	62.88	65.21
29.0	43.86	46.17	48.48	50.79	53.10	55.41	57.71	60.02	62.33	64.64
29.5	43.48	45.77	48.06	50.35	52.63	54.92	57.21	59.50	61.79	64.08
30.0	43.10	45.37	47.64	49.91	52.17	54.44	56.71	58.98	51.25	63.52
30.5	42.72	44.97	47.22	49.47	51.72	53.96	56.21	58.46	60.71	62.96
31.0	42.35	44.57	46.80	49.03	51.26	53.49	55.72	57.95	60.18	62.40
31.5	41.97	44.18	46.39	48.60	50.81	53.02	55.23	57.44	59.64	61.85
32.0	41.60	43.79	4598	48.17	50.36	52.55	54.74	56.93	59.12	61.31
32.5	41.23	43.40	45.57	47.74	49.91	52.08	54.25	56.42	58.59	60.76
33.0	40.86	43.01	45.16	47.32	49.47	51.62	53.77	55.92	58.07	60.22
33.5	40.50	42.63	44.76	46.89	49.02	51.15	53.29	55.42	57.55	59.68
34.0	40.13	42.25	44.36	46.47	48.58	50.69	52.81	54.92	57.03	59.14
34.5	39.77	41.86	43.96	46.05	48.14	50.24	52.33	54.42	56.52	58.61
35.0	39.41	41.49	43.56	45.63	47.71	49.78	51.86	53.93	56.00	58.08

Assumes a market moisture of 15,5 percent

TABLE 2. BUSHELS OF 15.5% MOISTURE SHELLED CORN IN ONE TON OF WET EAR CORN AT VARIOUS WET CORN KERNEL MOISTURE LEVELS

Wet Kernel Moisture %	Bushels Dry Shelled Corn	Wet Kernel Moisture %	Bushels Dry Shelled Corn
15.5	29.220	**25.5**	24.534
16.0	28.957	**26.0**	24.323
16.5	28.698	**26.5**	24.113
17.0	28.443	**27.0**	23.905
17.5	28.192	**27.5**	23.698
18.0	27.944	**28.0**	23.493
18.5	27.699	**28.5**	23.289
19.0	27.457	**29.0**	23.086
19.5	27.218	**29.5**	22.884
20.0	26.982	**30.0**	22.684
20.5	26.749	**30.5**	22.485
21.0	26.518	**31.0**	22.287
21.5	26.289	**31.5**	22.091
22.0	26.063	**32.0**	21.895
22.5	25.838	**32.5**	21.701
23.0	25.616	**33.0**	21.507
23.5	25.396	**33.5**	21.314
24.0	25.178	**34.0**	21.123
24.5	24.962	**34.5**	20.932
25.0	24.747	**35.0**	20.743

Conversion based on an equation estimated by John Schmidt, Dept. of Agr. Econ. University of Wisconsin-Madison. The conversion formula was based on actual shell out data provided by seed companies. If you want to make the conversion yourself you will need an electronic calculator capable of dealing with exponents. The formula is as follows:

1. Estimate pounds of wet kernels in one ton of wet ear corn

$$\frac{1}{\%\ \text{moisture}^{0.096723}} \times 2143.737 = \text{Pounds of wet kernels per ton}$$

2. Estimate number of dry bushels per ton using the standard shrinkage formula including an allowance of 0.5 shrinkage for dry matter loss in
(((%moisture) — (% moisture dry)) + 0.5 dry matter loss) = percent shrink
((100 — percent shrink)/100) x pounds of wet kernels = pounds of dry kernels
(pounds off dry kernels)/56 = bushels of dry corn

3. Multiply this times the dry corn price to get receipts per ton and then adjust for shelling and drying cost.

For example, suppose you have wet ear corn with 38 percent moisture and your local elevator quotes prices for dry corn on the basis of 14 moisture.

Pounds of wet kernels in one ton of 38% moisture ear corn is estimated as

$$\frac{1}{38^{0.096723}} \times 2143.737 = \frac{1}{1.42} \times 2143.737 = 1509.67$$

Calculating Shrinkage
(((38%) — (14%)) + 0.5%) = 24.5%
Apply Shrinkage to wet kernels
((100% —24.5%)/100) x 1509.67 pounds = 1139.80 pounds
Adjusting for 56 pounds per dry bushel
(1139.80 pounds)/56 pounds per bu. = 20.35 bu. at 14% moisture

4. Then multiply times the dry corn price and subtract shelling and drying cost to get the estimate of value per wet ton.

1. ESTIMATE VALUE OF RECEIPTS IF CORN IS SOLD AS DRY SHELLED CORN

	EXAMPLE	YOUR FIGURE
A. Find kernel moisture	26.0%	
B. Find dry corn price	$ 2.15/bu.	
C. Estimate receipts using table 1	$52.29/ton	

2. ESTIMATE SHELLING AND DRYING COSTS PER TON

D. Estimate shelling costs/ton ($0.25/100 lb.) X (2000 lb.) =	$ 5.00/ton	
E. Estimate drying costs @$0.30/bu./point		
Points = 26.0%—15.5% =	11.5%	
bu./ton from table 2 =	24.323 bu.	
Cost/ton = $0.03/bu./pt. x 11.5 pt. x 24.323 bu./ton =	$ 8.39/ton	

3. **SUBTRACT SHELLING AND DRYING COSTS**

4. **ESTIMATED VALUE PER TON OF WET EAR CORN**

$52.29-$5.00-$8.39 =	$38.90/ton	

This derived value is a starting point for entering the market. Local market conditions may well produce values above or below your estimate.

[1]This procedure can be used for pricing dry ear corn by simply ignoring the drying costs

Additional information related to this topic can be found in:

Milner, Ross, How to Determine Shrinkage in Grain, Cooperative Extension Service, The Ohio State University, Columbus, Ohio, Bulletin 425, 9/62

Murphy, William J., Tables of Weights and Measurements of Crops, University of Missouri, Department of Agronomy, Columbia, Missouri, Agronomy Guide, 7/81/10M

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