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CORN DRYING - QUICK CALCULATION CHARTS

by J. William Uhrig and Jay L. Strom
Department of Agricultural Economics

Calculating relationships such as shrinkage, bushels remaining after drying and the value of excess moisture is necessary in the course of making intelligent decisions about corn drying and the sale of wet corn. The traditional measurement of moisture content and the customary methods of discounting for "points" of excess moisture are often confusing and usually require several calculations to compare drying-selling alternatives.

GENERAL DIRECTIONS

The following charts are an aid in making quick estimates of wet and dry grain quantity and price relationships. Each alignment chart contains directions for finding the answer to part of the problem and can be used independently. Many moisture, quantity, and price combinations are shown by experimenting with a straight edge over Scales A, B, and C on each chart.

First Example: Bushels Remaining Dry, Chart No. 1

100 bushels of corn at 30 per cent moisture is to be dried to 15.5 per cent moisture. Place a straight edge on Scale A at 30 per cent, across Scale B at 15.5 per cent to Scale C. The number of bushels remaining dry is about 82 1/2 (82.34 actual).

Second Example: Value Remaining Dry, Chart No. 2

About 82 1/2 bushels of dry corn (15.5 per cent moisture) is to be sold for $1.10 per bushel. Place a straight edge on Scale A at 82 1/2, across Scale B at $1.10 to Scale C. The value dry is about $90.75 ($90.57 actual) or $.91 per bushel. Note that Scale A itself shows the "wet moisture" to "bushels remaining dry" relationship for the particular case of drying down to 15.5 per cent moisture.

Third Example: Value of Shrink, Chart No. 3

30 per cent moisture corn is to be dried to 15.5 per cent moisture. Dry corn is priced at $1.10 per bushel. What is the value of shrink? Place a straight edge on Scale A at 30 per cent moisture, and across to Scale B (on the right of the chart). Read Scale C (Between Scales A and B). The value of shrink is about 19 cents a bushel.

This implies that 30 per cent corn is worth about 19 cents per bushel (19.43 actual) less than 15.5 per cent corn (at the $1.10 price) considering only the difference in water content. Notice that $1.10 - $ .19 = $ .91 (results comparable to those obtained on Chart No. 2).

Example: Market Discount, Chart No. 4

30 per cent moisture corn is being sold at a discount rate of one cent per 1/2 point of excess moisture above 15.5 per cent. What will be the total discount per bushel? Place a straight edge on Scale A at 30 per cent moisture, across Scale B at the 1.0 discount rate to Scale C. The total discount is approximately 29 cents per bushel.

Historic Document

Cooperative Extension Work in Agriculture and Home Economics, State of Indiana, Purdue University and U. S. Department of Agriculture Cooperating. H. G. Diesslin, Director, Lafayette, Ind. Issued in furtherance of the Acts of May 8 and June 30, 1914.

Example: Value of Moisture Shrink and Total Market Discount Compared

30 per cent moisture corn is being dried to 15.5 per cent for sale. The price of corn is $1.10 per bushel and the discount rate is 1.0 cent per 1/2 point. The results for the Chart No. 4 example revealed a total discount of 29 cents per bushel on the market. The chart No. 3 results reveal a difference in value of only 19 cents per bushel because of water in the 30 per cent moisture corn (i.e. the value of moisture shrink).

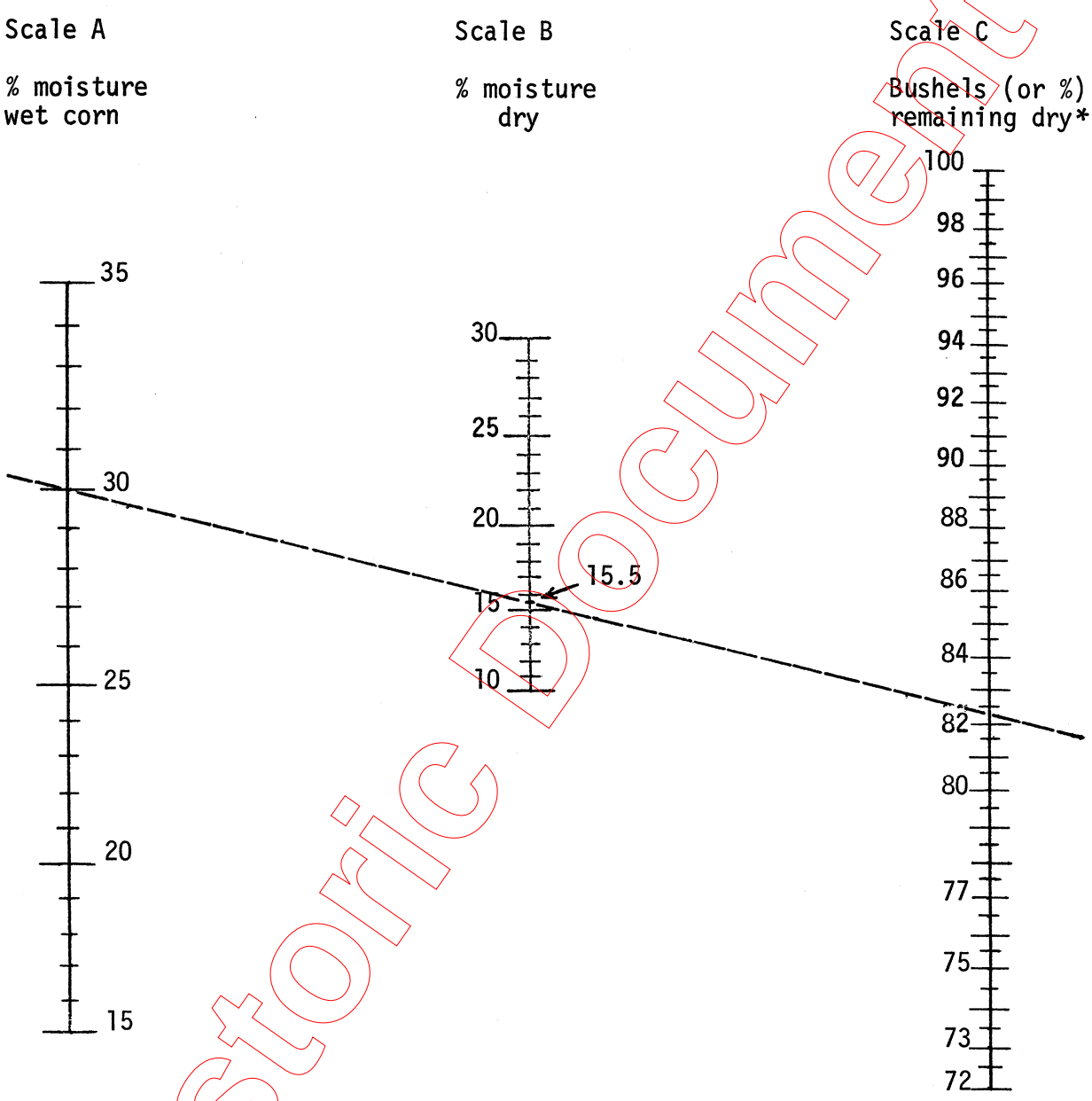
Chart No. 4 (scale C) = 29¢
Chart No. 5 (scale C) = 19¢
Difference = 10¢ per bushel

This difference between the market discount and the value of shrink implies a charge for drying and/or other costs. This difference is an estimate of the maximum amount, in cents per bushel, you can pay for drying corn on a wet bushel basis.

Note: All straight edge combinations between values on the A, B, and C scales of any single chart are valid comparisons. However, interpretations beyond the range of the scales, as printed, are not recommended.

Historic Document

Chart 1. The amount of grain remaining after drying 100 bushels of corn for various moisture combinations



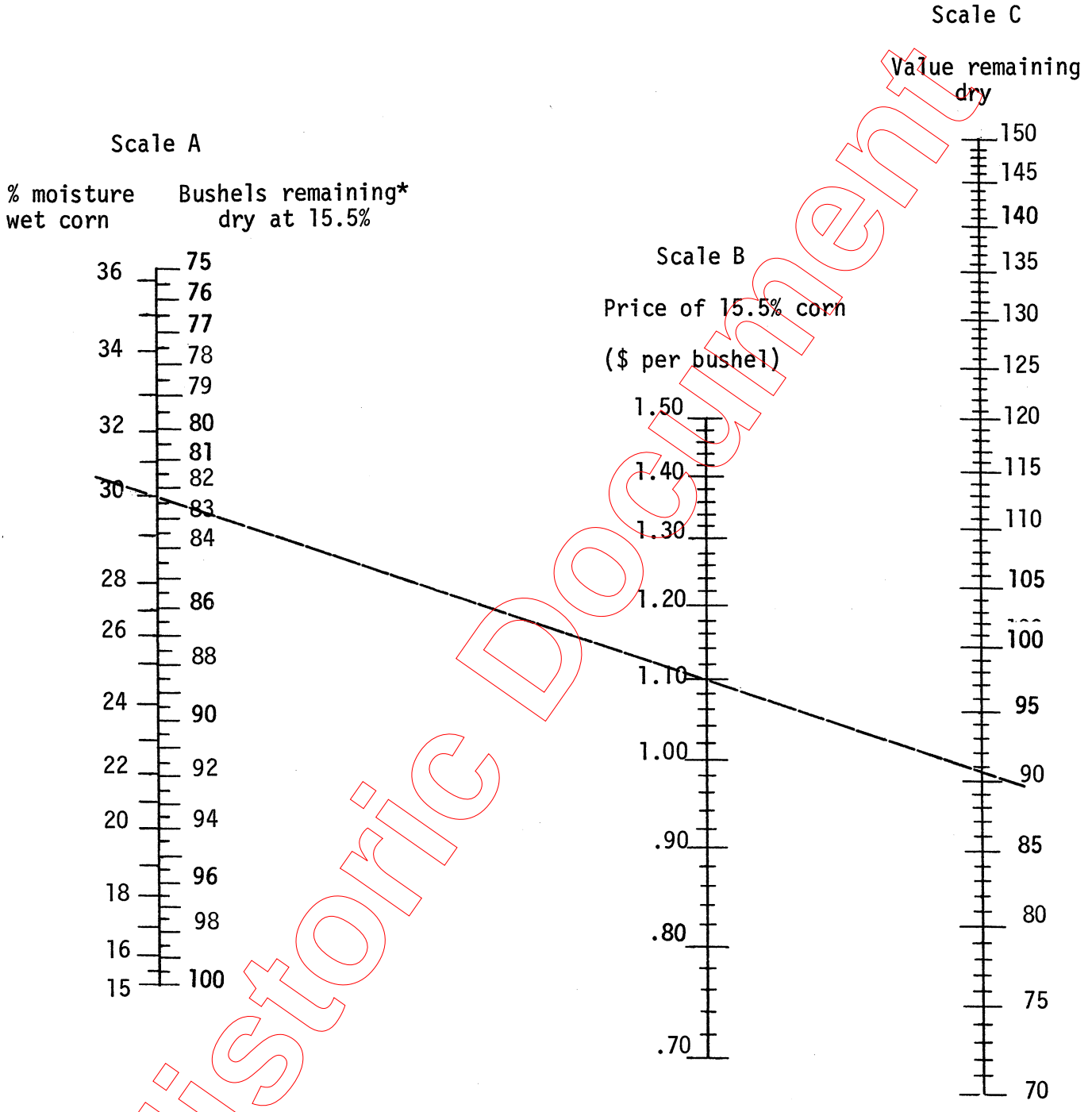
* Includes 1/2 of one per cent invisible shrink for all drying combinations.

Directions for finding the number of bushels remaining after drying:

Select the appropriate moisture content of the wet grain on Scale A and place a straight edge through it and Scale B (moisture percentage when dried) to the answer on Scale C. The answer found on Scale C is the approximate number of bushels remaining from 100 bushels of wet grain after removal of excess moisture (including 1/2% invisible shrink).

Historic Document

Chart 2. The amount and value of corn remaining from 100 bushels when dried to 15.5 per cent for various price combinations



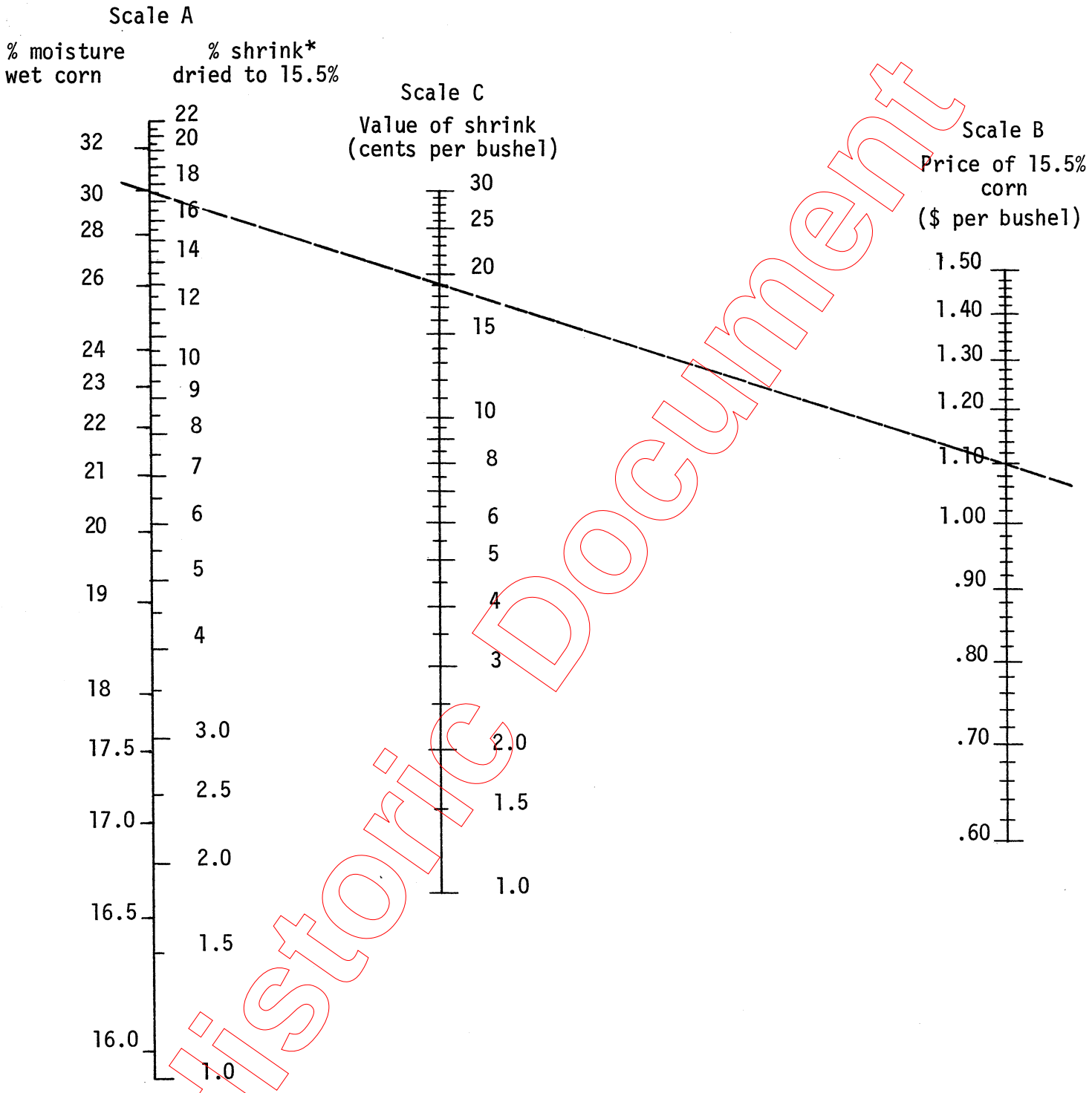
Historic Document

* Includes 1/2 of one per cent invisible shrink for all drying combinations.

Scale A Directions to find the number of bu. of corn remaining when drying to 15.5% moisture: Select the appropriate moisture content of the wet corn on the left of Scale A. The number of bu. remaining from 100 bu. of wet corn dried to 15.5% is directly opposite the wet moisture content selected on Scale A.

Price-Value Directions to find the value of wet corn after drying: Place a straight edge through the moisture content of the wet corn on Scale A and the selected price (Scale B) to the appropriate answer on Scale C. The answer found on Scale C is the approximate value of the dry bu. remaining from 100 bu. of wet corn after removal of excess moisture (including 1/2% invisible shrink).

Chart 3. The amount and value of shrink for various moisture and price combinations



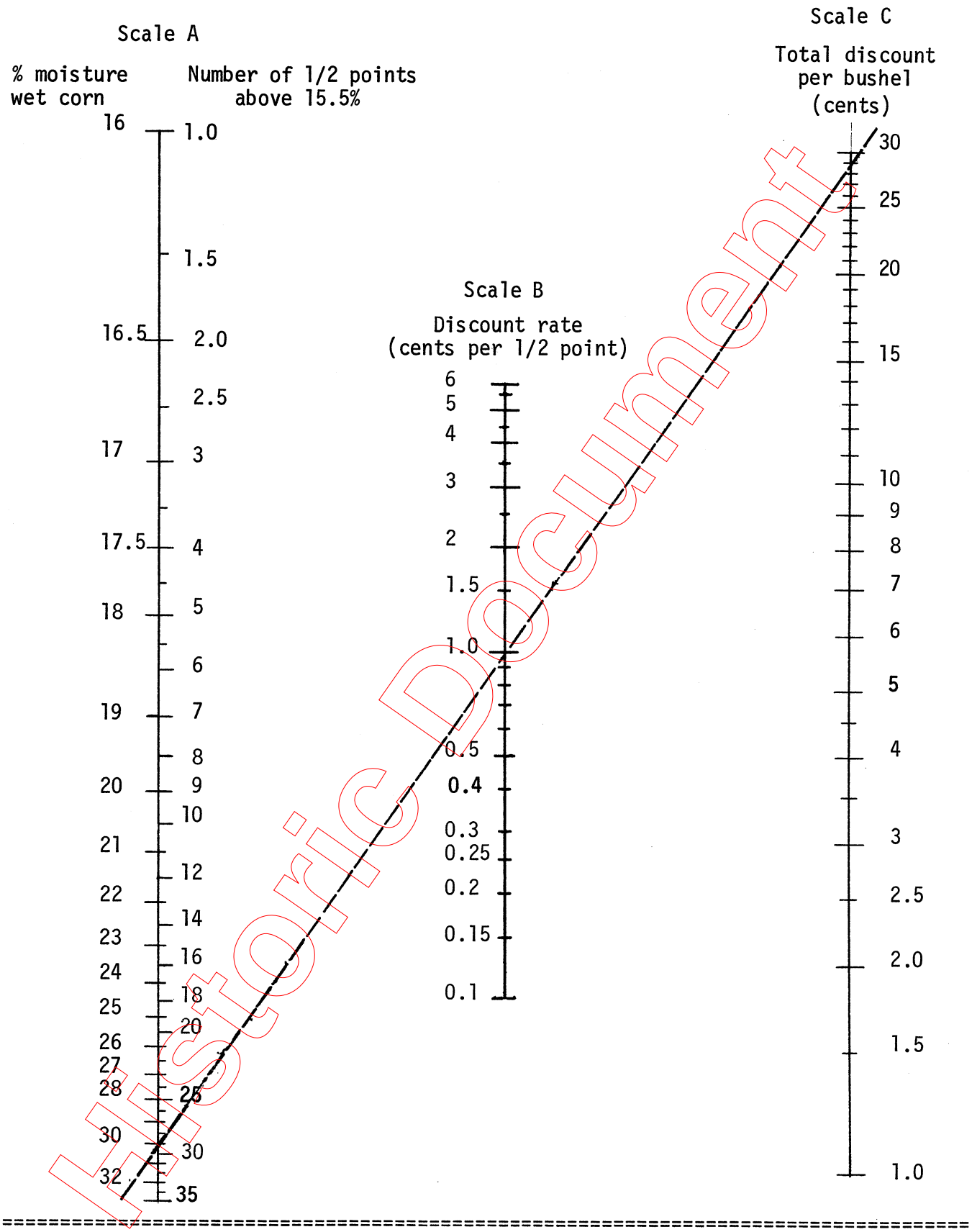
Historic Document

* Includes 1/2 of one per cent invisible shrink for all drying combinations.

Scale A Directions to find the per cent shrink when drying to 15.5% moisture: Select the appropriate moisture content of the wet corn on the left of Scale A. The per cent of shrink when drying wet corn down to 15.5% moisture is directly opposite the wet moisture content selected on Scale A.

Directions for finding the value of shrink when drying: Place a straight edge through the moisture content of the wet corn on Scale A and the selected price (Scale B, at right), crossing the appropriate answer on Scale C in mid-page. The answer found on Scale C is the value of shrink (including 1/2% invisible shrink) or the difference in value for water removed when corn is dried.

Chart 4. Total market discount for various moisture levels and discount rates



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Scale A Directions to find the number of one-half points of moisture: Select the appropriate moisture content on the left side of Scale A. The number of 1/2 points of excess moisture above 15.5% is directly opposite the wet moisture content selected on Scale A.

Total Discount Directions to find the total discount per bu.: Place a straight edge through the moisture content of wet corn on Scale A and the selected Discount Rate (Scale B) to the appropriate answer on Scale C. The answer on Scale C is the total discount for excess moisture in cents per bu.