Alternative Methods of Determining Soil Productivity (Which is Best?)

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Why worry about CER's, Corn Productivity, and CPI when estimating the value of a property?

The mark of a “Good Appraiser” is the ability to measure differences.

In the Sales Comparison Approach, adjustments are made to the comparable sales to arrive at a final value estimate.

Differences to Measure

- Time
- Field Arrangement
- Wood Lands
- Wind Towers
- Drainage Outlets
- Sale Terms
- Building Site Values
- Abandoned Building Site
- Access
- Mineral Rights
- Productivity
- Recreational Lands

Most adjustments can only be calculated after we adjust for land productivity.

How productivity is measured depends on the quality of these adjustments.

3 Methods to Measure Productivity

- Crop Equivalency Rate (CER)
- Corn Productivity
- Crop Productivity Index (CPI)

CER-Estimate of Net Earning Capacity of a Soil

- One of the first tools appraisers had to measure productivity differences between soils.
- Developed by Dr. Richard Rust, U of M Soil Scientist.
- Index rating soils on a scale of 0 to 100.
- Problems:
  - Not a real uniform rating between soils
  - Not a uniform rating system between counties
  - Very subjective-each county had own rating index

Corn Productivity (Yields)

- Still Subjective
- More Uniform
- Good only County by County

CPI – Crop Productivity Index

- More uniform rating between soils
- Uniform between counties
- Very objective – developed by NRCS soil scientists based on soils physical and chemical properties and how these relate to crop production.

Renville County Comparison
Same Soils
Three Different Index Values

Nicollet vs Harps

Soil Name	CPI	CER	Corn Bushels
Nicollet	99	90	154
Harps	90	61	132
Percent Difference	91%	68%	86%

Nicollet vs Webster

Soil Name	CPI	CER	Corn Bushels
Nicollet	99	90	154
Webster	93	77	148
Percent Difference	94%	84%	96%

Nicollet vs Harps-Seaforth-Okoboji

Soil Name	CPI	CER	Corn Bushels
Nicollet	99	90	154
Harps-Seaforth-Okoboji	90	58	138
Percent Difference	91%	83%	90%

Analysis of a Renville County Sale Using All Three Indexes

SALE #1

This sale occurred on October 31, 2012 and is located two miles northeast of Renville, MN. The farm was 155 acres in size with 150.5 tillable acres. There is a designated wetland that did not negatively affect value. The farm had random tile with good outlets. The farm sold at sealed bid auction with active bidding.

Land Use Breakdown: Using CPI (90 CPI/Till acre @ $127.98/CPI)

0 acres Class I cropland @ $0 per acre =	$0
29 acres Class IIe cropland @ $12,225 per acre =	$354,525
100.5 acres Class IIw cropland @ $11,427.61 per acre =	$1,148,475
21 acres Class IIIw cropland @ $11,000 per acre =	$231,000
4.5 acres Road & Waste @ $-0- per acre =	$-0-
Total Sale Price	$1,734,000

Land Use Breakdown: Using CER (66 CER/Till acre @ $182.66/CER)	
0 acres Class I cropland @ $0 per acre =	$0
29 acres Class IIe cropland @ $14,775 per acre =	$428,475
100.5 acres Class IIw cropland @ $10,852.69 per acre =	$1,090,695
21 acres Class IIIw cropland @ $10,230 per acre =	$214,830
4.5 acres Road & Waste @ $-0- per acre =	$-0-
Total Sale Price	$1,734,000

Land Use Breakdown: Using Corn Productivity (135 bu. /Till acre @ $85.48/CPI)

0 acres Class I cropland @ $0 per acre =	$0
29 acres Class IIe cropland @ $12,700 per acre =	$368,300
100.5 acres Class IIw cropland @ $11,231 per acre =	$1,128,715
21 acres Class IIIw cropland @ $11,285 per acre =	$236,985
4.5 acres Road & Waste @ $-0- per acre =	$-0-
Total Sale Price	$1,734,000

Comp #	1			Subje	CER		
0	ac. Class I @	$0	equals $0	126	@	$15,365	equals $1,935,990
29	ac. Class II @	$14,775	equals $428,475	25	@	$14,775	equals $369,375
0	ac. Class IIIe @	$0	equals $0	9	@	$10,190	equals $91,710
100.5	ac. Class IIw @	$10,853	equals $1,090,695	102.1	@	$10,853	equals $1,108,060
21	ac. Class IIIw @	$10,230	equals $214,830	58	@	$10,230	equals $593,340
0	ac. CRP @	$0	equals $0	0	@	$0	equals $0
0	ac. Farmsite @	$0	equals $0	0	@	$0	equals $0
4.5	ac. Road @		equals $0	1.62	@	$0	equals $0
155	Total Farm Ac.	$11,187	$1,734,000	321.72		$12,739	$4,098,475
	Difference:		$1,552				

Comp #	1			Subje	Corn Bu.		
0	ac. Class I @	$0	equals $0	126	@	$12,850	equals $1,619,100
29	ac. Class II @	$12,700	equals $368,300	25	@	$12,700	equals $317,500
0	ac. Class IIIe @	$0	equals $0	9	@	$10,685	equals $96,165
100.5	ac. Class IIw @	$11,231	equals $1,128,715	102.1	@	$11,231	equals $1,146,685
21	ac. Class IIIw @	$11,285	equals $236,985	58	@	$11,285	equals $654,530
	ac. CRP @	$0	equals $0	0	@	$0	equals $0
0	ac. Farmsite @	$0	equals $0	0	@	$0	equals $0
4.5	ac. Road @		equals $0	1.62	@	$0	equals $0
155		$11,187	$1,734,000	321.72		$11,917	$3,833,980
	Difference:		$730				

Comp #	1			Subje	CPI		
0	ac. Class I @	$0	equals $0	126	@	$12,370	equals $1,558,620
29	ac. Class II @	$12,225	equals $354,525	25	@	$12,225	equals $305,625
0	ac. Class IIIe @	$0	equals $0	9	@	$10,240	equals $92,160
100.5	ac. Class IIw @	$11,428	equals $1,148,475	102.1	@	$11,428	equals $1,166,759
21	ac. Class IIIw @	$11,000	equals $231,000	58	@	$11,000	equals $638,000
0	ac. CRP @	$0	equals $0	0	@	$0	equals $0
0	ac. Farmsite @	$0	equals $0	0	@	$0	equals $0
4.5	ac. Road @	$0	equals $0	1.62	@	$0	equals $0
155		$11,187	$1,734,000	321.72		$11,691	$3,761,164
	Difference:		$504				

ESTIMATED MARKET VALUE OF SAME FARM USING THREE ANALYSIS METHODS:

	PER ACRE	TOTAL VALUE
CER METHOD	$12,739	$4,098,475
CORN PRODUCTIVITY METHOD	$11,917	$3,833,980
CPI METHOD	$11,691	$3,761,164

SALE #2

40 Acres of land sold in the fall of 2012. There were 37.6 tillable acres, a good drainage outlet and good field arrangement. The farm sold for $404,000 or $10,745 per tillable acre.

SALE SUMMARY

Soil Name	CPI	CER	Corn Bu.
Seaforth	95	86	149
Harps	90	61	132
Okoboji	86	56	132
Sale Price/Unit	$120.71	$167.70	$79.08

CPI Method of Sale Analysis

8.6 ac. Class IIe @ $11,465/ac. =	$98,599
9 ac. Class IIw @ $10,865/ac. =	$97,785
20 ac. Class IIIw @ $10,381/ac. =	$207,616

CER Method of Sale Analysis

8.6 ac. Class IIe @ $14,425/ac. =	$124,055
9 ac. Class IIw @ $10,220/ac. =	$91,890
20 ac. Class IIIw @ $9,398/ac. =	$187,965

Corn Bu. Method of Sale Analysis

8.6 ac. Class IIe @ $11,780/ac. =	$101,308
9 ac. Class IIw @ $10,440/ac. =	$93,960
20 ac. Class IIIw @ $10,287/ac. =	$205,732