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Weekly Farm Economics: Break-Even Corn-After-Corn Yields and Yield Drags

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Many Illinois farmers have been disappointed with 2011 corn-after-corn yields, reporting significantly lower corn-after-corn yields compared to corn-after-soybean yields. So as to provide guidance for 2012 planting decisions, break-even corn-after-corn yields are calculated for farms in northern, central Illinois with high-productivity farmland (central-high), central Illinois with low-productivity farmland (central-low) and southern Illinois regions. Break-even corn-after-corn yields are between 24 and 35 bushels lower than corn-after-soybean yields.

Break-Even Corn-After-Corn Yields

Table 1. Break-Even Corn-After-Corn Yields and Break-Even Yield Drags for Illinois Regions.

	Unit	Region			
		Northern	Central-high	Central-low	
Soybean yield ¹	bu/acre	54	56	54	47
Soybean price ¹	\$/bu	\$13.00	\$13.00	\$13.00	\$13.00
Soybean non-land cots ¹	\$/acre	306	298	287	317
Soybean returns ²	\$/acre	396	430	415	294
Corn-after-corn non-land costs ¹	\$/acre	542	520	521	505
Corn price ¹	\$/bu	\$5.75	\$5.50	\$5.50	\$5.50
Break-even corn-after-corn yield ³	bu/acre	163	173	170	145
Projected corn-after-soybean yield	bu/acre	190	198	184	161
Break-even yield drag ⁴	bu/acre	27	25	14	16

¹ Taken from 2012 Illinois Crop Budgets available on *farmdoc*.

² Soybean yield x soybean price - soybean non-land costs.

³ (Soybean returns + corn-after-corn non-land costs) / corn price.

⁴ Projected corn-after-soybean yield - break-even corn-after-corn yield.

Break-even corn-after-corn yields are calculated in Table 1 and require soybean returns, corn-after-corn non-land costs, and corn price information. Calculations are shown for northern Illinois. In northern Illinois, soybean returns are projected at \$342 per acre (54 bushel soybean yield x \$12.00 soybean price – \$306 non-land costs). This soybean return, along with corn-after-corn non-land costs and corn price, are used to find the break-even corn-after-corn yield. For \$542 per acre of non-land costs for corn and a \$5.50 corn price, the break-even corn-after-corn yield is 161 bushels per acre (161 bushels = (\$342 soybean return + \$542 corn non-land costs) / \$5.50 corn price). This means that corn-after-corn with 168 bushel yield will give the same return as soybeans with 54 bushel yield.

The 168 bushel break-even corn-after-corn yields for northern Illinois is 29 bushels below the 190 bushel projected yield for corn-after-soybeans. This suggests that the break-even yield drag between corn-after-soybeans and corn-after-corn is 29 bushels in northern Illinois. Calculations in other regions indicate:

- The break-even corn-after-corn yield in central-Illinois with high productivity farmland is 163 bushels per acre, 35 bushels below the 198 projected corn-after-soybean yield.
- The break-even corn-after-corn yield in central Illinois for farms with low-productivity farmland is 160 bushels, 24 bushels below the 184 bushel projected corn-after-soybean yield.
- The break-even corn-after-corn yield in southern Illinois is 1437bushels per acre, 24 bushels below the 161 bushel projected yield for corn-after-soybeans.

Obviously these break-evens vary with differing prices, yields, and costs. Farms will have different yields and costs; hence, break-evens vary across farms.

Break-Even Corn-After-Corn Yields for Differing Prices

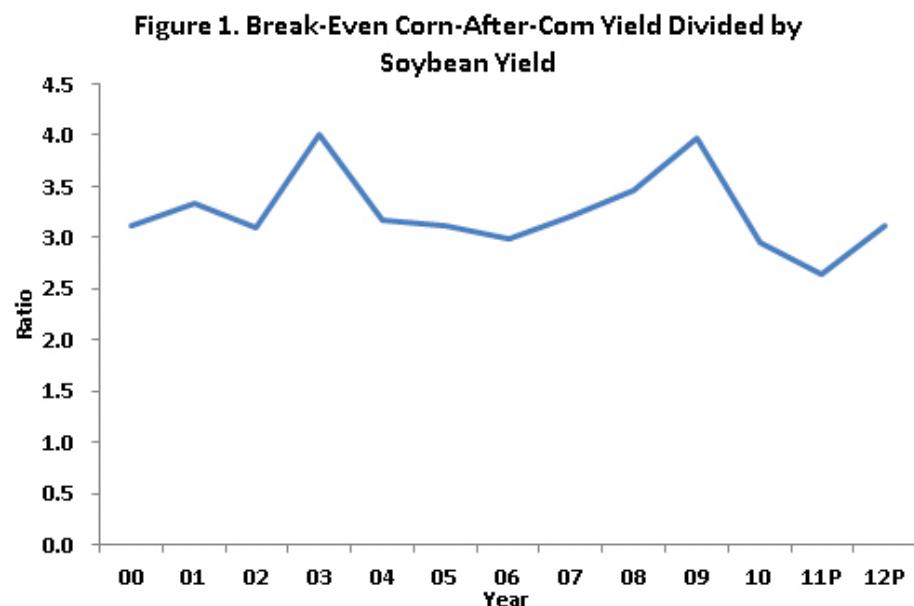
Table 2. Break-Even Corn-After-Corn Yields for Different Corn and Soybean Prices.

Corn Price	Soybean Price							
	\$10.50	\$11.00	\$11.50	\$12.00	\$12.50	\$13.00	\$13.50	\$14.00
Bushels per Acre								
\$4.00	201	208	214	221	228	235	241	248
\$4.25	189	195	202	208	214	221	227	233
\$4.50	178	184	190	196	202	208	214	220
\$4.75	169	175	180	186	192	197	203	209
\$5.00	161	166	171	177	182	188	193	198
\$5.25	153	158	163	168	174	179	184	189
\$5.50	146	151	156	161	166	171	175	180
\$5.75	140	144	149	154	158	163	168	173
\$6.00	134	138	143	147	152	156	161	165
\$6.25	128	133	137	141	146	150	154	159
\$6.50	124	128	132	136	140	144	148	153

1 Calculated using a 54 bushel soybean yield, \$306 of per acre non-land costs for soybeans, and \$542 of per acre nonland costs for corn.

Projected corn and soybean prices impact break-even corn-after-corn yields. Table 2 shows break-even corn-after-corn yields for differing corn and soybean prices, given costs and yields typical of northern Illinois. Break-even yields decrease as corn price increase. Break-even yields decrease as soybean price decreases.

Historical Break-Even Corn-After-Corn Yields Relative to Soybean Yields



For northern Illinois, the 161 bushel break-even corn-after-corn yield is 3.0 times the 54 bushel per acre projected soybean yields. The 3.0 ratio is low compared to historical ratios. From 2000 to 2010, the corn-to-soybean break-even ratio has averaged 3.3 (see Figure 1), meaning the corn yields had to be 3.3 times higher than soybean yields to break even. This current relatively low ratio suggests that market signals are favoring corn production over soybean production.

Summary

Break-even corn-after-corn yields for 2012 are presented in this paper. These break-evens corn-after-corn yields are between 24 and 35 bushels lower than corn-after-soybean yields. The 2012 break-even corn yields relative to soybean yields are low from a historical perspective. While farmers are questioning whether to continue with as much corn-after-corn, market prices and costs suggest corn is relatively more profitable than soybeans from an historical perspective.