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Weekly Farm Economics: Returns and Cash Rents given \$4.80 Corn and \$10.75 Soybean Prices

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The U.S. Department of Agriculture recently updated its World Agricultural Supply and Demand Estimates (WASDE), with the midpoints of 2013/2014 price estimates being \$4.80 per bushel for corn and \$10.75 per bushel for soybeans. These prices are significantly below prices in recent years, suggesting that agricultural returns may be lower in 2013 and 2014. These lower returns then may lead to the need to re-evaluate cash rents. Herein, returns at a \$4.80 corn price and a \$10.75 soybean price are examined by calculating operator and farmland returns for three different farmland productivities. These returns then are compared to current cash rent levels.

Operator and Farmland Returns

Operator and farmland returns – equaling gross revenue minus non-land costs – represent the amount of return that can be split between a land owner and a farmer. Take an operator and land return of \$350 per acre and a cash rent of \$300 per acre. In this case, the farmer receives \$50 per acre (\$350 operator and land return – \$300 cash rent). When cash rents exceed operator and land returns, the farmer faces losses.

As shown in Table 1, operator and land returns are calculated for three different farmland productivities: High, low, and lower. High and low productivities are based on yields and costs from central Illinois farms summarized by Illinois Farm Business Farm Management (FBFM). “Lower” productivity has corn and soybean yields below central Illinois averages summarized by FBFM.

Table 1. Operator Returns for Different Farmland Productivities

	High Productivity ¹		Low Productivity ¹		Lower Productivity ¹	
	Corn	Soybeans	Corn	Soybeans	Corn	Soybeans
Price	\$4.80	\$10.75	\$4.80	\$10.75	\$4.80	\$10.75
Yield	195	56	183	53	160	50
Gross revenue	\$936	\$602	\$878	\$570	\$768	\$538
Non-land costs	\$563	\$350	\$555	\$345	\$550	\$340
Operator and land return	\$373	\$252	\$323	\$225	\$218	\$198
Operator and land return ² (2/3 corn, 1/3 soybeans)	\$333		\$291		\$211	

¹ High and low productivities represent yields and prices from central Illinois budgets. The lower productivity category is included for comparison purposes.

² Operator and land return given 2/3 of acres are in corn and 1/3 are in soybeans.

For high productivity farmland, corn yield is expected to be 195 bushel per acre, resulting in \$936 gross revenue given a \$4.80 corn price. Subtracting \$563 of non-land costs gives an operator and land return for corn of \$373 per acre. Soybeans are expected to yield 56 bushels per acre, resulting in \$602 of gross revenue at a \$10.75 soybean price. Subtracting \$350 of non-land costs from \$602 gross revenue gives \$252 of operator and land return for soybeans. Herein, two-thirds of the acres are assumed to be planted to corn and one-third to soybeans. This crop mix gives \$333 of operator and land return per acre.

Operator and land returns are less for the remaining two land productivity classes. Low productivity farmland has a 183 bushel per acre corn yield and 53 bushels per acre soybean yield. Operator and land return for low productivity farmland is \$291 per acre (See Table 1). Lower productivity farmland has 160 bushel per acre corn yield, a 50 bushel per acre soybean yield, and a \$211 per acre cash rent.

Comparison to Recent Average Cash Rents

On April 9th, a farmdocdaily post released estimates of 2013 cash rents on professionally managed farmland based on a survey conducted by the Illinois Society of Professional Farm Managers and Rural Appraisers (available [here](#)). The midpoint cash rent is \$396 per acre for excellent quality farmland with corn yield over 190 bushels. The \$396 per acre cash rent is above the \$333 operator and land return calculated above for high productivity farmland with a 195 bushels per acre expected corn yield.

The Illinois Society reports a 2013 midpoint cash rent of \$339 per acre for farmland with corn yields between 170 and 190 bushels per acre. Low productivity farmland with a 183 bushel per acre yield has an operator and land return of \$291 per acre (See Table 1). Similar to high productivity farmland, the current cash rent not \$339 per acre is above the \$291 per acre operator and farmland return.

The Illinois Society reported a 2013 midpoint cash rent of \$285 per acre for farmland with expected yield between 150 and 170 bushel per acre. In the calculations above, lower productivity farmland with a 160 bushel per acre corn yield has \$211 per acre of operator and land return (see Table 1). Similar to the higher productivity class, the \$285 per acre cash rent exceeds the \$211 operator and land return.

Professional farm managers tend to have above average cash rents. The USDA reports average cash rents by county (see this farmdocdaily article for a map [here](#)). A number of these average cash rents are near the above calculated operator and land returns, particularly in central Illinois. For example, average cash rent is \$324 per acre in Sangamon County, \$326 in Macon County, \$313 in Logan County. These averages are only slightly below the \$333 per acre operator and land return for high productivity farmland. Given that there is a wide range of rents summarized in an average county cash rent, there likely are a large number of cash rents above the operator and land returns shown in Table 1.

Operator and Land Returns for Differing Prices

Price realizations greatly influence operator and land returns, as illustrated in Table 2. Take a \$.40 increase in corn price from \$4.80 to \$5.20 and an \$.80 per bushel increase in soybean price from \$10.75 to \$11.55. This results in a \$67 per acre increase in operator and land return from \$333 per acre to \$400 per acre.

Corn Price	Soybean Price	Farmland Productivity		
		High	Low	Lower
		\$ per acre		
\$3.60	\$8.35	132	102	171
\$4.00	\$9.15	199	165	185
\$4.40	\$9.95	266	228	198
\$4.80	\$10.75	333	291	211
\$5.20	\$11.55	400	353	225
\$5.60	\$12.35	467	416	238
\$6.00	\$13.15	533	479	251

¹ See Table 1 for the calculation of operator and land returns.

As price expectations change, returns will change as well. This then leads to a need to re-evaluate cash rents.

Summary

Price in the high \$4.00 range for corn and high \$10 range for soybeans are being projected for next year. Much more will be known about price levels once clearer expectations of 2013 corn and soybean yields are reached. If prices are in the high \$4.00 range for corn and \$10 range for soybeans, returns will be lower than in recent years. As a result, cash rent levels may need to be re-evaluated, particularly for situations in which the current cash rent is above average.