



AgEcon SEARCH

RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.



Graphical Illustrations of Proposed Farm Revenue Programs and Crop Insurance

Gary Schnitkey

Department of Agricultural and Consumer Economics
University of Illinois

April 12, 2012

farmdoc daily (2):69

Recommended citation format: Schnitkey, G. "Graphical Illustrations of Proposed Farm Revenue Programs and Crop Insurance." *farmdoc daily* (2):69, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, April 12, 2012.

Permalink: <http://farmdocdaily.illinois.edu/2012/04/graphical-illustrations-of-pro.html>

The Revenue Loss Assistance Program (RLAP) is a proposal put forward by Senators Conrad, Baucus, and Hoeven as a 2012 Farm Bill alternative for making counter-cyclical revenue payments. This alternative differs from others in that crop insurance payments are included in its calculation, often leading to reduced RLAP payments when crop insurance payments occur. Inclusion of RLAP will reduce incentives for farmers to buy higher levels of crop insurance. Impacts on crop insurance purchases are examined in this post for corn given prices in 2012. A more typical price scenario also is examined.

RLAP's guarantee

RLAP makes payments in a band between 75% and 88% of RLAP's benchmark revenue. RLAP's guarantee equals:

$.88 \times \text{farm historical yield} \times \text{national price}$

The farm historical yield is the higher of 1) the historical Actual Production History (APH) yield from the farm, 2) the most recent five-year Olympic average of farm yields, or 3) the counter-cyclical program yield for the farm. The national price will be the higher of the target price or the five-year Olympic average of National season average prices (SAPs). SAPs are reported by the National Agricultural Statistical Service. For corn and soybeans, the SAP is the average price from September of the year of harvest till August of the following year. The national price also cannot exceed the full costs of production. For corn and soybeans, the national price almost always will be the Olympic average of the previous five prices.

The guarantee is compared to the actual revenue which equals the yield from the farm times the average of the first four National monthly prices of the marketing year plus net crop insurance indemnity payments, where net insurance payments equal insurance payments minus farmer-paid premiums. Revenue equals:

$\text{Farm yield} \times \text{four-month average national monthly price} + \text{net insurance payments}$

When revenue is below the guarantee, a payment will be made equal to the difference times .65:

We request all readers, electronic media and others follow our citation guidelines when re-posting articles from *farmdoc daily*. Guidelines are available [here](#). The *farmdoc daily* website falls under University of Illinois copyright and intellectual property rights. For a detailed statement, please see the University of Illinois Copyright Information and Policies [here](#).

$$.65 \times (\text{guarantee} - \text{actual revenue})$$

The payment given above cannot exceed a maximum equal to the equivalent of payment on a band from 88% down to 75% of benchmark revenue. Hence, the maximum RLAP payment is:

$$.65 \times (.88 - .75) \times \text{farm historical yield} \times \text{national price}$$

From a crop insurance perspective, a key issue is that crop insurance payments are included in revenue calculation. Thus, crop insurance payments have the potential to reduce RLAP payments when the RLAP payment is not at its maximum. In these cases, each dollar of crop insurance payment will reduce RLAP payments by \$.65, up to the point where an RLAP payment no longer exists because RLAP revenue exceeds the guarantee. These impacts will be evaluated by calculating adjusted gross revenues with and without RLAP payments for corn in Illinois using 2012 prices and more typical prices.

Adjusted Gross Revenues With and Without RLAP

Adjusted gross revenue with and without RLAP payments are generated for differing harvest prices and coverage levels of crop insurance. Adjusted gross revenue without RLAP equals

$$\text{Crop revenue} + \text{insurance payment} - \text{insurance premium}$$

where crop revenue will equal yield times the average of the first four months of national prices. Adjusted gross revenue with RLAP payments includes RLAP payments. As prices are lowered, crop insurance and RLAP payments will increase. These increases will offset crop revenue losses, leading to minimum adjusted gross revenues for different crop insurance coverage levels. Minimum adjusted gross revenues will become less across coverage levels with inclusion of RLAP, thereby reducing incentives to purchase higher levels of crop insurance.

RLAP payments are generated using a Microsoft Excel spreadsheet available for download here (<http://www.farmdoc.illinois.edu/downloads/FDD120412.asp>). The insurance plan used in generating insurance premiums is Revenue Protection (RP), the most prevalent insurance policy for corn. Yields are based on county yields for McLean County. Yields and insurance premium used in calculations are:

- A Revenue Protection (RP) is used with a Trend Adjusted Actual Production History yield of 187 bushels per acre.
- The farm historical yield for RLAP is 182 bushels.
- Insurance premiums are for a Mclean County, Illinois farm with a 176 bushel APH yield and a 187 bushel TA-APH yield. Enterprise units of 400 acres are used to generate premiums of \$.54 per acre for a 50% coverage level, \$.78 per acre for a 55% coverage level, \$1.22 per acre for a 60% coverage level, \$1.77 per acre for a 65% coverage level, \$2.74 per acre for a 70% coverage level, \$5.17 per acre for a 75% coverage level, \$10.57 per acre for an 80% coverage level, and \$21.50 per acre for an 85% coverage level.
- Farm yield will equal the TA-APH yield of 187 bushels per acre.

Adjusted gross revenues will be generated for two price scenarios: 1) 2012 price conditions and 2) more typical prices. The 2012 price scenario is:

- Projected price for corn = \$5.68
- National price for RLAP = \$4.53. This is not certain because the 2011 marketing year is not complete. However, it is likely that the 2011 price period will be the highest price of the last five years, therefore it will be eliminated in the calculation of the five-year Olympic average.

The 2012 prices are somewhat unusual in that the national price for RLAP is much further below the projected price than average. Between 1980 and 2005, the national price averaged \$.30 below the projected price. Therefore to more closely match usual price conditions, adjusted gross revenues are generated under the following prices:

- Projected price = \$5.68
- National price for RLAP= \$5.38

RLAP and adjusted gross revenues are generated for differing harvest price. The 4-month average of monthly prices is assumed to be \$.25 per bushel lower than the harvest price.

2012 Prices

For 2012 prices, RLAP payments given differing harvest prices are shown in Panel A of Table 1. RLAP payments will not occur when RP is purchased at 75%, 80%, and 85% coverage levels, as net crop insurance payments always cause RLAP revenue to exceed the benchmark. The maximum RLAP payment is \$20 per acre at a 70% RP coverage level, \$54 for a 65% coverage level, and \$70 per acre for coverage levels at or below 60%.

Table 1. RLAP Payments and Adjusted Gross Revenues, Central Illinois, 2012 Price Conditions.

Harvest Price	Revenue Protection Coverage Level							
	50%	55%	60%	65%	70%	75%	80%	85%
Panel A. RLAP payment								
3.00	70	70	70	54	20	0	0	0
3.25	70	70	70	54	20	0	0	0
3.50	70	70	70	54	20	0	0	0
3.75	46	46	46	46	20	0	0	0
4.00	16	16	16	16	16	0	0	0
4.25	0	0	0	0	0	0	0	0
4.50	0	0	0	0	0	0	0	0
4.75	0	0	0	0	0	0	0	0
5.00	0	0	0	0	0	0	0	0
Panel B. Adjusted Gross Revenue without RLAP								
3.00	514	537	589	642	694	745	792	835
3.25	580	580	589	642	694	745	792	835
3.50	607	607	607	642	694	745	792	835
3.75	654	654	653	653	694	745	792	835
4.00	701	700	700	699	699	745	792	835
4.25	747	747	747	746	745	745	792	835
4.50	794	794	794	793	792	790	792	835
4.75	841	841	840	840	839	836	831	835
5.00	888	887	887	886	886	883	878	867
Panel C. Adjusted Gross Revenue with RLAP								
3.00	583	606	659	696	714	745	792	835
3.25	630	630	659	696	714	745	792	835
3.50	677	677	676	696	714	745	792	835
3.75	700	700	699	699	714	745	792	835
4.00	716	716	716	715	714	745	792	835
4.25	747	747	747	746	745	745	792	835
4.50	794	794	794	793	792	790	792	835
4.75	841	841	840	840	839	836	831	835
5.00	888	887	887	886	886	883	878	867

See text for definitions on how RLAP payments and adjusted gross revenues were generated.

Adjusted gross revenues without RLAP payments are shown in Panel B. Adjusted gross revenues with RLAP payments are shown in Panel C. Gross revenues in Panel C are higher than those in Panel B by the amount of the RLAP payment in Panel A. RLAP payments cause the minimum adjusted gross revenue to increase for coverage levels below 70%. For example, the minimum adjusted gross revenue without RLAP is \$694 per acre at a 70% coverage level. This \$694 per acre minimum revenue increases to \$714 per acre with RLAP.

RLAP payments draws minimum adjusted gross revenues together for some coverage levels. For example, the minimum adjusted revenue with and without RLAP is \$51 per acre different between the 70% and 75% coverage levels (\$745 for the 75% coverage level – \$694 for the 70% coverage level. With

RLAP, the increase is only \$30 per acre (\$745 for a 75% coverage level – \$714 for a 70% coverage level). This reduces the value of increasing coverage level from 70% to 75% and may cause some farmers to purchase a 70% coverage level rather than a 75% coverage level.

More Typical Price Relationships

When the RLAP benchmark price is closer to the projected price, the narrowing of minimum gross revenues becomes more pronounced, as illustrated in Table 2. Table 2 shows payments and revenues for the same prices and yields in Table 1, except that the national benchmark price is \$5.38. The \$5.38 benchmark price causes the projected price and benchmark price to differ by \$.30, the more typical historical relationship.

Table 2. RLAP Payments and Adjusted Gross Revenues, Central Illinois, Typical Price Relationships.

Harvest Price	Revenue Protection Coverage Level							
	50%	55%	60%	65%	70%	75%	80%	85%
Panel A. RLAP payment								
3.00	83	83	83	83	83	76	45	18
3.25	83	83	83	83	83	76	45	18
3.50	83	83	83	83	83	76	45	18
3.75	83	83	83	83	83	76	45	18
4.00	83	83	83	83	83	76	45	18
4.25	74	74	74	74	74	74	45	18
4.50	43	43	43	43	43	43	43	18
4.75	13	13	13	13	13	13	13	13
5.00	0	0	0	0	0	0	0	0
Panel B. Adjusted Gross Revenue without RLAP								
3.00	514	537	589	642	694	745	792	835
3.25	560	560	589	642	694	745	792	835
3.50	607	607	607	642	694	745	792	835
3.75	654	654	653	653	694	745	792	835
4.00	701	700	700	699	699	745	792	835
4.25	747	747	747	746	745	745	792	835
4.50	794	794	794	793	792	790	792	835
4.75	841	841	840	840	839	836	831	835
5.00	888	887	887	886	886	883	878	867
Panel C. Adjusted Gross Revenue with RLAP								
3.00	596	619	672	725	777	821	837	852
3.25	643	643	672	725	777	821	837	852
3.50	690	690	689	725	777	821	837	852
3.75	737	736	736	735	777	821	837	852
4.00	783	783	783	782	781	821	837	852
4.25	821	821	821	820	819	819	837	852
4.50	838	837	837	836	836	833	836	852
4.75	854	854	853	853	852	849	844	848
5.00	888	887	887	886	886	883	878	867

See text for definitions on how RLAP payments and adjusted gross revenues were generated.

Under these prices, minimum adjusted gross revenue with RLAP have the following increases:

- At a 70% coverage level, from \$694 without RLAP to \$777 with RLAP,
- At a 75% coverage level, from \$745 without RLAP to \$821 with RLAP,
- At an 80% coverage level, from without RLAP \$792 to \$837 with RLAP, and
- At an 85% coverage level, from without RLAP \$835 to \$852 with RLAP.

These increases draw the minimum coverage levels together. For example, the difference between minimum adjusted gross revenue without RLAP increases by \$90 per acre from the 75% coverage level to the 85% coverage level (\$835 at 85% – \$745 at 75%). This difference is reduced to \$31 per acre with RLAP (\$852 with RLPA to \$821 without RLAP). These narrowing minimum adjusted gross revenues reduce the incentives to purchase higher levels of crop insurance.

Summary

RLAP includes net crop insurance payments in its guarantee calculation. This provision likely was included to reduce overlapping payments between RLAP and crop insurance. It also will reduce the costs of the program. However, this provision also reduces incentives for purchasing higher coverage levels of crop insurance.