

Flex Rent calculation tool user guidelines

A large portion of crop production occurs on rented land. While many tenant/landowner agreements are informal, they can also involve long-term verbal understandings, personal and family relationships, making negotiations a sensitive event for all parties involved. This tool is designed to help everyone gain a perspective of the consequences of their land lease arrangement under different sets of assumptions about yield and price variability. All parties should benefit from using this tool to reach an arrangement with acceptable terms for everyone.

Recently, there has been a lot of pressure in the land rental market to move toward a rental arrangement more flexible than cash rent but not as complex as a share rent. Flex rents have become fairly popular as they may be an answer to more return to the landowner as well as less risk to the tenant. Flex rents can be the answer to high cash rents that put tremendous risk on the tenant operation. Flex rent may provide higher income prospects to the landlord while still maintaining a bearable level of risk on the tenant. This can be illustrated by Figure 1, which shows there is a tradeoff between all the different rental arrangements in the long run. Similar to other investments, the riskier the option, the higher are the expected risks. It is a critical figure to keep in mind while going through the process of comparing different rental options.

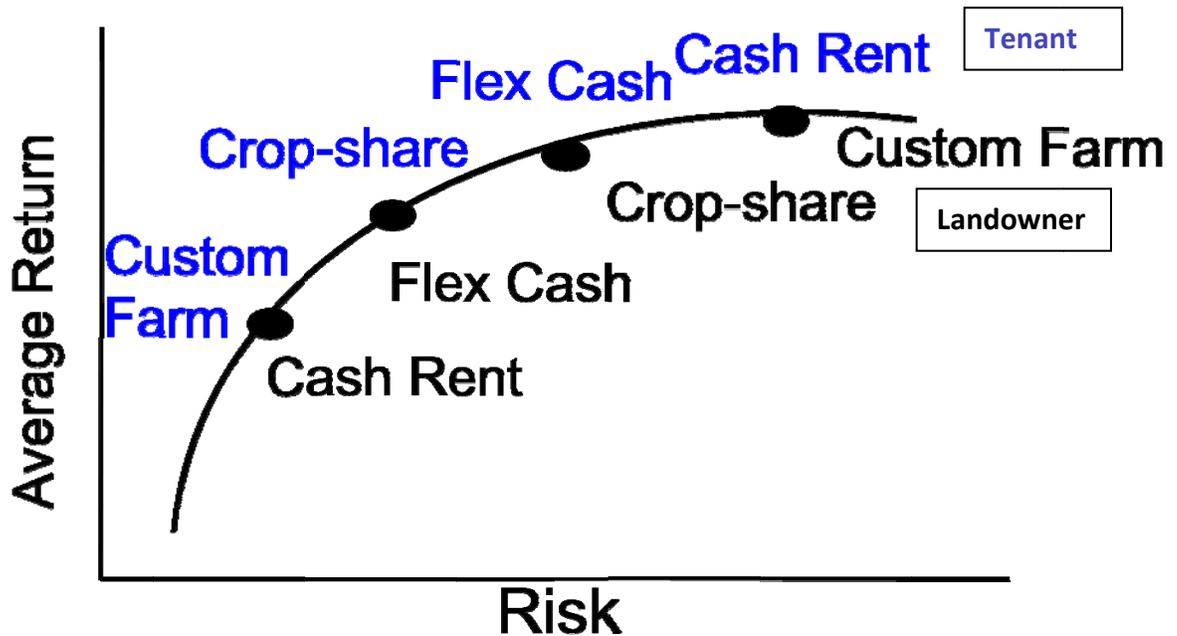


Figure 1: Tradeoff between risk and return. *For a tenant, providing custom farming activities would be less risky but would not provide as much return as a cash rent situation. From a landlord's perspective the scenario of hiring somebody to get the work done should bring the highest expected return, but also presents the largest risk. On the other hand, cash rent is the least risky for the landowner but returns should also not be expected to be as high as with other arrangements.*

While flex rent is an appealing concept, it can be somewhat misleading as it can have different meanings. Some flex rents are based on yield variability, if yield is above a certain level then the rent paid to the landowner is adjusted. Other flex rents apply the same methodology but based on the gross revenue. Another alternative is to have a cash fixed payment and a bonus based on prices, or yields, or both or other innovative framework. The path followed by this tool is to design a flex rent that will ensure a base price to the landlord and a bonus that is calculated based on total revenue. If total crop revenue is above a trigger value, then a share of it is given to the landlord as a bonus.

This tool **will not** provide the “fair” rent value. However, this tool **will** provide insights on different rental arrangements and how they affect net return based on different price and yield assumptions. From there, parties can negotiate to reach what they would call “fair” value. Rent prices are driven by the market reality and any agreements between a tenant and a landlord will prevail over any other sources of information.

Introduction to the Flex Rent calculator

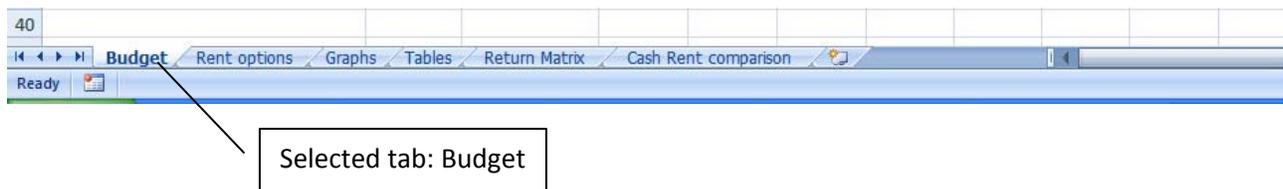
The tool uses a Microsoft Excel spreadsheet template. The following describes the layout of the tool in the spreadsheet and provides basic information about maneuvering through the spreadsheet and customizing the information for your situation.

In Excel, each small rectangle is called a *cell*, and it is referenced based on the column and the row. For instance, the cell selected below is C5.

	A	B	C	D	E	F
1			Corn	Soybeans	Wheat	DC Beans
2	Rotation		50%	50%	0%	0%
3						
4	Income	Units				
5	Government payment	\$/Acre	\$ 20.00	\$ 20.00	\$ 20.00	\$ -
6	Other income	\$/Acre	\$ -	\$ -	\$ -	\$ -
7						

Selected cell: C5

The different pages in the tool can be accessed by clicking on the different *tabs*. The *tabs* are located at the bottom of the screen.



Cells with a green background are input cells; they need to be changed to reflect the desired parameters. Results tabs such as graphs, tables or the return matrix are linked to the different input cells. A change in one of the input cells will automatically update the results. Results assume that no government payments besides direct payments will be received by the operation. Color coded tables are

for reading ease - a cell's background goes from red to blue as its content numbers go from negative to positive.

Tabs description:

-Budget: Several pieces of information need to be provided in this tab:

1. Crop rotation (help is provided to calculate the percentages).
2. Government income per acre. *Note that no payments need to be included for double crop.*
3. The cost per acre of various inputs.
4. Fixed costs. *They are entered as total number so that the average fixed cost per acre is going to vary based on total acreage farmed. If fixed costs are unknown, enter zero which means that the final results will not be net return to the tenant but rather gross return to the tenant. From this final number machinery ownership cost and family labor will have to be paid.*
5. Total Acreage. *It is required to calculate the average fixed cost per acre. If the operation is expanding, the increase in acreage needs to be included and fixed costs need to be updated accordingly.*
6. Property tax per acre.

-Rent options:

1. Under the share rent category provide the income and expense allocations that are used for the share rent cash calculation.
2. Flex rents are calculated as the sum of a base price and a bonus that is based on county yield and local elevator prices. The base price (B24) is received by the land owner no matter how good or bad the yield and the prices have been. The bonus is the agreed percentage of gross county income per acre that exceeds a base rent number (B25) agreed upon by the landlord and tenant. For instance the landlord and tenant have agreed on a \$140 base rent plus 40% of revenue above \$450. If the county yield is 135 and corn prices are \$3.5 (for a corn on corn crop rotation) then total rent will be: $\$140 + (135 \times \$3.5 - \$450) \times .4 = \$140 + \$22.5 \times .4 = \153.5
3. The cash rent cell represents the value in dollars per acre charged by the landlord to the tenant for the use of the property in the case of a regular cash rent agreement.

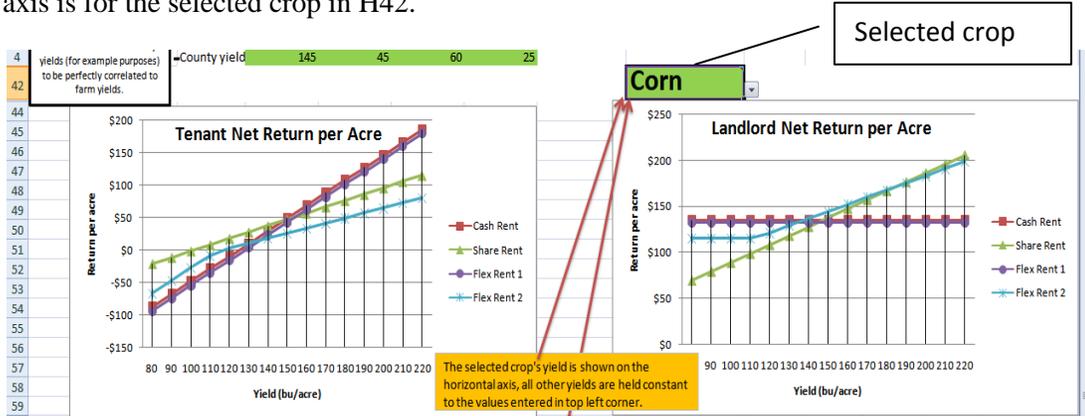
-Graphs:

Provide the desired information in the top cells such as expected yields, expected prices as well as expected county yields. The county yield values are only used for the calculation of Flex Rent 1. Calculation of Flex Rent 2 assumes that county yields and your farm's yields are perfectly correlated.

Select the crop that you want to use to be represented on the horizontal axis in cell H42. For instance, if you select soybeans, then the top two graphs will show soybean yields on the horizontal axis and the bottom two graphs will show soybean prices on the horizontal axis.

Top Graphs:

Top graphs represent the net return per acre for the tenant and the landlord for the different rental arrangements considered. All the yields but the one for the crop considered (in H42) are held to the values defined at the top (C2 through F2). The yield shown on the horizontal axis is for the selected crop in H42.



Bottom Graphs:

Bottom graphs represent the net return per acre for the tenant and the landlord for the different rental arrangements considered. Every crop price increase from left to right based on the ratio given in the two cells (I2 and I3) at the top of the page. The price shown on the horizontal axis is for the selected crop in H42.



-Tables:

Tables present the numerical values used to draw the graphs. Like the graphs, the values in the tables will change if numbers at the top of the graphs tab change. Highlighted in yellow are the numerical values that change between rows.

Yield				Price			Tenant Net Return per Acre				Landlord Net Return per Acre			
Corn	Soybeans	Wheat	DC Beans	Corn	Soybeans	Wheat	Cash Rent	Share Rent	Flex Rent 1	Flex Rent 2	Cash Rent	Share Rent	Flex Rent 1	Flex Rent 2
80	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ (87.20)	\$ (21.60)	\$ (93.75)	\$ (67.20)	\$ 135.00	\$ 69.40	\$ 132.70	\$ 115.00
90	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ (67.70)	\$ (11.85)	\$ (74.25)	\$ (47.70)	\$ 135.00	\$ 79.15	\$ 132.70	\$ 115.00
100	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ (48.20)	\$ (2.10)	\$ (54.75)	\$ (28.20)	\$ 135.00	\$ 88.90	\$ 132.70	\$ 115.00
110	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ (28.70)	\$ 7.65	\$ (35.25)	\$ (8.70)	\$ 135.00	\$ 98.65	\$ 132.70	\$ 115.00
120	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ (9.20)	\$ 17.40	\$ (15.75)	\$ 2.22	\$ 135.00	\$ 108.40	\$ 132.70	\$ 120.72
130	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ 10.30	\$ 27.15	\$ 3.75	\$ 10.02	\$ 135.00	\$ 118.15	\$ 132.70	\$ 128.52
140	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ 29.80	\$ 36.90	\$ 23.25	\$ 17.82	\$ 135.00	\$ 127.90	\$ 132.70	\$ 136.32
150	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ 49.30	\$ 46.65	\$ 42.75	\$ 25.62	\$ 135.00	\$ 137.65	\$ 132.70	\$ 144.12
160	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ 68.80	\$ 56.40	\$ 62.25	\$ 33.42	\$ 135.00	\$ 147.40	\$ 132.70	\$ 151.92
170	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ 88.30	\$ 66.15	\$ 81.75	\$ 41.22	\$ 135.00	\$ 157.15	\$ 132.70	\$ 159.72
180	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ 107.80	\$ 75.90	\$ 101.25	\$ 49.02	\$ 135.00	\$ 166.90	\$ 132.70	\$ 167.52
190	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ 127.30	\$ 85.65	\$ 120.75	\$ 56.82	\$ 135.00	\$ 176.65	\$ 132.70	\$ 175.32
200	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ 146.80	\$ 95.40	\$ 140.25	\$ 64.62	\$ 135.00	\$ 186.40	\$ 132.70	\$ 183.12
210	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ 166.30	\$ 105.15	\$ 159.75	\$ 72.42	\$ 135.00	\$ 196.15	\$ 132.70	\$ 190.92
220	49	70	29	\$ 3.90	\$ 9.40	\$ 6.20	\$ 185.80	\$ 114.90	\$ 179.25	\$ 80.22	\$ 135.00	\$ 205.90	\$ 132.70	\$ 198.72

Yield				Price			Tenant Net Return per Acre				Landlord Net Return per Acre			
Corn	Soybeans	Wheat	DC Beans	Corn	Soybeans	Wheat	Cash Rent	Share Rent	Flex Rent 1	Flex Rent 2	Cash Rent	Share Rent	Flex Rent 1	Flex Rent 2
157	49	70	29	\$ 2.00	\$ 4.82	\$ 3.18	\$ (198.40)	\$ (77.20)	\$ (178.40)	\$ (178.40)	\$ 135.00	\$ 13.80	\$ 115.00	\$ 115.00
157	49	70	29	\$ 2.20	\$ 5.30	\$ 3.50	\$ (170.89)	\$ (63.44)	\$ (150.89)	\$ (150.89)	\$ 135.00	\$ 27.56	\$ 115.00	\$ 115.00
157	49	70	29	\$ 2.40	\$ 5.78	\$ 3.82	\$ (143.38)	\$ (49.69)	\$ (123.38)	\$ (123.38)	\$ 135.00	\$ 41.31	\$ 115.00	\$ 115.00
157	49	70	29	\$ 2.60	\$ 6.27	\$ 4.13	\$ (115.87)	\$ (35.93)	\$ (95.87)	\$ (95.87)	\$ 135.00	\$ 55.07	\$ 115.00	\$ 115.00
157	49	70	29	\$ 2.80	\$ 6.75	\$ 4.45	\$ (88.36)	\$ (22.18)	\$ (68.36)	\$ (68.36)	\$ 135.00	\$ 68.82	\$ 115.00	\$ 115.00
157	49	70	29	\$ 3.00	\$ 7.23	\$ 4.77	\$ (60.85)	\$ (8.42)	\$ (40.85)	\$ (40.85)	\$ 135.00	\$ 82.58	\$ 115.00	\$ 115.00
157	49	70	29	\$ 3.20	\$ 7.71	\$ 5.09	\$ (33.34)	\$ 5.33	\$ (13.34)	\$ (13.34)	\$ 135.00	\$ 96.33	\$ 115.00	\$ 115.00
157	49	70	29	\$ 3.40	\$ 8.19	\$ 5.41	\$ (5.83)	\$ 19.09	\$ 14.17	\$ 3.57	\$ 135.00	\$ 110.09	\$ 115.00	\$ 122.07
157	49	70	29	\$ 3.60	\$ 8.68	\$ 5.72	\$ 21.68	\$ 32.84	\$ 37.95	\$ 14.57	\$ 135.00	\$ 123.84	\$ 117.49	\$ 133.07
157	49	70	29	\$ 3.80	\$ 9.16	\$ 6.04	\$ 49.19	\$ 46.60	\$ 50.25	\$ 25.58	\$ 135.00	\$ 137.60	\$ 127.63	\$ 144.08
157	49	70	29	\$ 4.00	\$ 9.64	\$ 6.36	\$ 76.71	\$ 60.35	\$ 62.55	\$ 36.58	\$ 135.00	\$ 151.35	\$ 137.77	\$ 155.08
157	49	70	29	\$ 4.20	\$ 10.12	\$ 6.68	\$ 104.22	\$ 74.11	\$ 74.85	\$ 47.59	\$ 135.00	\$ 165.11	\$ 147.91	\$ 166.09
157	49	70	29	\$ 4.40	\$ 10.61	\$ 6.99	\$ 131.73	\$ 87.86	\$ 87.16	\$ 58.59	\$ 135.00	\$ 178.86	\$ 158.05	\$ 177.09
157	49	70	29	\$ 4.60	\$ 11.09	\$ 7.31	\$ 159.24	\$ 101.62	\$ 99.46	\$ 69.59	\$ 135.00	\$ 192.62	\$ 168.18	\$ 188.09
157	49	70	29	\$ 4.80	\$ 11.57	\$ 7.63	\$ 186.75	\$ 115.37	\$ 111.76	\$ 80.60	\$ 135.00	\$ 206.37	\$ 178.32	\$ 199.10

-Return Matrix:

Values changing across rows

The return matrix uses yield and prices given at the top of the graphs tab to present the effects of price and yield variations on the tenant or the landlord net returns per acre. The user can select the rental arrangement as well as the party for which the table is calculated by changing the values in the top left corner. The bordered cell in the table represents the net return per acre where the prices and yields are given by the user at the top of the graphs tab.

Tenant				yield (bu/acre)															
Flex Rent 2				30%	40%	50%	60%	70%	80%	90%	100%	110%	120%	130%	140%	150%			
Prices (\$/bu)	Corn	Soybeans	Wheat	Corn	Soybeans	Wheat	Corn	Soybeans	Wheat	Corn	Soybeans	Wheat	Corn	Soybeans	Wheat	Corn	Soybeans	Wheat	
	0%	\$ -	\$ -	\$ -	(454)	(454)	(454)	(454)	(454)	(454)	(454)	(454)	(454)	(454)	(454)	(454)	(454)	(454)	(454)
	10%	\$ 0.39	\$ 0.94	\$ 0.62	(437)	(432)	(427)	(421)	(416)	(411)	(405)	(400)	(394)	(389)	(384)	(378)	(373)	(373)	(373)
	20%	\$ 0.78	\$ 1.88	\$ 1.24	(421)	(411)	(400)	(389)	(378)	(368)	(357)	(346)	(335)	(325)	(314)	(303)	(293)	(293)	(293)
30%	\$ 1.17	\$ 2.82	\$ 1.86	(405)	(389)	(373)	(357)	(341)	(325)	(309)	(293)	(276)	(260)	(244)	(228)	(212)	(212)	(212)	
40%	\$ 1.56	\$ 3.76	\$ 2.48	(389)	(368)	(346)	(325)	(303)	(282)	(260)	(239)	(217)	(196)	(175)	(153)	(132)	(132)	(132)	
50%	\$ 1.95	\$ 4.70	\$ 3.10	(373)	(346)	(319)	(293)	(266)	(239)	(212)	(185)	(158)	(132)	(105)	(78)	(51)	(51)	(51)	
60%	\$ 2.34	\$ 5.64	\$ 3.72	(357)	(325)	(293)	(260)	(228)	(196)	(164)	(132)	(99)	(67)	(35)	(3)	10	10	10	
70%	\$ 2.73	\$ 6.58	\$ 4.34	(341)	(303)	(266)	(228)	(191)	(153)	(116)	(78)	(40)	(3)	12	27	42	42	42	
80%	\$ 3.12	\$ 7.52	\$ 4.96	(325)	(282)	(239)	(196)	(153)	(110)	(67)	(24)	5	22	40	57	74	74	74	
90%	\$ 3.51	\$ 8.46	\$ 5.58	(309)	(260)	(212)	(164)	(116)	(67)	(19)	10	29	48	68	87	106	106	106	
100%	\$ 3.90	\$ 9.40	\$ 6.20	(293)	(239)	(185)	(132)	(78)	(24)	10	31	53	74	95	117	138	138	138	
110%	\$ 4.29	\$ 10.34	\$ 6.82	(276)	(217)	(158)	(99)	(40)	5	29	53	76	100	123	147	171	171	171	
120%	\$ 4.68	\$ 11.28	\$ 7.44	(260)	(196)	(132)	(67)	(3)	22	48	74	100	125	151	177	203	203	203	
130%	\$ 5.07	\$ 12.22	\$ 8.06	(244)	(175)	(105)	(35)	12	40	68	95	123	151	179	207	235	235	235	
140%	\$ 5.46	\$ 13.16	\$ 8.68	(228)	(153)	(78)	(3)	27	57	87	117	147	177	207	237	267	267	267	
150%	\$ 5.85	\$ 14.10	\$ 9.30	(212)	(132)	(51)	10	42	74	106	138	171	203	235	267	299	299	299	
160%	\$ 6.24	\$ 15.04	\$ 9.92	(196)	(110)	(24)	22	57	91	125	160	194	228	263	297	331	331	331	
170%	\$ 6.63	\$ 15.98	\$ 10.54	(180)	(89)	(1)	35	72	108	145	181	218	254	291	327	364	364	364	
180%	\$ 7.02	\$ 16.92	\$ 11.16	(164)	(67)	10	48	87	125	164	203	241	280	319	357	396	396	396	
190%	\$ 7.41	\$ 17.86	\$ 11.78	(148)	(46)	20	61	102	143	183	224	265	306	347	387	428	428	428	
200%	\$ 7.80	\$ 18.80	\$ 12.40	(132)	(24)	31	74	117	160	203	246	289	331	374	417	460	460	460	

Net return per acre for given yields and prices

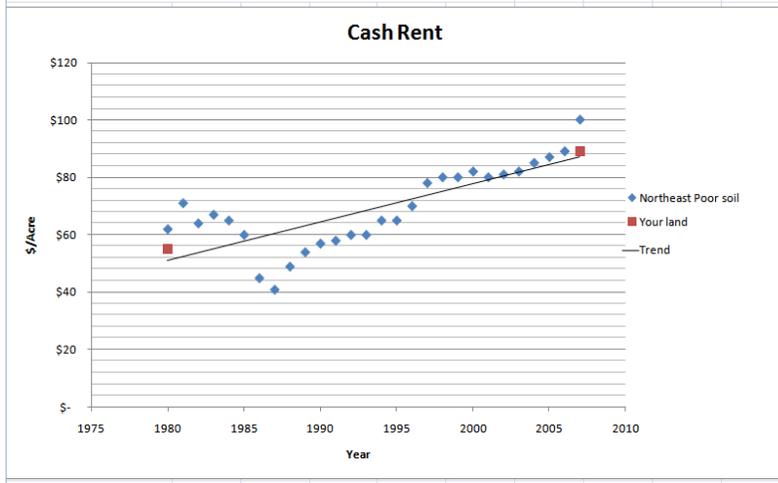
-Cash Rent Comparison:

This is a standalone tab; it provides the user with information relating the user's area of interest with Purdue's survey results. After selecting the geographic location and the quality of the soil, the user can visualize how a cash rent value in a given year would have varied over time and what it would have been in 2007 if it had increased/decreased at the same rate of the survey's results.

Location: Northeast
 Land type: Poor
 Base year (post 1975): 1980
 Rent then: \$55

In 1980 Purdue's survey based on similar land characteristics and location, was showing a cash rent of \$62 which was 12.7% more than yours.

If you assume that rent should have increased/decreased at the same rate as the reported numbers in the Purdue's survey, then the rent in 2007 should have been \$89 per acre.



Tips and advice:

The default cost per acre numbers in the budget section are a place to start if one does not have a good perspective on what those numbers should be. However, it is strongly encouraged that the tenant uses its own numbers to get a more precise perception of the effects on his/her operation.

If a flex rent arrangement has been agreed upon by landlord and tenant, it is strongly suggested to have the agreement reviewed by the FSA so that the government payments are split according to the regulations.

When in doubt for a flex rent arrangement, start by setting the base rent at the previous year cash rent level. Once you get an understanding on how it affects the return, adjust it to your liking.

Disclaimer: The information and suggestions in this tool are intended to provide insights on consequences of different rental arrangements. While no recommendations are specifically formulated, Purdue University assumes no liability for the conclusions and decisions taken as a result. The user of this tool assumes the entire risk of using the program. The user is advised to test the program thoroughly before relying on it. Purdue University and the authors of the program will not be liable for any consequential, indirect, or special damages suffered by the customer as a result of the use of the program.