

Base and Yield Update Calculator Instructions

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Introduction

The Farm Security and Rural Investment Act of 2002 provides producers two types of decoupled payments. Direct and Counter-Cyclical payments are decoupled from current production and are paid on historic base acres and payment yields. Crops DO NOT have to be planted to receive these payments.

The FB_CALCULATOR software is an education tool for evaluating the base and yield options for determining decoupled payments. It is a spreadsheet that operates under Excel, version 97 or later and may operate with later versions of Lotus 1-2-3 and Quattro Pro.

Calculation of Direct Payments (DP)

$DP = \text{Direct payment rate} * \text{Direct payment yield} * (\text{Base acres} * 0.85)$

Direct payment rates are fixed over the life of the farm bill, 2002-2007. Direct payment rates DO NOT decline each year.

Calculation of Counter-Cyclical Payments (CCP)

$CCP = (\text{Target price} - \text{Direct payment rate} - (\text{higher of National Loan Rate or National Average Marketing Year Price})) * \text{Counter-Cyclical payment yield} * (\text{Base acres} * 0.85)$

The Target prices and National Loan rates for wheat and feed grains for 2004-07 are slightly different than for 2002-03. It is not possible to receive a CCP for minor oilseeds. Counter-Cyclical Payments can vary year to year according to changes in the National Average Marketing Year Price.

2002 Farm Bill Rates

Crop	Units	DP Rate	Target Prices		National Loan Rates		Maximum CCP rate	
			2002-03	2004-07	2002-03	2004-07	2002-03	2004-07
Wheat	bu	0.52	3.86	3.92	2.80	2.75	0.540	0.650
Barley	bu	0.24	2.21	2.24	1.88	1.85	0.090	0.150
Oats	bu	0.02	1.40	1.44	1.35	1.33	0.026	0.086
Corn	bu	0.28	2.60	2.63	1.98	1.95	0.340	0.400
Sorghum	bu	0.35	2.54	2.57	1.98	1.95	0.210	0.270
Soybean	bu	0.44	5.80	5.80	5.00	5.00	0.360	0.360
Minor Oils	lb	0.008	0.098	0.101	0.096	0.093	0.000	0.000

Timing of Decoupled Payments

Direct Payment. For 2002, payment as soon as practicable, but not before October 1. Payment will be the calculated direct payment less 2002 PFC payments already made.

For 2003-07, up to 50 percent of the payment can be received beginning December 1 of the calendar year prior to harvest. The remainder is paid in October of the calendar year of harvest.

Counter-Cyclical Payment. For 2002-06, the first partial payment will be made in October of the year of harvest (to extent practicable for 2002) on up to 35 percent of projected CCP. The second partial payment will be made the following February on up to 70 percent of projected CCP minus first partial payment. The final payment, made when practicable after the end of 12-month marketing year for the crop, will equal actual CCP minus the first two payments.

Base and Yield Updating

The 2002 farm bill allows the updating of crop base acres to the 1998-2001 average acreage of covered commodities. The updated bases apply to the calculation of both direct and counter-cyclical payments. The only updating of yields that is allowed are for counter-cyclical payments when there has been an updating of crop bases. Soybeans and minor oilseeds were added as covered commodities eligible for decoupled payments. Even if bases are not updated, "eligible" oilseed history can be added to the existing crop base, and oilseed yield history, 1998-2001, is adjusted back to the 1981-1985 period to be consistent with payment yields of other covered commodities.

Input Section

The FB_CALCULATOR spreadsheet program is designed to evaluate the different base and yield update options. The input requirements are shown in the following tables. Input areas are shaded light yellow in the program.

Name	Fred Farmer	
Farm No.	2993	
County	Nelson	
Effective Cropland*		100

*Total cropland minus CRP and WRP acres

The Name, Farm No., and County entries are not used in calculations but may be useful for identification purposes. Effective Cropland is the total cropland minus land in CRP and WRP.

PFC (historic) Bases and Payment Yields

PFC (historic) Bases and Payment Yields			
Crop	Units	Acres	Yields
Wheat	bu	50.0	30
Barley	bu	20.0	50
Oats	bu	5.0	52
Corn	bu		
Sorghum	bu		
Total PFC base		75.0	

Enter the base acres and yields that were used under the 1996 farm bill Production Flexibility Contract (PFC). The Farm Service Agency (FSA) will refer to this as 2002 PFC, or simply "PFC" base acres and yields.

Enter Your Planted and Prevented Planted Acres, 1998-2001

Planted and prevented planted acres for each covered commodity during 1998-2001 should be entered. The covered commodities (program crops) grown in North Dakota for which there are decoupled payments are listed in the table. Report oil and non-oil sunflowers together. Do not include acreage of forage sorghum because, unlike grain sorghum, it is not a covered commodity. Contact FSA for a list of varieties to discern "grain" sorghum from "forage" sorghum. Records that are acceptable, currently, to determine prevented planting acres include FSA-578D or aerial photocopy identifying acreage by crop and tract, crop insurance acreage reports reported to RMA, and prevented planted acreage paid by either RMA or a reinsured insurance company. You may be able to include acres that could not be planted and were not covered by prevented planted insurance. Contact FSA for details on determining prevented planting acres.

Enter Your Planted and Prevented Planted Acres, 1998-2001

Crop	1998		1999		2000		2001		1998-2001
	Planted	Prev Plt	Planted	Prev Plt	Planted	Prev Plt	Planted	Prev Plt	Avg***
Wheat	50.0			40.0	70.0				40.0
Barley					20.0				5.0
Oats									0.0
Corn					10.0				2.5
Sorghum									0.0
Soybean			40.0						10.0
Sunflower	20.0								5.0
Canola									0.0
Flax			20.0				100.0		30.0
Safflower									0.0
Mustard									0.0
Rapeseed									0.0
Total Planted & Prev Plt:									
Covered Commodities	70.0		100.0		100.0		100.0		92.5
PFC Base	75.0		75.0		75.0		75.0		
Eligible Oilseeds*	0.0		25.0		25.0		25.0		18.8

*Covered Commodities minus PFC Base, but not less than 0.

**The lower of the 1998-2001 Average Oilseed acres and the 1998-2001 average of the Covered Commodities minus PFC Base calculation.

Eligible Oilseeds can be added to PFC base if acreage is not updated.

***Average 1998-2001 acreage is the new base if base acreage is updated.

Average Oilseeds	45.0
Eligible Oilseeds**	18.8

If a landowner elects to update base acres the 1998-2001 average planted and prevented planting acres will become the new base.

If a landowner does not elect to update base he/she may add "eligible" oilseed acres to the existing PFC base. The eligible oilseed acres that can be added to the PFC base is the 1998-2001 average oilseed

acreage up to a limit. The limit on oilseeds that are "eligible" is the 1998-2001 average of the annual calculation: total covered commodity acreage minus PFC base acres, but not less than 0.

If bases are not updated, oilseed acres can be substituted (offset), one for one, for PFC crop bases. The total base acres cannot exceed the original PFC base plus eligible oilseeds but the oilseed portion of this total can be up to the average oilseed acres, planted and prevented planted, for 1998-2001.

Enter Your Actual Yields per Planted Acres (and county "plug" yields)

The yields per planted acre or the minimum "plug" yields are used with the number of planted acres to calculate the 1998-2001 weighted average yields from which the oilseed payment yields and the updated yields for CCP are derived.

Enter Your Yields per Planted Acres (do not include prevented planted acres in calculating yield/acre)

Crop	Units	Actual Yields per Planted Acre				Minimum "Plug" Yields*	1998-2001		
		1998	1999	2000	2001		Total Acre Planted	Total Prod w/ plugs	Wted Avg Yield
Wheat	bu	34.3		15.7		22.5	120	3290	27.4
Barley	bu			36.2		39	20	780	39.0
Oats	bu						0	0	0.0
Corn	bu			98.4		66.75	10	984	98.4
Sorghum	bu						0	0	0.0
Soybean	bu		28.2			20.25	40	1128	28.2
Sunflower	lb	1458				983	20	29160	1458.0
Canola	lb						0	0	0.0
Flax	bu		18.23		22	15	120	2564.6	21.4
Safflower	lb						0	0	0.0
Mustard	lb						0	0	0.0
Rapeseed	lb						0	0	0.0

*Enter "plug" yields for your county (75% of the 1998-2001 county weighted average yield per harvested acre.)
 The higher of the "plug" and your actual yield per planted acre are used to calculate 1998-2001 average yield.
 Contact FSA for county plug yields. Refer to instructions if you have both irrigated and dryland yields.

The yield per planted acre is the total production of the crop for the year divided by total acres planted to the crop that year.

Current information indicates that owners who wish to establish or update yields must have verifiable evidence of actual production such as weight tickets, sales records, or crop loss appraisals for insurance purposes. However, other methods are allowed for determining yields if all the crop was handled in the same manner, either harvested for grain or hayed, silaged, or grazed. LDP records may be used. If certain conditions are met, FSA may assign a yield based on yields of three similar farms if verifiable production evidence or LDP's are not available. Contact FSA for rules of determining production that was consumed as feed on the farm. If information requirements to determine a yield cannot be met, the "plug" yield of 75 percent of the county average yield will provide a minimum crop yield for the year. Keep your records. FSA has stated that all producers may be subject to checks regarding verification of yields sometime in the six years after farm program signup.

"Plug" Yields. The "plug" yield is a minimum yield that will be used for any year in which it exceeds your yield per planted acre. The "plug" yield is 75% of the 1998-2001 county weighted average yield per harvested acre. The official "plug" yields will be available from county FSA offices. In counties that have irrigation history for a crop there will be separate "plug" yields for irrigation and for non-irrigated production. Use the "plug" yield that is appropriate for your production practice.

If you raised a crop during 1998-2001 using both irrigated and non-irrigated production practices, and yield(s) were lower than 75 percent of the county average, you should use the FB_IRRIGATED program available from www.ag.ndsu.nodak.edu/aginfo/farmmgmt/farmmgmt.htm or call 701-231-8642. In this instance the "plug" yield is the weighted average of the irrigation and nonirrigation "plug" yields. It is weighted according to the amount of acres planted under the two production practices. A different weighted "plug" yield is used each year if the proportion of the crop grown under irrigation and nonirrigation varies from year to year during 1998-2001.

Direct Payment (DP) and Counter-Cyclical Payment (CCP) Yields

Yields for direct payments, under all base and yield update options, are the existing PFC yields for "old" program crops (wheat and feedgrains). For new covered commodities, the oilseeds, the direct payment yields are the 1998-2001 weighted average yield per planted acre that are adjusted back to the 1981-1985 time period from which wheat and feedgrain PFC yields were established. The adjustment factor is .80 for sunflowers, .65 for flax and .78 for other oilseeds.

The CCP yield for a crop is the same as the DP yield unless there is a full acreage update. There are three CCP yield options when there is a full acreage update of crop bases. The options are, a) do not update CCP yields, b) 70 percent of the difference between DP yield and the 1998-2001 weighted average yield is added to DP yield, and c) 93.5 percent of the 1998-2001 weighted average yield.

Direct Payment (DP) and Counter-cyclical Payment (CCP) Yields under No Base Update (Options 1,2,3,5) and under Acreage Update (Option 4).

Crop	Units	PFC (historic) Yields	1998-2001 Wted Avg Yields	Old/New Factor	NO BASE UPDATE DP & CCP Yields	Enter Assigned FSA Yield***	ACREAGE UPDATE			
							DP Yields	CCP Yield Options		
					a.No Yield Update	b. 70% Option*		c. 93.5% Option**		
Wheat	bu	30	27.4		30		30	30	28	26
Barley	bu	50	39.0		50		50	50	42	36
Oats	bu	52	0.0		52		52	52	16	0
Corn	bu	0	98.4		0	58	58	58	86	92
Sorghum	bu	0	0.0		0		0	0	0	0
Soybean	bu	xxx	28.2	0.78	22		22	22	26	26
Sunflower	lb	xxx	1458.0	0.80	1166		1166	1166	1370	1363
Canola	lb	xxx	0.0	0.78	0		0	0	0	0
Flax	bu	xxx	21.4	0.65	14		14	14	19	20
Safflower	lb	xxx	0.0	0.78	0		0	0	0	0
Mustard	lb	xxx	0.0	0.78	0		0	0	0	0
Rapeseed	lb	xxx	0.0	0.78	0		0	0	0	0

*The "70% option" is the DP yield plus 70% of the difference between the 1998-2001 weighted avg yield and the DP yield.

**The "93.5% option" is 93.5% of the 1998-2001 weighted average yield.

***When updating acres, an FSA assigned yield is used for Wheat, Barley, Oats, Corn, or Sorghum only if there is no PFC historic base for the crop AND it was planted, or prevented planted, during 1998-2001. Contact your county FSA for the assigned yield. It is determined from the PFC yields of producers in a similar locale.

The only situation where you may make an entry to the previous table is when there is no PFC base for an old program crop (wheat and feedgrains) AND that crop was planted, or prevented planted during 1998-2001. A column heading "Enter Assigned FSA Yield" will appear. To evaluate the full acreage update option, you must enter an assigned direct payment yield for wheat, barley, oats, corn or sorghum if you have no PFC base for the crop but had acreage for the crop during 1998-2001. In North Dakota, corn is the most likely crop to meet these criteria. The assigned yield is determined by the county FSA office from PFC yields of producers in the area; it is NOT derived from your 1998-2001 yield history.

Expected National Marketing Year Average Prices for CCP Calculation

National marketing year average prices, used in the calculation of CCP, are the weighted average market price received by U.S. farmers over the marketing year. The marketing year for wheat, barley, oats, canola and flax is June 1 to May 31 and for corn, sorghum, soybeans, sunflower, safflower and mustard it is September 1 to August 31.

It is very difficult to accurately predict what prices will be several years in the future. The 2002-2007 prices are from the Food and Agricultural Policy Research Institute (FAPRI). It is recommended that these prices be used for your initial analysis. You may enter your price estimates to evaluate the outcomes of different price scenarios.

Expected National Marketing Year Average Prices for CCP Calculation								Relevant Price Range**	
Crop*	Units	2002	2003	2004	2005	2006	2007	2002-03	2004-07
Wheat	bu	3.76	3.26	3.04	3.07	3.17	3.23	2.80-3.34	2.75-3.40
Barley	bu	2.60	2.25	2.23	2.28	2.31	2.34	1.88-1.97	1.85-2.00
Oats	bu	1.81	1.46	1.28	1.29	1.29	1.30	1.35-1.38	1.33-1.42
Corn	bu	2.57	2.25	2.10	2.15	2.19	2.23	1.98-2.32	1.95-2.35
Sorghum	bu	2.56	2.15	1.97	2.02	2.06	2.09	1.98-2.19	1.95-2.22
Soybean	bu	5.67	5.03	4.83	4.96	5.07	5.21	5.00-5.36	5.00-5.36

*Minor oilseeds are omitted because a CCP is not possible under current USDA rules.

**Any price below the relevant range results in maximum CCP, any price above the range gives \$0 CCP.

The relevant range of prices for the analysis are listed in the last two columns of the above table.

Any price below the lower range will give the maximum CCP, and any price above the relevant range provides no CCP. For evaluating the base and yield options of the farm bill, it doesn't make any difference whether a wheat price is \$2.50 or \$2.75 because both provide the maximum CCP. Likewise, the exact wheat price above \$3.34 for 2002 or 2003, or above \$3.40 for years 2004 through 2007 is irrelevant to the analysis because prices above these levels will not provide any CCP for 2002-03 and 2004-07, respectively.

Minor Oilseeds. Although each minor oilseed has a national loan rate, the current USDA rule is that the national weighted all minor oilseed loan rate is used for CCP calculation. The national minor oilseed loan rate plus the direct payment rate exceeds the minor oilseed target price, therefore a CCP is not possible for any minor oilseed.

Analysis Section: Summary Tables

The FB_CALCULATOR spreadsheet program is designed to evaluate the following base and yield update options to optimize decoupled payments. The option that is selected must be used for all crops within the farm unit.

Option 1. Retain the existing Production Flexibility Contract (PFC) base and yields. These are the same bases and yields for the farm unit that were used to determine PFC (also known as AMTA) payments under the 1996 farm bill.

Option 2. Retain the existing PFC base and yields and increase total base acres by adding eligible oilseed acres. Eligible oilseeds are the lower of: a) 1998-2001 average planted and prevented planted oilseed acreage and b) the four year average of an annual calculation of covered commodities (planted and prevented planted) acreage minus the PFC base (the annual calculation cannot be less than 0). The covered commodities (or program crops) are all wheat, barley, oats, corn, grain sorghum, soybean, sunflower, canola, flax, safflower, mustard, rapeseed, cotton, rice, and peanuts.

Option 3 is similar to Option 2 in that the total base will be the same (retain PFC base acres and add eligible oilseed acres). However, in this option as many oilseeds as possible are included within the total base, and the base acres of the old PFC crops, wheat and feedgrains, are reduced accordingly. It is an acre for acre substitution of all oilseeds (average acreage during 1998-2001), for PFC base until either the oilseeds or the PFC base is exhausted. THIS OPTION WILL NEVER BE SUPERIOR TO ALL OTHER OPTIONS because the substitution of oilseeds for PFC base is forced: it is not driven by the goal of optimizing total payments.

Option 4. This is the option for whole base update. The new base will be the 1998-2001 average acreage of covered commodities. Option 4 does not allow updating of yields for the direct payment but allows three choices for determining counter cyclical yields:

- a) no yield update, use the same yields as for direct payments.
- b) update yields using the 70% option:
 $((\text{weighted avg 1998-2001 yield} - \text{direct pmt yield}) * .70) + \text{direct pmt yield}$
- c) update yields using the 93.5% option:
 $(\text{weighted avg 1998-2001 yield} * .935)$

Updating yields may increase the CCP yield of some crops but decrease the CCP yield for other crops. However, the selected option must be applied to all crops.

Option 5 is similar to Option 3, in that the total base will be the same (retain PFC base acres and add eligible oilseed acres). However, this option optimizes the substitution, or offset, of oilseed acreage for PFC base. It is an acre for acre substitution. The total substitution possible is limited by the PFC crop bases and the oilseed acreage available (1998-2001 average acreage, less the number of acres in "eligible" oilseed that are added to the existed PFC base). The substitution will occur if the per acre decoupled payments over the life of the farm bill for the oilseed are expected to exceed those of the PFC crop. Relative yields of oilseeds and PFC crops are an important determinant on whether a substitution will occur. The relative yields vary from farm to farm and region to region. However, on many farms corn has the highest decoupled payments, followed by wheat. Soybeans and barley typically rank either third or fourth, followed by the minor oilseeds, and then oats. Therefore, soybean or minor oilseeds will nearly always be substituted for oats, and soybeans may be substituted for barley.

In summary, PFC base and payment yields are retained in options 1, 2, 3, and 5. However, options 2, 3 and 5 add to the PFC base by including "eligible" oilseed base. The make-up of the base changes somewhat in options 3 and 5 with maximum and optimum substitution (acre for acre), respectively, of 1998-2001 average oilseed acreage for PFC base. Option 4 is a whole base update, which is the 1998-

2001 average acreage of covered commodities. However, there are three analyses for option 4 because three methods are available for determining counter cyclical yields. There is no update of yields for the direct payment.

Below is an example of each summary table:

Base Acres under different Options

	Option 1	Option 2	Option 3	Option 4a	Option 4b	Option 4c	Option 5
Crop	Retain PFC base & yield	Retain PFC, add eligible oilseed	PFC, add elig. oils. & max. oils. offset	Update acres & retain yields	Update acres & CCP yld (70% incr)	Update acres & CCP yld (93.5%)	PFC, add elig. oils. & optimal oils. offset
Wheat	50.0	50.0	48.8	40.0	40.0	40.0	50.0
Barley	20.0	20.0		5.0	5.0	5.0	20.0
Oats	5.0	5.0					
Corn				2.5	2.5	2.5	
Sorghum							
Soybean		10.0	10.0	10.0	10.0	10.0	10.0
Sunflower		5.0	5.0	5.0	5.0	5.0	5.0
Canola							
Flax		3.8	30.0	30.0	30.0	30.0	8.8
Safflower							
Mustard							
Rapeseed							
TOTALS	75.0	93.8	93.8	92.5	92.5	92.5	93.8
Free Ac*	25.0	6.2	6.2	7.5	7.5	7.5	6.2

*Non-base acres can be planted to fruits & vegetables without payment reduction or penalty.

Comparison of Options by Average Annual Payments (DP & CCP), 2002-07.

Crop	Option 1	Option 2	Option 3	Option 4a	Option 4b	Option 4c	Option 5
	Retain PFC base & yield	Retain PFC, add eligible oilseed	PFC, add elig. oils. & max. oils. offset	Update acres & retain yields	Update acres & CCP yld (70% incr)	Update acres & CCP yld (93.5%)	PFC, add elig. oils. & optimal oils. offset
Wheat	912	912	890	729	716	703	912
Barley	204	204		51	51	51	204
Oats	17	17					
Corn				51	59	61	
Sorghum							
Soybean		129	129	129	137	137	129
Sunflower		40	40	40	40	40	40
Canola							
Flax		20	160	160	160	160	47
Safflower							
Mustard							
Rapeseed							
TOTALS	1133	1321	1218	1160	1163	1151	1331
Rank	7	2	3	5	4	6	1

Total DP and CCP (with expected prices) each year, 2002-07, by Option.

Annual Payment*	Option 1	Option 2	Option 3	Option 4a	Option 4b	Option 4c	Option 5
	Retain PFC base & yield	Retain PFC, add eligible oilseed	PFC, add elig. oils. & max. oils. offset	Update acres & retain yields	Update acres & CCP yld (70% incr)	Update acres & CCP yld (93.5%)	PFC, add elig. oils. & optimal oils. Offset
DP	871	1014	929	898	898	898	1036
CCP 2002	0	0	0	0	0	0	0
CCP 2003	102	164	161	152	162	157	164
CCP 2004	478	545	515	465	468	447	526
CCP 2005	440	507	478	429	430	410	488
CCP 2006	312	366	340	309	312	299	347
CCP 2007	236	264	240	216	217	207	245
CCP Avg	261	308	289	262	265	253	295
Avg All	1133	1321	1218	1160	1163	1151	1331

* Annual payment limit per entity is \$40,000 for DP and \$65,000 for CCP.

Comparison of Options by Annual Payments (DP & CCP) Under Different Scenerios

Scenerio	Option 1	Option 2	Option 3	Option 4a	Option 4b	Option 4c	Option 5
	Retain PFC base & yield	Retain PFC, add eligible oilseed	PFC, add elig. oils. & max. oils. offset	Update acres & retain yields	Update acres & CCP yld (70% incr)	Update acres & CCP yld (93.5%)	PFC, add elig. oils. & optimal oils. offset
2002 (expectd prices)	871	1014	929	898	898	898	1036
2002-07 avg with:*							
expected prices	1133	1321	1218	1160	1163	1151	1331
max. CCP, 2003-07	1650	1848	1636	1552	1542	1508	1857
mid. CCP, 2003-07	1261	1431	1283	1225	1220	1203	1446
no CCP, 2003-07	871	1014	929	898	898	898	1036
Ranking within a scenerio:							
2002 (expected prices)	7	2	3	4	4	4	1
2002-07 avg with:*							
expected prices	7	2	3	5	4	6	1
max. CCP, 2003-07	3	2	4	5	6	7	1
mid. CCP, 2003-07	4	2	3	5	6	7	1
no CCP, 2003-07	7	2	3	4	4	4	1

*Average payments over the 2002-07 period with expected prices and with the following price scenarios:
 max. CCP, 2003-07 - expected prices for 2002 but prices at loan or below for max. CCP during 2003-07.
 mid. CCP, 2003-07 - expected prices for 2002 but prices which give 1/2 of max. CCP during 2003-07.
 no CCP, 2003-07 - expected prices for 2002 but prices high enough so no CCP during 2003-07.

Note: Crop base offsets in options 3 and 5 were determined under the expected price scenerio.

Change prices to see optimal crop base PFC/oilseed offsets under a different price scenerio.

Analysis Section: Detail

This section consists of tables that provide the details from which the summary tables are derived. There are tables for each option and information is itemized by crop. Base acres are listed, as are direct and counter-cyclical payments per acre and total per crop per year.

The per acre payment for each crop allows you to evaluate the relative value of different crop bases.