

**INCOME PROTECTION (IP) YIELD CALCULATION  
AND INDEXED INCOME PROTECTION (IIP) YIELD CALCULATION**

This procedure is effective for the 1998 crop year for calculating IP yields and effective for the 1999 crop year for IIP yields.

IP Yields are developed using data from all acreage of the crop in the county for a single unit by practice, type, variety (P/T/V), and FCI - 35 T-Yield map area if applicable. IP Yields are developed on a county enterprise basis. If multiple MPCU units need to be combined, use the procedure contained in the Crop Insurance Handbook, Exhibit 15, paragraph 1C and examples 1 & 2, Combining APH Yield History except that all references to optional units are expanded to include basic units. The following are items that have changed for IP for the 1998 crop year or are specific to the IP Yield and County Average Yield Calculation.

**A     PRODUCTION REPORTING REQUIREMENTS**

Insureds **MUST** use all previously certified yield history that is still within the base period and have IP Yield(s) calculated.

- (1) For the most recent APH crop year in the database, FCIC recommends that insureds complete an APH form for each standard APH unit using standard APH reporting requirements; however, if the producer elects to report total gross production and acreage by P/T/V and T-Yield such production reports are acceptable for IP purposes **ONLY**. The IP Yield Worksheet (See Figure 15) can be used when several units are being combined to compute the IP yield. Reporting acreage and production for the most recent crop year according to APH procedure provides the insured the opportunity to switch to other crop insurance products without recertifying the production history for the crop year and to qualify for optional units if applicable.
- (2) The insured must report and certify **ALL** planted acres and production for each APH crop year.
  - (a) For APH crop year(s) previous to the most recent crop year, acreage and production must be reported

separately by P/T/V (when indicated on the actuarial table) and by location (legal description) when "T" Yield Map areas are involved.

- (b) IP Yield(s) are compiled using the above acreage and production history by P/T/V as specified on the IP Actuarial Table (see examples in Paragraph E this exhibit).

**B**     Transitional Yields.

Four years of records are not required to establish an IP Yield for each P/T/V, or "T" Yield map area. If a P/T/V or "T" Yield map area requiring separate APH yields has less than four years of actual/assigned yields available, the IP T-Yield using standard category B APH procedure for variable T-Yields will be used to complete the database.

**C**     County Average Yield.

The county average yield is based on the average of the county yields from the IP FCI-35 Coverage and Rate Table for years the producer has actual yields reported. If a producer has less than 4 actual yields to compute the IP yield, then the county average yield is the average of the 10 most recent county yields. (Examples of calculating county average yields are shown in Figures 10 and 14.)

**D**     IP YIELD APPLICATION

The approved IP Yield (s) applies to all respective insurable acreage for a practice and type (only practices and types specified on the IP Actuarial Table are applicable). The IP Yield(s) are reported to FCIC as a type 15 record (yield record) for data processing purposes.

**E**     EXAMPLES OF CALCULATING IP YIELDS

The remainder of this exhibit is examples of combining MPCU units into an IP unit, calculating IP yields, calculating county average yields and IP rates.

**Example 1 -     Calculating an IP Yield from optional units in Map areas. (page 3)**

**Example 2 -     Calculating a County Average Yield and looking up an IP Rate. (Using no T-yields)**

(page 6)

**Example 3 - Calculating a County Average Yield and looking up an IP Rate. (Using T-Yields) (page 7)**

**Example 4 - Acreage record and Yield Record Example (Type 11 and 15 records)(page 8)**

**Example 5 - Calculating an IP Yield from APH historical units with practices different from the IP Actuarial Table practices. (page 11)**

**Example 6 - Indexed IP Yield calculation, rate look up, and electronic record layout - (Page 12)**

- (1) Example 1 - This example calculates an IP Yield from acreage covered under Map areas. The crop has been grown in two "T" Yield classification areas (Map Area). One P/T/V has been grown in each Map Area. Figures 1-3 are located in Map Area 1.

Figure 1, production reports for farm A, N-Irr Winter indicate two actual yields (one basic unit, standard APH located in section 11).

Figure 1: MPCU Unit 0100, Sec. 11, Map Area 1 N-Irr Winter

15.CY.	16.TP.	17.ACRES	18.YIELD
19XX	4,200	100.0	A42
19XX		0.0	Z
19XX	4,300	100.0	A43
19XX		0.0	Z
			19.
20.Prior Y.		21.Approved APH	

Figures 2 and 3, production reports for farm B, N-Irr Winter indicate two actual yields for unit 0201 (standard APH) in section 12 and no actual yields for unit 0202 (standard APH) in section 13.

Figure 2: MPCU Unit 0201, Sec. 12, Map Area 1 N-Irr Winter

15.CY.	16.TP.	17.ACRES	18.YIELD
19XX		0.0	Z

19XX	4,000	100.0	A40
19XX		0.0	Z
19XX	3,520	80.0	A44
			19.
20.Prior Y.		21.Approved APH	

Figure 3: MPCU Unit 0202, Sec. 13, Map Area 1 N-Irr Winter

15.CY.	16.TP.	17.ACRES	18.YIELD
19XX		0.0	Z
19XX		0.0	Z
19XX		0.0	Z
19XX		0.0	Z
			19.
20.Prior Y.		21.Approved APH	

Figures 4, 5 and 6 are production reports for farm C, Irr Spring which indicate three MPCU optional units (standard APH) located in sections 27, 28, and 36 all within Map Area 2. Unit 0301 does not have any actual yields. Unit 0302 has two actual yields. Unit 0303 has one actual yield.

Figure 4: MPCU Unit 0301, Sec. 27, Map Area 2 Irr Spring

15.CY.	16.TP.	17.ACRES	18.YIELD
19XX		0.0	Z
19XX		0.0	Z
19XX		0.0	Z
19XX		0.0	Z
			19.
20.Prior Y.		21.Approved APH	

Figure 5: MPCU Unit 0302, Sec. 28, Map Area 2 Irr Spring

15.CY.	16.TP.	17.ACRES	18.YIELD
19XX	4,000	50.0	A80
19XX		0.0	Z
19XX		0.0	Z
19XX	8,500	100.0	A85
			19.
20.Prior Y.		21.Approved APH	

Figure 6: MPCU Unit 0303, Sec. 32, Map Area 2 Irr Spring

15.CY.	16.TP.	17.ACRES	18.YIELD
19XX		0.0	Z
19XX		0.0	Z
19XX		0.0	Z
19XX	1,660	20.0	A83
			19.
20.Prior Y.		21.Approved APH	

Figures 7 and 8 are IP summary Yield APH Forms, one for each Map Area, Practice and Type.

Figure 7: IP Yield, Area 1 N-Irr Winter applicable to MPCU Units 0100, 0201, and 0202 (**IP UNIT 0100**)

15.CY.	16.TP.	17.ACRES	18.YIELD
19XX	4,200	100.0	A42
19XX	4,000	100.0	A40
19XX	4,300	100.0	A43
19XX	3,520	80.0	A44
			19. 169
20(A) PLEM. Y.	42	21. Approved APH Yield	

Figure 8, IP Yield, Area 2 N-Irr Spring Applicable to MPCU Units 0301-0303 (**IP UNIT 0100**)

15.CY.	16.TP.	17.ACRES	18.YIELD
19XX			N75
19XX			N75
19XX	4,000	50.0	A80
19XX		0.0	Z
19XX		0.0	Z
19XX	10,160	120.0	A84
			19. 314
20(A) PLEM. Y.	79	21. Approved APH Yield	

The forms are forwarded to the verifier who approves the Summary Yield. A separate IP Yield is required for each "T" yield map area for each practice, type, or variety (requiring separate APH yields) requested.

- (2) Example 2 - The following is a rating example using IP Yields calculated in Figure 7 and the sample IP FCI-35 in Figure 11.

The producer's IP yield for Non-Irrigated Winter Wheat is 42 bushels per acre. Assuming the years in the IP Yield Database were the most recent four years (1994-1997), the IP Yield and County Average Yield Calculation are calculated as follows:

Figure 9:

IP YIELD WORKSHEET

STATE: 53

TYPE: 011

COUNTY: 075

PRAC: 003

CROP: 0011

MAP AREA: 001

YEAR	TOTAL PRODUCTION	ACRES	SUMMARIZED YIELD	YIELD TYPE	COUNTY YIELD
				A=ACTUAL	
1994	4200	100	42	A	70
1995	4000	100	40	A	53
1996	4300	100	43	A	64
1997	3520	80	44	A	67

IP YIELD	42	COUNTY AVERAGE YLD	64
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Based on this calculation and using the IP FCI-35 from Figure 11, the appropriate 75% rate for IP N-Irr Winter Wheat would be 0.088.

- (3) Example 3 - The following is an example of calculating a County Average Yield and IP rate using information from Figure 8. (T-yields used)

Figure 10:

IP YIELD WORKSHEET

STATE: 53

TYPE: 012

COUNTY: 075

PRAC: 002

CROP: 0011

MAP AREA: 002

YEAR	TOTAL PRODUCTION	ACRES	SUMMARIZED YIELD	YIELD TYPE	COUNTY YIELD
1988					69
1989					66
1990					56
1991					77
1992			75	N	53
1993			75	N	56
1994	4000	50	80	A	70
1995		0	0	Z	53
1996		0	0	Z	64
1997	10,160	120	84	A	67

IP YIELD	79	COUNTY AVERAGE YLD	63
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Based on this IP Yield and County Average Yield calculation the appropriate rate for IP Irr Spring Wheat would be 0.039. (Note that a 10-year county average yield was used due to the IP Yield Summary having less than 4 actual yield years.)

- (4) Example 4 - The Acreage report would be developed the same way it currently is for master yields using two line entries (abbreviated) as follows:

Crop	Prac	Type	Unit	Map Area	Yield
Rate	Acres	Share			
Wheat	003 011	0100	001	42.0	0.088 100.0
	1.000				
Wheat 002	012	0100	002	79.0	0.039 320.0
1.000					

A new producer could submit an APH form for IP by practice/type/variety for the unit (essentially the summary alone) as outlined above. Or the



producer could develop the APH using standard APH  
procedures rolling the APH units into the IP  
Summary Yield by practice/type/variety.

The IP Yield information is stored electronically in the following data fields:

11 Record - **IP yield** in Yield Field  
**County Average Yield** in IP County Average Yield Field

15 Record - **Acres** in Yield Acre # Fields  
**Summarized Yield** in Annual Yield # Fields  
**Yield type** in Yield Type # Fields  
**IP Yield** in Approved Yield Field

**County Average Yield calculation:**

**If more than 3 years of actual years in the 15 record** (no t yields), the county average yield is the average of actual yield years' county yields from the FCI-35.

**If less than 4 years of actual yields on the 15 record**, the county average yield is the average of the most recent 10 years' county yields from the FCI-35.

FCI-35 COVERAGE AND RATES  
1998 AND SUCCEEDING CROP YEARS

ST: WASHINGTON (53)

CO: Whitman (075)

CROP: WHEAT (0011)

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INCOME PROTECTION BASE PREMIUM RATE

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75% COVERAGE LEVEL

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COUNTY AVERAGE YIELD

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PRODUCER	0-55	56-57	58-59	60-61	62-63	64-65	66-67	68-69	70-999
APH (BU)									

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0-25	0.048	0.102	0.125	0.138	0.183	0.219	0.259	0.304	0.474
26-30	0.033	0.069	0.085	0.095	0.127	0.153	0.182	0.215	0.350
31-35	0.027	0.056	0.070	0.077	0.103	0.124	0.149	0.176	0.290
36-40	0.023	0.047	0.058	0.064	0.086	0.103	0.123	0.146	0.242
41-45	0.021	0.041	0.050	0.055	0.073	0.088	0.104	0.124	0.204
46-50	0.019	0.037	0.044	0.049	0.064	0.076	0.090	0.106	0.174
51-55	0.017	0.033	0.039	0.043	0.056	0.066	0.078	0.092	0.149
56-60	0.017	0.030	0.036	0.039	0.051	0.060	0.070	0.081	0.131
61-65	0.016	0.029	0.034	0.037	0.047	0.054	0.063	0.073	0.116
66-70	0.016	0.027	0.032	0.035	0.043	0.050	0.058	0.067	0.105
71-75	0.016	0.026	0.031	0.033	0.041	0.047	0.054	0.062	0.095
76-80	0.016	0.026	0.030	0.032	0.039	0.045	0.051	0.058	0.087
81-85	0.016	0.025	0.029	0.031	0.038	0.043	0.048	0.055	0.081
86-90	0.016	0.025	0.028	0.030	0.036	0.041	0.046	0.052	0.076
91-95	0.016	0.024	0.027	0.029	0.035	0.039	0.044	0.049	0.071
96-999	0.016	0.024	0.027	0.029	0.034	0.038	0.042	0.047	0.066

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INCOME PROTECTION COUNTY YIELD TABLE

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CROP YEAR

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1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |

36 | 52 | 48 | 52 | 59 | 55 | 75 | 66 | 56 | 63 |

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1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |

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69 | 66 | 56 | 77 | 53 | 56 | 70 | 53 | 64 | 67 |  
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- (5) Example 5 - Calculating the IP Yield Summary from APH units having different practices/types.

This example shows how to compute an IP Yield for practice NPS (no practice specified) and type NTS (no type specified) from historical APH units with SF(summer fallow) and CC (continuous cropping) yields.

Figure 12: MPC I PRACTICE: 004 (CC) TYPE: 997

15.CY.	16.TP.	17.ACRES	18.YIELD
1994		0.0	30T
1995	1,000	20.0	50
1996	1,100	20.0	55
1997	1,000	20.0	50
			19.
20.Prior Y.		21.Approved APH	

Figure 13: MPC I PRACTICE: 005 (SF) TYPE: 997

15.CY.	16.TP.	17.ACRES	18.YIELD
1994			25N
1995			25N
1996	450	10	45A
1997	400	10	40A
			19.
20.Prior Y.		21.Approved APH	

Figure 14:

IP YIELD WORKSHEET

STATE: KANSAS

TYPE: NTS

COUNTY: ROOKS

PRAC: NPS

CROP: 0011

MAP AREA:

YEAR	TOTAL PRODUCTION	ACRES	SUMMARIZED YIELD	YIELD TYPE	COUNTY YIELD
1988					34
1989					10
1990					37
1991					27
1992					35
1993					16
1994			38	T	38
1995	1000	20	50	A	24
1996	1550	30	52	A	23
1997	1400	30	47	A	33

IP YIELD	47	COUNTY AVERAGE YLD	28
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If you wish to use the above worksheet, a copy of a blank form is attached.

- (6) Example 6 - The following is an example of calculating an indexed IP yield for a producer with less than four years of actual yields, looking up the indexed IP rate from the FCI-35 Actuarial Table and an abbreviated layout of the indexed IP information stored on the electronic acreage and yield record.

To calculate the Indexed IP yield, you need:

- 1) The **IP yield** (as described in Examples 1 - 3)
- 2) The producer's **County Average Yield** (Example 3)
- 3) The **expected yield** for the county (this is the most recent year's county yield from the

- 4) actuarial table)  
 4) The **difference** between the Producer's County Average Yield and their IP yield.

The formula is:

$$\text{Expected Yield} - (\text{County Average Yield} - \text{IP Yield}) = \text{Indexed IP Yield}$$

Figure 15.

IP AND INDEXED IP YIELD WORKSHEET

STATE: Maryland                                   TYPE: Grain           (016)  
 COUNTY: Allegany                                PRAC: NI             (003)  
 CROP: CORN                                     MAP AREA:

YEAR	TOTAL PRODUCTION	ACRES	SUMMARIZED YIELD	YIELD TYPE	COUNTY YIELD
19					99
19					102
19					80
19					104
19					88
19					104
19XX			71	N	102
19XX			71	N	91
19XX	7400	100	74	A	97
19XX	7400	100	102	A	102

IP YIELD	80	COUNTY AVERAGE YLD	97
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INDEXED IP YIELD CALCULATION:

County Avg Yield            minus                    IP Yield                    = Difference

$$\underline{\underline{97}} \quad - \quad \underline{\underline{80}} \quad = \quad \underline{\underline{17}}$$

Expected Yield            minus                    Difference(above)        = Indexed IP Yield  
 (From Actuarial Table)

$$\frac{102}{\text{---}} - \frac{17}{\text{---}} = \frac{85}{\text{---}}$$

The above producer had two years of actual production, so his IP yield was based on two actual yields and two transitional yields (use APH rules). The county average yield was computed using the 10 most recent county average yields from the FCI-35 (Figure 16) Coverage and Rate Table (in cases with 4 or more actual yields available then the county average yield is calculated using the county average yields for just the years which actual yields are reported).

Figure 16.

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10/16/1998  
PAGE 1

COUNTY ACTUARIAL TABLE

FCI-35 COVERAGE AND RATES  
1999 AND SUCCEEDING CROP YEARS

ST: MARYLAND (24) CROP:  
CORN (0041)  
CO: Allegany (001) PLAN:  
Indexed IP (45)  
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TYPE: (016) Grain PRAC:  
(002) Irrigated  
(016) Grain  
(003) Non-Irrigated

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FARM YIELD	PERCENT ELECTIONS				
	50	55	60	65	70
INTERVALS					
75					
0- 5	0.702	0.702	0.703	0.703	0.706
0.708					
6- 13	0.608	0.611	0.615	0.618	0.623
0.626					
14- 21	0.525	0.530	0.536	0.542	0.547
0.554					
22- 29	0.451	0.456	0.464	0.472	0.480
0.489					



30- 37	0.389	0.396	0.405	0.413	0.423
0.433					
38- 45	0.337	0.345	0.353	0.363	0.374
0.386					
46- 53	0.292	0.300	0.310	0.320	0.332
0.344					
54- 61	0.252	0.260	0.271	0.282	0.293
0.307					
62- 69	0.217	0.226	0.237	0.249	0.261
0.275					
70- 77	0.187	0.197	0.208	0.219	0.233
0.247					
78- 85	0.158	0.169	0.180	0.192	0.206
0.221					
86- 93	0.132	0.143	0.155	0.167	0.181
0.196					
94-101	0.108	0.119	0.131	0.144	0.158
0.174					
102-109	0.088	0.099	0.111	0.124	0.138
0.154					
110-117	0.071	0.082	0.094	0.107	0.121
0.137					
118-125	0.057	0.067	0.079	0.092	0.107
0.122					
126-133	0.045	0.055	0.067	0.079	0.094
0.110					
134-141	0.036	0.045	0.056	0.069	0.082
0.099					
142-149	0.029	0.037	0.047	0.059	0.073
0.089					
150-999	0.023	0.031	0.040	0.052	0.065
0.080					

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: INCOME PROTECTION COUNTY YIELD TABLE

: TYPE/PRAC | CROP YEAR

016/002	1979	1980	1981	1982	1983	1984	1985	1986
1987	1988							

	83	82	84	94	77	90	98	88
73	53							

	1989	1990	1991	1992	1993	1994	1995	1996
1997	1998							

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 | 97 | 102 | 99 | 102 | 80 | 104 | 88 | 104 | 102 | 91  
 |

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 |-----  
 | 016/003 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986  
 | 1987 | 1988 |

-----
73

-----
1989
1997

-----
97

-----  
 -  
 OPTION/OPTION NAME | OPTION FACTOR TABLE  
 |

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 -  
 (PF) PREVENTED PLANTING +5% | 1.010 |  
 (PT) PREVENTED PLANTING +10% | 1.020 |  
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TRANSITIONAL YIELD FACTOR TABLE

FCI-33

TYPE	PRACTICE	MAP AREA	T-YIELD
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016	GSG	002 I	79.0
016	GSG	003 NI	79.0

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 Using the Indexed Yield of 84 as calculated in Figure 15, and using the actuarial rate table in Figure 16., the appropriate rate at the 65% coverage level for this record would be .192.

The following is an abbreviated example of the acreage information (reported on the type 11 record) and the yield information (reported on the type 15 record) reported for a producer with an indexed yield as computed in Figure 15 which has a 40% share in 50 acres of corn, and 50% share of another 50 acres of corn.

Acreage Record (Type 11)

IP

County				Reported				
Plan Insured Code	Crop Code	Type Average Code	Prac Code	Unit	Yield	Rate	Acres	Share
45	0041	016	003	0100	84	.192	50	.5
	97							
45	0041	016	003	0100	84	.192	50	.4
	97							

Yield Record (Type 15)

County				Approved			Yield
Plan Code	Crop Code	Type Code	Prac Code	Unit	Yield	Index	
45	0041	016	003	0100	84	17	

If the producer's average yield is greater than the county average yield, the difference between the two is added to the expected county yield. For example using Figure 15, if the producer's IP yield was 100 bushels, the result would be (County average yield minus IP Yield (97 - 100) = - 3) subtracted from the Expected Yield (102 - (-3)) equals 105 bushel Indexed IP Yield.

If you wish to use the Worksheet which includes the indexed yield calculation a copy of a blank form is attached.

IP YIELD WORKSHEET

STATE:

TYPE:

COUNTY:

PRAC:

CROP:

MAP AREA:

YEAR	TOTAL PRODUCTION	ACRES	SUMMARIZED YIELD	YIELD TYPE	COUNTY YIELD
------	------------------	-------	------------------	------------	--------------

19					
19					
19					
19					
19					
19					
19					
19					
19					
19					
19					

IP YIELD		COUNTY AVERAGE YLD	
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IP AND INDEXED IP YIELD WORKSHEET

STATE :

TYPE :

COUNTY :

PRAC :

CROP :

MAP AREA :

YEAR	TOTAL PRODUCTION	ACRES	SUMMARIZED YIELD	YIELD TYPE	COUNTY YIELD
19					
19					
19					
19					
19					
19					
19					
19					
19					
19					
19					

IP YIELD		COUNTY AVERAGE YLD	
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**INDEXED IP YIELD CALCULATION:**

County Avg Yield            minus            IP Yield            =  
Difference

Expected Yield            minus            Difference(above)    =  
**Indexed IP Yield**  
(From Actuarial Table)  
=