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MULTIPLE PERIL CROP INSURANCE

- WHAT IS IT?
- SHOULD YOU BUY IT?
- THE NEW YORK EXPERIENCE

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MULTIPLE PERIL CROP INSURANCE:

WHAT IS IT?

SHOULD YOU BUY IT?

THE NEW YORK EXPERIENCE

Darwin P. Snyder¹

Introduction

Crop farmers, by choice of vocation, are risk takers. Crops are planted with the expectation that the harvested crop will not only return production costs but also a profit to the producer. Between planting and marketing of the crop, weather and market related events can adversely affect the results of even the best laid plans. Farmers insure against such losses through their own resources or formal insurance instruments.

In recent years, with low prices for many major farm commodities as well as the normal threat of adverse weather, crop insurance has been offered as a means of helping farmers spread the risk of crop losses. Nationwide, events such as drought, excessive moisture, hail, and frost account for 95 percent of crop losses as measured by Multiple Peril Crop Insurance (MPCI) claims experience from 1981 to 1986 (Figure 1).

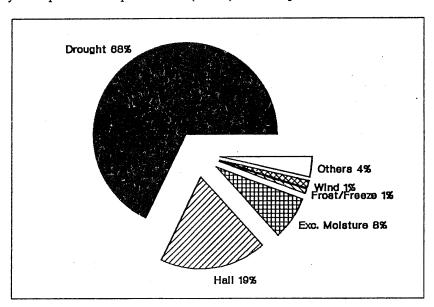


Fig. 1 MPCI claims experience, U.S., 1981-86

In the six years the multiple peril crop insurance program has been in force, U.S. producers have insured an aggregate of almost 300 million acres or an average of 49 million acres per year. That amounts to about 15 percent or the U.S. harvested cropland in the 1982 census of agriculture. Insured acreage has grown steadily from 45 million acres or less than 14 percent in 1982 to 61 million acres or nearly 19 percent in 1986. In 1986 as well as over the 1981 to 1986 period, farmers have received nearly \$2 in benefits for each \$1 of premium they paid.

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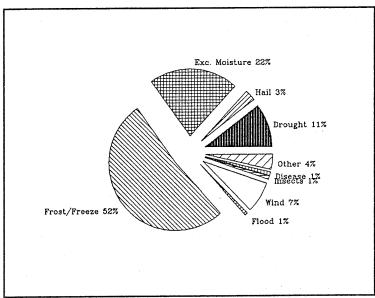


Fig. 2 MPCI claims experience, N.Y., 1981-86

The weather in New York does not present the same or as significant risks to crop production that are experienced by producers in most other states. New York producers are most likely to have crop losses due to frost as shown in Figure 2. In contrast, the most common reason for crop failure in the nation is drought.

New York farmers have not been quick to use crop insurance to reduce the risk of financial loss due to crop failure. During the 1981-1986 period, nearly 21,000 acres per year were covered by multiple peril crop insurance. This was about 0.5 percent of the harvested acres in the 1982 census. In 1986, coverage was less than the six year average. About 13,000 acres or 0.3 percent of harvested cropland was insured.

Despite this lack of use of crop insurance, adverse weather conditions do affect New York crop production. Crop insurance can provide a means of protection against financial loss due to crop failure in New York. Appendix I includes a summary of the benefits and costs of crop insurance in New York State by county for the period 1981-1986.

Fortunately, there are strategies that you can use to reduce the impact of these adverse events. Examples of risk-reducing strategies might include diversification or growing more than one crop; use of land tenure arrangements in which you share your risk with others, such as share rental arrangements; use of drought and disease resistant varieties and scheduling varieties to reduce risk; use of aggressive weed and pest control measures; and purchase of multiple peril and/or hail and fire crop insurance.

The purposes of this bulletin are: (1) to describe the basic features of multiple peril crop insurance (MPCI), with emphasis on its role as a tool for reducing your financial risk; and (2) to describe a budgeting procedure that you may find useful in assessing whether you should buy crop insurance protection. Our focus will be on the impact of the purchase of MPCI on your farm's net cash flow and balance sheet should an adverse event arise. Specific details of MPCI contract provisions should be discussed with a qualified crop insurance agent.

Three points should be emphasized in relation to the use of crop insurance in New York.

- To be eligible for crop insurance payments, you must comply with the Sodbuster/Swampbuster provisions of the Food Security Act of 1985. Your local ASCS office has details.
- Emergency disaster loan eligibility is dependent upon the use of crop insurance where it is available. This linkage originated with the 1985 farm bill and became effective in 1987. FmHA low interest

emergency disaster loans are not available to producers who fail to carry crop insurance on all insurable crops grown in the year in which the disaster occurs.

- April 15th is the closing date to obtain coverage for spring planted crops covered in New York. Closing dates for fall planted crops are September 30th for winter barley and wheat, November 20th for apples, and December 10th for grapes. A table indicating crops covered in 1988 by county is provided later in this publication.

What is Crop Insurance? Should You Buy It?

Crop insurance is available in two forms: (1) limited peril insurance, including commercial hail and fire insurance; and (2) multiple peril crop insurance (MPCI).

Hail and fire crop insurance (H/FCI) is offered under two types of plans--spot and area. Spot (acre-by-acre) plans pay you for losses based on the percentage loss occurring due to hail/fire on your damaged acres. Normal yields on non-damaged fields do not reduce payments. In contrast, under area hail and fire plans, indemnities are paid based upon the percentage of yield loss due to hail/fire averaged across your insured unit.

MPCI guarantees a minimum average yield per acre for the insured crop for the insured unit, with the minimum determined by the deductible you choose. If your average yield (adjusted for quality) for the insured unit falls below the level specified in your insurance policy, the insurance company agrees to pay you the difference. The guarantees are based on commonly accepted standards for good quality grain. Harvested yields are adjusted for quality factors such as grade, kernel quality and moisture level for insurance purposes.

Crop Insurance May Be Attractive To You Because:

- 1. It represents an opportunity to substitute a known cost (annual premiums) for unpredictable and irregular yield losses, particularly catastrophic losses. You can transfer a portion of your yield risk.
- 2. It stabilizes your farm's cash flow, thereby making you a lower risk borrower. This may improve access to and terms for borrowed money.
- 3. It may provide the financial liquidity needed to remain in farming for another year in the event of a significant crop yield loss.
- 4. It may increase the attractiveness of using cash forward contracts since your risk of not being able to perform in accordance with the contract is reduced.
- 5. Purchasing MPCI (if available in your county) is an eligibility requirement for emergency low-interest loans.

Major Factors Which Influence Your MPCI Purchase Decision Include:

- 1. Your family's financial capacity to withstand a significant crop yield loss; that is, your family's capacity to self-insure.
- 2. Your family's willingness to take risk; that is, your family's attitude toward the trade off between greater profit vs. lower risk.
 - 3. The probability of low yields...below your insured coverage.
 - 4. The expected benefits of risk reduction from the insurance versus the annual premium cost.

The purchase of multiple peril crop insurance may simultaneously increase your long-run average net profit per year as well as reducing your downside risk. If the purchase of multiple peril crop insurance significantly reduces your probability of bankruptcy over the next decade, your long-run average net profit per year (and net worth accumulation) may increase with the purchase of MPCI.

How Has MPCI Performed in New York?

New York farmers have used crop insurance relatively little. Of the approximate 4.1 million crop acres harvested in 1986 only 13,000 or 0.3% of the crop acres were insured.

Figure 3 shows the premium that farmers have paid into crop insurance and the loss payments that they have received for 1981 to 1986. During this period, New York farmers with MPCI received more in claims than they paid in premiums in all but one year. Only in 1983 did premium costs exceed benefits received.

The average benefit/cost ratio for the entire period was \$1.57; for every dollar in premium paid by farmers during that period they received \$1.57 in return.

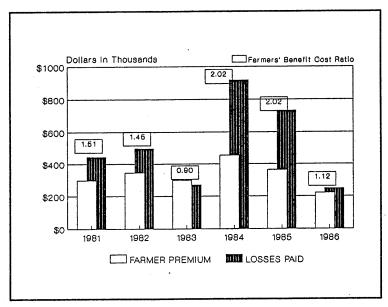


Fig. 3 Farmers Premiums Paid Vs. Farmers Claims Recieved, Mulitple peril crop insurance in New York, 1981-86

Basic Features of Multiple Peril Crop Insurance

What Crops Does It Cover?

Multiple peril crop insurance is offered on all ASCS program crops and is now available on many other commercial crops. Table 1 depicts the crops that are insurable by county in New York state.

How Is It Marketed?

Crop insurance is marketed by local insurance agents who, in most cases, sell crop insurance along with other lines of insurance. The objective of these agents is to provide a full range of insurance protection from crop insurance to farm/home owners' policies to meet farmers' risk management needs.

TABLE 1.

MULTIPLE PERIL CROP INSURANCE New York, 1988

SPRING CROPS	Apl, Crn, Grs, Oat	Crn, *Oat	Crn. Grs. Grs. Oat	Crn, Grs, Gra, Oat, Soy	Crn, Gra, Oat, Pot	Apl, Crn, GrS, *Oat, Pot	Crn, *Oat	Crn, Oat	Crn, Oat	Apl, Crn, GrS, Gra, #Oat	Crn	Crn, GrS, Oat	Apl, Ben, Crn, DyB, Gra, GnP, Oat,	Por, soy, swc	100	Ben, Crn, DyB, Gra, GnP, Oat. SwC			Insurance program details			Please refer to the Date Table in the individual	nts for a listing of	by crop.			Alm/Almonds Anj/Annles Bly/Barlow Bon/Bosns of the Although	en/beans C & P, Cit/Citrus,	Deans, DyP/Dry Peas, ELS/Extra Long Staple Cotton, Flx/Flax.	ing, FSc/Fresh Harket Sweet	Corn, FTo/Fresh Tomatoes, GrS/Grain Sorghum, Gra/Grapes, GnP/Green	eaches, Pnt/Peanuts,	Peppers, Pop/Popcorn, Pot/Potatoes, Rai/Raisins, Ric/Rice,	Kye/Kye, Sal/Salilower, Soy/Soybeans, SuB/Sugar Beets, Sgc/Sugarcane, Sun/Sunflowers, Suc/Suset Corn mcz/mmb) Conne	Tob/Tobacco, Wal/Walnuts, Wht/Wheat,								
WINTER CROPS	_	y Bly, Wht	Blv.Wht	Bly, Wht	Bly, Wht	Bly, Wht	Bly, Wht	Bly, Wht	Bly, Wht	Bly, Wht		Bly, Wht	BIY, WIT		Blv Wht	Bly, Wht	•		No FCI-35 Rate Table established.	curougn FAU.		Please refer to the Dat	County Actuarial Documents for a listing of	specific program dates by crop.		REVIATIONS	/Annles Blv/Berley B	Critical Division Critical	Peas, ELS/Extra Long St	uction, FgS/Forage Seed	Tomatoes, Grs/Grain So	Peas, HyS/Hybrid Seed, Oat/Oats, Pch/Peaches, Pnt/Peanuts,	P/Popcorn, Pot/Potatoes	Itlower, Soy/Soybeans,	J/Walnuts, Wht/Wheat.								
CODE COUNTY		093 Schenectady		_				•	-	_	-	115 Washington	III) WAYNE	. 611	121 Sycalog				•	BTCBTTBAB		NOTE				KEY TO CROP ABBREVIATIONS	Alm/Almonde. An	CAT/Citrus Trees	Beans, DyP/Dry	FgP/Forage Prod	Corn, FTo/Fresh	Peas, HyS/Hybri	Pep/Peppars, Po	Kye/Kye, Sar/Sa 'Sun/Sunflowere	Tob/Tobacco, Wa								
SPRING CROPS	Apl, Crn, *Oat	Crn, Oat	1100	Cra Gra Oat	Apl. Ben. Crn. DvB. Oat. Pot. Sov	Crn, Grs, Gra, Oat	Crn, Oat	Crn, Oat	Apl, Crn, Oat	Apl, Crn, *GrS, Gra, Oat	Crn, Oat	Crn, *Oat	Apl, Crn, Oat	Ben, Crn, DyB, Gra, GnP, Oat,	FOL, SWC	Api, crn, "Oat	Crn, *Oat	Ben, Crn, DyB, GnP, Oat, Pot, SwC	Crn, *Oat		Crn, Grs, Oat	Crn, GrS, Oat	Grn. Oat	Crn, DvB, GrB, GnP, Oat, Pot,	Soy, Swc	Crn, Oat, Pot	Apl, Ben, Crn, DyB, GnP, Oat,	Pot, Swc	Ben, Crn, GrS, Oat		Apl, Crn, Gra, Oat	Ben, Crn, Grs, Oat, Pot	Apl, Crn, Oat	Apl, Ben, Crn, DyB, Gra, GnP, Oat,	Soy, SWC	Apl. Ben. Crn. DvB. Grs. GnP. Oat	Pot, Soy, SwC	Apl, Crn, GrS, Oat	Crn, Oat		Crn, Grs, *Oat		Crn, Oat
WINTER CROPS	Wht	Bly,Wht	143	Blv. Whe		Bly, Wht	Bly, Wht	*Bly, Wht	*B1y, *Wht	Bly, Wht	Bly, Wht	Bly, Wht	Bly, Wht	Bly, Wht	p	Bly, wilt	(Fr.	Bly, Fgs, Wht	Wht		BIY, WILL	BIY, FgP, FgS, Wht	Blv.Wht	Bly, Wht		Bly, Fgs, Wht	Bly, Wht		bly, who		Bly, Wht	Bly, Wht	Bly, Wht	Bly, FgP, FgS, Wht	*Blv.FdS.Wht	Blv.Wht		Bly, Wht	Bly, Wht		*Bly, Wht	•	Bly, FgS, Wht
COUNTY	Albany	Allegany		Cattarangua	Cavuga	Chautauqua	Chemung	Chenango	Clinton	Columbia	Cortland	Delaware	Dutchess	Erie	2	Franklin	Fulton	Genesee	Greene	Hamilton	Herkimer	Jerrereon	Levis	Livingston		Madison	Monroe	Monthern	Montgomery		Niagara	Oneida	Onondaga	Ontario	Orange	Orleans		Овмедо	Otsego		Rensselaer	·	St Lawrence
ZOOD	001	003	000	000	66	013	015	017	019	021	023	025	027	053		033	035	037	039	043	1	045	049	051		053	055		059	061	063	065	067	690	071	073		075	077	083	083	085 087	680

What Causes of Yield Losses are Covered?

MPCI, on most crops, covers unavoidable production losses caused by:

- 1. Drought
- 2. Excessive moisture
- 3. Hail
- 4. Wind
- 5. Frost/freeze
- 6. Tornado
- 7. Lightning
- 8. Flood
- 9. Insect infestation
- 10. Plant disease
- 11. Excessive temperature during pollination
- 12. Wildlife damage
- 13. Fire
- 14. Earthquake

MPCI does not cover losses resulting from:

- 1. Poor farming practices
- 2. Low commodity prices (e.g., crop was not harvested because it was not worth harvesting)
- 3. Theft
- 4. Specified perils which are excluded in a limited number of policies.

There are specific restrictions on some crops based upon acceptable farming practices. For example, in most instances potatoes cannot be insured if potatoes were grown on the same land in the two previous years. Similarly, there are restrictions on planting dates, yield information, and other requirements. See a qualified insurance agent for program details.

How Much Coverage Can be Purchased?

There are two decisions that determine the amount of coverage: (1) the level of coverage (i.e., the amount of deductible); and, (2) the price at which yield losses are converted to cash.

Your insurance yield is based upon your actual production history (APH) which is an estimate of your 10-year average yield on the insurance unit. APH provides coverage based upon your proven performance record, not county averages.

Level of Coverage. You have the option of insuring at one of three coverage levels:

- 1. 75% of your insurance yield (i.e., 25% deductible)
- 2. 65% of your insurance yield (i.e., 35% deductible)
- 3. 50% of your insurance yield (i.e., 50% deductible)

MPCI payments are made if yields fall below your insurance yield guarantee.

Your yield guarantee per acre is equal to:

Insurance yield x coverage purchased (i.e., 50%, 65%, or 75%)

For example, if your insurance yield is 102 bushels of corn per planted acre and you purchase 65% coverage (35% deductible), your yield guarantee would be:

102 bu./acre x 0.65 = 66.3 bu./planted acre.

Commodity Indemnity Price Elections.

You must select a commodity indemnity price from the three elections available. This sets the price at which losses will be paid. For example, the 1988 low, medium, and high price elections for corn are \$1.25, \$1.50 and \$2.00, respectively.

How are Indemnity Payments Calculated?

If your average yield (adjusted for quality) is greater than your yield guarantee, no indemnity is paid. If your average yield per acre is less than your yield guarantee, the indemnity paid is equal to:

(Yield guarantee - average yield for insured unit) x indemnity price.

For example, using our previous case example, if your yield was 50 bu./planted acre your indemnity payment would be:

(66.3 bu./acre yield guarantee - 50 bu./acre realized yield) x \$2.00/bu. indemnity price = 32.60/planted acre.

Indemnity payments are taxable income.

What Does Multiple Peril Crop Insurance Cost?

Premium rates are based on your historical yields and the loss history for the county in which you farm. The premium rate, as a percent of the dollar value of protection, varies with your 10 year average yield level. It's important to note that the higher your average yield levels are, the lower the premium rate is as a percent of the dollar value of protection. Contact your crop insurance agent for your premium rates.

You have the option of buying MPCI with or without hail and fire coverage. However if you choose to opt out of the hail and fire insurance component of MPCI, an equivalent dollar amount of hail and fire coverage must be purchased as a separate hail and fire policy.

Premiums are generally due around the normal harvest period and if not paid within 30 days of billing, interest may be charged for late payment. Premium payments are a tax deductible expense.

To encourage broader participation, Congress authorized a 30 percent subsidy for premiums at the 50 percent and 65 percent coverage levels which is included in the quoted rates. However, if you choose 75 percent coverage, you must pay the full additional premium cost over the 65 percent level which decreases the effective subsidy rate. You also benefit from the federal government paying all of the administrative costs to operate the program. These two subsidies reduce your premium cost by about 50%.

Your premium/acre is calculated as follows:

Yield guarantee x indemnity price selected x premium rate.

For example, if we use our case example yield guarantee of 66.3 bu./acre, an indemnity price of \$2.00/bu., and an example premium rate of 3.2% the premium is:

 $66.3 \text{ bu./acre } \times 3.2\% \text{ rate } \times \$2.00/\text{bu.} = \$4.24/\text{acre}$

The 3.2% premium rate is based upon 65% coverage for your insurance yield in your county.

Do I Have To Insure All of My Crop?

If you purchase MPCI for a particular crop, all of that crop you are raising in the same county must be insured. It is not possible to just insure the portion of a crop that is most susceptible to loss. However, each

crop is insured separately, so you may insure one crop without having to insure a second crop produced in the same county. A qualified crop insurance agent can define the insurable units for the land you farm.

Claims are paid by farm unit. Separate units exist when there are different ownership interests in the crop. If you crop-share rent a second farm, the rented acreage constitutes a second unit. Providing proper records are maintained, you may qualify for more than one unit if your land is located in separate ASCS farm serial numbers.

When Must MPCI Be Purchased?

MPCI must be purchased by the date specified as the end of the sales period. In New York, the closing dates generally are September 30 for winter crops, November 20 for apples, December 10th for grapes and April 15 for spring crops.

Analysis of the MPCI Purchase Decision

The decision to purchase MPCI should be based on the likelihood of a covered loss in your area and, in particular, on your farm. Assume your 10 year average corn yield is 102 bushels per acre and that you insure at the 65 percent level. In those 10 years, how often was your yield below 66 bushels per acre (65 percent of 102 bushels)? An insurance claim would be paid only for bushels below that yield. Once you decide on your most likely disaster yield you can proceed to evaluate the likelihood of a covered loss under the MPCI program and whether to use MPCI or self insure.

To illustrate an analysis of the MPCI purchase decision we'll look at an example of historical yields and other assumptions. We'll also project cash flow differences with MPCI at yield levels low enough to trigger a claim.

Analyzing Historical Yields

In our example, the crop under consideration is corn. The farmer's corn yield per planted acre for the last ten years are as follows:

Year	Yield bu./acre
1987	110
1986	7 8
1985	94
1984	120
1983	50
1982	118
1981	110
1980	98
1979	125
1978	120

For this farm, the lowest yield was 50 bushels per acre in 1983. The 10 year average yield was 102 bushels per acre. This would be your insurance yield for the 1988 crop.

Historical yields help identify the range in possible yields and the average yield you might expect. Examining these yields helps you determine the risks you face and the alternative yields you might consider in the cash flow analysis.

Cash Flow Projection

In analyzing the effects of using MPCI on your cash flow, only those flows related to the decision need to be considered. You're interested in the difference between the benefits and costs of MPCI and how they

will affect your cash flow over time. The MPCI decision is made before the crop season begins and the premium a fixed cost that is unaffected by yield. MPCI benefits are dependent upon yield. For a given year, all other costs and returns will be the same with or without MPCI. Therefore, your decision to use MPCI can be based on the anticipated MPCI benefit/cost ratio for your situation and your tolerance to the risk of a loss.

Table 2. Analysis of MPCI Benefits and Costs per Acre for Three Coverage Levels and Two Disaster Yield Levels

(Crop: Corn grain; Average yield: 102 bu/ac; Price election: 2.00/bu).

(Crop: Corn grain, Avera	ge jioia.	MPC	I Covera	ge Level		
-	509		659		759	%
Item	50	40	50	40	50	40
1. Yield/planted ac, bu	50	40	50			
Disaster Year:						
MPCI Cost 2. Insurance yield, bu/ac			102-			~~~~~
2. Insurance yield, bu/ac	5(<u> </u>	6.5	5	7.	5
3. Level of coverage, %			3.		5.	.9
4. Premium rate, %	2.		 -2.00-			
5. Price election, \$/bu	5) 0.0		2.00 4.2		9.0	13
6. Premium, \$/ac (2x3x4)	x5) 2.3	33	4.2	24	٠.٠	33
MPCI Return						
7. Yield guarantee ¹ ,		_			76	: =
bu/ac (2x3)	51	0	66	.3	70	
8. Yield claim, bu/ac				0.0	065	265
(7-1)	1.0	11.0	16.3	26.3	26.5	36.5
9. MPCI payment,					#n 00	<i>6</i> 0.00 .
\$/ac (8x5)	2.00	22.00	32.60	52.60	53.00	73.00
Net Cash Flow ²						40.00
\$/ac (9-6)	-0.35	19.65	28.36	48.36	43.97	63.97
<i>5</i> , 20 (5 0)						
Loss Period				47		
10. Loss frequency - 1 yr	. in		10-	a		
11. MPCI payments/loss	i.					
\$/ac (8 x 5)	2.00	22.00	32.60	52.60	53.00	73.00
12. Premium/loss,	25.00					
	23.50	23,50	42.40	42.40	90.30	90.30
\$/ac (6x10)	20.00	20.00				
NOOL Devest/Cost Date	.3					
MPCI Benefit/Cost Rati	.09	.94	.77	1.24	.59	.81
(11/12)	.09	.⊅⁴	.,,	2. ear f		
						11

Yield guarantee must exceed yield per planted acre to result in a covered loss.
Compared to no MPCI coverage for each situation in the disaster year only.

Table 2 provides a procedure to determine the net cash flow resulting from MPCI coverage during a disaster year at two yield levels for the three levels of coverage offered. Premium rates depend on yield levels within a county and can be obtained from local MPCI agents. The table illustrates the annual premium for each coverage level and the MPCI payment that would result for two yield levels in a disaster year. The net cash flow indicates the additional income the insured would receive compared to the uninsured producer. For example, with a yield of 50 bushels per acre at the 65 percent coverage level, an insured producer's income would \$28.36 per acre higher than a producer without MPCI.

In a disaster year, higher coverage levels result in higher net cash flows for a given yield. However, disaster yields cannot be predicted. Therefore, the MPCI purchase and option decisions should be made according to your best estimate of the frequency and severity of disaster yields below your particular yield guarantee.

³ Benefits exceed cost if ratio exceeds 1 (disregarding the time value of money).

In our example of historical yields, we determined a 10 year average yield of 102 bushels of corn per acre. The highest coverage level, 75 percent, would require a yield to be less than 76.5 bushels per acre (102 bushels x 75 percent) for an MPCI payment to occur. Only in one year, 1983, could a claim have been filed. Thus, the record would indicate the likelihood of an MPCI payment in one year out of 10.

Assuming the same MPCI premium and benefit factors over a period of 10 years, Table 2 shows the 10 year premium cost related to the once-in-10 year return. This is expressed as the MPCI benefit/cost ratio. Over the planning period of 10 years, MPCI benefits exceed MPCI costs if the ratio exceeds one. The ratios shown in Table 2 would have been lower if an interest charge had been made for the premium cost during the 10 years. However, the procedure will serve to demonstrate a reasonable approach to an analysis of the MPCI purchase decision.

For the insurance yield and price election used in Table 2, the 65 percent coverage level results in the highest MPCI benefit/cost ratio for a given yield level. As noted earlier, the premium increases more rapidly between 65 and 75 percent coverage than between 50 and 65 percent coverage. This reflects lower government subsidies at the higher coverage level.

A worksheet form of Table 2 is provided in Appendix II for use with your actual figures. Its use will aid in your decision to use MPCI or not and, if so, at what coverage level and crop price election.

Analyzing Your Financial Reserves

Even though the MPCI benefit/cost ratio for a 10 year period is less than one, your financial reserves (or lack of them) may cause you to consider MPCI to reduce the adverse financial results in the year of a disaster yield as yield levels may be more likely to decrease below the level at which a covered loss occurs. In situations with low financial reserves, the MPCI payment could be crucial to the survival of the business.

The implications of reduced yields are influenced by the specific debt level. For instance, for a relatively low debt situation, crop insurance may not be as important as it is for the manager in a relatively high debt situation. However, the low debt manager needs to consider long run implications and the risk strategies that will contribute to achieving the long run goals of the business.

Those managers with intermediate debt may be in a position to accept the risk but one bad year would force them into a high debt situation. They would have less management control and flexibility over their farming operation. The high debt manager definitely needs to consider crop insurance as a tool that can transfer risk and help to keep the farm in business. In some cases the lender will require crops to be insured.

In the final analysis the benefits of crop insurance to you depend upon your family's capacity and willingness to take risks and the probability of a loss occurring. Table 2 and the Appendix II worksheet were designed to help you with the first step in evaluating your capacity to withstand yield losses. You can then apply the results of the cash flow analysis to your specific financial situation by thinking about the implications for your balance sheet.

Questions you have for your crop insurance agent.

APPENDICES

- I Crop Insurance, by County, New York State, 1981-86
- II Worksheet

1981-86 New York State Summary of Crop Insurance - All Crops Parmers' Benefits/Cost Comparisons

11/13/87

APPENDIX I. CROP INSURANCE BY COUNTY, NEW YORK STATE, 1981-86

!; ======= MPCI & CH/P PROTECTION ========= 8.08 8.08 1.00 1.00 6.75 3.00 0.00 1.50 4.00 0.00 0.00 0.00 Benefit Cost 0.00 Katio Losses Paid \$(000) Yarmers' Premium Protection in force \$(000) 132 443 199 199 654 372 148 ,948 !; ====== COMMERCIAL CROP HAIL/FIRE ======== 0.00 0.00 0.00 8.8 Cost Ratio 88 Losses Paid \$(000) Parmers' Premium Protection in force \$(000) 0.50 1.00 6.75 3.00 5.18 0.00 1.50 0.50 0.83 5.57 3.61 0.00 0.00 8.08 Coat Losses Paid \$(000) Parmers' Premium Total Premium \$(000) Acres Insured (000) Protection in force \$(000) 394 344 141 590 349 114 114 County Total ('81-86) CATTARAUGUS CATTARAUGUS CATTANAUGUS CATTARAUGUS CATTARAUGUS CHAUTAUQUA CHAUTAUQUA CHAUTAUQUA CHAUTAUQUA CHAUTAUQUA CATTARAGUS ALLEGANY ALLEGANY ALLEGANY ALLEGANY ALLEGANY CAYUGA CAYUGA CAYUGA CAYUGA BROOME ALBANY ALBANY ALBANY ALBANY

1981-86 New York State Summary of Crop Insurance - All Crops Parmers' Benefits/Cost Comparisons

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1981-86 New York State Summary of Crop Insurance - All Crops Farmers' Benefits/Cost Comparisons

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1981-86 New York State Summary of Crop Insurance - All Crops Parmers' Benefits/Cost Comparisons

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Farmers' Benefit Cost Ratio	2.59	3.3	1.45	0.27	7.00	0.00	0.0	0.00	3.0	8.	3.6	0.0	9.0	8.6	3.5	90.0	3 6	3.0	0.00	1.00	1.00	0.00	8.3	0.67	6	0.0	0.00	0.00	2.58	4.20	3.03		0.00	0.00	00.0	00.0	00.0	0.46
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1981-86 New York State Summary of Crop Insurance - Ali Crops Parmers' Benefits/Cost Comparisons

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St County Name Yr	in force \$(000)	Insured (000)	Premium \$(000)	Premium \$(000)	Paid \$(000)	Cost	ii in force	Premium S(000)	Paid S(000)	Cost	in force (1000)		Paid S(000)	Cost	: == ==
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1981-86 New York State Summary of Crop Insurance - All Crops Parmers' Benefits/Cost Comparisons

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ALL MOLTIPLE PERIL CRO	## ## ## ## ##	== ALL MULTIPI	DE PERIL CRO	P INSURANCE !	PROTECTION ==		Farmera	יי ===== נחשש	OMBEKCIAL CKUP MAIL/FIKE	ALL/FIRE ==	Parmore	= =:	=		- NOTECTION	Promice	: ::
		Protection	Acres	Total	Parmers'	Losses	Benefit	Protection		Losses	Benefit	: :: :	Protection	Farmers'		Benefit	=== :
St County Hame	Yr	\$(000)	(000)	\$(000)	Fremium \$(000)	\$(000)	COST ;	; in force ;; \$(000)	Freelum \$(000)	\$(000)	Cost Ratio	:= ::	1n Force \$(000)	Premium \$(000)	Paid \$(000)	cost Ratio	===
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MY	83	5,998	11	395	300	271	0.00	119	35	18	0.51	::	6,717	335	289	98.0	==
N.	84	9,130	22	909	455	918	2.02	11 924	09	7.7	0.37	::	10,054	515	940	1.83	==
N.Y.	82	7,362	74	480	362	732	2.02	1,723	69	-	0.01	==	8,585	431	733	1.70	==
N.	88	4,417	13	292	221	248	1.12	96		0	0.00	::	4,513	224	248	1.11	==
State Total		38,728	125	2,621	1,981	3,116	1.57	4,214	229	99	0.29	==	42,942	2,210	3,182	1.44	==

Notes: AACI Estimates are based on PCIC & CUIAA Data; MPCI Subsidy estimated at 254; 1986 Data as of 4/87; Performance data by county is available upon request.

APPENDIX II. WORKSHEET

Analysis of MPCI Benefits and Costs per Acre for Three Coverage Levels and Two Disaster Yield Levels

(Crop:;	Average yie	ld:	; P:	rice elect	ion:).
		MI	CI Cover	age Leve	L	
Item	50	0%	65	<u>~</u>	75%	
1. Yield/planted ac,						
Disaster Year:						
MPCI Cost					•	
2. Insurance yield,	/ac					
3. Level of coverage						
4. Premium rate, %	· -					
5. Price election, \$/						
6. Premium, \$/ac (2	2x3x4x5)					
MPCI Return	,					
7. Yield guarantee ¹ ,						
/ac (2x3)						
8. Yield claim, bu/ac	c					
(7-1)						
9. MPĆI payment,						
\$/ac (8x5)						
, ,						
Net Cash Flow ²						
\$/ac (9-6)		•				
Loss Period						
10. Loss frequency -	1 yr. in					
11. MPCI payments						
\$/ac (8 x 5)						
12. Premium/loss,						
\$/ac (6x10)						
	2					
MPCI Benefit/Cost 1	Ratio ¹					
(11/12)					*****	

Yield guarantee must exceed yield per planted acre to result in a covered loss.
 Compared to no MPCI coverage for each situation in the disaster year only.
 Benefits exceed cost if ratio exceeds 1 (disregarding the time value of money).