MISSISSIPPI STATE UNIVERSITY EXTENSION

Factors to Consider When Selecting a Crop Insurance Policy

Cotton production exposes producers to significant risks throughout the year. These risks are typically larger and more extensive than those faced by producers of other major row crops due to the comparatively large capital investments in specialized equipment, practices, and inputs required to produce cotton competitively. It is critical that cotton producers are aware of effective risk management alternatives and use them appropriately. The purpose of this publication is to identify important factors that producers should consider when selecting a crop insurance policy. This publication is intended only as a guideline for producers. Consult your insurance agent before making insurance policy purchases.

Need for Risk Protection

The first factor to consider when evaluating an insurance policy is the need for risk protection. Risk is commonly defined as an aspect of business decisions that a manager has no control over. For cotton and row-crop producers, decisions related to input prices, interest rates, and weather-affected production are generally considered risky. Every individual has a different attitude toward exposure to unknown events or risks; this is known as risk preference. Many factors, including the financial position of the producer and exposure to other risks, may influence a person's risk preference. A strongly risk-averse producer would likely be comfortable with a higher level of crop insurance protection, while a less risk-averse producer might prefer a lower level of protection.

Another factor to consider is the existence of off-farm income, savings, and/or diversification. Many farming households receive income from off-farm employment of the producer, the spouse, or both. If a significant portion of the total household income is derived from off-farm employment, then a lower level of crop insurance protection may be acceptable. Savings accounts and diversification have a similar effect; large savings or diversification in other industries reduce the risk of being unable to pay for the cost of producing a crop.

Different types of crop insurance policies allow producers to tailor their risk management programs to their risk preferences. These products include yield protection (YP), revenue protection (RP), and revenue protection with harvest price exclusion (RP-HPE). Another alternative is to purchase catastrophic insurance (CAT), which provides a low coverage level and price guarantee at a very low cost. If the producer's main concern is the total loss of a crop, then the CAT insurance policy offers a low level of risk protection for just a few dollars.

Unit Structure Availability

Different types of crop insurance policies have different unit structures. The unit structure impacts the size of the premium a producer pays for a specific level of coverage. Producers should understand the concept of unit structure and then choose their insurance policies according to what best meets their individual needs.

The term "unit" or "insurance unit" refers to a parcel of land that is insured separately from other parcels. An individual farm may be divided into several units defined by ownership or lease arrangements, management practices, or location. Four alternative unit structures are available under various types of crop insurance coverage: basic units, optional units, enterprise units, and whole farm units. Producers may receive a discount on their premium if they can move toward a larger insurance unit. However, not all unit structures are permissible for every type of insurance. For example, yield protection coverage is not available on whole farm units. Table 1 identifies the available unit structures for each of the types of crop insurance available for cotton.

Table 1. Available unit structure for different types of crop insurance products.

	Types of Units			
	Basic	**Optional**	**Enterprise**	**Whole Farm**
CAT	Yes	No	No	No
YP	Yes	Yes	Yes	No
RP	Yes	Yes	Yes	Yes

Correlation with Area Production

Group insurance policies such as Area Risk Protection Insurance (ARPI) are available in some areas and provide a lower-cost risk management alternative. Group insurance policies pay indemnities based on county production

averages. Individual producer actual yields are not used; rather, the county average yield determines losses.

When evaluating a group insurance policy, producers must account for how their yields compare with the yields of other area producers to effectively choose the most suitable insurance policy. If a producer's individual production on a yearly basis follows county production trends fairly closely in direction and magnitude, then a group insurance policy could be an attractive option. Conversely, if a producer's production has a weak relationship with area production, then group policies are not likely to be an effective risk management tool.

Government Price Support Programs

Government price support programs represent another potential source of risk protection for producers. Consider the federal marketing loan program: if the price falls below a set loan rate, then a payment is made. When this occurs, this program covers much of the price risk facing producers. During periods when the marketing loan program is making payments, the price risk protection of revenue insurance policies is redundant. Predicting prices and potential government loan payments far into the future is extremely difficult. However, when the likelihood of prices below the loan rate seems high, then straight yield policies become more attractive risk management instruments.

Shallow Loss Programs

The Agricultural Act of 2014 allows a producer to layer two insurance policies on the same acre of a crop. This layering allows for individual coverage (YP, RP, RP-HPE) for "deep losses" and either supplemental coverage option (SCO) or stacked income protection (STAX) for "shallow losses." In effect, SCO and STAX cover a portion of the deductible not covered by the individual coverage policy.

SCO is available for most program crops, while STAX is only available for cotton. Both SCO and STAX are triggered by county yields rather than farm yields, and both function similarly to area revenue insurance products (ARPI) already available. The key difference between ARPI and SCO or STAX insurance is that SCO and STAX are restricted to cover only shallow losses.

SCO provides an indemnity payment when market revenue measured at the county level falls below 86 percent of the expected county revenue, as determined from county yield histories and futures prices. The payment size is determined by the proportion of the range of the loss below 86 percent down to the nominal coverage level of the producer's farm-level crop insurance. A producer would pay 35 percent of the actuarially fair premium (100–65 percent subsidy).

STAX is similar in structure to SCO in that indemnities are based on actual revenue relative to expected revenue at the county level. The top coverage for STAX is 90 percent rather than 86 percent. The coverage range is limited to no more than 90 percent of expected county revenue down to 70 percent of expected county revenue in 5 percent increments. The use of a multiplier allows a producer to increase the amount of insurance by up to 120 percent of expected county revenue. The subsidy rate for STAX is 80 percent for all coverage levels, and the producer is not required to buy an underlying individual coverage policy.

Crop Insurance and Marketing Strategies

Producers also need to consider how a particular crop insurance product will fit into their overall marketing plan. Revenue insurance products provide some level of price protection, while yield insurance products do not. Producers should think about how the coverage offered through their chosen insurance product may complement or substitute for other price protection strategies, such as forward contracting or using futures and options.

Need for Special Features

Another major factor to consider when deciding on the insurance product or coverage level is the need for special features. Special features include provisions related to replanting, prevented planting, and alternative farm practices such as irrigation and double-cropping. When any of these items are a concern, a producer must consider which type of insurance policy offers such features.

Regarding specialized farming practices, such as irrigation and double-cropping, producers must select insurance policies that allow for such practices. For example, if a producer wants to begin irrigating a cotton crop in a county that has traditionally been strictly nonirrigated, purchasing a nonirrigated insurance policy would not be as valuable due to the lower yields typically associated with nonirrigated cotton.

Replanting and prevented planting features in regions with uncertain early-season weather have proven to be valuable to producers. A producer must consider geographic and topographic conditions when determining the importance of these features. If a producer consistently struggles with suitable planting weather due to fluctuating temperatures, excessive rainfall, or other environmental conditions, then an insurance policy containing replanting and prevented planting provisions could be very valuable.

The need for special features in a policy can affect not only the choice of policy type but also the choice of coverage level for any given policy. For example, replanted and prevented planting provisions are not available on CAT coverage.

Coverage Level

Producers may wonder what coverage level to select for a given crop insurance policy. Selecting a coverage level involves weighing a trade-off between a higher level of protection and a higher total premium. Additionally, the decision may be influenced by the portion of the premium that is subsidized. The higher the coverage level, the lower the portion of the premium subsidized by the USDA. Table 2 shows premium subsidy factors by coverage level. These factors represent the percentage of the total premium paid by the USDA.

Table 2. Subsidy levels for alternative unit structures and products.

Coverage Level (%)	Basic & Optional (%)	Enterprise Unit (%)	SCO Subsidy (%)	STAX Subsidy (%)
50	67	80	65	NA
55	64	80	65	NA
60	64	80	65	NA
65	59	80	65	NA
70	59	80	65	80
75	55	77	65	80
80	48	68	65	80
85	38	53	65	80
86	NA	NA	65	80
90	NA	NA	NA	80

Since premiums are designed to be actuarially fair, the higher indemnity payments associated with higher coverage levels should nearly be offset by the higher premiums. The decision of what coverage level to select is mainly influenced by an individual producer's attitude toward risk and ability to withstand risk. The financial position of the operation is a key factor to consider. An example will help illustrate this point. This example uses an RP policy; however, the principles illustrated here are relevant to any type of policy.

Consider the case of a producer growing cotton with an APH of 800 pounds per acre. Suppose that the RMA-established base price for cotton in the spring is $0.78 per pound. The producer is interested in purchasing an RP policy. In this producer's county, RP coverage can be purchased at levels from 50 to 85 percent of expected revenue. At the 60 percent coverage level, for example, the producer's per-acre revenue guarantee would be:

800 × 0.60 × $0.78 = $374.40 per acre.

Assuming that the total premium for this coverage (not including the administrative fee) works out to $40 per acre, the producer's portion of the premium would be

$40 – ($40 × 0.64) = $14.40 per acre.

At the 80 percent coverage level, the producer's per-acre revenue guarantee would be:

800 × 0.80 × $0.78 = $499.20 per acre.

Assuming a total premium of $88 per acre, the producer's portion of the premium would be $88 – ($88 × 0.48) = $45.76 per acre. Taking into account the differences in premium, the 80 percent coverage level provides $93.44 per acre more protection than the 60 percent coverage (i.e., [499.20 – 374.40] – [45.76 – 14.40] = $93.44).

Suppose next that, due to locally wet weather late in the year, the producer experiences a significant loss in production, picking just 500 pounds of cotton per acre. Suppose also that the cotton market has improved somewhat from earlier in the year so that the harvest price is $0.85 per pound. The producer's final revenue guarantee under the terms of an RP policy would be:

800 × 0.60 × $0.85 = $408.00 per acre

at the 60 percent coverage level, and

800 × 0.80 × $0.85 = $544.00 per acre

at the 80 percent coverage level.

Accounting for premium differences, the final guarantee on the 80 percent coverage is $104.64 per acre higher than the final guarantee on the 60 percent coverage {i.e., [($544.00 – $408.00) – ($45.76 – $14.40)]

= $104.64}. The producer's actual revenue (for crop insurance purposes) is:

500 × 0.85 = $425.

In this example, if the producer had purchased an RP policy at the 60 percent coverage level, no indemnity would be received; however, an RP policy with 80 percent coverage would pay the producer an indemnity of $119 per acre (the $544 final guarantee minus the producer's actual revenue of $425).

The point of this illustration is not that higher coverage levels are better than lower coverage levels. Indeed, if premiums are actuarially fair, then, on average, the higher indemnities associated with higher coverage levels will be just covered by the higher premiums associated with those coverage levels. The focus of this illustration is that the choice of coverage level can, at times, have an important impact on a producer's financial position. If, for instance, the producer in this example must generate revenues of at least $375 per acre to cover most production costs, then he or she should by all means consider a coverage level that will provide that. On the other hand, if the producer's financial position is such that a major loss will not jeopardize the survivability of the operation, then the additional expense for higher coverage levels may not be justified.

Shallow Loss Coverage Example

Beginning in the 2015 crop year, cotton producers had the opportunity to participate in the STAX program, which could impact their crop insurance coverage selection decision. Participation in the STAX program does not require an underlying crop insurance policy.

An example of how the STAX program works, in the case where the producer selects a 100 percent STAX protection factor and the 70 percent STAX coverage level, is shown in Table 3. The expected county income per acre ($828.36) is first calculated by multiplying the expected county yield (1,062 pounds per acre) by the insurance projected price ($0.78 per pound). The income level ($745.52 per acre) that would trigger a STAX indemnity is then calculated by multiplying the expected county income by 90 percent. The lowest STAX income guarantee is calculated by multiplying the expected county income by 70 percent. The maximum STAX indemnity is calculated by subtracting the lowest STAX income guarantee from the STAX trigger ($745.52 – $579.85 = $165.67 per acre). In this example, the actual county income ($560 per acre) is calculated by multiplying the insurance harvest price ($0.80 per pound) by the actual county yield (700 pounds per acre). The county indemnity of $165.67 per acre in this example is calculated by taking the smaller of the maximum STAX indemnity ($165.67 per acre) or the difference ($185.52 per acre) between the STAX trigger ($745.52) less the actual county income ($560 per acre).

Table 3. STAX example.

Category	Amount
Insurance projected price	$0.78
Expected county yield	1,062
Expected county income	$828.36
STAX protection factor	100%
STAX upper coverage	90%
STAX lower coverage	70%
Income level triggering STAX indemnity	$745.52
Lowest STAX income level guarantee	$579.85
Maximum indemnity	$165.67
Insurance harvest price	$0.80
Actual county yield	700
Actual county income	$560.00
County indemnity	$165.67
Indemnity with 100% protection factor	$165.67

Cotton producers have the option to participate in the SCO program on acreage that is not enrolled in the STAX program. The SCO program requires that the producer have an underlying crop insurance policy, and it will take on the characteristics of that underlying policy. An example of how the SCO program works, assuming a 70 percent RP policy with a 1,000-pound APH and a 650-pound actual yield, is shown in Table 4. The expected county revenue ($828.36 per acre) is calculated by multiplying the expected county yield (1,062 pounds per acre) by the expected county price ($0.78 per pound). The SCO trigger ($712.39 per acre) is calculated by multiplying the expected county revenue by 86 percent. The SCO payment factor is calculated by first dividing the actual county revenue (700 pounds per acre × $0.80 per pound = $560 per acre) by the expected county revenue ($560 ÷ $828.36 = 67.6 percent), then subtracting that percentage

from the SCO trigger of 86 percent (86 percent – 67.6 percent = 18.4 percent). Next, the difference in the expected return (18.4 percent) is divided by the difference between the SCO trigger and the underlying crop insurance policy's coverage level (86 percent – 70 percent = 16 percent), resulting in a calculated SCO payment factor of 1.15. However, the SCO payment factor cannot exceed 1, so, in this case, 1 is substituted for 1.15 as the SCO payment factor. Because this example is based on an RP policy, the SCO liability per acre ($128) is calculated by multiplying the farm APH (1,000 pounds per acre) by the larger of the base insurance price ($0.78 per pound) or harvest insurance price ($0.80 per pound), then by the difference between the SCO trigger (86 percent) and the producer's crop insurance coverage level (70 percent). The SCO payment ($128 per acre) is calculated by multiplying the SCO payment factor (1) by the SCO liability ($128 per acre).

Table 4. SCO example.

Category	Amount
Expected county yield	1,062
Expected county price	$0.7800
Expected county revenue	$828.36
SCO trigger (86%)	$712.39
County actual yield	700
County harvest price	$0.8000
Actual county revenue	$560.00
Harvest insurance price	$0.8000
SCO payment factor	1
SCO liability per acre	$128.00
SCO payment	$128.00
Producer APH	1,000
Base insurance price	$0.7800
RP coverage level	70%
RP guarantee	$546.00
SCO deductible range covered	$124.80
Producer actual yield	650
Final RP guarantee	$560.00
Producer revenue to count	$520.00
RP indemnity	$40.00

In addition to the SCO payment, the producer would also receive a $40 per acre indemnity from the underlying RP policy. That RP policy indemnity is calculated as the difference between the final RP guarantee [APH of 1,000 pounds per acre × 70 percent coverage level × harvest price ($0.80 per pound) = $560 per acre] and the producer's revenue to count (650 pounds per acre × $0.80 per pound = $520 per acre)

Conclusions

Crop insurance is an important risk-management tool for cotton producers. However, deciding which type of crop insurance policy and level of coverage to purchase can be complex. It is essential for producers to carefully evaluate their coverage needs, considering any special provisions, marketing plans, participation in other government programs, and their current financial position. The goal should be to purchase a policy that provides adequate, cost-effective coverage and integrates well with the operation's other management strategies and objectives.

Cotton Incorporated

Cotton Incorporated funded the research for this project and publication.

Publication 2886 (POD-08-24)

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Produced by Agricultural Communications.

Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. ANGUS L. CATCHOT JR., Director