

Factors to Consider in Selecting a Crop Insurance Policy

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Introduction

Cotton producers are exposed to significant risks throughout the production 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 be aware of effective risk management alternatives and to 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 as a guideline for producers and not a decision aid. Producers should consult their insurance agent before making insurance policy purchases.

Need for Risk Protection

The first factor to be considered when evaluating an insurance policy is the need for risk protection. Every individual has a different attitude toward exposure to unknown events or risks. This basic attitude toward risk is known as a risk preference. Many things, including the financial position of the producer and exposure to other risks, may influence a person's risk preference. A more strongly risk averse producer would tend to be more comfortable with a higher level of crop insurance protection, while a less risk averse producer would be inclined to purchase a lower level of protection.

Another item to be considered is the existence of off-farm income, savings and or diversification. Many farming households receive income from the 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 reduces the risk of an inability to pay for the cost of producing a crop.

Different types of crop insurance policies have been developed to allow producers to tailor their risk management programs to their risk preferences. These products include yield protection (YP), revenue protection (RP), revenue protection with harvest price exclusion (RP-HPE). Another alternative may be to purchase catastrophic insurance (CAT) which provides a low coverage level and price guarantee at a very low cost. If the only real concern of the producer is the total loss of a crop, then the CAT insurance policy proves to be a low level of risk protection for just a few dollars. It is important to note that past federal disaster assistance programs have provided a higher level of assistance to producers who had purchased at least the CAT level of crop insurance coverage.

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Unit Structure Availability

Different types of crop insurance policies have different unit structures that a producer may select. The unit structure impacts the size of the premium a producer pays for a specific level of coverage. It is important that producers understand the concept of unit structure and then choose their insurance policy 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 be able to receive a discount in their premium if they are able to move toward a larger insurance unit. It should be noted, however, that not all unit structures are permissible for every type of insurance. For example, Yield Protection coverage (YP) is not available on whole farm units. Table 1 identifies the available unit structures for each of the types of crop insurance available on cotton.

Table 1. Available Unit Structure for Different Types of Crop Insurance Products

| | Types of Units | | | |
|--------|----------------|----------|------------|------------|
| | Basic | Optional | Enterprise | Whole Farm |
| CAT | Yes | | | |
| YP | Yes | Yes | Yes | |
| RP | Yes | Yes | Yes | Yes |
| RP-HPE | Yes | Yes | Yes | Yes |

Correlation with Area Production

Group insurance policies such as the Area Risk Protection Insurance Policy (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.

In evaluating a group insurance policy a producer must account for how his/her yields relate 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 is consistent or 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 price falls below a set loan rate, then a payment is made. When this occurs, much of the price risk facing producers is covered by this program. During periods that the marketing loan program is making payments, the price risk protection of revenue insurance policies is redundant. Predicting prices and potential government loan payments very 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 provides a producer the opportunity 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 the area revenue insurance products (ARPI) that were already available. The key difference between ARPI and SCO or STAX insurance is that SCO and STAX are restricted to only cover shallow losses

SCO would provide 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 would be 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% of the actuarially-fair premium (65% subsidy).

STAX is similar in structure to SCO in that indemnities would be based on actual revenue relative to expected revenue at the county-level. The top coverage for STAX is 90% rather than 86%. The coverage range is limited to be no more than from 90% of expected county revenue down to 70% of expected county revenue in 5% increments. The use of a multiplier allows a producer to increase the amount of insurance by up to 120% of expected county revenue. The subsidy rate for STAX is 80% 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 be considered when deciding on the insurance product or the 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 (FAC – following another crop – i.e., multiple crops on same land in one production year), producers must be sure to select insurance policies that allow for such practices. For example, if a producer wants to begin irrigating his cotton crop in a county that has otherwise traditionally been strictly dryland, purchasing a non-irrigated insurance policy would not be as valuable due to the lower yields typically associated with dryland 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 will not be available on CAT coverage

Coverage Level

Producers may wonder about what coverage level to select for a given crop insurance policy. Obviously, selecting a coverage level involves weighing a tradeoff 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 amount of the premium that is subsidized by USDA. Table 2 shows premium subsidy factors by coverage level. These factors represent the percent of the total premium that is paid by 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% | n/a |
| 55% | 64% | 80% | 65% | n/a |
| 60% | 64% | 80% | 65% | n/a |
| 65% | 59% | 80% | 65% | n/a |
| 70% | 59% | 80% | 65% | 80% |
| 75% | 55% | 77% | 65% | 80% |
| 80% | 48% | 68% | 65% | 80% |
| 85% | 38% | 53% | 65% | 80% |
| 86% | n/a | n/a | 65% | 80% |
| 90% | n/a | n/a | n/a | 80% |

Since premiums are designed to be actuarially fair, the higher indemnity payments associated with higher coverage levels should be just about completely offset by the higher premiums that must be paid. The decision of what coverage level to select thus comes down mostly to an individual producer's attitude toward risk and ability to withstand risk. The financial position of the operation is a key factor to consider in this regard. An example will help to illustrate this point. This example uses a RP policy; however, the principles illustrated here are relevant whatever type of policy is being considered.

Consider the case of a producer growing of 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 a RP policy. In this producer's county, RP coverage can be purchased at levels from 50% to 85% of expected revenue. At the 60% coverage level, for example, the producer's per acre revenue guarantee would be

1) $800 \times 0.60 \times \$0.78 = \374.40 per acre.

Assuming, as an example, that the total premium for this coverage (not including the administrative fee) worked out to \$40 per acre, the producers portion of the premium would be $\$40 - (\$40 \times 0.64) = \$14.40$ per acre.

At the 80% coverage level, the producer's per acre revenue guarantee would be

$$2) 800 \times 0.80 \times \$0.78 = \$499.20 \text{ per acre,}$$

Assuming a total premium of \$88 per acre, the producers portion of the premium would be $\$88 - (\$88 \times 0.48) = \$45.76$ per acre. Taking into account the differences in premium, the 80% coverage level provides \$93.44 per acre more protection than the 60% coverage (i.e., $[499.20 - 374.40] - [45.76 - 14.40] = \93.44).

Now, suppose 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 a RP policy would be

$$3) 800 \times 0.60 \times \$0.85 = \$408.00 \text{ per acre}$$

at the 60% coverage level and

$$4) 800 \times 0.80 \times \$0.85 = \$544.00 \text{ per acre}$$

at the 80% coverage level. Taking premium differences into account, the final guarantee on the 80% coverage is \$104.64 per acre higher than the final guarantee on the 60% coverage (i.e., $[(\$544.00 - \$408.00) - (\$45.76 - \$14.40)] = \$104.64$). The producer's actual revenue (for crop insurance purposes) is

$$5) 500 \times 0.85 = \$425.$$

In this example, if the producer had purchased a RP policy at the 60% coverage level, no indemnity would be received; however, a RP policy with 80% 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, as pointed out earlier, 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 real point 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 knows that he must generate revenues of at least \$375 per acre in order to be able to meet pressing financial obligations, then he 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 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 will have the opportunity to participate in the STAX program which can impact the crop insurance coverage selection decision. Participation in the STAX program does not require having an underlying crop insurance policy.

An example of how the STAX program works in the case where the producer selects a 100% STAX Protection Factor and the 70% STAX coverage level is shown below in Table 3. The expected county income per acre (\$828.36) is first calculated by multiplying the expected county yield (1062 pounds per acre) times 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 times 90%. The lowest STAX income guarantee is calculated by multiplying the expected county income by 70%. 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 (\$560.00 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 (\$560.00 per acre).

Table 3. STAX Example.

| | |
|--|-----------|
| Insurance Projected Price | \$ 0.78 |
| Expected County Yield | 1062 |
| 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 does require that the producer have an underlying crop insurance policy, and the SCO program will take on the characteristics of the underlying crop insurance policy. An example of how the SCO program works, assuming a 70% RP policy with a 1000 pound APH and a 650 pound actual yield is shown in Table 4 below. The expected county revenue (\$828.36 per acre) is calculated by multiplying the expected county yield (1062 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 times 86%. The SCO payment factor is calculated by first dividing the actual county revenue (700 pounds per acre times \$0.80 per pound = \$560 per acre) by the expected county revenue (\$560/828.36 = 67.6%), then subtracting that percentage from the SCO trigger of 86% (86%-67.6% =

18.4%). Next, the difference in the expected return (18.4%) is divided by the difference in the SCO Trigger and the underlying crop insurance policy's coverage level (86%-70% = 16%), which results 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 (\$128.00 per acre) is calculated by multiplying the farm APH (1000 pounds per acre) by the larger of the base insurance price (\$0.78 per pound) or harvest insurance price (\$0.80 per pound) by the difference in the SCO trigger (86%) less the producers crop insurance coverage level (70%). The SCO payment (\$128.00 per acre) is calculated by multiplying the SCO payment factor (1) by the SCO liability (\$128.00 per acre).

In addition to the SCO payment, the producer would also receive an \$40.00 per acre indemnity from the underlying RP policy, calculated as the difference between the Final RP Guarantee (APH of 1000 pounds per acre times 70% coverage level times Harvest Price (\$0.80 per pound) = \$560 per acre) less the Producer Revenue to Count (650 pounds per acre times \$0.80 per pound = \$520 per acre).

Table 4. SCO Example.

| | | | |
|-------------------------|-----------|------------------------------|-----------|
| Expected County Yield | 1062 | Producer APH | 1000 |
| Expected County Price | \$ 0.7800 | Base Insurance Price | \$ 0.7800 |
| Expected County Revenue | \$ 828.36 | RP Coverage Level | 70% |
| SCO Trigger (86%) | \$ 712.39 | RP Guarantee | \$ 546.00 |
| | | SCO Deductible Range Covered | \$ 124.80 |
| County Actual Yield | 700 | | |
| County Harvest Price | \$ 0.8000 | Producer Actual Yield | 650 |
| Actual County Revenue | \$ 560.00 | Final RP Guarantee | \$ 560.00 |
| Harvest Insurance Price | \$ 0.8000 | Producer Revenue to Count | \$ 520.00 |
| | | RP Indemnity | \$ 40.00 |
| SCO Payment Factor | 1 | | |
| SCO Liability per Acre | \$ 128.00 | | |
| SCO Payment | \$ 128.00 | | |

Conclusions

Crop insurance represents an important risk management tool for cotton producers. However, the decision regarding what type of crop insurance policy and what level of coverage to purchase can be quite complex. It is important for producers to carefully evaluate their coverage needs—including the need for special provisions—their marketing plans, their level of participation in other government programs, and their current financial position in making a crop insurance purchase decision. The goal should be to purchase a policy that provides adequate coverage that is cost effective and that integrates well with the other management strategies and objectives of the operation.

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