



BEST MANAGEMENT PRACTICES

Chapter 46: Insuring Soybeans in South Dakota



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Insurance is an important part of managing South Dakota soybean crops. Programs and needs are constantly changing; therefore, it is recommended that coverage be reviewed annually by the March 15 sales closing date. South Dakota producers insured 4.5 million acres of soybeans in 2012, second only to the record of 4.9 million acres that were insured in 2009. The purpose of this chapter is to highlight common features of soybean insurance. An example is provided and if you have questions contact your agent. Once understood, producers can make better decisions related to choices of insurance policy type and coverage levels.

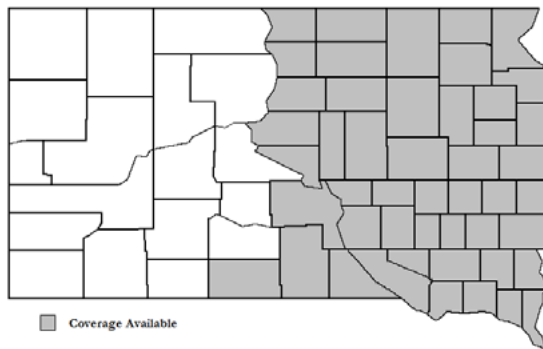


Figure 46.1. Soybean counties in South Dakota.
(Additional information at http://www.rma.usda.gov/fields/mt_rso/2013/sdinsurable.pdf)

Where and when coverage is available

Information about crop insurance can be obtained from many sources including a crop insurance agent, a lender, the university, and the USDA-Risk Management Agency (www.rma.usda.gov). Each of these information sources provide a slightly different perspective that will help you make your decision. Soybean coverage details as discussed here are outlined in the “Common Crop Insurance Policy,” the “Coarse Grains Crop Provisions,” and the “Commodity Exchange Price Provisions” (CEPP). Copies are available from crop insurance agents and on the Risk Management Agency (RMA) website (www.rma.usda.gov). Standard coverage for soybeans is available in eastern South Dakota counties (Fig. 46.1). In other counties, soybeans may be covered by written agreements from insurance companies.

Several dates are critical to assure the proper coverage is chosen and in place when needed. For soybeans, the insurance must be purchased or changed by March 15 and the earliest planting date is April 26. The final planting date is June 10. After the final planting date, there is a 25-day late planting period with reduced coverage levels. In the event of a loss, producers typically have 72 hours to notify their insurance agent of a potential claim. The latest the coverage lasts is December 10.

Policy dates match up fairly well with South Dakota cropping and marketing patterns as reported by the National Agricultural Statistics Service (NASS). The range of common planting dates for soybeans is from May 10 through June 30. The range of common harvest dates is from September 20 through November 10. Historically, the percentage of soybeans marketed peaks after harvest, commonly in October. Additional higher monthly marketings are also common in January.

Policy type and coverage level specifics

While dates and details are important, producers struggle with the overriding issues of policy type and yield coverage level. The main policy types are:

- *Revenue Protection (RP)*
- *Yield Protection (YP)*
- *Revenue Protection with the Harvest Price Exclusion (RP-HPE)*
- *Catastrophic Risk Protection (CAT)* (Table 46.1)

Each policy type has different benefits (Table 46.1) and coverage level generally refers to the yield coverage level or percent of the producer's actual production history insured.

Revenue insurance products have dominated the coverage type choice in recent years. Relatively high prices have encouraged producers to forward price soybeans and use revenue insurance. Statewide, 95% of insured soybean acres in 2012 were covered by RP. Another 3% of acres were covered by YP. The remaining acres were covered by RP-HPE and CAT.

With YP, a producer receives an indemnity payment at the fixed per bushel price if the resulting yield falls below the yield coverage level. With RP, there is a fixed guarantee level and either lower yields and/or lower prices may trigger an indemnity payment. RP is designed to cover price increases and is ideal when producers forward price the crop. Producers with RP can select the harvest price exclusion (RP-HPE), which is limited to downside revenue protection at a slightly higher cost than YP. RP-HPE costs less than RP and may be preferred if little forward pricing is expected.

Once a policy type has been selected, the coverage levels need to be chosen. With RP and RP-HPE there is no price election option; one must use 100% of the projected price (Table 46.1). For YP, a producer can select less than 100% of the projected price. To minimize the insurance premium expense, a producer could use a price election that closely aligns the insured price with the expected cash price. For example, if expected basis implies a cash price below an RMA projected price, a price election of less than 100% may match well and reduce the cost of protection accordingly.

Across policy types, the yield coverage level must be chosen. The elections range from 50% to 85% coverage. Soybean producers in South Dakota used 75% and 70% yield coverage levels most often in 2012. The optimal level depends on a producer's willingness and ability to self-insure the deductible amount and on the cost of different coverage levels. The best choice is a farm-specific decision and is also influenced by any forward pricing or protection strategies employed.

The pre-harvest statewide level of liability coverage in 2012 was \$1.5 billion on soybeans. That averages out to about \$350 per insured acre in liability protection. Producers paid about \$12.50 per acre in premiums for the coverage. The liability coverage protects the cost of crop production that a producer may seek to insure. Depending on the farm's financial situation and the insurance cost, many producers try to obtain coverage for seed, chemicals, fuel, and perhaps land rent. Producers may also try to obtain coverage for the fixed cost of machinery or profits.

The premium outlay reflects the cost of insurance products. The premium is a positive function of the prevailing soybean price when the insurance is purchased. For revenue insurance, the premium is also a positive function of the prevailing soybean price volatility. The cost of policy types increases when moving from yield to revenue protection. Within policy types, costs increase with the coverage level. The premium cost also depends on the crop, the county, and a producer's yield history.

Information on determining proven yields are available at <http://www.extension.iastate.edu/agdm/crops/html/a1-55.html>.

Table 46.1. The details of insurance types.

Insurance Option	Detail
Revenue Protection (RP)	<ul style="list-style-type: none"> • Price election level fixed at 100% • Most expensive, but may be best choice if forward pricing. • Capped upside protection to offset potential hedging losses when yield risk is possible.
Yield Protection (YP)	<ul style="list-style-type: none"> • Price election level can be adjusted to below 100% • Inexpensive option but no downside price protection. • May be of interest if no forward pricing is likely.
Revenue Protection with Harvest Price Exclusion (RP-HPE)	<ul style="list-style-type: none"> • Price election level fixed at 100%. • Slightly higher cost than YP, but provides downside price protection. • May be of interest if little forward pricing is likely.
Catastrophic Risk Protection (CAT)	<ul style="list-style-type: none"> • Price election level fixed at 50%. • Yield election level fixed at 50%. • Least expensive option. • Suitable when self-insuring.

Managing yield and revenue risks

Conceptually, producers make crop insurance choices based on their risk tolerance and marketing considerations. Insurance only covers downside yield and some price risks. Insurance does not eliminate the need for sound marketing strategies. Producers also need to account for any government programs (such as loan deficiency payments) that would provide income protection under certain circumstances. Producers may consider what level and under what conditions to prudently hedge some production. Producers may also consider what risks remain once insurance is in place.

By aligning policy type and coverage level with a marketing strategy, producers can implement a comprehensive risk management plan in a cost-effective manner. Insurance factors, many specific to RP, may need to be accommodated in the marketing plan. The RMA price discovery periods use the CBOT November Soybean futures contract. The average of the futures closes during the discovery periods sets the respective prices. The projected price discovery period is February 1 to February 28. The Projected Price is used in YP to determine the price level at which indemnities are paid. The Projected Price sets the minimum coverage level for RP and RP-HPE.

The harvest price discovery period is October 1 to October 31. The Harvest Price is combined with the actual yield to determine harvest revenue in RP-HPE. The Harvest Price is also used in RP to determine whether higher coverage is relevant at harvest. The unbiased nature of futures prices is evident based on the past ten years (Table 46.2). The average change has been \$0.28 per bushel with six years of increases and four years of decreases. Extreme moves are also evident as the price increased \$2.84 in 2012 and decreased \$4.14 in 2008.

RP and RP-HPE insurance premiums are a direct function of the soybean price volatility. The volatility factor, measured late in the projected price discovery period, was at a historically low level in 2012 (Table 46.2). Producers responded by purchasing high yield coverage levels. When the volatility was relatively high in 2008 and 2009, the premium levels were also high, limiting coverage.

Basis, defined as the difference between a cash price and a futures price, reveals a disparity between

insurance coverage and local conditions. Basis is not factored into the projected nor harvest prices for crop insurance. As such, the RMA prices likely exceed the expected and actual local cash prices. The insurance settles to a fixed or static month that may not always line up with harvest or crop sales.

October is typically the month with the greatest percent of soybeans marketed in South Dakota. For reference, the statewide price received by farmers (from NASS) is shown for October along with the basis relative to the harvest price (Table 46.2). Basis variability is evident, ranging from \$0.49 per bushel in 2008 to -\$1.75 per bushel in 2010. For planning purposes, a five-year moving average of historical basis seems reasonable.

Table 46.2 Soybean insurance and marketing factors from 2003 to 2012. (Source: USDA-RMA and USDA-NASS)

Year	Projected Price (\$/bushel)	Harvest Price (\$/bushel)	Change (\$/bushel)	Volatility Factor	October Cash Price (\$/bushel)	Basis (\$/bushel)
2003	5.26	7.23	2.06	0.18	6.47	-0.85
2004	6.72	5.26	-1.46	0.21	5.32	0.06
2005	5.53	5.75	0.22	0.21	5.45	-0.30
2006	6.18	5.93	-0.25	0.21	5.13	-0.80
2007	8.09	9.75	1.66	0.19	7.99	-1.76
2008	13.36	9.22	-4.14	0.31	9.71	0.49
2009	8.80	9.66	0.86	0.31	9.02	-0.64
2010	9.23	11.63	2.40	0.20	9.88	-1.75
2011	13.49	12.14	-1.35	0.23	11.50	-0.64
2012	12.55	15.39	2.84	0.18	13.80	-1.59

Examples for comparing coverage levels for YP, RP and RP-HPE are available in Problem 46.1. Consider a projected price of \$13.00 per bushel, an approved yield of 40 bushels per acre, and a yield election coverage of 75%. The coverage level implies a Trigger yield of 30 bushels and a liability level of \$390 per acre across major coverage types. The premium costs were projected for 2013 for Brookings County with a volatility level of 20% using the RMA Cost Estimator. Combinations of actual yields and harvest prices result in different net proceeds across coverage types.

RP coverage will increase should the harvest price be higher than the projected price. However, a 200% limit on the price change by harvest is in effect. As stated in the CEPP, “The harvest price will not be greater than the projected price multiplied by 2.00.” If a producer hedges aggressively, suffers a large yield loss, and the market price increases beyond 200% of the projected price, then hedge losses may exceed indemnity payments. Covered sales seem like the best way to mitigate this low probability event. Forward contract sales or short futures hedges are covered by buying call options on the same number of bushels at a strike price below 200% of the projected price.

There is a continuum of insurance and marketing choices (Fig. 46.2). Some coverage or use of insurance is expected because of the premium subsidy. The subsidy is large enough that minimal insurance will pay for itself over time regardless of the risk tolerance of the producer. The historic loss ratio also favors purchasing the insurance; it has been high enough that indemnity payments have consistently exceeded the producer premiums paid at the aggregate or statewide level. Minimal coverage, typically CAT, is still available, but has not been widely used for soybeans.

Relatively high prices reflected in futures prices suggest RP-HPE would be intermediate coverage. It is difficult to justify purchasing YP when RP-HPE is nearly the same cost and provides downside price protection. For those forward pricing, standard RP will likely be optimal. The upside protection of RP is often necessary to offset potential hedging losses when yield risk is possible. Given the upside cap on RP, covered sales should be considered if hedging aggressively.

Problem 46.1. Potential indemnity payments across coverage types.

Harvest Price: \$14.00, Actual Yield: 40 Bu.	YP	RP	RP-HPE
Calculated Revenue	\$560	\$560	\$560
Indemnity Payment	\$0	\$0	\$0
Premium Cost	\$15	\$20	\$16
Net Proceeds	\$545	\$540	\$544
Harvest Price: \$12.00, Actual Yield: 25 Bu.			
Calculated Revenue	\$300	\$300	\$300
Indemnity Payment	\$65	\$90	\$90
Premium Cost	\$15	\$20	\$16
Net Proceeds	\$350	\$370	\$374
Harvest Price: \$12.00, Actual Yield: 30 Bu.			
Calculated Revenue	\$360	\$360	\$360
Indemnity Payment	\$0	\$30	\$30
Premium Cost	\$15	\$20	\$16
Net Proceeds	\$345	\$370	\$374
Harvest Price: \$14.00, Actual Yield: 25 Bu.			
Calculated Revenue	\$350	\$350	\$350
Indemnity Payment	\$65	\$70	\$40
Premium Cost	\$15	\$20	\$16
Net Proceeds	\$400	\$400	\$374

Note: Following the method and notation of Woodard, Sherrick and Schnitkey (2010) for earlier insurance products, the respective indemnity calculations are as follows:

$$YP\ Indem = \max [0, \text{Projected price} \times (\text{Trigger yield} - \text{Actual yield})]$$

$$RP\ Indem = \max [0, (\text{Trigger yield} \times \max (\text{Projected price}, \text{Harvest price})) - (\text{Harvest price} \times \text{Actual yield})]$$

$$RP - HPE\ Indem = \max [0, (\text{Projected price} \times \text{Trigger yield}) - (\text{Harvest price} \times \text{Actual yield})]$$

At the far extreme are very high coverage levels and full hedging or risk protection. This can be overdone. The subsidy declines as the coverage level increases. In essence, a producer would approach the point where one pre-pays the cost of routine yield variability. Over-hedging is another concern as potential hedge losses (usually from extreme price increases) can exceed insurance indemnity levels. Thus, some optimal insurance coverage exists.

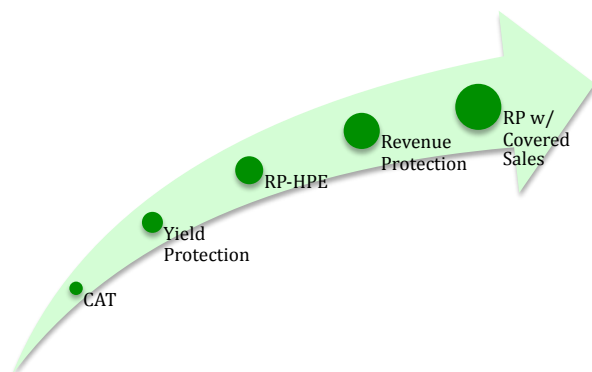


Figure 46.2. Continuum of insurance and marketing choices.

Final thoughts

Insurance is an important part of managing soybean production in South Dakota. Programs and needs are constantly changing; therefore, it is recommended that coverage be reviewed annually. For example, Group Risk types of coverage were not discussed here. Current production conditions leave a high amount of intra-county yield variability, limiting the attractiveness of group coverage. Producers may want to visit with their agent about how units are treated, prevented planting rules, insuring specialty soybeans, and necessary production records. If you are planning on planting a cover crop, you need to check with

your agent about your insurance eligibility. Producers may also want to visit with their commodity broker about matching marketing to the product type, limiting hedging based on the coverage level, and making covered sales.

References and additional information

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Acknowledgements

Funding for this chapter was provided by SDSU Extension.

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