

Corn and Cotton Producers' Prevented Planting Decision

*Kevin Adkins, Graduate Research Assistant
Christopher N. Boyer, Associate Professor
S. Aaron Smith, Assistant Professor
Andrew P. Griffith, Associate Professor
Andrew Muhammad, Professor and Blasingame Chair of Excellence
Department of Agricultural and Resource Economics*

*Angela McClure, Professor
Tyson Raper, Assistant Professor
Department of Plant Sciences*



Introduction

Federal crop insurance programs have a prevented planting provision that can protect producers from the financial losses and risk associated with not being able to plant the intended crop within the planting period. Revenue protection, revenue protection with harvest price exclusion, yield protection, and area risk protection insurance policies pay indemnities if producers were unable to plant the insured crop by a designated final planting date or within any applicable late planting period due to natural causes, typically drought or excess moisture (USDA, Federal Crop Insurance Corporation, 2017). The final planting date is the

last day a producer can plant the insured crop and receive full coverage from their crop insurance policy. The late planting period is generally a maximum of 25 days after the final planting date but can vary depending on the crop. Table 1 provides important dates for Tennessee corn and cotton producers when examining prevented planting decisions (USDA, Risk Management Agency, 2019).

Table 1: Important Prevented Planting Crop Insurance Dates for Corn and Cotton in Tennessee

Date	West TN	Middle and East TN
<i>Corn</i>		
Earliest Planting Date	March 21	March 21
Final Planting Date	May 20	May 25
End of Late Planting Period	June 4	June 9
<i>Cotton</i>		
Final Planting Date	May 20	-
End of Late Planting Period	June 4	-

Note: Cotton dates are the same throughout Tennessee.

Four Main Prevented Planting Options

A farmer has four main options if they are unable to plant their corn or cotton by the final planting date:

1. Farmers could plant their crop in the late planting period. This option comes with reduced insurance, as the farmer's production guarantee would decrease 1 percent per day for each day of delay after the final planting date until the crop is planted or the end of the late planting period. Production guarantee is the guaranteed revenue amount offered by a crop insurance provider and is calculated by multiplying guaranteed insurance price by actual production history (APH) yield, which is a four- to 10-year trend adjusted average yield used for future crop insurance purchases by insurance coverage level.
2. A farmer can take the full prevented planting payment. The full prevented planting payment is the farmer's production guarantee multiplied by the prevented planting coverage factor. The prevented planting coverage factor for corn is 55 percent; therefore, a corn farmer would receive 55 percent of their production guarantee. The prevented planting coverage factor for cotton is 50 percent. This option requires leaving the land fallow or planting a summer cover crop after the late planting period that cannot be harvested or grazed before November 1. This option does not impact the producer's APH.
3. A farmer can receive 35 percent of their full prevented planting payment for corn or cotton and switch to a second crop. If a partial indemnity payment was received for the first crop, the second crop will be uninsured, and a farmer must wait until after the late planting period for the first crop to plant the second crop.
4. A farmer could forgo the prevented planting payment for corn or cotton and plant a second crop. If a farmer did not receive an indemnity payment for the first crop, they can switch their insurance to a second crop and plant immediately.

In this report, we examine these alternatives by assessing the profit-maximizing option using historical data and also layout information producers should consider if they are faced with a prevented planting decision.

Examination Using Historical Data

In this section, we present an example of the economic implications of the possible options corn and cotton producers could consider if faced with a prevented planting decision. This example is used to help producers think about their options so they can examine potential economic outcomes that best fit their operation. Net returns to corn and cotton are estimated for the four prevented planting options at 60 percent, 70 percent and 80 percent insurance buy-up coverage for both revenue protection (RP) and yield protection (YP). In the example, we assume a producer would plant soybeans if they choose to switch crops. Yield data come from planting date experiments in Milan, TN. Market prices are the average prices of corn, cotton

and soybeans in Tennessee from 2011 to 2017, which might not reflect the market today but is useful for this example (USDA, National Agricultural Statistics Service, 2018). Production costs are the average costs from 2011 to 2017 from UT Extension field crop budgets for no-till, non-irrigated corn, cotton and soybeans (University of Tennessee, Department of Agricultural and Resource Economics, 2018). Insurance premiums and projected prices were estimated averages for Gibson County, TN, from 2011 to 2017 (USDA RMA 2018b; USDA RMA 2018a). Gibson County was selected because this location is where the agronomic data were collected. Table 2 shows a summary of the data used for this study.

Table 2. Data Used to Calculate Net Returns for Corn, Cotton and Soybeans

Variable Definition	Corn	Cotton	Soybeans
Market Price (\$/bu or \$/lb)	\$4.81	\$0.73	\$11.31
Projected Price (\$/bu or \$/lb)	\$4.85	\$0.82	\$11.29
Actual Production History Yield (bu or lb)	152	1124	44
Production Cost Before Planting (\$/acre)	\$126	\$133	\$55
Production Cost After Planting (\$/acre)	\$386	\$509	\$246
RP Premium with 60% Coverage (\$/acre)	\$7	\$11	\$9
RP Premium with 70% Coverage (\$/acre)	\$15	\$20	\$15
RP Premium with 80% Coverage (\$/acre)	\$31	\$41	\$32
YP Premium with 60% Coverage (\$/acre)	\$5	\$7	\$7
YP Premium with 70% Coverage (\$/acre)	\$10	\$12	\$12
YP Premium with 80% Coverage (\$/acre)	\$20	\$26	\$25

Note: Land rent included in corn and cotton production cost before planting.

Results – Corn

Table 3 shows the estimated net returns for a corn producer by RP coverage and prevented planting option. Expected net returns were maximized by planting uninsured soybeans after receiving a 35 percent prevented planting payment, regardless of the RP coverage level. Late planting and the full prevented planting payment had the next highest expected net returns (depending on the RP coverage level), and planting insured soybeans had the lowest expected net returns across all the RP coverage levels analyzed. As RP coverage increased, the expected net returns for late planting corn and planting insured soybeans decreased. This was due to higher premium prices with increased RP coverage and net returns for these options being greater than the guaranteed net returns from RP coverage. That is, producer insurance costs were increasing for unnecessarily high crop insurance protection. Conversely, the expected net returns for taking the 35 percent prevented planting payment, and planting uninsured soybeans increased as RP coverage increased. This is because the 35 percent prevented planting payment increased with higher RP coverage. This was also the case for the full prevented planting payment option; as RP coverage increases, expected net returns will increase.

Table 3: Estimated Net Returns for a Corn Producer with Revenue Protection

Option	Estimated Net Returns (\$/acre)		
	60% RP	70% RP	80% RP
Late Planting Period	\$135	\$135	\$129
Full Prevented Planting Option	\$110	\$143	\$167
35% Prevented Planting + Uninsured Soybeans	\$174	\$187	\$195
Insured Soybeans	\$102	\$96	\$80

Corn showed similar results when estimated with YP crop insurance (Table 4). Receiving a 35 percent prevented planting payment and planting uninsured soybeans maximizes net returns at 60 percent, 70 percent and 80 percent YP levels. Expected net returns from this option, the insured soybeans option, and the full prevented planting payment option react to changes in YP coverage in the same way they did with RP coverage. However, due to YP having smaller insurance premiums than RP, late planting net returns show a slight increase as YP coverage increases (opposite of RP).

Table 4: Estimated Net Returns for a Corn Producer with Yield Protection

Option	Estimated Net Returns (\$/acre)		
	60% YP	70% YP	80% YP
Late Planting Period	\$140	\$142	\$145
Full Prevented Planting Option	\$112	\$148	\$178
35% Prevented Planting + Uninsured Soybeans	\$175	\$189	\$199
Insured Soybeans	\$104	\$100	\$86

Results – Cotton

Table 5 shows the same general findings for cotton production as corn production with RP coverage. Planting uninsured soybeans after receiving a 35 percent prevented planting payment was also the option that maximized net returns at all RP coverage levels analyzed. The full prevented planting option was next, then insured soybeans, followed by planting late. Changes in RP coverage levels affect the expected net returns the same as corn producers.

Table 5: Estimated Net Returns for a Cotton Producer with Revenue Protection

Option	Estimated Net Returns (\$/acre)		
	60% RP	70% RP	80% RP
Late Planting Period	\$48	\$42	\$37
Full Prevented Planting Option	\$133	\$170	\$195
35% Prevented Planting + Uninsured Soybeans	\$178	\$192	\$200
Insured Soybeans	\$95	\$90	\$72

For cotton with YP coverage, the option that maximized net returns for 60 percent and 70 percent coverage was still 35 percent prevented planting payment and uninsured soybeans (Table 6). However, the full prevented planting payment maximized net returns at 80 percent coverage. Expected net returns from the full prevented planting payment as well as the 35 percent payment and uninsured soybeans increased with increases in YP coverage. Late planting net returns remained constant with increases in YP coverage, and net returns from insured soybeans decreased.

Table 6: Estimated Net Returns for a Cotton Producer with Yield Protection

Option	Estimated Net Returns (\$/acre)		
	60% YP	70% YP	80% YP
Late Planting Period	\$51	\$48	\$52
Full Prevented Planting Option	\$137	\$178	\$210
35% Prevented Planting + Uninsured Soybeans	\$182	\$193	\$207
Insured Soybeans	\$100	\$91	\$81

Important Considerations

Estimates in Tables (3-6) are averages; yield variability is a key variable in estimating net returns and can make the planting options riskier than prevented planting payments. It should be noted that planting later in the season typically comes with a decrease in yield. Therefore, a farmer may want to consider how the field(s) left to plant has (have) performed under wet planting conditions.

Not all producers will be able to switch crops when dealing with a prevented planting situation. The prevented planting coverage factor is set to match a producer's pre-planting costs; therefore, if a farmer already has seed and fertilizer for corn or cotton and it cannot be returned or stored, switching to soybeans may not be a viable option (USDA, RMA, 2018b). In this case, a farmer should carefully look at their costs to date and consider the amount of insurance coverage when deciding between late planting and the full prevented planting payment option. A farmer should contact their crop insurance provider within 72 hours of being prevented from planting by the final planting date to discuss their situation.

Our analysis used fixed prices, but an important factor to consider is market price movements after the crop insurance price has been set. Increases or decreases in market price could affect the profit-maximizing prevented planting decision. Table 7 shows how changes in market price for corn, cotton and soybeans will affect expected net returns for all four options.

Table 7: Market Price Changes for Corn, Cotton and Soybeans Effect on Net Returns

Option	Net Returns
<i>Increases (Decreases) in Corn and Cotton Market Price</i>	
Late Planting Period	Increase (decrease)
Full Prevented Planting Option	No change (no change)
35% Prevented Planting + Uninsured Soybeans	No change (no change)
Insured Soybeans	No change (no change)
<i>Increases (Decreases) in Soybean Market Price</i>	
Late Planting Period	No change (no change)
Full Prevented Planting Option	No change (no change)
35% Prevented Planting + Uninsured Soybeans	Increase (decrease)
Insured Soybeans	Increase (decrease)

Note: Decrease in market price effect on net returns are in parenthesis.

If market prices increase after the crop insurance projected price is set, a producer may want to give more consideration to the planting options. If market prices decrease after the crop insurance projected price is set, the full prevented planting payment may be the most profitable option.

Important Links

For more information about important dates by crop and policy:

webapp.rma.usda.gov/apps/actuarialinformationbrowser2018/CropCriteria

For more information on prevented planting provision:

rma.usda.gov/News-Room/Frequently-Asked-Questions/Prevented-Planting-Coverage-Factor-Changes-for-2019

References

- Adkins, K.R. 2019. "Prevented Planting Provision Influence on Corn and Cotton Producers' Late Planting Decision." Master's Thesis, University of Tennessee.
- United States Department of Agriculture Federal Crop Insurance Corporation. 2017. "Prevented Planting Standards Handbook."
- United States Department of Agriculture National Agricultural Statistics Service. 2018. "Quick Stats." Available at: quickstats.nass.usda.gov/.
- United States Department of Agriculture Risk Management Agency. 2019. "Actuarial Information Browser 2018." Available at: webapp.rma.usda.gov/apps/actuarialinformationbrowser2018/CropCriteria.aspx.
- United States Department of Agriculture Risk Management Agency. 2018a. "Detailed Estimate." Available at: webapp.rma.usda.gov/apps/costestimator/Estimates/DetailedEstimate.aspx.
- United States Department of Agriculture Risk Management Agency. 2018b. "Prevented Planting Coverage Factor Changes for 2019." Available at: rma.usda.gov/News-Room/Frequently-Asked-Questions/Prevented-Planting-Coverage-Factor-Changes-for-2019.
- University of Tennessee Department of Agricultural and Resource Economics. 2018. "Field Crop Budgets." Available at: ag.tennessee.edu/arec/Pages/budgets.aspx.



AG.TENNESSEE.EDU