

Chesapeake Maryland Farm

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The **Chesapeake Maryland Farm** is representative of many of the corn/soybean/wheat farms found in Maryland and neighboring states. Production practices, costs of production, market prices, weather patterns, and other information are based on data from the region in order to provide a realistic setting. The probabilities of risk events were also calculated using the best available data, however slight modifications were sometimes made to maintain the workability and realism of the simulation.

The farm is an 800 acre corn, soybean, and wheat farm. They typically plant corn and full-season soybeans in May each year and harvest in September/November. Winter wheat is planted in September/October and harvested in June/July. Double-crop soybeans can be planted in June/July following wheat harvest. Each year, risk management decisions are made by the managers of this operation about: 1) the ratio of crops to plant, 2) crop insurance, 3) forward pricing, and 4) crop storage.

Chesapeake Maryland Farm normally plants 250 acres of winter wheat, expecting to harvest 18,750 bushels each year. A total of 250 acres of double-crop soybeans are usually planted following wheat harvest, with a yield of 6,250 bushels expected. Typical production costs on the wheat/soybean double-crop acres are \$669.60 per acre. Corn is typically planted on 400 acres of the farm, yielding 60,000 bushels with production costs of \$552.86 per acre. Finally, full-season soybeans are normally planted to 150 acres, yielding 6,000 bushels, where production costs are \$350.10 per year.

Total annual revenues for Chesapeake Farm are typically around \$660,645 from cash crop sales. Another \$20,000 is usually received from government program payments. Total annual expenses are around \$441,059, leaving an anticipated cash net return of \$239,586 per year for the farm.

At present Chesapeake Maryland Farm has no commodities in storage. However, the farm considers storage options at the end of each harvest season. Also, the farm may use one or more forward pricing strategies through the year in an attempt to lock in a price better than that typically available at harvest.

Double-Crop Production	
Crop Acres	250 acres
Normal Wheat Yield	75 bu. per acre
Normal Soybean Yield	25 bu. per acre
Production Costs	\$669.60 per acre
Corn Production	
Crop Acres	400 acres
Normal Annual Yield	150 bu. per acre
Production Costs	\$552.86 per acre
Full-Season Soybeans Production	
Crop Acres	150 acres
Normal Annual Yield	40 bu. per acre
Production Costs	\$350.10 per acre

Expected Annual Net Farm Income			
<u>Expected Revenues</u>		<u>Expected Expenses</u>	
Wheat	18,750 bu. = \$147,750.00	Double-Crop	250 acres = \$167,400.00
Soybeans	12,250 bu. = \$159,495.00	Soybeans	150 acres = \$52,515.00
Corn	60,000 bu. = \$353,400.00	Corn	400 acres = \$221,144.00
Gov. Payments	\$20,000		
Annual total:	\$680,645.00	Annual total:	\$441,059.00
Net Return = \$239,586.00 per year			

DECISIONS

Year 1	Risk and Probability of Occurrence	Impact	Risk Management Strategy Decision
Period 1 Jan 1 to Mar 15	<u>Market Price Risk</u> Overall Positive Markets (1/4) Positive Corn/Negative Beans (1/4) Negative Corn/Positive Beans (1/4) Overall Negative Markets (1/4)	<ul style="list-style-type: none"> • In overall positive markets the prices of corn, soybeans, and wheat increase. • In positive corn and negative soybean markets, prices of corn and wheat increase while the price of soybeans decrease. • In negative corn and positive soybean markets, prices of corn and wheat decrease while the price of soybeans increase. • In overall negative markets the prices of corn, soybeans, and wheat decrease. 	<u>Decision 1: Crop Mix</u> The decision about the number of acres of which crops to grow is a strategy for managing exposure to both price and production risk. At this point we decide how many acres of corn to plant for the coming season. Full season soybeans will be planted on the remaining available acres. <p style="text-align: center;">.....</p> <u>Decision 2: Crop Insurance</u> Several combinations of crop insurance are available to manage the risks presented by changing market prices. These include: 1) no insurance (self-insure), 2) CAT coverage, 3) Revenue Protection (RP) coverage at 60 percent, 4) RP at 70 percent, or 5) RP at 80 percent. Making a selection applies crop insurance at the coverage level selected to each crop in the mix. Insurance premiums are then calculated accordingly.
Period 2 Mar 15 To Jun 15	<u>Planting Intentions Report</u> Low acres (1/5) Low corn/High bean acres (3/10) High corn/Low bean acres (3/10) High acres (1/5) <u>Spring Precipitation</u> Good (1/4) Average (1/2) Low (1/4)	<ul style="list-style-type: none"> • With low planting intentions reported for corn and soybeans across the U.S., crop prices will generally increase. • With low corn planting intentions and high soybean planting intentions, prices for corn will generally increase and prices for soybeans will decrease. • With high corn planting intentions and low soybean planting intentions, prices for corn will generally decrease and prices for soybeans will increase. • In the case of high planting intentions reported for corn and soybeans, crop prices will generally decrease. • Good spring precipitation will increase crop yields but decrease prices. • Low spring precipitation will decrease crop yields and increase prices. 	<u>Decision 1: Forward Price Corn</u> One option for managing price risk is to forward contract a portion or all of a crop prior to harvest. Decision one allows the manager to forward price corn for harvest delivery at the current contract price. <p style="text-align: center;">.....</p> <u>Decision 2: Forward Price Soybeans</u> One option for managing price risk is to forward contract a portion or all of a crop prior to harvest. Decision two allows the manager to forward price soybeans for harvest delivery at the current contract price.

<p>Period 3 Jun 15 to Sep 15</p>	<p><u>Summer Precipitation</u> Good (3/20) Average (9/20) Low (3/10) Extremely low (1/10)</p> <p>.....</p> <p><u>National Crop Reports</u> Poor production (1/5) Average (2/5) Above Average (1/5) Excellent (1/5)</p>	<ul style="list-style-type: none"> • Where summer precipitation is good, yields for corn and soybeans are expected to increase. • When summer precipitation is average, yields remain the same. • With low summer precipitation, yields for wheat, corn and soybeans decrease. • When summer precipitation is extremely low, yields for both corn and soybeans drop substantially below the average. <p>.....</p> <ul style="list-style-type: none"> • Where national crop progress reports indicate poor production/progress, wheat, corn, and soybean prices are expected to increase. • When national crop reports describe average production, wheat prices decline slightly due to seasonality. • When crop reports indicate above average production, wheat, corn, and soybean prices decline. • When crop reports point to excellent production, wheat, corn and soybean prices drop significantly below the average. 	<p><u>Decision 1: Forward Price Corn</u> One option for managing price risk is to forward contract a portion or all of a crop prior to harvest. Decision one allows the manager to forward price corn for harvest delivery at the current contract price.</p> <p>.....</p> <p><u>Decision 2: Forward Price Soybeans</u> One option for managing price risk is to forward contract a portion or all of a crop prior to harvest. Decision two allows the manager to forward price soybeans for harvest delivery at the current contract price.</p>
<p>Period 4 Sep 15 to Dec 31</p>	<p><u>U.S. Corn and Soybean Production</u> Below average expectations (1/5) Average (3/5) Above average expectations (1/5)</p>	<ul style="list-style-type: none"> • With production below average expectations, prices for wheat, corn, and soybeans will increase. • With average production, crop prices will follow seasonal patterns with corn and soybean prices decreasing and wheat price increasing. • With production above average expectations, wheat, corn and soybean prices will decline. 	<p><u>Decision 1: Post harvest storage</u> One option for managing price risk is to store a portion of the crop in anticipation of improving prices. This decision allows the manager to: 1) sell all of the uncontracted crop on the cash market (do not store), 2) store 25 percent, 3) store 40 percent, or 4) store 50 percent. This storage decision applies to both corn and soybeans. Storage costs total \$0.35/bu. through to March of the following year.</p> <p>.....</p> <p><u>Decision 2: Wheat Planting Acres</u> Another strategy for managing risk is diversification. Decision two allows the manager to decide how many acres to plant to winter wheat for harvest in the summer of the following year. Choices presented are to plant: 1) 150 acres, 2) 250 acres, or 3) 400 acres of wheat.</p>

Year End	Forward price stored crops	<ul style="list-style-type: none"> The manager may choose to forward price some or all of the commodities in storage for March delivery at the current contract price. Any commodities not forward priced will be sold at the current cash price in March. 	<p><u>Decision 1: Forward price stored commodities</u> Choices available include: 1) do not forward price, 2) forward price 25 percent, 3) forward price 50 percent, 4) forward price 75 percent, or 5) forward price 100 percent of the stored commodities.</p>
Year 2	Risk and Probability of Occurrence	Impact	Risk Management Strategy Decision
Period 5	Same as Year 1.	Same as Year 1.	Same as Year 1.
Period 6	Same as Year 1.	Same as Year 1.	Same as Year 1.
Period 7	Same as Year 1.	Same as Year 1.	Same as Year 1.
Period 8	Same as Year 1.	Same as Year 1.	<p>These forward pricing decisions are for contract delivery at harvest. Any quantities not forward priced will be sold at the post-harvest cash price.</p> <p><u>Decision 1: Forward Price Corn</u> One option for managing price risk is to forward contract a portion or all of a crop prior to harvest. Decision one allows the manager to forward price corn for harvest delivery at the current contract price.</p> <p>.....</p> <p><u>Decision 2: Forward Price Soybeans</u> One option for managing price risk is to forward contract a portion or all of a crop prior to harvest. Decision two allows the manager to forward price soybeans for harvest delivery at the current contract price.</p>



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