

Below are several questions that will ask you to demonstrate your understanding of how these farm programs work. You will likely have to use the class overheads and/or the materials posted on the class web page to answer some them.

Farm Facts: Suppose a farmer owns a 240 acre FSA farm that includes 100 base acres for corn with a 155 bu/ac payment yield and 60 base acres of soybeans with a payment yield of 38 bu/ac. On that FSA farm in 2019, the farmer planted 120 ac of corn that had an average yield of 190 bu/ac, and 60 acres of soybeans that had an average yield of 62 bu/ac, and has 40 acres of alfalfa that over all cuttings yielded 7 tons/ac.

Suppose that in September 2020, the USDA announced that the 2019 national marketing year average price is \$3.56 for corn and \$8.57 for soybeans. Suppose the farm is in Mitchell County, WI (not real) and the USDA announced a 2019 county ARC guarantee of \$675/ac for corn and \$435 for soybeans for Mitchell County, WI. Suppose in June 2020, the USDA announces that the actual 2019 average corn yield in Mitchell County is 175 bu/ac and 50 bu/ac for soybeans.

A. Price Loss Coverage (PLC)

Suppose the farmer signed up for PLC for both the corn and soybeans.

1. What events trigger a corn PLC payment and a soybean PLC payment for this farm?

National marketing year average prices below the effective reference prices of \$3.70 for corn and \$8.40 for soybeans.

2. What are the farm's PLC payments for corn and soybeans for the 2019 crop year?

Corn PLC payment rate = $\$3.70 - \$3.56 = \$0.14$

Corn PLC payment = $85\% \times 100 \text{ corn base acres} \times 155 \text{ bu/ac} \times \$0.14/\text{bu} = \$1,844.50$

Soybean PLC payment rate = \$0, the MYA price of \$8.57 > \$8.40, so no PLC payment

3. How would the PLC payments change if the farmer had planted all 160 acres in soybeans?

PLC payments would not change, as they depend on the crops with base acres, not actual planted acres, as long as it stays in an agricultural use and is not a vegetable or fruit crop.

4. How would the PLC payments change if the farmer had planted all 160 acres in alfalfa?

PLC payments would not change, as they depend on the crops with base acres, not actual planted acres, as long as it stays in an agricultural use and is not a vegetable or fruit crop.

5. How would the farm's PLC payments change if the farmer used futures markets and sold the corn for \$3.76/bu and the soybeans for \$9.28/bu?

PLC payments would not change, as they depend on national marketing year average prices, not actual prices the farmer receives for the crops.

6. How would the farm's PLC payments change if the farmer had sold the corn at harvest for \$3.21/bu and the soybeans for \$8.18/bu?

PLC payments would not change, as they depend on national marketing year average prices, not actual prices the farmer receives for the crops.

7. How would the farm's PLC payments change if the farm's actual harvested yields for 2019 were 110 bu/ac for the corn and 28 bu/ac for the soybeans?

PLC payments would not change, as they depend on payment yields for base acres, not actual yields for the crops.

B. County Agricultural Risk Coverage (ARC)

Instead, suppose the farmer signed up for county ARC for both the corn and soybeans.

1. What events trigger a county ARC payment for corn and for soybean for this farm in 2019?

Actual county revenue for a crop less than the county revenue guarantee for that crop in that county.

2. What are the farm's county ARC payments for the 2019 crop year?

Actual county revenue is calculated as actual county average yield x national marketing year average price. ARC payment rate is the revenue guarantee minus the actual county revenue, with this payment rate equal to zero if this difference is negative and this payment has a maximum amount equal to 10% of the county benchmark.

For corn, actual county revenue = $175 \times \$3.56 = \623 , which is less than the county revenue guarantee of \$675/ac, so an ARC payment is triggered.

ARC payment rate = $\$675 - \$623 = \$52.00/\text{ac}$, which is less than the max ARC payment rate of 10% of county benchmark, and so the ARC payment rate is \$52.00/ac.

ARC payment = $85\% \times 100 \text{ corn base acres} \times \$52.00/\text{ac} = \$4,420$.

For soybean, actual county revenue = $50 \times \$8.57 = \428.50 , which is less than the county revenue guarantee of \$435/ac, so an ARC payment is triggered.

ARC payment rate = $\$435 - \$428.50 = \$6.50/\text{ac}$, which is less than the max ARC payment rate of 10% of county guarantee, and so the ARC payment rate is \$6.50/ac.

ARC payment = $85\% \times 60 \text{ soybean base acres} \times \$6.50/\text{ac} = \$331.50$.

3. How would the ARC payments change if the farmer had planted all 160 acres in corn?

ARC payments would not change, as they depend on the crops with base acres, not actual planted acres, as long as it stays in an agricultural use and is not a vegetable or fruit crop.

4. How would the ARC payments change if the farmer had planted all 160 acres in alfalfa?

ARC payments would not change, as they depend on the crops with base acres, not actual planted acres, as long as it stays in an agricultural use and is not a vegetable or fruit crop.

5. How would the farm's ARC payments change if the farmer used futures markets and sold the corn for \$3.76/bu and the soybeans for \$9.28/bu?

ARC payments would not change, as they depend on actual county revenue which uses the national marketing year average price, not the farmer's actual price received.

6. How would the farm's ARC payments change if the farmer had sold the corn at harvest for \$3.21/bu and the soybeans for \$8.18/bu?

ARC payments would not change, as they depend on actual county revenue which uses the national marketing year average price, not the farmer's actual price received.

7. How would the farm's ARC payments change if the farm's actual harvested yields for 2019 were 110 bu/ac for the corn and 28 bu/ac for the soybeans?

ARC payments would not change, as they depend on actual county revenue which uses the county average yield, not the farm's actual yield.

C. Marketing Assistance Loans

1. How many bushels of corn and of soybeans did the farmer harvest in 2019?

Corn: $120 \text{ acres} \times 190 \text{ bu/ac} = 22,800 \text{ bu}$.

Soybean: $60 \text{ acres} \times 62 \text{ bu/ac} = 3,720 \text{ bu}$.

2. If the farmer enrolled half of the harvested corn and all of the harvested soybeans, how large of a Marketing Assistance Loan would the farm receive using the national loan rates of \$2.20/bu for corn and \$6.20/bu for soybeans?

Corn: enroll $\frac{1}{2}$ of 22,800 bu = 11,400 bu at \$2.20/bu corn loan rate = \$25,080.

Soybean: enroll 3,720 bu at \$6.20/bu soybean loan rate = \$23,064.

Total MAL = \$25,080 + \$23,064 = \$48,144.

3. The farmer pays back the corn Marketing Assistance Loan on January 15th when the posted county price is \$3.45/bu.

- a) Would the farmer receive a Loan Deficiency Payment?

No. No loan deficiency payment is paid since posted county price of \$3.45/bu exceeds the corn loan rate of \$2.20/bu.

- b) Ignoring interest payments and processing fees, how much does the farmer pay back?

The farmer would pay back the same amount borrowed against the corn, or, ignoring interest payments and processing fees, \$25,080.

- c) Suppose the farmer actually sold the corn on March 25th for \$2.15/bu. How much would this change the farmer's loan deficiency payment or loan repayment?

This action would not change the loan deficiency payment or the amount the loan paid back, the repayment and deficiency payment are determined by the posted county price on the day the farmer pays back the loan, not the day actual sale occurs.

4. Suppose instead the farmer pays back the corn Marketing Assistance Loan on April 1st when the posted county price is \$2.15/bu.

- a) Would the farmer receive a Loan Deficiency Payment?

Yes, a loan deficiency payment is paid because posted county price of \$2.15/bu is less than the corn loan rate of \$2.20/bu. However, note that the farmer never actually receives a payment, but instead pays back less than the full amount of the original marketing assistance loan.

- b) Ignoring interest payments and processing fees, how much does the farmer pay back?

The loan deficiency payment is $\$2.20 - \$2.15 = \$0.05/\text{bu}$, so for 11,400 bu, this would be \$570, so the farmer would pay back the original loan amount of \$25,080 minus the \$570 loan deficiency payment, or \$24,510, ignoring interest and processing fees.

- c) Suppose the farmer actually sold the corn on June 11th for \$2.80/bu. How much would this change the farmer's loan deficiency payment or loan repayment?

The loan is paid back on April 1st and so it does not matter when after this date and for what price the farmer actually sells the grain for or feeds if it is fed to livestock on the farm. Thus, the actual sale for \$2.80/bu on June 11th does not affect the loan deficiency payment or the loan repayment.