

# Enhancing Crop Insurance Decisions with Data-Driven Tools



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## Abstract

*Farmers face growing production and price risks that traditional Farm Service Agency (FSA) programs and crop insurance only partially address. This article reviews existing decision tools and introduces the Crop Insurance Decision Maker (CIDM), a web-based platform that uses stochastic simulations to project expected net revenues across insurance products and coverage levels. By incorporating farmer risk preferences and county-level data, CIDM improves transparency and supports more informed enrollment in FSA and crop insurance programs. Case studies demonstrate how CIDM enhances risk management decisions, balancing income stability with financial resilience.*

## INTRODUCTION

Farm managers, appraisers, and agricultural lenders recognize that farm income is closely tied to the safety net provided by federal programs. The Farm Service Agency's (FSA) commodity programs, including Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC), and the Federal Crop Insurance Program, administered by the USDA's Risk Management Agency (RMA), form the backbone of farm risk management (Rosch, 2022; USDA, 2024). ARC and PLC protect against shallow losses resulting from price or revenue declines, while crop insurance<sup>1</sup> offers deeper coverage of farm-level yield and revenue risks, often up to 85% of expected income (USDA-ERS, 2025; USDA-RMA, 2024). Together, these tools influence farm profitability, creditworthiness, and land values.

Decisions about which commodity program to elect (ARC or PLC) and what crop insurance product and coverage level to purchase are not straightforward. Outcomes depend heavily on local yields, market conditions, and individual risk preferences. As a result, universities, extension programs, and private firms have developed various decision-making tools to guide farmers through these choices (Coppess et al., 2019; Edwards et al., 2024; Maples, 2024; Biram, 2024). These tools have improved transparency and adoption, but they often differ in scope and analytical detail, which can limit their ability to incorporate local conditions and producer-specific risk preferences (DeLay et al., 2020).

This article builds on the existing literature by introducing the Crop Insurance Decision Maker (CIDM), a free, web-based tool designed to simplify program and insurance decisions while also serving an educational purpose. CIDM combines stochastic simulations with county- and farm-level data to project expected net revenues under multiple scenarios. By presenting results graphically, the tool not only helps producers identify the options that best fit their risk preferences but also illustrates how program and insurance choices shape revenue outcomes. In doing so, it complements existing tools while making the underlying trade-offs more transparent and accessible to producers, lenders, and appraisers alike (Goodwin and Hungerford, 2015; Maples et al., 2022).

## FSA PROGRAM AND CROP INSURANCE BACKGROUND

Federal commodity programs provide a primary safety net for U.S. producers, and their interaction is central to farm management and lending decisions, with implications for income stability considered in agricultural land appraisal. Commodity programs, such as ARC and PLC, are administered by the FSA and protect against shallow losses from price and revenue declines, while the Federal Crop Insurance Program, administered by the RMA, provides more individualized protection against yield and revenue risks at the farm level (Rosch, 2022; USDA, 2024; USDA-RMA, 2024).

ARC operates at either the county or farm level. ARC-County (ARC-CO) triggers payments when county revenue falls below 86%<sup>2</sup> of a benchmark, while ARC-Individual (ARC-IC) compares actual versus benchmark revenue for all crops on a farm unit. PLC, similarly, makes payments when the marketing year average price falls below a reference price and only provides price protection. Both programs apply to historical base acres rather than planted acres, which limits their ability to cover farm-level variability (Paulson et al., 2024).

Figure 1 illustrates recent enrollment patterns across ARC and PLC, showing the apparent differences in program choice by commodity. For example, corn and soybeans tend to favor ARC-CO due to yield variability, whereas wheat farms tend to split the middle. In regions with stable yields, producers often favor PLC for its price protection. Where yields are more variable, producers tend to choose ARC, since revenue coverage inherently accounts for yield risk. Very few producers enroll in ARC-IC, because it aggregates revenue across all covered crops on a farm, similar to a whole-farm insurance policy, meaning strong performance in one crop can offset losses and reduce potential payments for another.

Crop insurance complements federal commodity programs by covering deeper losses, primarily through individual farm-level products regulated by the RMA. Producers may also purchase optional county-based supplemental endorsements, including the Supplemental Coverage Option (SCO) and Enhanced Coverage Option (ECO), which provide area-based coverage above an underlying individual insurance policy by covering a portion of the deductible. These endorsements expand the range of available risk management tools but are designed to supplement, rather than replace, individual coverage.

This study focuses on individual farm-level yield and revenue crop insurance products, which account for the majority of producer participation in the Federal Crop Insurance Program (Turner et al., 2023). Among these products, the most commonly selected policies are Yield Protection (YP), Revenue Protection (RP), and Revenue Protection with Harvest Price Exclusion (RP-HPE). Figure 2 presents 2024 crop insurance enrollment, showing that most producers enroll in RP or YP, with fewer selecting RP-HPE. While SCO and ECO are an important component of the broader crop insurance portfolio, they are not included in the analysis that follows.

Over time, crop insurance enrollment has expanded dramatically, from about 90 million acres in 1981 to nearly 500 million acres in 2022. Figure 3 highlights this growth and shows how policy reforms, such as the 1994 Federal Crop Insurance Reform Act, helped shift producers away from reliance on ad hoc disaster payments and toward federally supported insurance (Barnett and Coble, 1999; Chite, 2000). At the same time, the mix of insured acres has shifted, with forage and specialty crops gaining share relative to row crops (USDA-RMA, 2024). Insurance liabilities have also grown, underscoring the financial scale of the program and its stabilizing role for both producers and agricultural lenders (Figure 4).

The rationale for crop insurance over free disaster aid lies partly in accountability and incentives. Research shows that disaster payment programs are more susceptible to fraud and moral hazard, while insurance programs increase producer awareness of risk exposure and discourage unsustainable cropping practices (Barnett and Coble, 1999). At the same time, agriculture faces new and compounding risks—from climate extremes and pest outbreaks to geopolitical disruptions such as the Russia-Ukraine war, drought-driven supply chain bottlenecks at the Panama Canal, and attacks on cargo ships in the Red Sea—that highlight the need for structured, rules-based protection (Goyal et al., 2024; Rao, 2010).

For practitioners, these trends underscore the importance of joint program elections and insurance decisions, with outcomes contingent upon local yields, market conditions, and individual risk tolerance. The complexity of choices—encompassing coverage levels, unit structures, product types, and FSA program elections—creates a demand for decision-support tools that can tailor analysis to farm-level conditions. Tools such as CIDM, as well as others developed by universities and extension services, build on this foundation by integrating local yield/price correlations and risk preferences, making the trade-offs between

program benefits, premiums, and indemnities more transparent.

## CROP INSURANCE AND A FARM PROGRAM DECISION-MAKING TOOL

Building on this need, producers and their advisors increasingly rely on decision-support tools to guide ARC/PLC elections and crop insurance decisions. Developed by universities, extension programs, and private firms, these tools range from simple Excel spreadsheets to sophisticated online calculators. Their primary purpose is to help farmers evaluate potential program payments, premium costs, and expected revenues across alternative risk management strategies.

Beyond guiding individual choices, these tools play an important educational role in the farm economy. By illustrating how coverage levels, deductible amounts, and program elections impact potential losses and indemnity payments, they enable producers to develop financial literacy, enhance policy understanding, and better comprehend their risk exposure (Kostyuchenko et al., 2015). In this sense, tools not only provide “answers” but also foster a more transparent decision-making process for producers, lenders, and appraisers.

Academic and extension programs have been leaders in this space. Texas A&M’s Agricultural and Food Policy Center developed the ARC/PLC Decision Aid, while Iowa State and Kansas State have created spreadsheet tools to compare historical program outcomes and evaluate future enrollment choices (Agricultural and Food Policy Center, 2025; Coppess et al., 2019; Reid, 2019; Gaku et al., 2024). Similarly, universities such as Mississippi State and Michigan State offer tools to help producers weigh program trade-offs (Maples, 2024; LaPorte & Sears, 2025). Iowa State’s Ag Decision Maker provides detailed crop insurance comparisons (Edwards et al. 2024), and Kansas State has developed calculators for supplemental coverage options (Ifft 2024). Other land-grant universities also contribute—for example, Iowa State’s ARC/PLC methodology resource (Plastina et al., 2025) and North Dakota State’s ARC/PLC payment calculator (Swenson and Haugen, 2024). Table 1 summarizes several widely used academic tools for FSA program decisions, while Table 2 highlights tools tailored to crop insurance coverage decisions.

Private companies and ag-tech firms have also invested heavily in decision-support platforms.

AgriLogic Insurance Services utilizes data-driven models for area, individual, and hybrid-based products (AgriLogic Consulting, 2024). Global Ag Risk Solutions has introduced cost-of-production insurance, which covers direct inputs and gross margins, thereby extending protection beyond yield or revenue alone (Global Ag Risk Solutions, 2024). Farmers Edge integrates precision agriculture with insurance decision-making, enabling producers to utilize real-time field data to optimize inputs and evaluate coverage strategies (Farmers Edge, 2024). These tools bring innovation but are often proprietary, tied to specific products, or come at a higher cost to producers.

Across both academic and private decision-support tools, a common limitation emerges: most emphasize expected returns while giving comparatively less attention to risk preferences, a critical factor in how individual producers value income stability relative to higher but riskier outcomes. As Smith, Outlaw, and Tufts (2017) emphasize, effective risk management begins with identifying the specific risks a producer seeks to reduce, followed by consideration of insurance plan type, production practices, yield exclusion options, unit structure, coverage level, and premium subsidization. The ultimate objective is therefore not only to maximize expected returns but also to ensure that coverage strategies align with a farm’s financial resilience, management objectives, and long-term goals. By incorporating farm-level risk modeling, tools can support more accurate farm-level analysis despite not requiring farm-specific data, while still facilitating discussion of key trade-offs.

Both academic and private industry tools exhibit additional structural limitations that further constrain meaningful engagement. Many academic tools rely on Microsoft Excel spreadsheets, which can be difficult for users without spreadsheet familiarity and often restrict use in group, classroom, or advisory settings. Moreover, most university-developed tools evaluate FSA programs and crop insurance separately, with a heavy emphasis on FSA programs due to their relative simplicity at the county level. This separation limits opportunities to explore how combined program selections affect whole-farm risk and to discuss interactions across risk management choices. While private industry has expanded upon these tools, access frequently requires paid subscriptions or service fees, which can restrict their use for exploratory analysis, education, and broader extension outreach.

Our review of existing decision-support resources highlights both meaningful progress and persistent

gaps. Producers have access to a wide range of university-developed and industry tools, yet these resources often require trade-offs between usability and analytical depth, with many prioritizing simplicity, spreadsheet-based platforms, or expected-value metrics. As summarized in Tables 1 and 2, most tools focus on either FSA programs or crop insurance in isolation and rarely incorporate stochastic modeling, local yield/price relationships, or explicit measures of risk preference. As a result, these tools often function as calculators of expected payments rather than as platforms for evaluating how alternative choices align with producer-specific risk attitudes.

CIDM was developed to build on the strengths and address the limitations identified in this review. Existing decision tools typically rely on static assumptions for prices and yields, requiring users to manually specify a limited set of scenarios they consider plausible. In contrast, CIDM provides a free, non-Excel, web-based interface that integrates both FSA and crop insurance programs within a single framework and evaluates a full stochastic distribution of price and yield outcomes with associated probabilities.

By incorporating stochastic simulations, local yield/price correlations, and certainty equivalents, CIDM allows producers and the professionals who advise them to evaluate alternatives not only in terms of expected revenues but also through structured discussions of risk exposure, revenue stability, and alignment with individual risk preferences and long-term management objectives. To our knowledge, no other tool provides farm-level program and insurance comparisons based on expected values derived from an explicitly modeled stochastic distribution of prices and yields.

## IMPROVING CROP INSURANCE UNDERSTANDING WITH CIDM

In practice, crop insurance decisions remain difficult for producers to navigate. Policies are complex, agents may not always communicate options clearly, and outcomes hinge on local yields, market prices, and premium costs (DeLay et al., 2020). CIDM was designed to address these challenges by offering a free-to-use, web-based platform that simplifies program and insurance choices while incorporating local data into the analysis.

CIDM evaluates three major Multi-Peril Crop Insurance (MPCI) products—YP, RP, and RP-HPE—as well as a “no insurance” scenario. Users enter basic information

about their operation (crop, county, irrigation practice, and unit structure), and the tool produces graphs showing expected net revenues per acre under multiple coverage levels.

CIDM is built on a stochastic simulation framework that draws on historical yield data from USDA’s National Agricultural Statistics Service (NASS) and price data from CME Group futures contracts and Barchart.com. For each crop and county, the model generates 10,000 possible yield/price outcomes by resampling from historical yield distributions and combining them with projected and harvest futures prices (Miranda, 1991; Biram et al., 2022). To ensure realism, the simulation incorporates correlation modeling between yields and prices using a copula function. When USDA-RMA provides state-level yield/price correlations, these are applied directly. When such data are not available, empirical correlations are estimated from long-run historical series (1960–2022). This copula-based approach, following Goodwin and Hungerford (2015), ensures that CIDM reflects systemic risk, for example, the tendency for prices to rise in years with poor yields or fall during bumper crops.

For each simulated outcome, CIDM calculates farm revenue under alternative coverage levels and program choices, taking into account producer-paid premiums, indemnity payments, and FSA program benefits. The simulation outputs are then summarized as expected net revenues, which are presented graphically to allow side-by-side comparisons across insurance products and program elections. In this way, CIDM functions not only as a decision-support tool but also as an educational resource, illustrating for producers, lenders, and appraisers how coverage-level and product choices can influence income variability, downside risk, and overall financial stability.

Figure 5 reports expected net revenues for non-irrigated corn in Campbell County, Kentucky, under basic units and ARC enrollment across alternative crop insurance coverage levels. Expected net revenues are negative in the absence of crop insurance and at coverage levels below 60%, indicating substantial downside risk for producers who do not purchase adequate insurance protection. Expected net revenues increase monotonically with higher coverage levels and become positive beginning at 65% coverage, highlighting the financial value of increased insurance guarantees.

Differences in expected net revenues across insurance products are relatively small. YP generates the highest expected net revenues at all coverage levels, but the magnitude of this advantage over RP and RP-HPE

is modest. At higher coverage levels (80% and 85%), gains in expected net revenues are accompanied by higher producer-paid premiums, reflecting the increased out-of-pocket costs required to secure greater coverage.

Although Figure 5 shows negative expected net revenues on average in the absence of crop insurance, this result should not be interpreted as evidence that corn production is unprofitable or should be avoided in Campbell County. Rather, the figure reflects expected outcomes for the 2025 crop year, which was characterized by relatively low commodity prices. In this context, the CIDM results underscore the role of crop insurance in mitigating downside risk and smoothing farm income during periods of unfavorable market conditions.

It is additionally important to note that YP often appears more favorable in the 2025 expected net revenue comparisons because it carries lower premium costs than revenue-based products. The trade-off is that YP only protects against yield losses and does not adjust guarantees if harvest prices rise. By contrast, RP provides protection against both yield and price declines and increases guarantees when harvest prices exceed projected levels, while RP-HPE offers similar protection at a lower cost by excluding that upward adjustment. As a result, the differences between RP and RP-HPE are often relatively minor, unless harvest prices rise substantially, in which case RP provides more protection.

In this example, however, 2025 corn prices were already low going into the crop year, leaving relatively little revenue to protect against further declines. While RP would provide more protection if prices increased at harvest, CIDM also accounts for the typical price drops that occur at harvest, which further limits the added value of RP and RP-HPE in this case. This context helps explain why YP compared favorably in net revenue terms, since the added price coverage in RP and RP-HPE did not generate much additional benefit relative to their higher premiums. The Christian County example therefore shows that coverage-level decisions can matter more than product choice, since premiums drive the main differences. However, in years with greater expected price variability, RP may become the better product choice because it protects against both yield and price risk. CIDM makes these differences transparent by using county-specific yield data and price/yield correlations, allowing producers and their advisors to see whether coverage level or product choice is the more important decision lever in their area.

The power of CIDM is further demonstrated in Figures 6 and 7, which compare expected 2025 revenue distributions with and without crop insurance in Christian County, Kentucky. In the uninsured scenario (Figure 6), the distribution of expected net revenues is wide and skewed, with a 31% chance of financial loss ranging from  $-\$1$  to  $-\$800$  per acre. While average net revenue is positive ( $\$136$  per acre), the range of possible outcomes is large, leaving the farm exposed to severe downside risk in poor yield or price years. By contrast, Figure 7 shows results under a 75% RP policy with optional units. Here, the probability of some loss is slightly higher (34%), but the severity of losses is dramatically reduced, limited to  $-\$1$  to  $-\$200$  per acre. At the same time, expected or average net revenue rises to  $\$160$  per acre. This narrowing of the revenue distribution reflects how crop insurance reshapes risk exposure, cutting off catastrophic outcomes while maintaining upside potential. For a producer with debt obligations or tight cash flow, this stability may be the difference between default and survival.

This trade-off illustrates why crop insurance decisions must be evaluated beyond averages. Without insurance, farms may enjoy higher upside in good years but face the possibility of devastating losses. With insurance, premiums reduce long-run returns slightly, but income stability improves significantly. For lenders, this distinction is central to credit risk assessment. For appraisers, insured revenue streams are an important indicator of land value stability; for farm managers, CIDM helps ensure coverage strategies align with the farm's financial resilience and tolerance for risk.

## CASE STUDY: A KENTUCKY GRAIN PRODUCER'S INSURANCE EXPERIENCE

The importance of CIDM can be illustrated through the experience of a Kentucky grain farmer who has consistently purchased crop insurance from 2008 to 2024. Table 3 summarizes the producer's annual premiums, indemnities, and FSA program payments across this 17-year period. On average, the farmer paid just over  $\$18,000$  per year in crop insurance premiums. As is typical with crop insurance, indemnity payments varied widely over time, with some years generating substantial payouts and others providing none at all (USDA-RMA, 2024).

During "normal" years—including 2008, 2010, 2014, 2017 through 2019, and again in 2022 and 2023—the farmer received no indemnities despite paying

significant premiums. In these years, crop insurance felt like a net cost. However, in years of widespread losses, the program provided critical support. In 2009 and 2013, indemnities were large and far exceeded the farmer's annual premium costs, stabilizing the farm's finances and covering operating costs that would otherwise have been at risk.

Looking across the full 2008–2024 period, the producer's long-run loss ratio was 95%, meaning indemnities received were nearly equal to total premiums paid in. This outcome is consistent with actuarial fairness as designed by the Federal Crop Insurance Program (Coble et al., 2010). Still, the distribution of benefits was uneven: in most years, crop insurance produced a net cost, while in a handful of years, it delivered significant financial support that preserved solvency.

FSA commodity program payments provided additional support during this period, as shown in Table 3. In years when indemnities were absent or small, ARC and PLC payments helped offset premium costs and smooth income. This underscores the complementary relationship between farm programs and crop insurance: insurance protects against large, farm-specific yield and revenue shocks, while FSA programs provide a stabilizing baseline against systemic price or revenue declines (Rosch, 2022; USDA, 2024).

From the farmer's perspective, the uneven pattern of returns created skepticism about the value of crop insurance. In most years, premiums felt like wasted dollars, but in the worst years, indemnities were the difference between financial survival and distress. This mirrors the broader producer sentiment documented in earlier research, which emphasizes that farmers often weigh the annual cost of premiums against the rare but critical role of indemnities in catastrophic years (Barnett and Coble, 1999; Paulson et al., 2024).

For practitioners, the lessons are clear. Lenders benefit from insurance enrollment because indemnities improve repayment capacity in loss years, reducing credit risk. Appraisers can interpret insured revenue streams as signals of long-term income stability, which influences land values. Farm managers can use these insights to help clients design coverage strategies that balance annual costs with protection against catastrophic losses.

CIDM extends these lessons into a forward-looking framework. By simulating thousands of yield and price outcomes, CIDM shows producers what this Kentucky

farmer lived through over 17 years: insurance is often a cost in good years but a financial lifeline in bad ones. The tool makes these trade-offs transparent, helping producers and their advisors tailor decisions to the unique financial and agronomic conditions of each farm.

## CONCLUSION

Farm producers today manage risk in an environment shaped by volatile commodity markets, shifting policy supports, and increasing weather and global uncertainties. ARC and PLC provide a baseline of protection against shallow losses, but crop insurance fills deeper gaps by covering farm-level yield and revenue risks. Together, these programs influence not only farm income but also creditworthiness, land values, and long-term financial stability.

The results presented here highlight important takeaways for practitioners. For producers, coverage-level decisions often have a greater effect on expected net revenues than product selection, though revenue-based products such as RP provide additional protection when price variability is high. For lenders, crop insurance enrollment improves repayment capacity by reducing the likelihood of severe income shortfalls. For appraisers, consistent program participation and insured revenues provide stronger signals of land value stability. The Christian County example and Kentucky farmer case study both illustrate the reality that premiums may feel costly in most years, but indemnities in disaster years are indispensable in sustaining farm operations.

CIDM adds value not only as a decision aid but also as an educational tool. By making the trade-offs of crop insurance transparent and visually illustrating how coverage levels, products, and program elections alter financial outcomes, CIDM enhances producer understanding and supports better communication between farmers, lenders, and appraisers. In this way, CIDM builds financial literacy while informing real-world choices.

Looking ahead, agriculture will face continued challenges—from climate extremes and pest pressures to trade disruptions and geopolitical shocks—that will test the resilience of farm businesses and rural credit markets. Meeting these challenges will require more than federal safety nets alone. The synergy between public programs and innovative decision-support tools is essential, providing the flexibility, transparency, and resilience that producers, lenders, and appraisers need

to manage risk effectively and ensure the long-term stability of the agricultural sector.

Practitioner Access: CIDM is available as a free, web-based decision-support tool intended for use by agricultural producers, extension professionals, and advisors. The tool can be accessed at <https://hunterbiram.shinyapps.io/CropInsuranceDecision2025/> and does not require specialized software, spreadsheet expertise, or paid subscriptions. Users input basic operation-level information, including location, crop, irrigation practice, and program selections, after which CIDM generates expected net revenue distributions and certainty equivalents across crop insurance and FSA program combinations. The tool is designed to support exploratory analysis and education rather than to prescribe a single optimal decision. Housing of the tool is subject to change but will be available on University of Kentucky and University of Arkansas Agricultural Economics websites in the future. The tool currently functions for Arkansas and Kentucky, but the authors are open to collaboration and growing use of the tool via partnerships other universities as well as industry partners.

## FOOTNOTES

- 1 Federal crop insurance is subsidized, with premium support historically ranging from 38% to 80%, depending on coverage level and unit structure. On average, the government has covered about 63% of total premiums, leaving producers responsible for roughly 40% out of pocket (USDA-ERS, 2024). Recent policy changes under the One Big Beautiful Bill (OBBB), enacted in July 2025, increased premium support for most farm-level policies, further reducing producer-paid costs. While these subsidies lower the cost of coverage below actuarially fair rates and encourage broad participation, the farmer-paid share remains a significant annual expense that must be weighed against potential indemnities and the complementary protection offered by FSA programs.
- 2 The One Big Beautiful Bill Act (OBBBA) increased the ARC-CO revenue guarantee from 86% to 88%.

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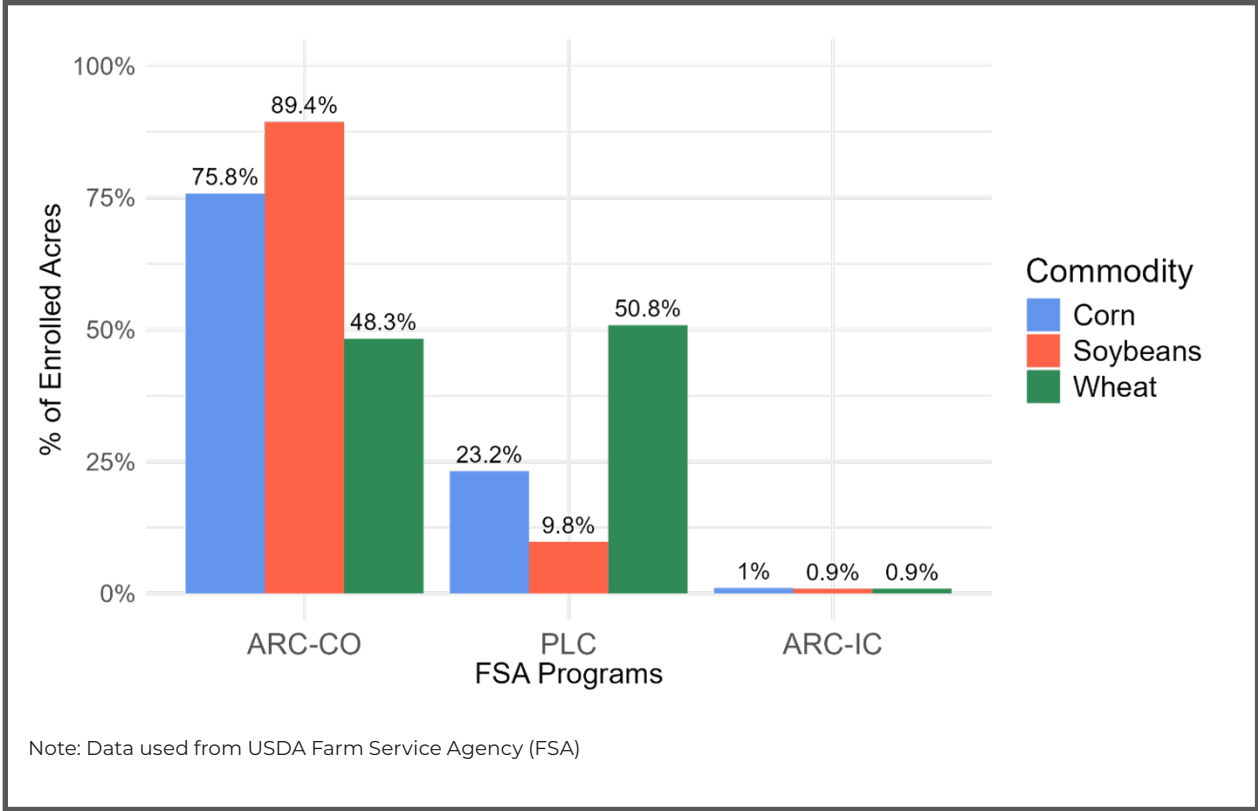


Figure 1. United States Enrolled Base Acres by FSA Program and Commodity, 2024 (%)

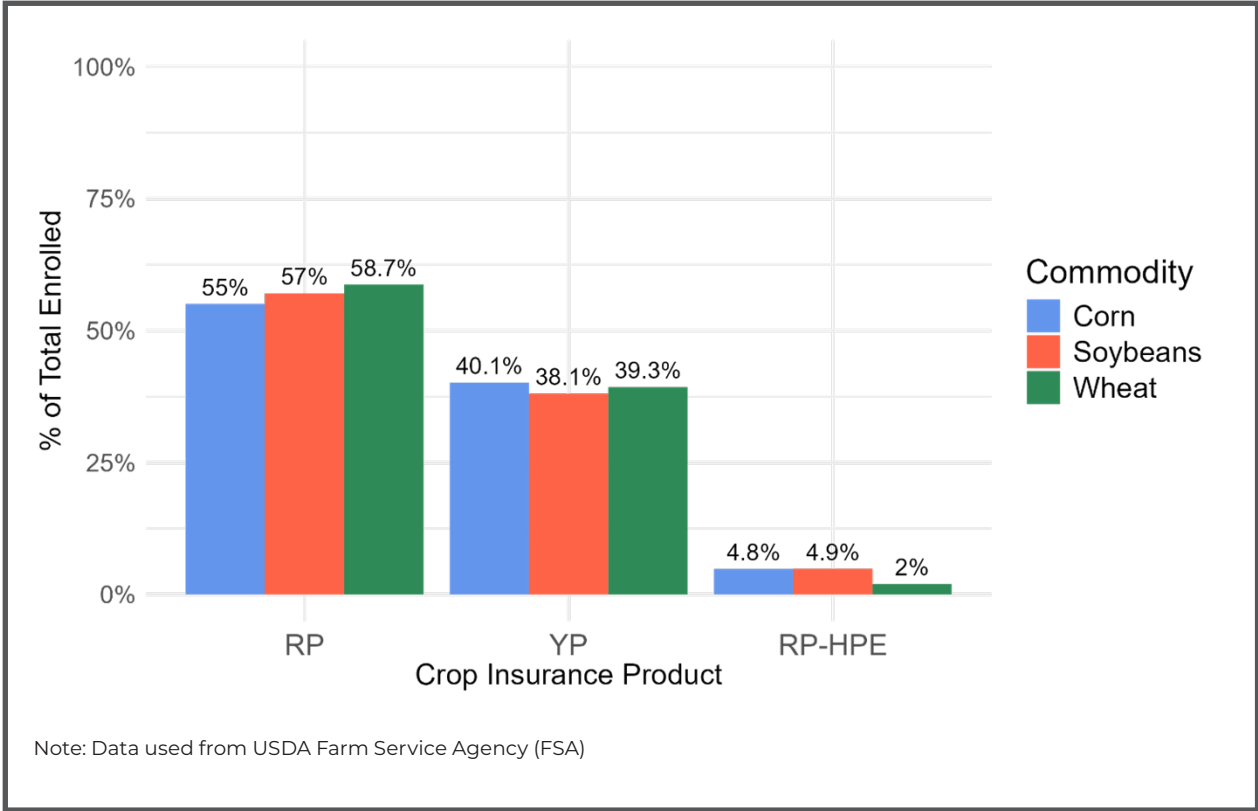


Figure 2. United States Crop Insurance Enrollment by Product and Commodity, 2024 (%)

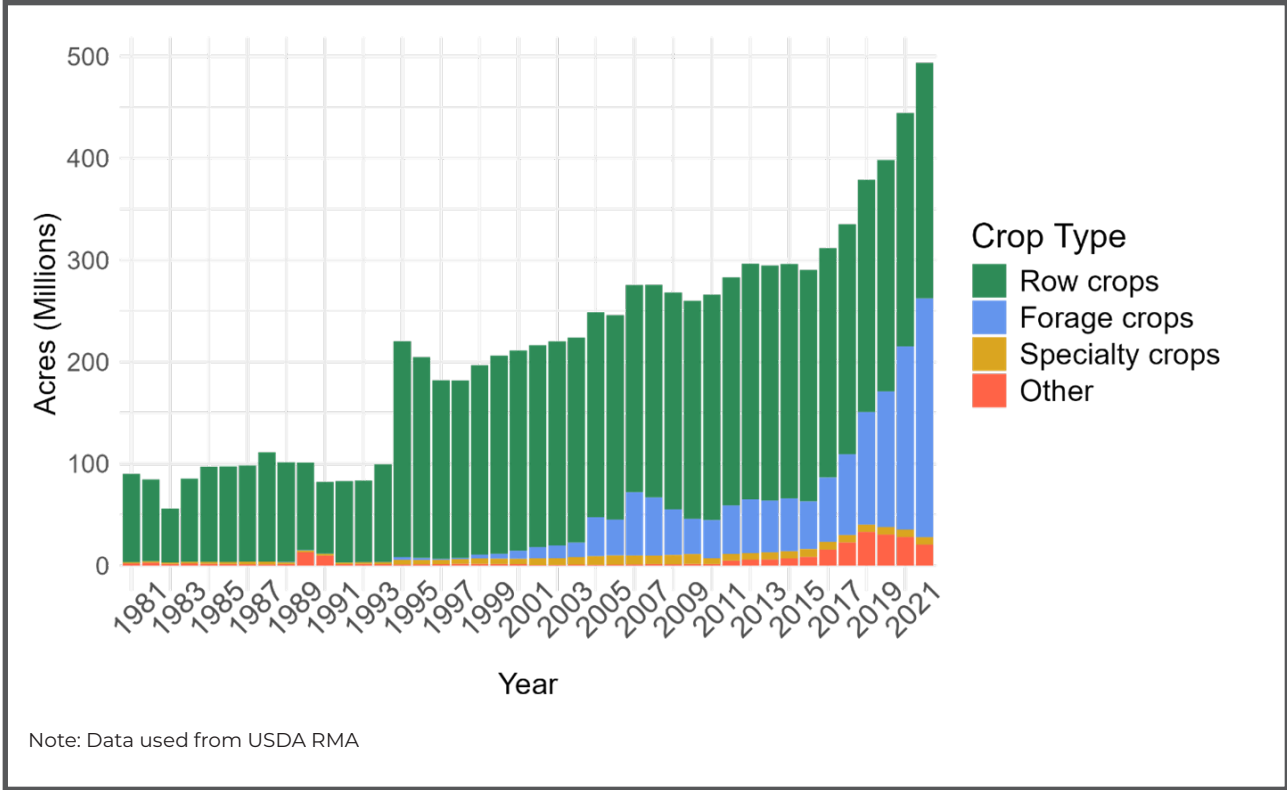


Figure 3. Trends in the United States Federal Crop Insurance Program Net Reported Acres by Commodity Type, 1981-2021

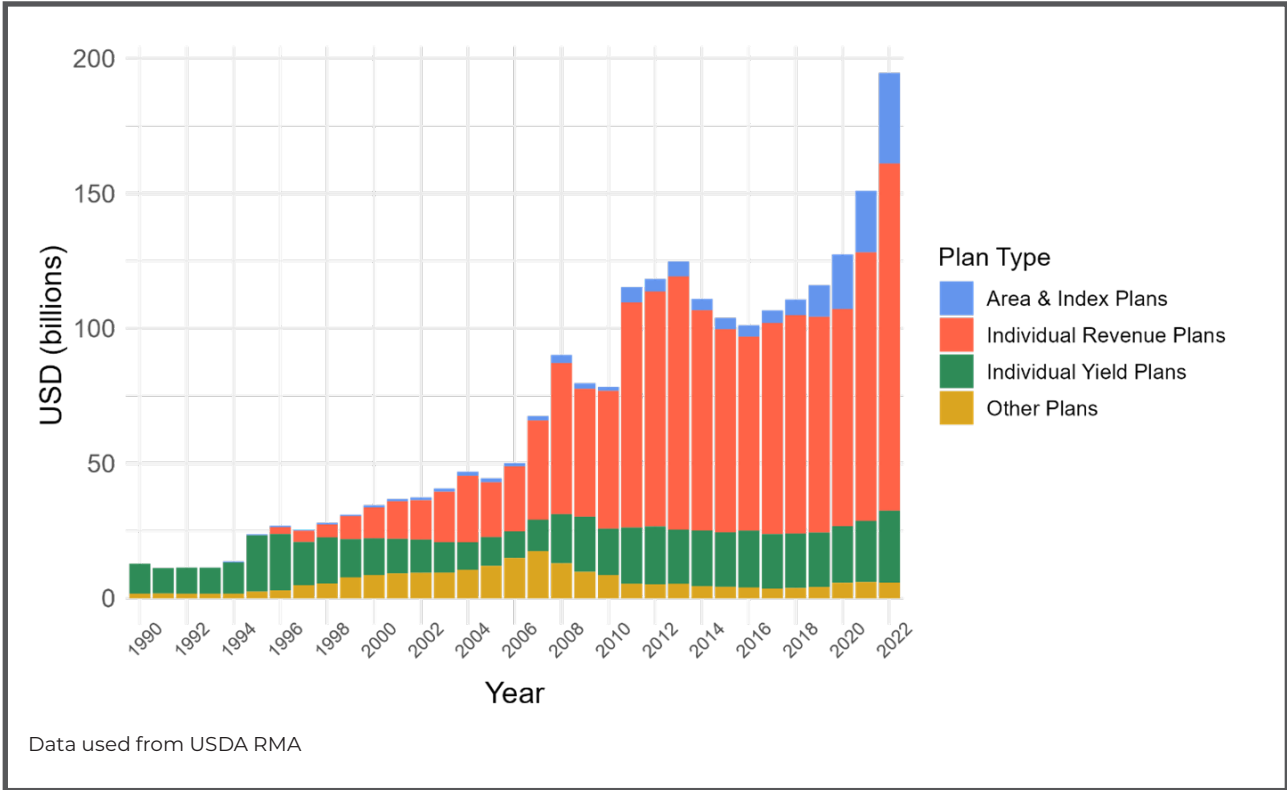


Figure 4. United States Federal Crop Insurance Program Liability by Policy type, 1990-2022

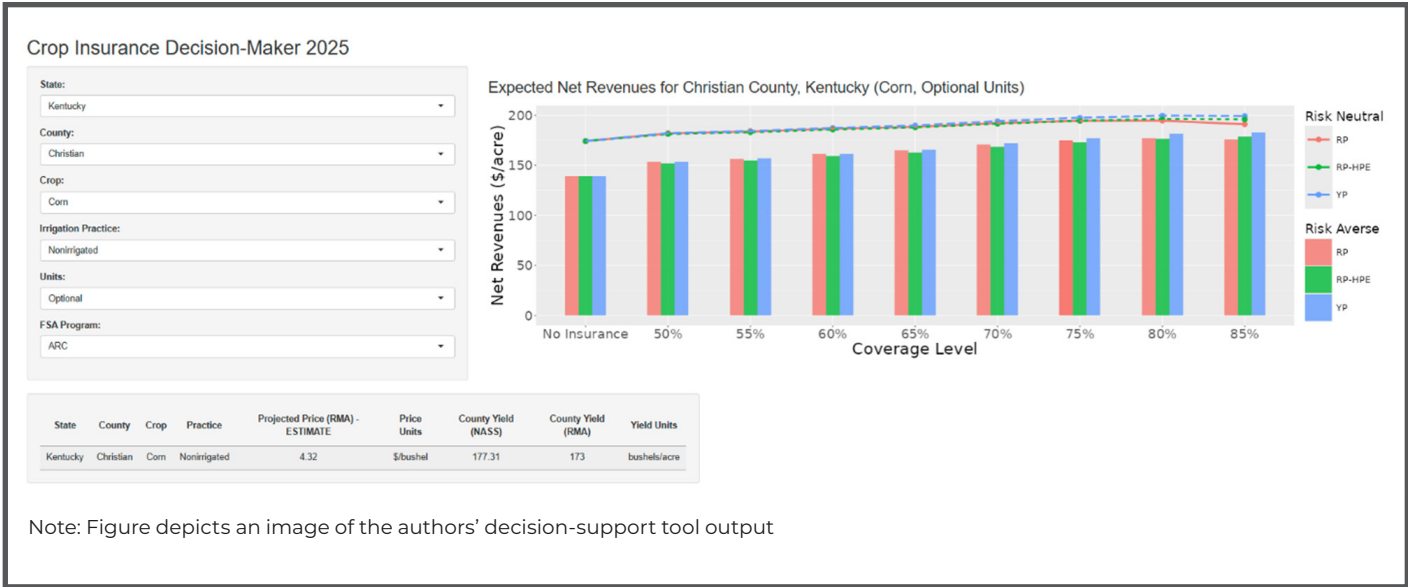


Figure 5. CIDM Web Application Tool

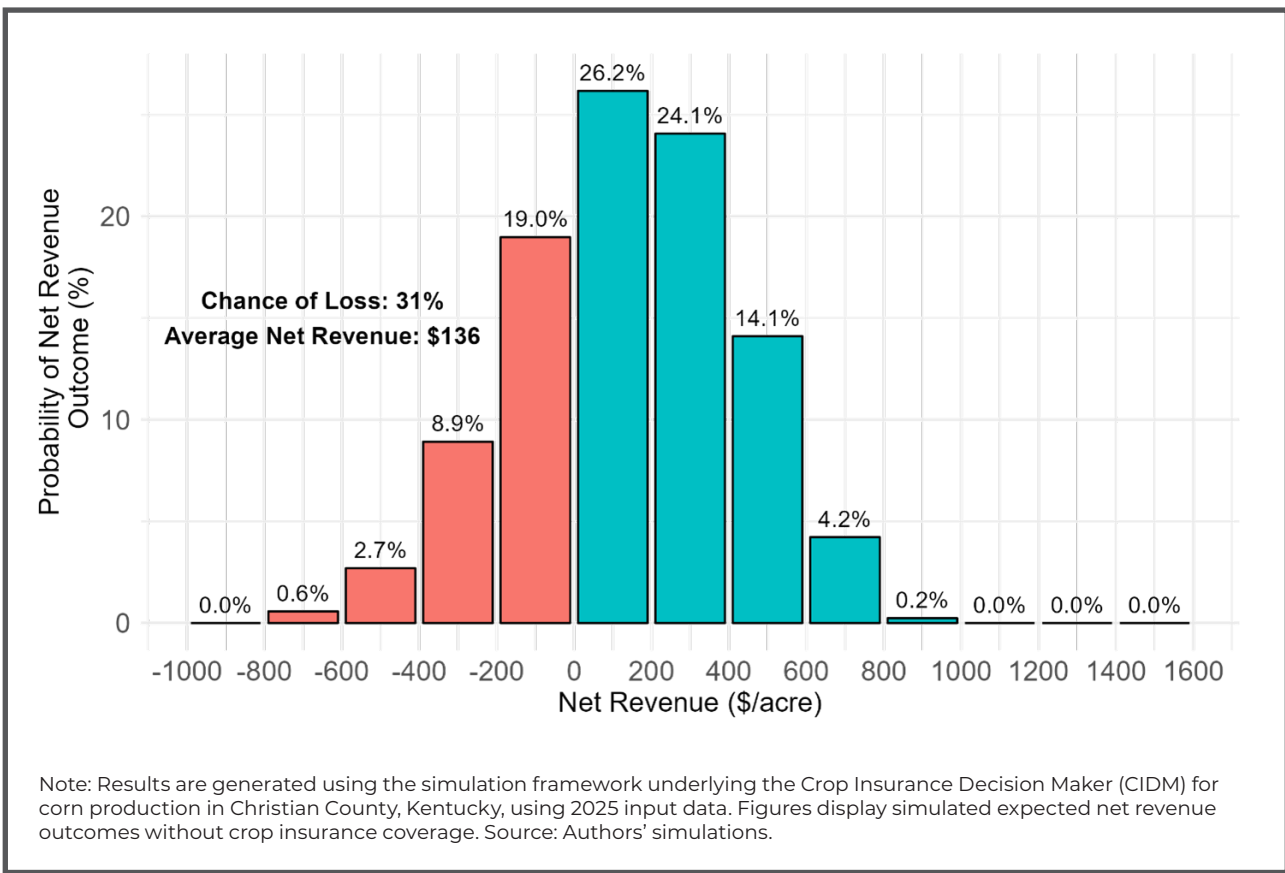


Figure 6. Expected Net Revenue Distribution without Insurance for Corn in Christian County, Kentucky, 2025

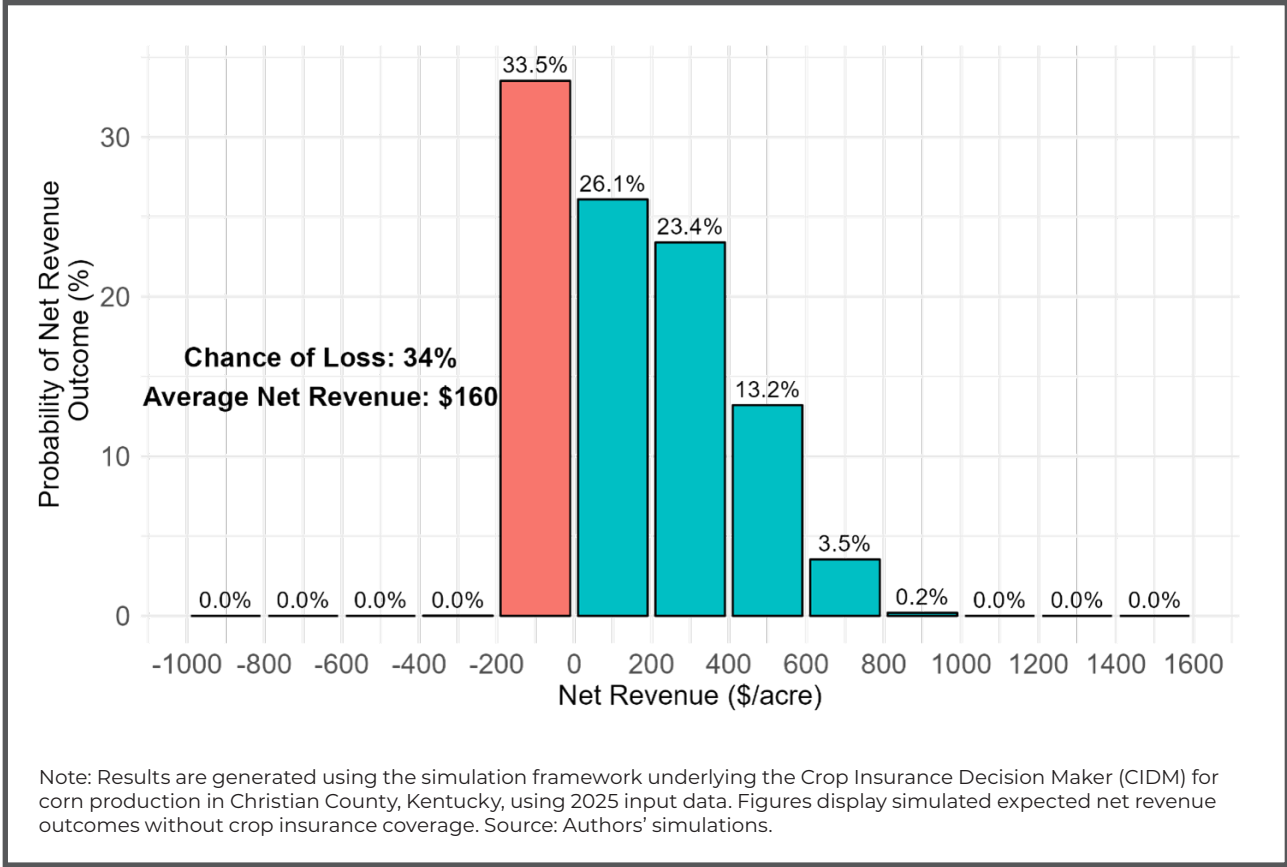


Figure 7. Expected Net Revenue Distribution with a 75% Revenue Protection for Corn in Christian County, Kentucky, 2025

**Table 1. Comparison of Universities' FSA Decision-Making Tools for Farm Program Enrollment**

Characteristics	University of Illinois	Iowa State University	Kansas State University	Michigan State University	Mississippi State University
<b>Platform Type</b>	Online Web-based	Excel Spreadsheets	Excel Spreadsheets	Excel Spreadsheets	Online Web-based
<b>Commodities</b>	Corn, Soybeans, and Wheat	Corn and Soybeans	Corn, Wheat, Soybeans, Sorghum / Other crops, and more are found in a separate tool	Corn, Soybeans, and Wheat	Corn, Soybeans, and Wheat
<b>Payment Program Included</b>	ARC-CO and PLC	ARC-CO and PLC	ARC-CO, PLC, and SCO	ARC-CO and PLC	ARC-CO and PLC
<b>Regional Focus</b>	Nationwide-County Level	Iowa- County Level	Nationwide- County level	Michigan State-County level	Mississippi State-County Level
<b>Method of Payment Estimation</b>	Option to choose between projected prices, USDA projected prices, series of low but realistic prices, series of high but realistic prices, and MYA prices by the Congressional Budget Office	Reported and projected prices from USDA Farm Service Agency and Risk Management Agency to project payments at the county level	County FSA and RMA yields and thus represent the average county-level payouts, not individual payouts.	Based on assumptions about county yields and national market prices	Estimated payment accounts for yield and price risk based on a 10,000 simulation of potential price and yield combinations.
<b>Includes What-If scenarios</b>	Yes, it lets the user choose payment, method, and calculations	No	No	No	Selection of price volatility. Provides scenario probability of expected payment and no payment.
<b>Notes</b>	Payments are made using the base acres in place of actual planted acres on the FSA farm.	Payments are calculated for non-irrigated corn and soybeans base acres by county.	Analysis doesn't account whether a producer has base acres for the crop being produced. ARC and PLC only pay out on base acres.	County yields can be adjusted by entering different yields directly or adjusting their percentage. A default for 86% of county yields is available to demonstrate scenarios of significant yield loss.	The information provided is for educational purposes and to be used as a guide. This decision tool accounts for uncertainty and reports expected payments based on a 10,000 scenario simulation.
<b>Visual Graphs/ Charts</b>	Yes. provides a graph for the payments and payment distributions.	No	One of the tools compares PLC and ARC-CO payments	No	No
<b>Combination of FSA and Crop Insurance</b>	No	No	No	No	No

Note: Other crops include but are not limited to canola, large and small chickpeas, dry peas, crambe, flaxseed, lentils, mustard seeds, oats, rapeseed, rice (long grain, med/short grain, temperate japonica), safflower, sesame, sunflower

**Table 1. Comparison of Universities' FSA Decision-Making Tools for Farm Program Enrollment (Continued)**

Characteristics	University of Missouri	North Dakota State University	Ohio State University	Texas A&M University
<b>Platform Type</b>	Excel Spreadsheets	Excel Spreadsheets	Excel Spreadsheets	Online Web-based
<b>Commodities</b>	Corn, Soybeans, and Wheat	Barley, Canola, Corn, Soybean, Sorghum, Wheat / Other Crops	Corn, Soybeans, and Wheat	Barley, Canola, Corn, Cotton, Sorghum, Peanuts, Soybeans, and Wheat / Other Crops
<b>Payment Program Included</b>	Arc-CO, ARC-I, and PLC	ARC-CO and PLC	Arc-CO, ARC-I, and PLC	ARC-CO and PLC
<b>Regional Focus</b>	Nationwide- County level	Minnesota, North Dakota, South Dakota, and Montana- County level.	Nationwide- County level	Nationwide-County Level
<b>Method of Payment Estimation</b>	Farmers input their own FSA price PLC yields, marketing year average prices (national price)	2024 Marketing year average (MYA) and average county yields	Farmers input their own FSA PLC yields, marketing year average prices (national price)	Characterizes probabilities of different levels of expected FSA payments. Based on 500 possible future realizations of market prices and county yields.
<b>Includes What-If scenarios</b>	Allows what if scenarios for individual county-based yields and prices.	No	Allows what if scenarios for individual county-based yields and prices.	Yes, insert assumed County yields to calculate ARC payments for all trials in the simulation
<b>Notes</b>	Users can change the market year prices by using a crop price model that estimates price 1,000 times for variation. The price used is the average of those trials.	Only applicable for farms which have all base acres physically located in one county. Will only calculate ARC-CO using non-irrigated yields.	Users can change the market year prices by using a crop price model that estimates price 1,000 times for variation. The price used is the average of those trials.	Values displayed in the results will not match the payments you might calculate using single specific price and yield realizations. To see the likelihoods of different levels of payments, click on an individual expected payment
<b>Visual Graphs/ Charts</b>	Yes. Annual payments, performance section, program design and illustration.	No	Yes. Annual payments, performance section, program design and illustration.	No
<b>Combination of FSA and Crop Insurance</b>	No	No	No	No

Note: Other crops include but are not limited to canola, large and small chickpeas, dry peas, crambe, flaxseed, lentils, mustard seeds, oats, rapeseed, rice (long grain, med/short grain, temperate japonica), safflower, sesame, sunflower

**Table 2. Comparison of Universities' Crop Insurance Decision-Making Tool**

Characteristics	University of Illinois Urbana-Champaign	Iowa State University	Kansas State University	University of Arkansas
<b>Platform Type</b>	Excel Spreadsheets (Fast Tools) and Online Web-Based	Excel Spreadsheets	Excel Spreadsheets	Online Web-based
<b>Commodities Included</b>	Corn, Soybeans, and Wheat	Soybeans and Corn	Corn, Soybeans, Grain Sorghum, and Wheat	Corn, Soybeans, Medium and Long grain Rice
<b>Coverage Options</b>	RP, RP-HPE, YP, SCO, and ECO	RP, RP-HPE, and YP	SCO and ECO with RP, RP-HPE, and YP	Margin Protection
<b>Regional Focus</b>	Illinois, Alabama, Arkansas, Florida, Georgia, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, West Virginia, and Wisconsin at the county level.	Manually type County and State	Nationwide-county level	Nationwide- county level
<b>Coverage Levels</b>	50% - 85%	50% - 85%	50% - 85%	70%-95%
<b>Unit Structure</b>	Enterprise, Basic, and Optional	No option to choose	No option to choose	No option to choose
<b>Visual Graph/ Charts</b>	No	No	No	Yes, provides a visual breakeven price and protection factor for the chosen coverage level.
<b>Notes</b>	Actual Production History (APH) yield is based on the last ten years of yields with substitutions made for low yields.	Directs user to the Farmdoc Premium Calculator to find estimated premiums.	Payments are determined by multiplying the SCO or ECO Payment Rate (if positive) by the SCO or ECO Protection, respectively	The user should note that positive values of net indemnity imply the producer does not owe any money on their Margin Protection policy and may use this dollar amount to pay their operating loan note or pay for a producer premium on a different purchased policy.

**Table 3. Crop Insurance and Federal Program Payments for a Representative Producer in Kentucky (2008-2023)**

Year	Crop Insurance Cost (\$)	Indemnity Payments	Government Payments
2023	\$17,769	\$ -	\$ -
2022	\$27,875	\$ -	\$ -
2021	\$22,619	\$4,786	\$2,456
2020	\$17,868	\$8,703	\$75,586
2019	\$18,504	\$ -	\$109,849
2018	\$19,941	\$ -	\$4,690
2017	\$20,434	\$ -	\$21,226
2016	\$17,618	\$1,556	\$2,254
2015	\$17,365	\$1,536	\$11,678
2014	\$18,169	\$ -	\$33,888
2013	\$23,933	\$212,545	\$46,886
2012	\$18,277	\$2,112	\$71,200
2011	\$20,367	\$14,911	\$45,894
2010	\$4,816	\$ -	\$117,998
2009	\$16,006	\$36,632	\$35,799
2008	\$14,740	\$ -	\$31,955
Total	\$296,301	\$282,781	\$611,359
Average	\$18,519	\$17,674	\$38,210
Loss Ratio	95.44%		