Title:

Documenting and analyzing crop insurance participation in counties with Socially Disadvantaged Farmers and Ranchers (SDFRs)

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Research study period: (07/31/2024, 07/31/2025)
Reporting period: January 2025
Due date of report: 01/27/2025
Submission date: 01/27/2025
Organization to which report is submitted: Socially Disadvantaged Farmers and Ranchers Policy Research Center
Policy Research Analyst: Kara Woods

Abstract:

Primary data collection, Literature and secondary data cleaning

Ana Claudia Sant'Anna
West Virginia University

The research aims at understanding the adoption of crop insurance by Socially Disadvantaged Farmers and Ranchers (SDFR). The study will: 1) document and explore the correlations between the presence of SDFRs in a county and crop insurance participation; 2) quantify the explanatory power of county-level measures, such as producer race, gender and ethnicity on crop insurance misrating. In January we collected data on livestock insurance and worked on summary statistics. We also collected and sent out survey requests to farmers in the USDA organic farm list as well as African American farmers in the index list. We are getting ready to set up a table at the WV Small Farm conference to collect more survey responses. We continued to work on the econometric model.

Summary of Research Study Progress

Overall, the research goal is to understand the adoption rate of crop insurance by Socially Disadvantaged Farmers and Ranchers. Objectives are two-fold: 1) document and explore the correlations between the presence of SDFRs in a county and crop insurance participation; 2) quantify the explanatory power of county-level measures, such as producer race, gender and ethnicity on crop insurance misrating. We will use secondary as well as primary data in our analysis. Aims related to milestone 1 from July to September were mostly completed. We are still working on the data collection and literature review. Milestone 2, running from October to December involved data analysis and data cleaning. In January we are still collecting literature as new studies are published. We have increased the secondary dataset to include information on livestock insurance, this is because of the large number of African American and Hispanic producers involved in cattle production. We some tables available in the appendix. We are working on completing some more summarized tables to identify insurance purchase over the years and linked to SDFRs. We have also submitted an abstract for a presentation at the AAEA conference.

Preliminary data analysis of the 2022 Ag Census shows that Texas is the state where the majority of African American and Hispanic producers are, 25.3% and ~36% out of the total number of Black and Hispanic producers respectively. Most Hispanic and African American producers are involved in beef cattle and ranching according to the 2022 Ag Census. According to data collected on livestock risk protection insurance, considering the period of 2003-2025, on average 21 weeks or more prior to the intended marketing date at an average coverage level of 98%.

We also collected farmer's email listing from various sources: USDA certified organic, WV grown and black farmer index. We have emailed them to request their participation in the survey.

Research Methods

This study will adopt a descriptive analysis and a quantitative approach. The methodology includes the following steps: 1) the collection secondary data at the county level, pre and post the 2018 Farm Bill, on crop insurance expenses, premium and loss ratios from the Risk Management Agency, as well as historical yield data from NASS and, demographic data on SDFRs from the Census of Agriculture; 2) the use of statistical methods to analyze the data and identify relationships between SDFR counties and crop insurance participation; 3) the use of spatial econometric models to analyze county-level data on crop insurance loss ratios, premiums, and SDFR demographics.

Secondary data will be collected from the US Agricultural Census 2022 and the USDA's Risk Management Agency (RMA) Summary of Business, the National Agricultural Statistics Service (NASS), as well as, the 2017 and 2022 US Census of Agriculture. Key variables collected will include county-level crop insurance data, yield data, coverage level choices, revenue plan participation, group plan participation, and the ratio of downside yield deviations across sample periods, number of principal producers by race, sex, age and experience, county-level data on farm characteristics (e.g. farm size and crop type). While data from the US Agricultural Census is only available in 2017 and 2022, data from the RMA is available yearly.

With the data collected we will create a comprehensive panel dataset highlighting a period before and after the 2018 Farm Bill, allowing for an initial descriptive analysis to identify trends and patterns for interpretation within the context of the 2018 Farm Bill provisions. This can be accomplished through line and bar graphs. We will also use descriptive statistics such as means, standard deviation, growth rates, minimum and maximum to

analyze the data variation and range. This will allow us to identify any periods of anomaly in terms of the crop insurance participation over the years. We also plan on displaying the information on crop insurance participation in a map to allow for an analysis of the distribution of payments across the US. A significant limitation of our research is that we do not have individual level information and can only make inferences at the county level. As such we can only comment on crop insurance adoption at the county level. As such this will be complimented by primary data collected from farmers through an online survey.

The collected data is further analyzed through the following empirical estimation. We follow the methodology proposed by Teal and Stevens (2024) and expand it to include all SDFRs. Teal and Stevens (2024) only consider African American farmers, we propose also considering Hispanic, Asian, Native American, female farmers, as well as interactions between these to account for female African American farmers for example. The dependent variables in our model will be the county-level crop insurance loss ratio (LL), defined as the ratio of indemnities to premiums. The independent variables will include a set of county-level systematic factors (XX) such as historical yield trends, yield variability, coverage level choices, revenue plan participation, group plan participation, and the ratio of downside yield deviations across sample periods. Additionally, we will include variables representing the share of different SDFR groups in the county. The spatial econometric model, which contains a spatial lag to account for spatial dependence can be represented as:

$$LR = \rho WL + X\beta + u \tag{1}$$

where LR is the expected loss ratios, $\rho\rho$ is the spatial autoregressive coefficient, W is spatial weights matrix the X a matrix of independent variables, β is a vector of parameters, and u the error terms. Separate estimations of equation (1) will be run for different types of crops mostly grown by SDFRs. We also plan on running equation (1) using other dependent variables such as crop insurance expenses. Estimations will be conducted with data pre- and post the 2018 Farm Bill to identify any changes in the interpretation of results. This estimation procedure is not without limitations. We are unable to identify if crop insurance premium misratings are beneficial or not to SDFRs. Estimation results do however allow us to identify whether the proportion of SDFRs in a county is related to crop insurance loss ratio. If discrimination is not present, then these would not be related, and the coefficient would be statistically insignificant. Results from the empirical estimation and descriptive data analysis will be provided in a report which will include recommendations to policy makers. Visualization will be provided in the form of fact sheets and similar outreach material.

We aim at increasing response rate of the surveys by sending out multiple opportunities for farmers to answer. We will also have the QR code available at various conferences attended by farmers and farm operators to increase participation. We will be counting with the help of the Socially Disadvantaged Farmers and Ranchers Policy Research Center to reach out to farmers.

Research Study Participants

Study participants are US farmers.

Publications

None to disclose at the moment.

Key Personnel

Dr. Ana Claudia Sant'Anna, the principal investigator, will supervise the tasks performed by the graduate student (e.g. data collection, survey design and initial analysis), perform econometric estimations, review deliverables and, take the lead in drafting and editing the final report.

Stipend: $16,094.00 and Fringe Benefits: $3,702.00

Ranjita Bhandari will work as a graduate research assistant. Her main tasks are survey design, data collection, data cleaning and descriptive analysis, assisting in the report draft and preliminary analysis of econometric

modelling. Ranjita is currently a PhD candidate in the School of Community and Economic Development at West Virginia University. She has experience in statistical analysis, data collection and cleaning, SDFRs, and in estimating empirical models. Below related work and presentations were highlighted, please see her CV in Appendix A for the complete information on past and present research.

Stipend: $20,700 (Fringe Benefits: $1,864.00) and Summer Salary: $4,198 (Fringe Benefits: $378)

Changes

We included having a table at the WV Women in Agriculture conference to get farmers to fill out our survey.

Problems

Low response rate for the survey. We plan to keep reaching out to potential respondents to increase response rate.

Financial Statement

No deviations in costs and budget to report. Expenditures for this period include travel expenses to the WV Women in Ag Conference, Graduate Research Assistant Funding and Supplies. For amounts, including direct and indirect expenses, please refer to the financial table.

Research Study Status

The overall study is progressing well. We plan to provide some tables for discussion in the preliminary draft report due December 30th.

	Q1 2024				Q2 2024			Q3 2025			Q4 2025		
	Jul	Ago	Set	Out	Nov	Dez	Jan	Fev	Mar	Abr	May	Jun	July
Milestone 1: Secondary data collection and cleaning (Deadline: Set. 30 2024). Survey design for primary data													
Literature review	Jul.15												
Data collection													
US Agricultural Census													
Risk Management Agency (RMA)													
Data Cleaning													
Data organization and cleaning													
Merge Ag Census and RMA data													
Survey design and testing													
IRB submission													
Milestone 2: Initial analysis (descriptive statistics) and preliminary draft report (Deadline: Dec. 30 2024). Collection Primary data													
Data Analysis													
Summary statistics													
Tables and graphs													
Draft Report write up						Dec. 30th							
Survey send out													
Presentation at conference													
Milestone 3: Econometric estimations and final report (Deadline Mar. 14 2025)													
Econometric Estimations													
Primary data													
Organization and cleaning													
Analysis													
Final draft report (with econometric part)									Mar.14				
Preliminary Repot with primary data												Jun 30th	
Presentation to Stakeholders at conferences													
Milestone 4: Finalizing activities - contract end Apr. 14 2025 (extended to July 31st)													
Final draft report (with all data)													Jul 31st
working on any final updates to deliverables													Jul 31st
Coordination with SDFR Policy Research Center													
Monthly progress reports													

Note: Dates in the grids were provided by SDFR Policy Research Center

Additional Documents

AAEA abstract

Preliminary Research Report Certification Form

Reporting Period Dates from: <u>January 1, 2025 to January 27, 2025</u>

Principal Investigator(s): <u>Dr. Ana Claudia Sant'Anna</u>

Research Study Title: <u>Documenting and analyzing crop insurance participation in counties</u>

<u>with Socially Disadvantaged Farmers and Ranchers (SDFRs)</u>

Institution/Organization: <u>West Virginia University</u>

Address: <u>Office of Sponsored Programs, 886 Chestnut Ridge Road</u>

Telephone: <u>304 293 3998</u>   Fax Number: <u>304 293 7435</u>

Email: anaclaudia.santanna@mailwvu.edu

Website: https://www.davis.wvu.edu/faculty-staff/directory/ana-claudia-sant-anna

Principal Investigator Assurance:

I certify that the statements in this report are true, complete, and accurate to the best of my knowledge.

Ana Cláudia Sant'Anna   01/27/2025

Principal Investigator Signature   *Date*

Institutional/Organizational Assurance:

I certify that the statements in this report are true, complete, and accurate to the best of my knowledge.

Tracy Vuong   01/27/2025

Signature of Authorized Official   *Date*

Name/Title: Associate Director, Award Initiation & Management

Address: 886 Chestnut Ridge Road, Morgantown, WV 26506-6845

Telephone: 304 293 3998   Fax Number: 304 293 7435

Email: wvusponsoredprograms@mail.wvu.edu

Website: https://osp.research.wvu.edu/

Preliminary Financial Statement Form

Reporting Period Dates: <u>January 1, 2025 to January 27, 2025</u>

Principal Investigator(s): <u>Dr. Ana Claudia Sant'Anna</u>

Budget Categories	Budgeted Amount	Expenditures	Remaining Balance
Personnel			
Salaries Total	$40,992	$11,252.32	$29,739.68
Benefit Eligible & Annual Inc	$16,094.00	0	$16,094.00
Grad Assts Fellows Stud Emp	$24,898	$11,252.32	$13,645.68
Fringe Benefits Total	$5,943	$1,012.72	$4,930.28
FB Grant Fr Reim Grad Std (includes summer)	$2,241.00	$1,012.72	$1,228.28
WVU BE (Sant'Anna)	$3,702.00	0	$3,702.00
Total Personnel	$46,935	$12,265.04	$34,669.96
Contract Programming/Subawards	$0	$0	$0
Equipment	$0	$0	$0
Supplies (Ge Exp Office Expenses)	$1,965	$49.07	$1,915.93
Travel	$10,000	$823.44	$9,176.56
Other	$0	$0	$0
Research and Data Collection	$0	$0	$0
Commodities	$0	$0	$0
Total Commodities			
Total Direct Cost Non-Personnel	$11,965	$872.51	$11,092.49
Total Direct Cost Personnel	$46,935	$12,265.04	$34,669.96
Total Direct Cost	$58,900	$13,137.55	$45,762.45
Total Indirect Cost (10%) (F&A Reimb & Aux Srve Chrg)	$5,890	$1,313.79	$4,576.21
Total Budget Amount	$64,790	$14,451.34	$50,338.66

Abstract sent to Applied Agricultural Economics Association Meeting in Denver July 2025

Introduction and Problem Statement:

Minority farmers in the United States have been facing barriers to accessing agricultural resources and support. These barriers can significantly impact a farmer's ability to run their farm which can, ultimately, result in the decline in the number of farms within certain minority-owned agricultural production groups (Brown, Dagher, and McDowell, 1992). Discriminatory practices have been documented in government programs such as the Paycheck Protection Program (PPP), where differences in approved loan amounts were found for farmers of different races and genders, indicating potential discrimination against African American farmers due to limited access to capital (Sant'Anna et al., 2023). Demko and Sant'Anna (2023) showed that non-white, Hispanic, and female-owned small businesses received smaller PPP loans than their business counterparts of the same size. Another example is the Pigford v. Glickman case, which shows the USDA's discrimination against Black farmers by providing inadequate access to farm loans, disaster payments, crop payments, and other federal financial aid (Cowan and Feder, 2013). Additionally, research has shown that minority borrowers are charged higher interest rates than their non-minority counterparts, showing the inequalities in agricultural financing that limit their access to essential resources (Escalante et al., 2018). In terms of crop insurance, Teal and Stevens (2023) find that producer race has explanatory power for crop insurance misrating. Teal and Stevens (2023), however, only examine the power of African American farmers. As such, we investigate the impact of other Socially Disadvantaged Farmers and Ranchers (SDFRs) beyond African American farmers (e.g. Hispanic, Asian, African American women, etc.).

Despite these findings, research on the impact of government agricultural programs, specially the Federal Crop Insurance Program (FCIP), on Socially Disadvantaged Farmers and Ranchers (SDFRs) remains limited. The Federal Crop Insurance Program (FCIP) is one of the most important agricultural policies in the U.S. In 2022, the FCIP offered coverage for $194 billion in agricultural production (USDA 2024). The 2018 Farm Bill introduced key provisions aimed at improving equity and accessibility in federal crop insurance programs for SDFRs. With more than 80% of producers participating in the program, the FCIP oversees more than $114 billion in crop insurance liabilities for 543 crops spread over about 300 million acres (United States Department of Agriculture, Risk Management Agency, 2021, 2016). Despite its significance, the potential impacts of the FCIP's rate-setting methodologies on minority farmers remain unexplored. Existing research, such as that by Teal and Stevens (2024), has primarily focused on the impact of these provisions on Black/African American farmers, highlighting the issue of premium misrating within the FCIP, showing that race at the county level can influence insurance outcomes. However, this study did not address other SDFR groups, such as Hispanic, Asian, women, young and beginning farmers, and other underrepresented farmers. Given the diverse group of socially disadvantaged farmers, a comprehensive study that includes these groups is essential to fully understand and address the inequalities in crop insurance participation and premium ratings.

Given the importance of inclusivity and the key role that diversity plays within US agriculture; our study extends the analysis to include a broader group of SDFRs. This would provide a more comprehensive understanding of their participation in the FCIP. The objectives of our research are to 1) Document and explore the correlations between the presence of SDFRs in a county and crop insurance participation; 2) Quantify the explanatory power of county-level measures, such as producer race, gender, and ethnicity on crop insurance misrating. Our research will contribute to a more comprehensive understanding of the challenges faced by SDFRs and the impact of the 2018 Farm Bill provisions on their participation in federal crop insurance programs. The findings will guide policy recommendations and outreach initiatives designed to improve access to crop insurance for minority farmers, ensuring that all SDFRs receive fair and equitable treatment under the FCIP. This study is important for addressing the gaps in current research and providing insights to enhance the support and sustainability of minority-owned farming operations through improved federal crop insurance policies.

Method:

To investigate the impact of the 2018 Farm Bill on crop insurance participation and premium ratings in counties with Socially Disadvantaged Farmers and Ranchers (SDFRs), this study will adopt a descriptive analysis and a quantitative approach, incorporating both secondary and primary data sources. We will analyze secondary data from the USDA's Risk Management Agency (RMA), the National Agricultural Statistics Service (NASS), and the Agricultural Census to document and explore correlations between the presence of SDFRs in a county and

their crop insurance participation. Additionally, we will conduct primary data collection through surveys to gather first-hand information on producer race, gender, and ethnicity and their participation in crop insurance.

To deepen our analysis, we will employ a spatial econometric model to assess county-level crop insurance loss ratios, premiums, and SDFR demographics. The dependent variables in our model will be the county-level crop insurance loss ratio (L), defined as the ratio of indemnities to premiums. The independent variables will include a set of county-level systematic factors (X) such as historical yield trends, yield variability, coverage level choices, revenue plan participation, group plan participation, and the ratio of downside yield deviations across sample periods. Additionally, we will include variables representing the share of different SDFR groups in the county. The spatial econometric model, which contains a spatial lag to account for spatial dependence can be represented as:

$$LR = \rho WL + X\beta + u \qquad (1)$$

where LR is expected lost ratios, ρ is the spatial autoregressive coefficient, W is the spatial weights matrix, X is a matrix of independent variables, β a vector of parameters, and u the error terms.

Expected results and potential discussions:

We expect to provide a thorough analysis of crop insurance participation trends among Socially Disadvantaged Farmers and Ranchers (SDFRs) before and after the 2018 Farm Bill, particularly in counties with 50% or more of SDFR principal producers. By comparing crop insurance participation and expenses between counties with higher shares of SDFRs and those with lower shares, we expect to provide evidence of whether the mandate is affecting the intended audiences. Our findings will help provide policy recommendations and create informative outreach materials, such as infographics, to effectively communicate the impacts of current policies and suggest necessary adjustments to improve crop insurance accessibility and fairness for SDFRs. This analysis will provide necessary insights for policymakers, aiming to enhance equity within the agricultural sector.

Table 1: Length, price and coverage level of livestock risk protection by state from 2003-2025

Location_State_Abbreviation	numeric_Endorsement_Length_mean	numeric_Coverage_Price_mean	numeric_Coverage_Level_Percent_mean
AL	24.02	214.29	0.98
AR	23.72	218.18	0.98
AZ	25.14	223.15	0.99
CA	26.94	232.89	0.98
CO	25.27	208.75	0.99
FL	23.39	209.00	0.99
GA	28.47	220.39	0.99
IA	27.09	150.98	0.98
ID	26.39	206.99	0.99
IL	28.94	140.46	0.98
IN	29.35	96.72	0.99
KS	23.13	198.86	0.98
KY	22.22	216.95	0.98
LA	19.24	173.52	1.00
MD	17.33	231.82	1.00
MI	30.36	95.33	0.99
MN	29.01	127.27	0.98
MO	22.50	210.72	0.98
MS	22.28	228.82	0.99
MT	27.28	207.91	0.99
NC	22.40	237.56	0.98
ND	25.33	207.25	0.98
NE	25.12	191.66	0.99
NM	24.52	216.14	0.99
NV	28.14	214.18	0.99
NY	31.88	262.93	1.00
OH	31.47	137.52	0.98
OK	22.87	203.77	0.98
OR	27.34	208.50	0.99
PA	39.85	184.87	0.99
SC	13.00	112.58	0.99
SD	25.17	194.06	0.99
TN	21.71	211.16	0.98
TX	23.69	211.36	0.99
UT	24.18	211.46	0.99
VA	23.44	215.12	0.99
WA	24.94	202.65	0.99
WI	29.55	192.23	0.99
WV	21.56	249.26	0.99
WY	25.96	217.23	0.99
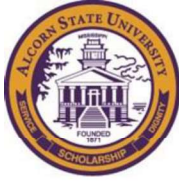
ALCORN.

SOCIALLY DISADVANTAGED FARMERS AND RANCHERS POLICY RESEARCH CENTER

Human Subjects Usage Form

Reporting Period Dates from __01/01/2025__ to __01/27/2025__

Principal Investigator(s): __Ana Claudia Sant'Anna__

Human Subjects:

If applicable, attach an updated IRB approval that extends into

the research study end date. Check one:

☐ No human Subjects

☒ Exempt (IRB is attached with December Report)

☐ Yes, award involves human subjects. (Enclose copies of all key personnel research training certificates for dealing with human subjects.)

Indicate the total projected and the actual enrollment of human subjects by ethnicity and race.

Ethnicity	Projected Females Number	Actual Females Number	Projected Males Number	Actual Males Number	Total
Hispanic or Latino	10		10		
Not Hispanic or Latino	100	6	100	3	9
Unknown or Not Reported					
Racial Categories	**Projected Females Number**	**Actual Females Number**	**Projected Males Number**	**Actual Males Number**	**Total**
Native American/Indian/ Alaska Native	0		0		
Asian	0		0		
Native Hawaiian or Pacific Islander	0		0		
Black or African American	50	2	50	1	3
White	50	4	100	2	6
More than one Race	10		10		
Unknown or Not Reported	50		50		
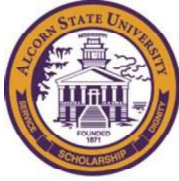
Equipment Inventory List

Only equipment noted in the research study proposal and budget may be purchased with award funds. Equipment not approved in the award proposal budget may only be purchased after prior approval has been obtained in writing from the Policy Research Analyst for the Socially Disadvantaged Farmers and Ranchers Policy Research Center. Any equipment purchased with award funds must be documented on the Equipment Inventory List Form and submitted to the Policy Research Analyst.

Section A: Research Study Details:

Research Study Period Dates from_____to _____

Principal Investigator: Ana Claudia Sant'Anna

Research Study Title: Documenting and analyzing crop insurance participation in counties SDFRs

Principal Investigator: Ana Claudia Sant'Anna

Principal Investigator Email: anaclaudia.santanna@mail.wvu.edu

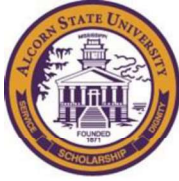Principal Investigator Phone Number: 304-293-8757

Section B: To Be Completed by Principal Investigator

List all equipment purchased with award funds.

Equipment Serial Number	Location	Description and Remarks
Nothing to report. No physical equipment was listed in the grant		

ENDORSEMENT: WE UNDERTAKE THAT THE INFORMATION PROVIDED BY US IS TO THE BEST OF OUR KNOWLEDGE CORRECT AND FREE FROM ERRORS.

PRINCIPAL INVESTIGATOR:

Ana Claudia Sant'Anna

NAME

Ana Cláudia Sant'Anna   01/27/2025

SIGNATURE   **DATE**

AUTHORIZED OFFICIAL:

Tracy Vuong

NAME

Tracy Vuong   01/27/2025

SIGNATURE   **DATE**

N/A

COMMENTS: