An Evaluation of Changes to the Specialty Crop Block Grant Program as a Result of USDA's 2016 Quantitative Performance Measurement Requirements

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ABSTRACT

This research examined the impact of the United States Department of Agriculture's 2016 implementation of performance measures on the Specialty Crop Block Grant Program (SCBGP) to determine the effects of pre-set quantitative outcome measures on an existing block grant program in the understudied realm of federal agricultural food programs. Beginning with the New Public Management reforms of the 1990s, the topic was explored within the history of the federal government's incrementally bound emphasis on numerical output measures to quantify interim and final results for its state block grant programs. The study also built on prior evaluations of the SCBGP which identified widespread stakeholder dissatisfaction with the 2016 measures. This quantitative study, framed within the context of systems theory, collected 13 years of SCBGP projects from all 50 states, then classified each project as either research or non-research. From there, three sets of project data were parsed and analyzed: that for Georgia, the other 49 U.S. states, and the 10 other states that receive funding similar to Georgia's. It was determined that the introduction of performance measures effectively changed the SCBGP from a program that once mostly funded non-research projects to one that funded a significantly higher proportion of research projects. The implications of this change were explored and discussed in terms of what this shift might mean for states as they administer their SCBGP programs, as well as its bearing on the larger realm of federal-to-state agricultural grants administration.

Keywords: SCBGP, Farm Bill, systems theory, incrementalism, federal-to-state grants, New Public Management, performance measures, agricultural research funding

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LIST OF ACRONYMS/ABBREVIATIONS

AMS - Agricultural Marketing Service

Census - U.S. Census of Agriculture

CAQDAS - Computer Assisted Qualitative Data Analysis Software

GDA - Georgia Department of Agriculture

GPRA - Government Performance and Results Act

GPRAMA - GPRA Modernization Act of 2010

GTPS - Grant Thornton Public Sector, LLC

ITS - Interrupted Time Series

NASDA - National Association of State Departments of Agriculture

NPM - New Public Management

OMB - Office of Management and Budget

PA - public administration

PART - Performance Assessment Rating Tool

RQ - Research Questions

SCBGP - Specialty Crop Block Grant Program

UGA - University of Georgia

USDA - United States Department of Agriculture

USDA-AMS - United States Department of Agriculture-Agricultural Marketing Service

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Chapter I

INTRODUCTION

The United States Department of Agriculture's (USDA) Specialty Crop Block Grant Program (SCBGP) supports the production of specialty crops (USDA, 2021a). Specialty crops include hundreds of plants that are typically not grown as row crops, like berries, peppers, cucurbits, herbs, stone fruits, almonds, azaleas, and Japanese maples, and must be grown for food, medicinal purposes, or aesthetic enjoyment. This research examines the impact of the USDA's 2016 implementation of quantitative performance measures on the SCBGP in Georgia. The statutory purpose of the SCBGP is to "enhance the competitiveness of specialty crops" defined as fruits, vegetables, tree nuts, dried fruits, horticulture, and nursery crops, including floriculture (USDA, 2021a, p. 5). Every year since 2009, USDA, through their Agricultural Marketing Service (AMS), has awarded between $49 million and $85 million in SCBGP funds to the 50 U.S. States and Territories through funding provided by the Farm Bill (USDA, 2021a). Most state departments of agriculture, acting as pass-through agencies, award these funds to subgrantee projects through a competitive review process. These projects generally fall into one or more of the following categories: access, education, food safety, marketing, production, or research.

Despite the federal government's increasing reliance on performance measures for programs, a trend that started in the 1980s, recipients of the SCBGP reported their results using self-derived outcome measures. This reporting method changed in 2016 when USDA-AMS revamped its application template to mandate that subgrantees

predict and choose project results from a pre-set list of eight quantitative outcomes. Final reports, filed three years after projects are completed, must now show progress against these outcome measures. The idea for this new method of reporting emerged in 2015 when the Office of Management and Budget (OMB) mandated these changes to gauge the SCBGP's overall impact to justify its continued funding. These changes provided a means to homogenize data collection to quantitatively illustrate the positive impacts of the SCBGP on the nation's agriculture industry.

In nearly every year since its outset, the SCBGP has grown larger in scale, scope, and funding. The 2004 Specialty Crops Competitiveness Act first authorized the SCBGP, but the program did not receive a budget until 2006. The 2008 Farm Bill provided the SCBGP with its first mandatory funds at $10 million per year. The 2014 Farm Bill increased the program's mandatory funding to $72.5 million per year through 2017, then to $85 million per year starting in 2018 (National Sustainable Agriculture Coalition, 2019). From this funding, the Georgia Department of Agriculture (GDA), using an allocation formula that includes a base grant and an amount based on the average of the most recent available value of specialty crop cash receipts and the acreage of specialty crop production in the state, receives approximately $1.2 million per annum (USDA, 2021a). Through a competitive application review process, most states and territories award and distribute SCBGP funds to grower groups, nonprofits, local governments, universities, and other entities who use the money to conduct a wide array of projects, such as locally and regionally focused specialty crop research, marketing and promotion efforts, access and awareness programs for underserved communities and populations, and on-farm food safety and farm-to-school educational

initiatives. In Georgia and since 2009, anywhere from 10 to 20 projects are typically funded each year, leading to 223 individual projects funded through 2021. Only about a quarter to a third of the applications submitted are funded, making Georgia's SCBGP one of the more competitive programs in the U.S.

Though the SCBGP is a federal program, each state that receives the grant is encouraged to tailor funding distributions for maximum local impact, as well as to include beginner and socially disadvantaged farmers through a transparent process of soliciting and considering public comments to identify funding priorities (USDA, 2021a). Despite these federal and state efforts at grassroots outreach, the number of farms in the U.S. continues to decrease as their size and scope continue to increase (MacDonald, 2020). And as the world becomes more interconnected and technology advances by the day, the nation's food supply sources become more global, increasingly dominated by multi-national agro-conglomerates like Cargill, Kraft, Monsanto, and Unilever (Heinrich-Böll-Stiftung, 2017). But there are compelling arguments to be made for keeping produce locally grown: fresh food tastes better, and supporting regional farms boosts regional economies, most of which are rural. Farmers markets are now a weekend staple in many American towns and local food movements continue to gain followers (Schupp, 2017). With this increasing interest in locally grown food in mind, Congress sets aside funds each year for the SCBGP and will likely continue to do so, as specialty crops, though only occupying about 13% of harvested cropland acres, represent about 20% of the value of all U.S. crop production (USDA, 2017).

Statement of the Problem

As the SCBGP is a cornerstone of agricultural funding in Georgia and with the changes to the program brought about by the 2016 measures, it is important to ascertain whether the state's SCBGP continues to fulfill the grant's stated mission, "to enhance the competitiveness of U.S.-grown specialty crops" (USDA, 2021a, p. 5). Though the program has been in place for the past 13 years, it has been the subject of little scholarly research and evaluation. While some literature has examined the SCBGP from a policy standpoint (Noel & Schweikhardt, 2007; Paggi, 2007), USDA-AMS only recently tasked researchers from Purdue University to evaluate one full year, 2013, of the SCBGP from a holistic, 50-state perspective. The insights were revealing, and this study built on those findings yet differs in that it examined several years of the SCBGP and focuses on Georgia's program. The Purdue study sought to provide data to demonstrate the value of the program to stakeholders, identify gaps and areas for improvement, and provide an independent program review (Burgess et al., 2018). While accomplishing these objectives, the study also revealed a need for a consistent evaluation reporting framework, specifically for relaying project outcomes and impact in annual and final reports. USDA-AMS put the 2016 quantitative outcome measures into place to address this need and has since revamped the measures for 2022 with input from states and other relevant stakeholders. But instead of merely changing the output of the final reports from narratives to numbers, the 2016 measures may have affected a change in the SCBGP's balance of project types, based on empirical observations of the increased number of research projects that are now funded nationwide, as well as in Georgia.

Though Georgia has participated since 2009, receiving a combined total of nearly $20 million for its projects to date, its SCBGP program has never been evaluated in a macro sense. This is a serious deficiency because, as Rossi et al. (2004) emphasized, "No matter how well a program assesses target needs, embodies a plan of attack, reaches its target population, and delivers apparently appropriate services, it cannot be judged successful unless it actually brings about some measure of beneficial change in its given social arena" (p. 204). Without periodic programmatic evaluation, the efforts of the SCBGP in Georgia remain largely speculative and anecdotal, which inhibits strategic planning aimed at potential improvements.

Purpose

The purpose of this study was to determine the impact of the SCBGP's changes and to determine the extent of the changes, possibly facilitated by the introduction of pre-set performance measures, then to discuss what such changes might mean for the SCBGP. More specifically, this quasi-experimental study examined the relationship between USDA-AMS's implementation of quantitative performance measures and the types of projects funded (research or non-research), prior to 2016, then after. The SCBGP is observed in the context of systems theory, which envisions government programs (and the realm in which they operate) as interconnected elements that function together in setting policy and practice to provide a benefit to the public (Schelbe et al., 2018). In this case, the benefit is the enhancement of the marketplace for U.S.-grown specialty crops.

Impactful public policy relies on sound evidence for the development and implementation of programs that promote the public good. Public administrators need

to know that the programs for which they are spending their scarce resources are effective and achieve desired outcomes. Given the complex nature of individuals, agencies, and societies, prediction in this area can be difficult and highly subjective. Decisions based on reasoned and methodical analysis and close examination of existing programs inform good policy. Such decisions are also more likely to produce desired outcomes, much more so than those based on politics, opinion, and gut feeling. Decisionmakers must be able to answer to stakeholders with informed reasons as to why they have chosen to run their programs as they do. They must also be willing to pivot when outcomes suggest that change, be it incremental or wholesale, would be beneficial to the program and therefore the public. To this end, this evaluation of the SCBGP is another foray into the growing lexicon of policy administration research into the effects of performance measures on U.S. social programs, yet it is unique in that its focus remains within the realm of agricultural policy administration. While studies on the short- and long-term ramifications of outcome-based policy abound in the social sciences, such work tends to set its gaze on the topics of healthcare and education. While both are critical subjects for investigation, the nation's food and agricultural policy also deserve a primary focus in an ever-expanding age of data-centric decision-making. How does an increasing shift to quantitative measurements affect food programs in the short and long term, on both the front-end and the back? From the social sciences perspective, individuals, and the systems within which they operate, are never far removed from this equation; bureaucratic buy-in is key. Administrative reactions to reforms are central to determining the effectiveness of performance-based mechanisms for public-sector accountability (Rabosky, 2014).

With this principle in mind, USDA-AMS sought input from administrative stakeholders when formulating the 2016 and 2022 performance metrics (Burgess et al., 2018; USDA 2021c), as the validity of results obtained are precariously dependent on each state agency's understanding and commitment to the cause of accurate reporting. In this sense, the data affects the program, but the bureaucrat affects the data. Furthermore, an administrator's confidence in the data's eventual use makes for a stronger social program. Chapter 2 will explore these determinative factors in depth.

Research Questions and Hypotheses

As outlined by Chambliss and Schutt (2018), the four most important goals of social research are description, exploration, explanation, and evaluation. Similarly, Frankfort-Nachmias and Leon-Guerrero (2018) described the research process as primarily consisting of five stages: asking the research question, formulating the hypothesis, collecting the data, analyzing the data, and evaluating the hypothesis. It was therefore necessary to develop relevant research questions that created an opportunity to further what was known about the SCBGP using a comprehensive, goal-centered approach, with a postpositivist's understanding that what was revealed may only be one piece of a very complex puzzle.

With this in mind, Georgia served as the centerpiece of this study, as it has a robust SCBGP that has received approximately the same amount of funding from USDA-AMS each year for the past 13 years and has changed little, programmatically and administratively, save for the introduction of the 2016 measures. Through a comprehensive review of the program, guided by postpositivism's reductionist

worldview in which cause may influence effect, this study sought to answer the following questions:

- RQ1: How did the USDA's 2016 implementation of quantitative performance measurements impact the SCBGP in Georgia?
- RQ2: How did this change in Georgia compare to the other 49 U.S. states (as aggregated)?
- RQ3: How did this change in Georgia compare to the 10 other states (individually) that received similar SCBGP award amounts?

These queries were examined in the context of the SCBGP's stated goal, to "enhance the competitiveness of U.S.-grown specialty crops" (USDA, 2021a, p. 5), to determine if Georgia is using its yearly allotment of funds toward this end. To answer the research questions, the following hypotheses guided the quantitative inquiry from which relevant inferences were made:

- $H1_0$: There was no change to the types of SCBGP projects funded in Georgia after the 2016 implementation of quantitative performance measures.
- $H1_a$: There was a change to the types of SCBGP projects funded in Georgia after the 2016 implementation of quantitative performance measures.
- $H2_0$: There was no change to the types of SCBGP projects funded in the other 49 U.S. states (aggregated) after the 2016 implementation of quantitative performance measures.

- $H2_a$: There was a change to the types of SCBGP projects funded in the other 49 U.S. states (aggregated) after the 2016 implementation of quantitative performance measures.
- $H3_0$: There was no change to the types of SCBGP projects funded in the 10 other U.S. states that receive award amounts similar to Georgia's after the 2016 implementation of quantitative performance measures.
- $H3_a$: There was a change to the types of SCBGP projects funded in the 10 other U.S. states that receive award amounts similar to Georgia's after the 2016 implementation of quantitative performance measures.

Significance of Study

This study investigated the effects of performance measures on Georgia's SCBGP in relation to the effects of the introduction of performance measures on state grant programs. The existing scholarly literature, when researched in a policy administration context, revealed that such evaluations tend to focus on the practice areas of education and healthcare, and often lead to positive outcomes given certain environments. This study will add to the current body of knowledge regarding the impact of performance-based management on federal agricultural grants, specifically the SCBGP. This work is necessary, given that the program has been the subject of relatively few recent and in-depth inquiries, with the exception of the 2018 Purdue University evaluation and the 2021 Grant Thornton Public Sector (GTPS) survey, both of which USDA-AMS commissioned.

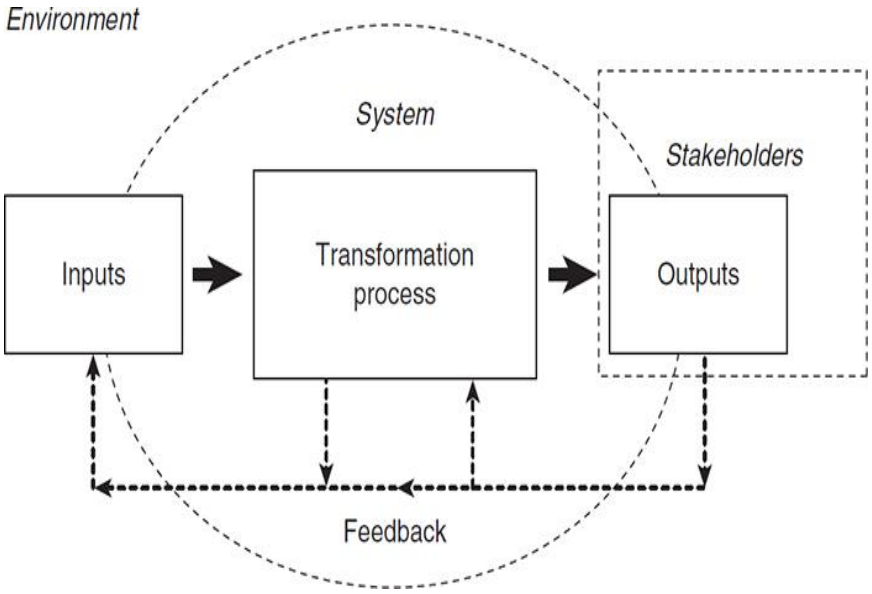
As state budgets often fluctuate from year to year, their agencies increasingly rely on federal funds to run their programs and to fund localized projects. A perpetual

dearth of public funds relative to growing programmatic needs should spur state agricultural agencies to consider programmatic effectiveness as a matter of course. Ensuring that implemented programs are performing as intended is crucial for effective and efficient management of public revenues, which is, in turn, critical for maintaining trust and credibility in the eyes of the taxpayers. Still, programs such as Georgia's SCBGP are funded and administered year after year without meaningful evaluation of key elements of that process or close examination of the eventual results. As is the case with many government programs, such structured reflection is perpetually limited by the constraints of personnel time and budgets. Yet it should be done. By providing a framework for public administrators to evaluate facets of their grant programs longitudinally, before and after new reporting requirements, this study sought to connect program evaluation to performance management in the under-analyzed universe of agricultural grants administration. Furthermore, this discussion of the changes that may have been brought about by the 2016 measures could prove useful to other states as they examine their own SCBGP programs. This research also aimed to reveal valuable insights into Georgia's SCBGP program, as the identification of deficiencies might lead to necessary improvements. This research, though focused on Georgia, is particularly timely, as USDA-AMS will implement their revised SCBGP performance measures in late 2022. A snapshot in time, this study provides a benchmark against which researchers can later evaluate these newest measures in Georgia as well as in other states with similar programs. Furthermore, the researcher will share and discuss the results of this study with SCBGP stakeholders, within the Georgia Department of Agriculture (GDA) and beyond, and it will eventually contribute

to a growing collection of public administration (PA) literature on the effects of quantitative performance measures on grant programs.

Conceptual Framework

Frederickson et al. (2018) posited that the validity or usefulness of any theory depends mostly on its capacity to describe, explain, and predict. In this vein, theory becomes a highly reliable guide for action, for the ordering of factual material, and for determining what ought to be. Systems theory informed and guided this study. This theory, as explained by Easton (1953), views organizations as social systems that must interact with their environments to survive and thrive, particularly when policy change is warranted. As put forth by Schelbe et al. (2018), systems theory concepts, when used as a framework for evaluation, "help delineate program components and roles of stakeholders; outline boundaries between and interactions among stakeholders; and identify program strengths and weakness" (p. 277). This evaluation, in using this framework, considered the complex factors that are inherent within the larger structure, or system, in which individual projects are embedded. It also provided a holistic basis to understand SCBGP processes and practices within the universe of a large and complicated government program that is subject to both public and political influence, as well as programmatic changes that require adept adaptation.



Systems Theory Model. Adapted from Cunliffe, A., & Luhman, J. T. (2013). *Key concepts in organization theory.* SAGE Publications, Ltd.

Figure 1

Systems Theory Model

In the context of this study, the Systems Theory Model (Figure 1) framed how the organizational activities of the SCBGP in Georgia follow a process of taking inputs from the environment (the 2016 quantitative measures), transforming these inputs given the existing structure and practices, creating outputs (project activities, classified as either research or non-research), and gathering and using feedback mechanisms to positively impact the program, and thus, the specialty crop industry as a whole. Here, the feedback also entails the results of this study, which will be disseminated to SCBGP state coordinators at their next national conference, slated for March of 2023. This systems theory framework contains a dynamic interaction of several large government bureaucracies (Office of Management and Budget [OMB] and USDA-AMS, as well as GDA). These organizations hold broad oversight powers and tight bureaucratic

boundaries, and their subgrantees consist of organizations of varying size and scope (from small nonprofits to large universities). Thus, this framework presents an opportunity to examine the dynamics and lasting effects of a one-time, wholesale change in policy and procedure to a popular and well-established public social program.

Summary of Methodology

This study employed a quantitative research design to examine a possible relationship between the implementation of quantitative performance measures in 2016 to the types of SCBGP projects funded in Georgia, categorized as research or non-research. Such an evaluation entailed a methodical examination of the projects funded in the state since 2009. These funded projects were then compared to an aggregation of the types of SCBGP projects funded in the other 49 U.S. states during this same period, as well as to those of 10 other U.S. states that received award amounts similar to Georgia's. Tests of statistical significance and time-series studies were employed. To display a visual representation of trends, proportions of research projects to all SCBGP awards were displayed by award year and graphed, using line charts, for the entire U.S., Georgia, and the 10 other U.S. states.

Limitations

The study drew conclusions from data gathered from Georgia's SCBGP from the last 13 years, totaling 223 funded projects. These somewhat small sample sizes presented limitations to the generalizability and applicability of the statistical results. Additionally, for the purposes of this research, SCBGP projects were coded and categorized into two main types: research and non-research. Non-research projects included those with access, education, food safety, marketing or production activities, and were combined

and labeled generally as “non-research” because, oftentimes, such endeavors involved a blending of two or more activities, whereas research projects were generally straightforward in their purpose and were more easily defined. When comparing Georgia’s project-type distribution to the other 10 states as well as to the entire 50 U.S. states (as aggregated), direct comparisons were given limited weight given the political and programmatic differences inherent in each state’s SCBGP. As a rule, terms like correlation and causation were not used due to the researcher’s hesitancy to make direct inferences based solely on this quasi-experimental study, which lacked an available control group from which to draw reference.

Overview of Chapters

The focus of Chapter 2 is the review of the literature, which begins with the purpose, background, and history of the SCBGP, which is then related to GDA’s process of accepting applications for consideration and choosing impactful projects for funding. The chapter then looks into prior research on the topic of the SCBGP and delves into the broader subject of post-1980’s trends toward quantitative performance measures for federally funded programs in the U.S., in light of New Public Management (NPM) approaches to government efficiency and accountability. Such is a natural progression when viewed in terms of Lindblom’s (1959) theory of incrementalism for public policymaking, which will be discussed as well. NPM principles for business-like accountability and performance improvement will then be related to the evolution of the SCBGP’s 2016 performance measures, leading into an explanation of the forthcoming 2022 measures. Despite the SCBGP’s oversight by USDA, a vast federal agency, and its span across 50 states, there is value in viewing the program holistically. To that end, the

researcher chose a systems theory framework for this study, presented in the context of the postpositivist worldview that shapes the quasi-experimental, quantitative design for this program evaluation.

Chapter 3 describes the research design and methodology used in this study, starting with a general overview, then moving into the study design, data collection definitions and procedures, and data analysis methods. The specifics of the independent and dependent variables will be outlined, with an explanation as to why they were chosen and how they were isolated for this evaluation. Here, key data sources are defined and described, with their inclusion and usage justified, then discussed in terms of reliability and validity. Research assumptions and study limitations are articulated and accounted for in this chapter as well.

Chapter 4 entails the results portion of the study, laying out the findings from the quantitative data, analyzed for statistical relevance and significance. Here, discoveries, insights, and trends are related to the research hypothesis and tied into the quantitative data findings. Results are organized in both narrative forms and visually, using figures, illustrative tables, and summaries of data analysis.

Chapter 5 is where the study concludes with an explanation of the broader implications of the research. Findings are summarized and results are discussed in light of relevant literature and established theoretical foundations. The chapter includes an interpretation and extrapolation of the relevant outcomes to the larger scope of SCBGP, both for Georgia and in a national context. Practical impacts are examined within a discussion as to whether Georgia's specialty crops may or may not have benefitted as a result of the introduction of performance measures, toward the goal of fulfilling the

SCBGP's purpose to fund projects that yield the greatest impact to the specialty crop industry. Explained are the potential theoretical applications of this study and the practical contributions to knowledge for PA, with empirical observations tailored specifically for the state SCBGP administrator. Here, the limitations of this study are considered and recommendations for future research of the SCBGP are made.

Chapter II

REVIEW OF LITERATURE

As it is important to contextualize a government program as large, complex, and comprehensive as the SCBGP, this literature review begins with its history and background, highlighting its importance within the universe of agricultural grants, then explains how it is funded and administered in the state of Georgia. From there, the chapter explores writings on the SCBGP from both empirical and policy-based perspectives, revealing a lack of focused academic research on this critical source of agricultural funding within the U.S. With the SCBGP and its 2016 changes explained and project types established as the dependent variable in this study, the review goes on to examine the general subject of performance measurement, understood here as the process of defining, monitoring, and using objective indicators of the performance of organizations and programs on a regular basis (Moynihan, 2008). Incrementally, NPM's reforms to public policy brought about the requirements for quantitative metrics within most federal programs, including block grants to the states. This evolution is recounted through the legislative and presidential accountability initiatives of the Government Performance and Results Act (GPRA), the Performance Assessment Rating Tool (PART), and GPRA Modernization Act (GPRAMA), concluding with a discussion of the lasting legacies of each. From there, the review examines several empirical studies of federally mandated quantitative performance measures to determine their effectiveness on program performance and outcomes. As such literature is fairly extensive in the

policy administration realms of healthcare and education, research from both is used illustratively for the SCBGP, with inferences drawn when analogous.

The researcher, having reviewed the extant literature on the SCBGP and NPM-mandated performance measures separately, goes on to synthesize the relevant variables through an exploration of the origins of the 2016 outcome measures and the stakeholder dissatisfaction that led to their latest revision, slated to take effect in late 2022. Finally, in preparation for the methodology chapter that follows, systems theory is explained and advanced as the most appropriate framework from which to evaluate the impact of the 2016 performance measures on the SCBGP.

History of the SCBGP

Starting in 1933 and as a product of the trials of the Great Depression, Congress recognized the supreme importance of American agriculture and created the very first Farm Bill, which set aside funds to support agriculture through designated titles on commodity programs, trade, rural development, farm credit, conservation, agricultural research, food and nutrition programs, and marketing. As an omnibus bill that is renewed every five years, the $867 billion dollar Farm Bill (2018) designates both mandatory and discretionary spending and is the final product of years of tradition and repetition, combined with the input of citizens, as well as the lobbying efforts of big business, national farm groups, commodity associations, state organizations, nutrition and public health officials, as well as advocacy groups representing conservation, recreation, rural development, faith-based interests, local food systems, and organic production.

Legislative authority for the SCBGP is provided under section 101 of the Specialty Crops Competitiveness Act of 2004 (7 U.S.C. § 1621) and amended under

section 10107 of the Agriculture Improvement Act of 2018, Public Law 115-334 (the Farm Bill). By statute, the SCBGP assists departments of agriculture in the 50 States and territories to enhance the competitiveness of specialty crops through the following means: (a) leveraging efforts to market and promote specialty crops; (b) assisting producers with research and development relevant to specialty crops; (c) expanding availability and access to specialty crops; and (d) addressing local, regional, and national challenges confronting specialty crop producers (USDA, 2021a).

Funding for the SCBGP is based on information derived from USDA's U.S. Census of Agriculture (Census), the latest results of which were released in April of 2019. Since 1840, the agricultural Census is taken once every five years and sent out to each farm in America with at least $1,000 in annual sales (actual or potential). The 24-page, 34-section survey reveals to USDA a grand total of over 6.4 million points of data and presents an opportunity for farmers and producers of all sizes to provide an update of the state of the nation's agricultural framework (USDA, 2021b). These results are gathered and statistically analyzed by USDA to tell the story of agriculture in the U.S. Each questionnaire takes the respondent about an hour to complete yet is of monumental importance as its answers reveal changes and trends that help to promote and formulate allocations and strategies for the next five years. The amount of detail it uncovers is significant because the Census collects information on the demographics of every farm operation, as well as the farm's operator in terms of gender, age, race, and ethnicity. It also asks about production practices and the economics for each particular entity. This well-rounded picture tells the federal government what is happening at a local and county level, as well as at the state and national levels. Since this information is gathered just

once every five years, there are always new and interesting statistics that come out of the data, particularly for specialty crops. The information gleaned has an enormous impact on policy decisions that translate directly to funding for the 50 U.S. states and territories.

SCBGP Funding Allocation and Project Selection

A prime example of how Census results translate to actual funding for individual states can be seen in the annual allocations of SCBGP funds, which have been awarded every year since 2006 by USDA-AMS. Subject to the amount of available funding set forth by Congress in the most recent Farm Bill, each eligible state (or territory's) department of agriculture, as the designated applicant, is eligible to receive a pre-determined allocation of SCBGP funds. The base grant amount for 2020 was $243,001. Added to this is an additional amount based on the average of the most recent available value of specialty crop cash receipts in the state, per 2018 calendar year estimates, and the total acreage of specialty crop production in the state or territory, as revealed by the Census. The resulting grant amounts vary greatly yet accurately reflect the importance of specialty crop farming in each location. Out of the 50 U.S. states and territories, California typically receives the largest award, $23,744,447 in 2021, whereas the District of Columbia usually receives the smallest, $243,001 in 2021 (USDA, 2021a). From here, state/territory agricultural agencies are instructed to prioritize the development of projects pertaining to the most pressing issues affecting the specialty crop industry, as identified by farmers and producers in the most recent Census. For 2021, these priorities included the following: (a) enhancing food safety; (b) improving the capacity of all entities in the specialty crop distribution chain to comply with the requirements of

the Food Safety Modernization Act; (c) investing in specialty crop research, including that which focuses on conservation and environmental outcomes; (d) developing new and improved seed varieties and specialty crops; (e) pest and disease control; (f) increasing child and adult nutrition knowledge and consumption of specialty crops; (g) improving efficiency and reducing costs of distribution systems; and (h) sustainability (USDA, 2021a). GDA adds to this its own priorities: (a) increasing consumption of specialty crops in Georgia's schools by expanding children's knowledge of these foods and improving access to the nutritional benefits of specialty crops; (b) assisting all entities in the specialty crop production/distribution chain in developing "Good Agricultural Practices," "Good Handling Practices," "Good Manufacturing Practices," and in cost-share arrangements for funding audits of such systems for small farmers, packers and processors; (c) research projects, including those that focus on helping specialty crop growers reduce the financial costs and/or environmental impact of their operations, such as improved pest and disease management techniques, efficient water management, integrated pest management, and/or sustainable production; (d) developing and researching new and improved specialty crop varieties that are better adapted to Georgia's soils and climate and/or result in longer shelf-life; and (e) increasing sales and marketability and driving demand for commercially grown specialty crops (GDA, 2021).

With these priorities in mind, every February 1st, GDA announces its SCBGP Request for Applications (RFA) through various traditional and social media outlets. Project award funding requests can range from a minimum of $20,000 up to a maximum of $100,000. Awarded projects can take no more than three years to complete. The application process starts with the submittal of a Concept Proposal to GDA. Those who

meet the organizational and project eligibility criteria are invited to put in a full application, as long as they are a 501(c)(3) nonprofit organization, commodity commission, grower association, state or local government entity, college, or university. Individuals and for-profit organizations are not eligible to apply. Because this is a complicated grant for subgrantees to administer, previous experience with federal grants factors greatly in application scoring, as does an organization's administrative capacity. The stated intent of Georgia's SCBGP is to fund projects that can produce the highest degree of measurable benefits to specialty crop producers in relation to each dollar spent. Partnerships are strongly encouraged for this grant, and applications that show input and support from local stakeholders, in the form of letters of support, are scored higher than those that do not. The SCBGP, unlike many other federal grants, has no matching requirement, which makes it attractive to cash-strapped nonprofits and to researchers who would rather be paid a salary by the grant or hire graduate students, as opposed to putting forth in-kind hours or coming up with a cash-match from the university. However, no indirect costs can be charged against the grant. This is because USDA-AMS caps that amount at 8%, which GDA retains to cover its overhead expenses. This leads some organizations to decline participation.

Like most states' departments of agriculture, GDA has one full-time employee who administers the SCBGP. This position is attached to the agency's Finance Division, overseen by a Chief Financial Officer, who reports to the state's elected Commissioner of Agriculture. Georgia is somewhat unusual among the 50 U.S. states in that its Agriculture Commissioner is elected every four years, making it one of just 12 that do so. The commissioner, unlike the governor, is not limited to two terms; in fact, Georgia's last

commissioner, Tommy Irvin, served a record 42-year term. In theory, this political arrangement could make the SCBGP a powerful tool for handing-out favors to the commissioner's supporters. For this reason, USDA-AMS strongly encourages all states to appoint an independent review panel to select each year's SCBGP recipients. GDA follows this recommendation. The individuals who serve on the review panels are nominated by GDA personnel and often represent the varied facets of Georgia's agricultural industry: growers, processors, distributors, nonprofit personnel, and professors, among others. GDA's Review Committee members must certify that they are free from conflicts of interest and commit to conducting fair and impartial reviews of the submitted applications through a numerical scoring process.

Once the Review Committee selects projects, GDA's SCBGP administrator compiles the sub-applications and submits them to USDA-AMS in one large and comprehensive state application. USDA-AMS approval is typically received by mid-September and projects begin around October 1st, once official agreements are signed. As subgrantees spend against their project budgets, they submit invoices and receipts to GDA for reimbursement. Progress is reported through annual reports and the SCBGP administrator conducts periodic on-site visits. In turn, annual reports are submitted to USDA-AMS, and they conduct periodic, on-site audits of GDA's program. Subgrantees submit final reports in December of the third year and, since 2016, must report each project's impact through the presentation of quantifiable, verifiable data. Though rare, project investigators who do not spend-down most of their grant funds are less likely to receive another SCBGP award, as any unused funds belong to USDA and are later re-

added to the U.S. Treasury. USDA-AMS also instructs states to avoid regranting funds to organizations that have mismanaged or have not completed previous projects.

Prior Studies of the SCBGP

In 2011 and in preparation for discussions surrounding specialty crop funding in the 2012 Farm Bill, the National Association of State Departments of Agriculture (NASDA) studied the SCBGP on a national level, providing a necessary evaluation in the wake of USDA-AMS's increased regulatory oversight of the program that started in 2008. In this study, they surveyed states that received funding from the SCBGP's outset to determine the impact of increased funding and administrative oversight, the demand for the program within the states, and the legislative and programmatic changes that could potentially improve the program. Most of the states participated in the survey, and all deemed the program highly successful. Most notably, the study found that while the program started out as a primary funding mechanism for state-sponsored agricultural marketing programs, within three years it had evolved into one that also funded a significant number of research and education projects. Highlighted from Georgia's program was a 2006 partnership with the Georgia Green Industry Association that created an education and marketing program targeting outreach to landscape professionals and nursery consumers (National Association of State Departments of Agriculture [NASDA], 2011).

Seven years later and commissioned by USDA-AMS, Wilella Burgess and her team from Purdue University conducted a comprehensive and nationwide evaluation of the 2013 SCBGP program, which she presented to a gathering of SCBGP coordinators

from across the U.S. at their conference in 2018. The evaluation had three primary objectives:

1. To describe successful outcomes of SCBGP and evidence supporting this attribution.
2. To characterize the extent to which the SCBGP enhances the specialty crop industry's capacity nationally and within states.
3. To identify barriers preventing the SCBGP from addressing its primary purpose.

To accomplish these tasks, Burgess used both quantitative and qualitative data gathered from surveys, interviews, and final reports in order to "catalog, aggregate, and evaluate the degree to which the SCBGP's 2013 agreements fulfill the statutory purpose of enhancing the competitiveness of specialty crops" (Burgess et al., 2018, p. 2). Much was revealed in the study, though admitted limitations included challenges with outcome evaluation given the flexible design of the program and (pre-2016) non-standardized outcome measures, which lacked an evaluation framework and varied greatly across project types. But the study was able to meet its first objective in that successful outcomes were observed and evidenced by the tangible and intangible products made possible by the grant, including knowledge generation that fostered "state and territory support for identified needs and priorities; nurturing innovation and risk-taking on promising initiatives, and adapting to changing priorities and external factors" (p. 3). It was also able to meet the second objective by examining "the impact of state-level management structures on SCBGP success, the efficacy of the SCBGP as a means of supporting the specialty crop industry as a whole, and the agility of states

and territories to leverage SCBGP funds to sustain positive outcome" (p. 3). Barriers, explored in the third objective, included opportunities for program improvement, particularly in regard to making the program more accessible and understandable to non-university grant recipients and to allowing more flexibility in formulating outcome measures, so as not to exclude small farmers, farmers markets, and marketing projects. These findings tie back to the post-2016 trends in Georgia that form the impetus for this study, which noted the ever-increasing funding of academic research projects over access, education, and marketing projects submitted by nonprofits and grower associations, both large and small. Further strengthening of the partnerships between USDA-AMS and the states was determined to be a means by which the SCBGP could continue to advance its primary purpose of sustaining the specialty crop industry across the U.S. (Burgess et al., 2018).

In the wake of the Purdue study and the recognized dissatisfaction with the existing performance measures, in early 2020, USDA-AMS commissioned consultants from GTPS and NASDA to survey stakeholders to evaluate the current performance measures for all its grant programs, including the SCBGP. The goal, as stated, was to identify new measures that would accurately reflect the accomplishments of grant recipients and improve USDA-AMS's ability to report grant program impacts. To this end, the online survey collected feedback about the "relevance, achievability and measurability" of the current outcomes and indicators, in hopes that the survey results would "help inform the development of performance measures," which would "allow USDA-AMS to understand the impacts of each grant, harmonize measures across programs where needed, and decrease the burden for grant applicants, recipients, sub-

recipients, and staff" (USDA, 2021c, p. 2). The findings of this study provided the foundation for the new SCBGP performance measures that will be implemented in late 2022 and are discussed later in this chapter.

Beyond these three studies initiated by NASDA or USDA-AMS, there is no other academic or professional research evaluating the empirical processes or performance of the SCBGP at the national level. Past policy-focused research on the SCBGP emphasized its origins within the Farm Bill, as highlighted by two studies from 2007. One explores the specialty crop industry's ongoing complaint that the sector receives inadequate Farm Bill funding, compared to that which is allotted to commodity crops such as grains, oilseeds, peanuts, and cotton. Here, Paggi (2007) argues that any federal spending for the specialty crop industry should be evaluated against its real and actual contribution to the public good. He points out that research and development outlays "have consistently shown high social rates of return" (p. 2) and should therefore be the focus of funding to the sector, leaving the SCBGP's access, education, marketing, and production components by the wayside. From a pragmatic standpoint, his argument appears to have merit, but specialty crop lobbying efforts are typically led by producer organizations, and while they appreciate the value of research and development, they also favor the flexibility offered by SCBGP grants for non-research efforts by grower-associations, commodity commissions, and non-profits.

Noel and Schweikhardt (2007) take a different approach in their study, exploring the devolution of federal farm policy through SCBGP grants to states, starting with the history of federal block grants and ending with several proposed goals

for the program, including a cost-share model where states would contribute to SCBGP funding. They argue that the SCBGP's stated goal, to improve the competitiveness of U.S. specialty crops, is not enough, and that the program should seek out the larger policy objective of long-term industry sustainability through an emphasis on economic, environmental, and social impacts. They concede that the flexibility of the program allows projects that address these goals, at least indirectly, through marketing, education, and research. Yet the emphasis remains on industry competitiveness, making it more appropriate for short-term goals in a sector that could benefit from long-term solutions. But such a shift or scattering of focus might mean less control of the projects by states, whose continued interests are lobbied for in Congress by representatives from NASDA, as well as their respective congressional delegations.

Incrementalism, NPM and Federally Mandated Metrics

The shift from bottom-up, self-derived performance measures to top-down, pre-determined outcome reporting for the SCBGP was inevitable and it is somewhat surprising that it took until 2016 to come about, given that the federal government had been pursuing performance-informed reforms for nearly 60 years. This evolution can be viewed through Lindblom's (1959) theory of incrementalism, which sees public policy made through a series of small adjustments from the status quo, built upon what is most practical and possible at the time (Atkinson, 2011). Incrementalism remains the most straightforward model for making sense of the policy process in that its stages generally include agenda setting, formulation, legitimation, implementation, and evaluation, all in that order. This model entails marginal differences and changes and

remains the predominant method for policy change in most democracies. The essence of incrementalism, Lindblom (1959) offered, was to systematize decision-making processes around a recognition of the need for political agreement. He averred that, inasmuch as there is a system in what is known as "muddling through," this method *is* the system. Rather than an abrupt, substantial shift when resolving a problem or developing a policy, the incremental theory cushions the policy-making process into minor steps. The process of then advancing with the steps, the "muddling through," is based on the combination of experience, perception, speculating, and employment of differing techniques. In this study, incrementalism provides a lens through which to view the federal government's ever-increasing reliance on performance measures for grant programs. It also provides insight into the SCBGP's gradual journey from subgrantee-determined performance measures to the pre-set, quantitative outcomes and indicators of 2016, and concludes with the revised measures that will go into effect in late 2022.

While quantitative performance measures for public programs existed in some forms as far back as the 1970s, their widespread adoption came courtesy of the NPM movements of the 1980s and 1990s. Forty-plus years on, there is no shortage of literature analyzing and critiquing their origins and outcomes. As Pidd (2012) described it, NPM was a reaction to and against the classical organizational structures and management processes inherent in the highly insular and bureaucratic civil service system that preceded it. In Osborne and Gaebler's (1995) seminal text, *Reinventing Government*, now recognized as a force behind the NPM movement, they viewed measurement as an effective way to help government agencies plan, provide, and

improve services, ideas that were rooted in the private-sector managerialism espoused by Peter Drucker. But NPM was far more than just measurement. As Hood (1991) explained, it centered around a set of ideas including professional management, clear lines of accountability, output controls, disaggregation of large units, greater competition, more contracting, business-driven management styles, and parsimonious resource use through efficiency and improvements in productivity.

In Georgia, NPM meant the end of the State Merit System in 1996 and the creation of GeorgiaGain, a performance-based compensation program for state employees. At the federal level, Bill Clinton's GPRA (1993), with its goal of accountability for stakeholders and the general public, solidified efforts to increase the supply of quantifiable data for programs by requiring formal, outcomes-based evaluations for federal programs as a way to deemphasize process and focus more on product (Heinrich, 2002). With its legislative origins, GPRA became codified as statute, thus it remains in use to this day. For grants, GPRA looked to hold federal grantors responsible for the accomplishments of their grantees through output measurement, outcome oversight, customer satisfaction, and efficiency through the pairing of allocations to results (Muller, 2009), all with an eye toward providing maximum programmatic value for outlays of taxpayer funds. Budget expenditures were always accessible as the dependent variable, but quantifiable performance measures provided the independent variable that enabled calculations showing the numerical value of programs across time. Public value theorists of this era encouraged and promoted the now ubiquitous notion that public services should add value to their communities (Moore, 1995), and GPRA provided benchmarks and progress based on

numbers through which they could show value, at least numerically. Also inherent in theories of public value was the assumption that administrators, now NPM-inspired active participants (as opposed to passive civil-servants), would advocate for their programs politically and strive toward process improvement as a matter of course (Pidd, 2012). In what is now considered a seminal work for PA, Behn (2003) held that performance should not be measured merely as an end in itself, but as part of a key strategy to help public managers "evaluate, control, budget, motivate, promote, celebrate, learn, and improve" in their ongoing quest for managerial purpose (p. 586). Moynihan (2008), in his extensive writings on performance measures for public service, echoes this approach when he defines performance management as "a system that generates performance information through strategic planning and performance measurement routines and that connects this information to decision venues, where, ideally, the information influences a range of possible decisions" (p. 5). It was, in effect, a general movement toward making governments run more like businesses.

George W. Bush's administration, through his President's Management Agenda, incrementally built on the performance measures trend. Bush's plan was aimed at increasing the production of output data from federal agencies, though scant evidence indicates that it was consistently used to improve services (Joyce, 2011). His Performance Assessment Rating Tool (PART) initiative for federal programs came about in 2004 as an attempt to compare results to programmatic objectives. PART, like GPRA, also sought to measure programs based on national performance goals. PART required federal agencies to evaluate and score the programmatic effectiveness of selected programs in four areas: purpose and design, strategic planning, program

management, and program results. Based on the scores received, OMB labeled programs as either effective, moderately effective, adequate, or ineffective. But Moynihan, in his extensive analysis of its legacy, found that PART became a partisan political tool by which OMB more closely scrutinized traditionally liberal programs: "In one stark example, the Department of Education had more PART analyses, relative to the Department of Defense, despite having just one-tenth of the budget" (Kroll & Moynihan, 2020, p. 3). Given that grants rely heavily on third-party grantees for performance data and that federal agencies are often limited in their authority to obtain such data from them, in the realm of grants, PART received criticism as a less than effective tool for performance measurement. With 50% of the PART's score based on program results, grant programs appeared less effective than their non-grant counterparts. This perception was particularly pronounced in terms of block grants, as its recipients receive funds based on a formula, not competition (Stalebrink, 2009).

With Barack Obama's election in 2008, PART, a creation of executive action, was essentially scuttled. Yet his OMB built on his predecessors' prior efforts through new requirements for comprehensive program evaluation and performance-informed budgeting, with the goal of leveraging "Performance Information to Lead, Learn, and Improve Outcomes" (Joyce, 2011, p. 362). In touting this new initiative, OMB pointed out that while both GPRA and PART led to an increase in the amount of performance data available to federal agencies, few of those agencies were actively using that data to make programmatic improvements. GPRAMA sought to change this data use by requiring agencies to set performance goals for their programs and then to report their goals online at *Performance.gov*. The Act also mandated quarterly,

numbers-driven evaluations of performance, with priority given to certain high-priority and cross-agency goals (Moynihan & Kroll, 2016). Use of the *Performance.gov* website waned during the Trump administration, though GPRA and GPRAMA remained in place, with both the 2016 and 2022 SCBGP performance measures announcements noting continued adherence to both (USDA, 2021c).

Quantitative Measures to Improve Performance

Despite their current ubiquity in federal grants programs, debate remains on the true effectiveness of performance measures, particularly when the measures are not tied to funding levels, as is the case with a block grant such as the SCBGP. Poister et al. (2013) saw this determination hampered by an overall lack of studies into the impact of performance-based grants management, particularly at the federal to state level. They went on to observe that, when operating in a decentralized system, as these grants inherently do, control and accountability can lead to principal-agent conflicts. It follows that such conflicts are further exacerbated by a changing network of subgrantees, each with their own priorities and varying levels of program organization and understanding, as with a pass-through grant like the SCBGP. But the research of Poister et al. (2018) into performance-based grants management, in the highly decentralized realm of the Center for Disease Control and Prevention's National Breast and Cervical Cancer Early Detection Program, found that performance measures had little effect on grantees (state departments of health) who were already high-performing, yet they proved at least somewhat effective for grantees who were regularly challenged by the testing targets. In another healthcare-related study, Kogan et al. (2015) determined that the 2015 performance measures for the Maternal and

Child Health Block Grant, which replaced the original 1997 measures, increased accountability while allowing for greater programmatic flexibility and a lessened reporting burden for participating states. And it is true that USDA-AMS reduced some of the narrative required for SCBGP interim and final reports after implementing quantitative performance measures, a welcome change for state administrators and project coordinators. But in the space of child protective services programs, Munro (2010) faulted performance measures for their myopic reliance on feedback garnered by limited data, as well as their failure to consider nuanced outcomes such as relationship-building and sound caseworker judgment. Within the SCBGP program, similar complaints, centered on under-counted but crucial project impacts, were raised as primary concerns during the 2020 stakeholder engagement sessions (USDA, 2021c).

Beyond the field of public healthcare, education is an oft-studied subject for performance measure research, as evidenced by Gerrish's (2016) inclusion of 19 education-focused studies in his 49-unit meta-analysis of the impact of such management systems on program performance in public organizations. Here, he determined that such systems had an overall, though relatively small, positive average impact on performance. Yet that effect increased with the use of management best practices techniques, such as benchmarking. While benchmarking is encouraged for SCBGP projects, it is not necessarily required. This can make it difficult to gauge the impacts of the grants, particularly on a macro-level, as was noted by Burgess et al. in their 2018 evaluation of the program.

In Patrick and French's (2011) comprehensive assessment of 2001's No Child Left Behind Act, they determined that its requirement for performance measures did

not lead to significant increases in student performance and called into question the entire notion of quantitative accountability models for education, warning that measures lacking stakeholder input and not based on organizational capacity were doomed to fail. Yet in a study on performance management practices in New York City's public schools, Sun and Van Ryzin (2014) found that those who developed measurable indicators of goal achievement, then used the results for planning and goal setting, reaped better outcomes in the form of student test scores. This positive finding echoed prior studies of the Job Training Partnership Act, which utilized a robust system of performance management through outcome measurement to meet, then surpass, GPRA-mandated goals (Heinrich, 2002). With a feedback framework in place for the SCBGP, states could use one year's results to better plan for future awards, particularly when setting funding priorities.

In another study of education programs, this time in Denmark, Deutz et al. (2021) found that using quantitative performance-based metrics led researchers to change their journal publication patterns, echoing the results of earlier findings in Norway and Finland. Beyond mere unintended consequences, they deemed these changes 'constitutive effects,' echoing the title of an article by Dahler-Larsen (2014) that eschewed emphasis on the intentions of the measures and instead focused on the activities and outcomes derived. Constitutive effects recognize that numerical indicators, particularly when tied to rewards, shape the entire process of the practices they seek to describe, from start to finish. In that sense, the requirement of quantitative measures for programs has the power to affect research agendas, knowledge production processes, and research behavior (Heuritsch, 2018). It is a

relevant and crucial consideration when analyzing the effects of the 2016 measures on the types of SCBGP projects funded by the grant and is discussed further in subsequent chapters of this study.

In weighing the relative successes and failures of performance measures for public programs, be they in healthcare, educational settings, or elsewhere, bureaucratic input into their formulation and use remains key. This input was a central consideration in the formulation of the 2022 performance measures for the SCBGP, noticeably more so than for the 2016 measures. As pointed out by Rabovsky (2014), if agency leaders do not view their state or federally mandated measures as legitimate and appropriate, they are far less likely to be effective, particularly for performance-based funded programs. He also tied administrators' lack of enthusiasm to a perception that the information generated would be used politically to cut budgets, not programmatically to improve services. Ultimately, the effectiveness of performance measures depends mostly on if and how they are used. If they are simply an end unto themselves, their effects are nominal (Poister et al., 2013). But if they are utilized as part of a continuous feedback loop to improve program performance, they can serve as a useful and effective performance management tool. Unfortunately, as revealed by Nielsen and Moynihan (2016) in a survey of 667 politicians, those who insist on quantitative indicators of performance for programs will readily use these numbers to assign blame to agency officials when the results are far from stellar. Such negativity bias is exacerbated when that data is used selectively by interest groups to further their political agendas, leading to further ideological polarization of elected officials.

Performance Metrics for the SCBGP: Current and New

In light of this changing emphasis and the overall shift toward performance metrics for government programs, the Senate Committee on Agriculture, Nutrition, and Forestry held the first of several hearings in 2011 to address "Farm Bill Accountability: The Importance of Measuring Performance While Eliminating Duplication and Waste." In her opening statement, Committee Chairwoman Debbie Stabenow asked the panel to focus its discussions, first and foremost, on measuring performance and efficiency in every one of the upcoming 2014 Farm Bill's list of funded programs. She went on to ask "How are we measuring whether programs are getting results and being cost-effective? Workers in my state get annual performance reviews and they have a right to apply the same standard or expect us to apply the same standard to our government" (S. Rep. No. 112–281, 2011). Threats to the continued funding of the SCBGP came about during congressional discussions related to the 2014 Farm Bill and brought the issue of performance measurement to a critical juncture; legislators wanted to know the tangible benefits of the SCBGP's annual multi-million-dollar allocation. In a 2015 response, PART directed USDA-AMS to devise strong performance metrics for the SCBGP, to be put in place starting with the 2016 grants. Such measures were to be quantifiable to enable aggregation so as to demonstrate the overall performance of the program on a national level, as mandated by GPRAMA. After seeking input from stakeholders, USDA-AMS formulated and deployed the following eight measures, each with anywhere from one to eight analogous sub-indicators (listed in Appendix A). Starting in 2016, every SCBGP sub-recipient project submitted included the sub-recipients plan for how the relevant data would be collected, along with at least one of the following outcomes:

1. Enhance the competitiveness of specialty crops through increased sales.
2. Enhance the competitiveness of specialty crops through increased consumption.
3. Enhance the competitiveness of specialty crops through increased access and awareness.
4. Enhance the competitiveness of specialty crops through greater capacity of sustainable practices of specialty crop production resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
5. Enhance the competitiveness of specialty crops through more sustainable, diverse, and resilient specialty crop systems.
6. Enhance the competitiveness of specialty crops through increasing the number of viable technologies to improve food safety.
7. Enhance the competitiveness of specialty crops through increased understanding of threats to food safety from microbial and chemical sources.
8. Enhance the competitiveness of specialty crops through enhancing or improving the economy as a result of specialty crop development (USDA, 2016).

As a result of the implementation of these metrics, upcoming discussions pertaining to the 2023 Farm Bill will reference, for the first time, quantifiable measures of impact, compiled from several years of SCBGP final reports from across the U.S. and its territories.

While the 2016 metrics received OMB approval and were put into place by USDA-AMS, they were not met with resounding support. Grant recipients expressed concern that certain metrics, specifically those relating to marketing data (Outcome 1),

were difficult to obtain from subgrantees, citing the reluctance (or outright refusal) of grocery store chains and other producers to share their sales data, as well as the difficulty in parsing that data for a single state's crop. These concerns eventually rose to the level of congressional awareness, aided by the lobbying efforts of NASDA. In response, Congress incorporated action to address this issue into the 2018 Farm Bill, mandating that, in conjunction with the state departments of agriculture, USDA-AMS develop a newer set of performance measures to be used in evaluating the SCBGP at the national level, starting in 2022. To conduct this process, USDA-AMS engaged GTPS, in partnership with NASDA, to assess the current performance measures for the SCBGP and use this information to develop a revised set of measures. These measures would be incremental in that they would build on the existing measures yet address and correct the problems inherent within them.

Through comprehensive interviews with USDA-AMS staff, surveys of state SCBGP coordinators and other stakeholders, and NASDA-led listening sessions, the true extent of dissatisfaction with the 2016 measures soon became apparent. As expected, the surveys revealed the desire for new, or at least revised, outcomes and indicators, particularly for measuring marketing and promotion efforts. This need was attributed to a difficulty in collecting sales data from third parties, including the establishment of baseline amounts. For the outcomes USDA-AMS required to be achieved, the grant period of three years was deemed too short, in that it was not enough time to gauge successful marketing, education, or research efforts. Nor did it factor in short, medium, and long-term goals. Respondents also indicated that external

factors, not accounted for in the existing outcome measures, affected project results (USDA, 2021c).

Using what was learned from this comprehensive stakeholder engagement, GTPS went on to recommend new measures with "feasible, low-burden indicators enabling comprehensive evaluation of individual grant recipient and overall grant portfolio impact" in order to "mitigate inconsistencies in grant-related data collection, diminish administrative burden for grant applicants, recipients, and sub-recipients, USDA-AMS personnel, and pass-through entities in collecting and aggregating data, and remedy challenges in the evaluation of combined grant program impacts" (USDA 2021c, p. 3). In doing so, GTPS sought to establish a uniform grant evaluation framework that aligned with USDA-AMS's strategic goals, that could be easily adapted to GPRA requirements, and that ensured that stakeholders saw consistency among the requested data points. Here, GTPS also used program evaluation techniques consistent with Government Accountability Office best practices to evaluate and revise a set of tailored, comprehensive performance measures for the SCBGP. This process included creating logic models for the program, which showed how sub-recipient activities related to measures of those activities (output measures), as well as how those measures of activities related to measures of actual impact (outcome measures). These logic models provided a baseline to identify key issues inherent in the 2016 performance measures from which GTPS was able to formulate these revised measures. The following outcome measures, along with their related sub-indicators (listed in Appendix B) will be put in place starting with the 2022 SCBGP projects:

1. Increase consumption and consumer purchasing of specialty crops.
2. Increase access to specialty crops and expand production and distribution.
3. Increase food safety knowledge and processes for specialty crops.
4. Improve pest and disease control processes for specialty crops.
5. Develop new seed varieties and specialty crops.
6. Expand specialty crop research and development.
7. Improve environmental sustainability of specialty crops.

While these new measures do not appear to differ greatly from the 2016 measures, they are far simpler in language and include indicators of early, mid, and late-stage project progress and impacts, along with further considerations for external factors. Most notably, they remove the burden of obtaining sales data as the only means of quantifying the success of marketing projects, instead allowing for numerical counts of consumers and business transactions affected by promotional efforts. Related efforts will have USDA-AMS provide states and sub-recipients with long-awaited recommendations on how to collect the required data for inclusion in final reports (USDA, 2021c), as such clarity was not provided for the 2016 measures. It is worth noting that, when presented by USDA-AMS at the March 2021 SCBGP State Coordinators Conference, the new outcome measures and indicators received a positive response from those in attendance.

Systems Theory as a framework to Study the SCBGP

When viewed in terms of the now decade-long congressional demands for performance measures for the SCBGP, the program appears to follow principal-agent theory, whereby politicians attempt to hold agencies accountable for program results,

often with varying success. In the theory, elected officials compel bureaucrats to behave in a way that they would not have otherwise behaved (Meier & O'Toole, 2003). Though it is true that the 2016 measures likely would not have come to be without an OMB mandate, despite the ubiquity of NPM-driven performance measures for many federal programs, such a perception is far too one-dimensional. An understanding as to how the 2016 measures changed the SCBGP program is incomplete without full contextualization. And while it might be expedient to think of the SCBGP in terms of its individual placement and functioning within the vast grant portfolios of the USDA-AMS, the 50 states, and their sub-recipients, such a view undermines the importance of its interconnectedness.

To counter this perception, systems theory views the actors as interrelated parts of an ordered whole, where each affects the others, and the whole is greater than the sum of its parts (Schelbe et al., 2018). In this context, statutes and procedures are the boundaries that define and shape the SCBGP system and are subject to continuous feedback from the environment in the pursuit of a shared goal, all with a tendency toward equilibrium. Feedback involves communication, which Luhmann (2012), a German sociologist, viewed as its centerpiece. To him, systems theory was primarily a theory of communication, centering around the contingency of meaning. Here, systems are self-referential and the theory itself is observational, not operational, and stems from the scientific concept of autopoiesis. The information coming in from outside the system is limited, but within, communication is critical and keeps the system operating. Simeone et al. (2005), in using GPRA as a conceptual model of performance-based management to frame its effects on the National Drug Control

Strategy, found the systems approach most appropriate in that it factored the commitment among individuals engaged in the pursuit of a particular end, saw them secure the resources and perform the work needed to make progress toward this end, then refine the nature and scope of this work though their efforts (2005). In much the same way, individual commitment toward the betterment of the SCBGP was driven by general discontent expressed toward the 2016 measures by its stakeholders. This discontent led to the creation of a congressional mandate and to increased stakeholder engagement during the development of the 2022 outcome measures.

Systems theory was used in this study to explain how the organizational activities of the SCBGP in Georgia follow a process of taking inputs from the environment (the 2016 quantitative measures), transforming these inputs given the existing structure and practices, creating outputs (project activities, classified as either research or non-research), and gathering and using feedback mechanisms to positively impact the program, and thus, the specialty crop industry as a whole. Feedback also entailed the final results of this study, which will be disseminated to fellow SCBGP state coordinators at their next national conference, slated for March of 2023. This systems framework allowed the introduction of the 2016 quantitative performance measures to the program (after seven years of homeostasis) to be viewed in terms of the systemic effect on the entire program, not just the sub-recipient projects. Chapter 5 looks at the changes that came about and discusses their constitutive effects.

Conclusion

Contemporary PA theory holds that performance measurement is essential to performance management. When managing for results, outcomes, in the form of

quantitative measures, are the means by which decisionmakers assess progress toward desired objectives (Ingraham et al., 2003). The use of such measures by the federal government, starting in the late 1980's, heavily emphasized outcomes over processes and outputs as a means to improve grantee accountability and transparency (DeGroff et al., 2014). This incremental evolution of NPM reforms within the federal government eventually brought performance outcome requirements to the SCBGP, a full 10 years after its inception. As detailed at the outset of this chapter, the SCBGP is a large and complex government program, involving the 50 states and territories, each with their own agricultural needs, priorities, and agendas. These entities, in turn, must award and manage anywhere from one to several hundred sub-grantees, ranging from small non-profits to large state universities, all of whom have undertaken projects that span a diverse range of allowable activities. Yet whether they are intended for access, education, food safety, marketing, production, or research efforts, each SCBGP project pursues one single statutory objective: to enhance the competitiveness of U.S.-grown specialty crops.

In Georgia, the process for administering the grant has remained much the same since 2009. Yet the program has never been comprehensively evaluated, a need that became prescient after the 2016 measures were put into place, as a noticeable shift in project types began to emerge, both in the application and funding stages. This observation led to a natural question of scope, as similar observations emerged in the researcher's discussions with SCBGP administrators from other states. The researcher recognized that the shift's presence or absence could be gleaned from existing information, as Georgia's project data was published annually along with the other 49

states' project summaries on USDA-AMS's website. But before outlining the meticulous categorization, count, and comparison of pre- and post-2016 project types to determine if and how the introduction of performance measures may have affected them, it was important to contextualize such research in terms of the scholarly literature that preceded it.

As summarized by Poister et al. (2018), when performance measures are used to gauge service delivery at the local level, the results are generally positive, with an abundance of studies to support this assessment. Unfortunately, as they also noted, policy administration literature yields far fewer examinations of the results of performance-based approaches to the management of federal grants. What has been written on the subject presents few positive results, particularly when program control flows from the federal government to the states. In these highly complex and decentralized systems, a lack of state accountability to federal control often led to principal-agent conflicts (Jennings & Haist, 2004; Meier & O'Toole, 2003), resulting in relatively low levels of program efficiency and effectiveness (Salamon, 2002). Within the SCBGP, such conflicts are minimized by a high level of communication between USDA-AMS and the states, manifested through the facilitation of an active user group, frequent online meetings, periodic trainings, and a biennial state coordinators conference. This dynamic, unusual in the realm of federal to state grant programs, mitigates principal-agent conflicts and may lend itself to greater program success. Stakeholder engagement was also highlighted as a critical factor in determining measurement effectiveness, as bureaucratic support in their formulation often influenced future attitudes about their effectiveness, especially if the measures

were initially perceived as politically motivated (Rabovsky, 2014). This initial buy-in was also important in formulating measures as it was more likely to bring about the inclusion of less obvious, but still influential, programmatic outcomes (Munro, 2010). Here again, what is normally a deficiency in federal to state grant programs is a noted strength of the SCBGP in that USDA-AMS sought stakeholder feedback in creating the 2016 measures, and they later partnered with NASDA and GTPS to conduct an even higher level of engagement in revising the measures for 2022.

Overall, what has emerged from the policy administration literature on performance measures at all government levels is a consensus that they are essentially pointless efforts unless conceived and implemented as part of a comprehensive effort to improve services. This is hardly revolutionary, as Behn's (2003) seminal writings on the subject tied it inextricably to the execution of effective management strategy. With the outcome results of the states' 2016 SCBGP final reports only recently available to USDA-AMS, it is difficult to say, at this point, if and how they will be used to improve the program. They will likely be compiled and presented to OMB and Congress during negotiations for the 2023 Farm Bill, ostensibly to show the overall impact of the grant's $85 million annual outlay. These aggregate project outcomes will finally yield the quantitative data that lawmakers have long sought for the SCBGP, and their reaction may become the topic of future program analysis.

This study differed in its approach to the 2016 measures as it emanated from a more fundamental level, while adding to the scant existing literature that examines the effects of performance measures on federal agricultural grant programs. Evaluated in the forthcoming chapters are the changes to Georgia's program that resulted from the

introduction of the 2016 measures, given the constraints they introduced by no longer allowing subgrantees to create their own measures. This change was calculated in terms of the types of projects that were funded in the seven-year period before and the six-year period after the 2016 measures went into effect. For the purposes of comparison, the same calculations were be made using an aggregated total of the other U.S. states' funded projects, as well as for the examination of the 10 other states that receive award amounts similar to Georgia's, also delineated by project type. Beyond viewing any resulting change strictly in terms of project-type outputs, this study examined the changes in terms of the 2016 measures' constitutive effects. From this perspective, the new measures were not seen as merely a means to capture comparable sets of quantitative data. Instead, they were contextualized within the system that motivates subgrantees to adapt and change their behavior based on the required incorporation of measures into their projects. By looking at these factors holistically, this research will provide a scalable framework for the examination of the SCBGP in the other 49 states, which may serve as a basis for future comparisons between the 2016 and 2022 measures. Results from this study and others will then become part of the feedback loop that remains a crucial component of the complex SCBGP system, with a goal to incorporate such discussions into future programmatic adjustments and improvements.

Chapter III

METHODS AND PROCEDURES

Overview of Problem and Purpose

As stated in the Farm Bill, the statutory objective of the SCBGP is to enhance the competitiveness of U.S.-grown specialty crops. It would follow that an evaluation of the program would ultimately gauge results in terms of this goal. To get to a point where such a determination is feasible, critical components of the program should be given careful consideration, so they can later be used as the building blocks of a comprehensive, holistic programmatic evaluation. Thus, this study explored the impact of USDA-AMS's quantitative outcome measures, measured in terms of the types of SCBGP projects funded both before, then after these 2016 changes went into effect. And while this study primarily focused on Georgia's program, it utilized funded-project data from all 50 states to identify trends and to draw inferences where possible across the entire U.S. program. Once tabulated, the results were used to determine the changes that may have resulted from the 2016 measures, then discussed, empirically and with caveats, in terms of the grant's fulfillment of its statutory purpose. This connection was examined in the context of systems theory, which sees the SCBGP and the realm in which it operates as a set of interconnected elements that function together to provide a benefit to the public, in this case, to boost the marketplace for U.S.-grown specialty crops. The link between the addition of pre-set quantitative performance measures and a possible change to SCBGP project types is a consideration that will be discussed in Chapter 5 as a first

step toward an answer to the question; Do an increased number of research projects make for an SCBGP that effectively enhances the competitiveness of U.S.-gown specialty crops?

The SCBGP is unique among federal grants in that it is the only one that offers block funding for state departments of agriculture to fund access, education, food safety, marketing, production, and/or research projects for most locally grown fruits and vegetables. This project flexibility, plus its three-year length and lack of a match requirement, contribute to its popularity and competitiveness among a wide variety of subgrantee applicants, ranging from small non-profits to large state universities. But, up until 2016, the lack of a consistent evaluation reporting framework made it difficult to assess the program in terms of project outcomes and impact at both the state and national levels (Burgess et al., 2018). Though Georgia has received funding for the SCBGP every year since 2008, the program has never been comprehensively evaluated, as one grant cycle leads into the next, leaving little time for reflection or revamping. This lack of change in program policy and administration over the last 13 years presents a unique opportunity to isolate the shift in project types that may have resulted from the 2016 performance measures. From there, it is reasonable to assess such change in terms of programmatic effectiveness and statutory goal fulfilment, both at the state and national levels.

Paradigm and Methodology

There is no preferred methodological approach to researching PA because, like so many other facets of the discipline, the "best" method depends on the subject studied as well as the available data. For Riccucci (2010), the discipline itself lacks a paradigmatic

base due to its applied nature, which relies on practiced experience that is inextricably linked to politics. Here, where critical realism affords the understanding that even the most meticulous researcher cannot truly know anything with certainty, the postpositivist worldview leans into the notion that the observed can reveal objective truth. Postpositivism is a philosophical perspective that arose in the second half of the 20th century and critically revised positivism, the prevailing research paradigm up to that point. Positivists believed that reality outside of oneself could be objectively observed and recorded, resulting in a full understanding of that reality. The assumption was that reality was real and truth universal, and knowledge was obtained through direct observation and measurement of phenomenon in an orderly and predictable manner. Postpositivist critiques either rejected these understandings (Riccucci, 2010) or merely modified them (Kelly & Maynard-Moody, 1993), depending on who is asked. Either way, this moved positivism toward critical realism, which still embraced an understanding of reality outside of the knower and sought to apprehend that external reality partially and probabilistically. Postpositivists saw that neither reality nor truth was directly accessible and such concepts could only be approximated through research, which provided pieces of reality. Much in this way, this study focused on the relationships found within the data to develop theories to describe the given phenomenon, with an understanding that other factors, both internal and external to the SCBGP, might also influence observed changes. And while Riccucci (2010) touted this paradigm's mostly qualitative methodological traditions, Creswell (2014) saw it as entirely appropriate for quantitative research, given its deterministic philosophy, where "causes probably determine effects and outcomes" (p. 7).

This chapter presents a systematic approach to fill in a current knowledge gap in Georgia's SCBGP. To that end, the researcher will describe the methods utilized to determine the relationship between the implementation of quantitative performance measures to the types of SCBGP projects funded, classified here as research or non-research. Chapters 1 and 2 detailed the NPM-grounded evolution of the federal government's ever-increasing reliance on quantitative measures to measure performance for programs. They also argued the need for further inquiry into the SCBGP, particularly in light of the quantitative performance measures that were put into place by USDA-AMS in 2016, as well as the new ones that will be implemented in late 2022. Using a single-group interrupted time-series (ITS) analysis for policy interventions in the social sciences, this study evaluated how the introduction of such measures affected SCBGP project types in Georgia, the 50 states (aggregated), as well as those of 10 other states that received SCBGP award amounts similar to Georgia's. In using what is regarded as arguably the strongest quasi-experimental research design (Penfold & Zhang, 2013), this ITS analysis used pretests and posttests to determine the effects of a single programmatic intervention. Here, the intervention was the nationwide implementation of pre-determined quantitative performance measures by USDA-AMS for the SCBGP starting in 2016. Prior to 2016, quantitative performance measures were used to report the final outcomes of SCBGP projects, but the subgrantees created them, making them unique to each project. This method precluded the aggregation of results to a statewide and nationwide level, leading to complaints from Congress and OMB about the lack of impact-related data for the program. It was primarily for this reason that this study did not compare the outcomes of the pre-2016

measures, which cannot be standardized, to the post-2016 measures, which are standardized. Instead, this study focused on the types of projects that were funded, both before and after the 2016 measures went into place.

Research Questions and Study Design

This study applied quantitative data analysis to information collected over a 13-year period (2009–2021) to investigate 3 research questions:

- RQ1: How did the USDA's 2016 implementation of quantitative performance measurements impact the SCBGP in Georgia?
- RQ2: How did this change in Georgia compare to the other 49 U.S. states (in total)?
- RQ3: How did this change in Georgia compare to the 10 other states (individually) that receive similar SCBGP award amounts to Georgia?

To answer these questions, this study employed a quasi-experimental, longitudinal research design with one dependent variable (project type) and one independent variable (year). The purpose of this study was to examine the relationship between USDA-AMS's implementation of quantitative performance measures and the types of projects funded, prior to 2016, then after. Here, the SCBGP project types were the dependent variable, and the 2016 performance measures (years before and after 2016) were the independent variable. Project types were classified as either research or non-research. The first part of the study entailed an examination of the types of projects that were funded in Georgia over a 13-year period to answer RQ1 (How did the USDA's 2016 implementation of quantitative performance measurements impact the SCBGP in Georgia?). The question was hypothesized as follows:

- $H1_0$: There was no change to the types of SCBGP projects funded in Georgia after the 2016 implementation of quantitative performance measures.
- $H1_a$: There was a change to the types of SCBGP projects funded in Georgia after the 2016 implementation of quantitative performance measures.

The second part of the study entailed an examination of the types of projects funded in the other U.S. states over a 13-year period to answer RQ2 (How did this change in Georgia compare to the other 49 U.S. states [in total])? The question was hypothesized as follows:

- $H2_0$: There was no change to the types of SCBGP projects funded in the other 49 U.S. states (aggregated) after the 2016 implementation of quantitative performance measures.
- $H2_a$: There was a change to the types of SCBGP projects funded in the other 49 U.S. states (aggregated) after the 2016 implementation of quantitative performance measures.

The last part of the study entailed an examination of the types of projects funded in the 10 other states that received funding similar to Georgia's over a 13-year period to answer RQ3 (How did this change in Georgia compare to the 10 other states [individually]) that receive SCBGP award amounts similar to Georgia's?). The question was hypothesized as follows:

- $H3_0$: There was no change to the types of SCBGP projects funded in the 10 other U.S. states that receive award amounts similar to Georgia's after the 2016 implementation of quantitative performance measures.
- $H3_a$: There was a change to the types of SCBGP projects funded in the 10 other U.S. states that receive award amounts similar to Georgia's after the 2016 implementation of quantitative performance measures.

For each of the above examinations, this research employed a basic interrupted time-series (ITS) design, wherein observations were compiled both before and after a treatment was introduced. The observations before the treatment was introduced provided the counterfactual with which data after the treatment was introduced was compared (Reichardt, 2019):

O_1	O_2	O_3	O_4	O_5	O_6	O_7	X	O_8	O_9	O_{10}	O_{11}	O_{12}	O_{13}

Figure 2

A Basic Interrupted Time-Series (ITS) Design

In this illustration (Figure 2), there are seven pretest observations (*O*'s) and six posttest observations spaced over time (one-year periods). The treatment (*X*) is implemented between the seventh and eighth observations.

Data Collection

Data for this study was collected exclusively from a secondary source: the list of SCBGP Awarded Projects from 2009 to 2021, all of which are publicly available from

the USDA-AMS SCBGP website, in PDF format, and divided by year. Within each document, every SCBGP project is listed by state, along with the project description.

IRB approval. Permission to conduct this research was secured from Valdosta State University's Institutional Review Board. Because this research was conducted using publicly available data and used no human participants, the board granted an exemption from oversight (Appendix C).

Population and sample. As described by Creswell (2014), this single group ITS is a quasi-experimental design in that the "participants" are not randomly selected. In this study, the population consisted of every SCBGP project that received funding in the U.S. from 2009 to 2021, including those from Georgia and 10 other states to be used for comparison. The only projects excluded from the available nationwide data were those from Washington D.C. and the U.S. Territories of American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands. The reasons for their exclusion from this study were due to the very small number of SCBG projects funded each year in these areas and their specialized agricultural needs as non-U.S. states. Additionally, D.C. and the territories remain closely affiliated with the federal government in terms of oversight, falling under the direct authority of Congress, although each is allowed a certain degree of home rule. Given that this was a state-based study within the confines of a federal system, the 50 states' Article IV Section Four Constitutional guarantee of home rule made it a more politically homogeneous within-comparison group.

To obtain the primary dataset (titled "U.S. Funded Projects" [UFP]), the researcher downloaded the 2009 to 2021 grant awards for the entire U.S. Each were

printed to give the researcher access to a hard copy. Each PDF document was electronically converted to Excel format using Adobe Acrobat software, then loaded into a single Excel spreadsheet consisting of three columns: year, state, and project description. From there, using the printed PDF copies of each year's awards, the researcher verified that the data imported correctly and completely. Some reformatting was necessary to ensure that all rows were lined up properly and to remove the data from Washington D.C. and the U.S. Territories, as well as the administrative information. At this point, the single dataset (UFP) consisted of three columns: year, state, and project description. A fourth (blank) column was then added for the researcher's manual coding of project types. This UFP dataset contained all of Georgia's SCBGP projects from 2009–2021, which were later extracted and evaluated as the "Georgia's Funded Projects" [GFP] dataset.

For the third dataset (later titled "Other States' Funded Projects" [OFP]), the researcher used the full UFP dataset from above, then isolated 13 years (2009–2021) of project data for each of 10 U.S. states, based on the following criteria:

1. Over the last 13 years, the state typically received a SCBGP award between $814,000 and $1,900,000, an amount between 66% and 166% of Georgia's 2009-2021 average award of $1,219,432.
2. The state had a university with an agricultural research program ranked in the top 30 of such programs in the U.S. in 2020.

As SCBGP awards can vary widely across the U.S., from $253,113 for Alaska to $23,744,447 for California (USDA, 2021a), it was necessary to select a sample of states that received award amounts somewhat close to Georgia's, for the purpose of a fair

comparison. The range of 66% to 166% of Georgia's average award (~$1.2 million) was chosen to include at least 10 other state programs with average awards falling within the given range on either side of that amount. The researcher also verified that each of the 10 other states had at least one university with a top-30 ranked agricultural research program, as states lacking ranked programs typically do not fund as many research projects as those that do. Here, no state out of the 10 had more than one top-30 ranked program. The University of Georgia's (UGA) program fell within the lower third of this group, with a #22 national ranking, according to an annual list published by *U.S. News and World Report* (2021).

In total, the study population consisted of every SCBGP project that received funding from 2009 to 2021 in Georgia (GFP, $N = 223$), in the other 49 U.S. states (UFP, $N = 8{,}594$), and in 10 other U.S. states (OFP): Arizona ($N = 253$), Colorado ($N = 170$), Michigan ($N = 299$), Minnesota ($N = 165$), North Carolina ($N = 211$), Nebraska ($N = 178$), New York ($N = 140$), Pennsylvania ($N = 223$), Texas ($N = 226$), and Wisconsin ($N = 251$).

Defining project types. Each project description consisted of a 100- to 250-word summary, taken from the introductory paragraph of every funded SCBGP application, wherein the subgrantee described the activity or activities to be undertaken and for what purpose(s) and goal(s). These descriptions provided the needed details for the next step of the data collection, which was for the researcher to determine the project types, as they were not specified by USDA-AMS in their project lists. As this was a qualitative determination, it was important for the researcher to first understand and clearly define

what constituted an SCBGP "research" project versus a "non-research" project for the purposes of this study.

Since 2008, USDA-AMS has stated that the SCBGP's purpose, to enhance the competitiveness of specialty crops, can be achieved through subgrantee projects in one of five ways:

1. By leveraging efforts to market and promote specialty crops.
2. By assisting producers with research and development relevant to specialty crops.
3. By expanding availability and access to specialty crops.
4. By addressing local, regional, and national challenges confronting specialty crop producers; and/or
5. For such other purposes determined to be appropriate by the Secretary of Agriculture, in consultation with specialty crop stakeholders and relevant State departments of agriculture.

Using this information, the projects that described a goal in line with the second point (Number 2, above) were coded as "research." All others were coded as "non-research," except for the fourth and fifth points, which could describe a research or non-research project, depending on the specifics described in the summary. Non-research projects, typically consisting of access, education, food safety, marketing, or production activities and goals, were combined and singularly coded as "non-research" because such endeavors often involve an equal blending of two or more of these activities within a single project, making them difficult to singularly categorize, whereas research projects are generally straightforward in their purpose. And while some research projects also involve non-research activities and goals, these are typically the end or by-products of the

research findings. A common example of this is university research on a pest or disease that will be disseminated to growers in educational sessions or through Extension publications at the end of the project. In the vast majority of cases, research projects are carried out by colleges and universities, either alone or in partnership with a grower organization. They typically involve efforts to mitigate agricultural pests or diseases or to develop tools or strategies to increase crop production or decrease crop losses.

To further delineate research from non-research projects for the purposes of coding, this study employed the USDA-AMS definition of a specialty crop research project:

> Research projects are systematic studies directed toward fuller scientific knowledge or understanding of the subject studied (2 CFR § 200.87). Projects may include, but are not limited to: Conducting research in plant breeding, genetics, and genomics to improve crop characteristics; Improving production, processing, storage, and distribution efficiencies for conventionally or organically grown specialty crops; Reducing environmental impacts; and/or Conducting research to determine consumer preferences, including studies of willingness to pay, sensory evaluations, focus groups, and other evaluative research methods that will then be disseminated to specialty crop growers. (USDA, 2019)

The above USDA-AMS definition is key, as there is an argument to be made for categorizing market research as marketing projects and, therefore, as non-research. Yet the USDA-AMS definition clearly articulates that such projects are to be viewed as research projects, so this protocol was followed for this study. In all cases, research, be it

scientific or consumer-related, has to be the primary goal of the project in order for it to be coded as research.

Qualitative document analysis and coding. The researcher initially read through each printed hard copy of project lists, by year, and marked each individual project as research (R) or non-research (NR) in accordance with the definitions outlined above. Using these hand-coded hard copies as a guide, the researcher read through every project summary in the Excel UFP dataset, then manually coded each project as either research (R) or non-research (NR). Once coded, the researcher re-read the project summaries and corrected errors by changing the project types as appropriate, resulting in a final, exact match in coding between the hard copies and the Excel UFP project list.

As a check on validity, the researcher employed the use of *Atlas.ti* (version 9.1), a computer-assisted qualitative data analysis software (CAQDAS) package widely used for scholarly research. This program assisted the researcher in addressing "a range of methodological challenges, such as working with large datasets and supporting deeper levels of analysis than is possible by hand" (Paulus & Lester, 2016, p. 405). Atlas.ti itself does not analyze data but facilitates its storage and coding, then automates data retrieval for linkage, comparison, and categorization (Oguz, 2007). Central to its functioning is the researcher's coding which links selected pieces of data, in this case, keywords, back to these codes.

To begin this process, the researcher uploaded the Excel UFP dataset (without the manually coded project types) into the Atlas.ti software, then assigned sub-codes to words and phrases within the project summaries based on common project keywords and quotes (as listed in Appendix D). The main codes used were Research (R), with a sub-

code of research (r), and Non-Research (NR), with sub-codes of access (a), education (e), food safety (f), marketing (m), and production (p). From here, Atlas.ti identified the keywords and coded/sub-coded each datapoint to where it could be analyzed in an organized format. Content analysis involved an initial examination of these results to verify that the associated keywords aligned with the proper sub-codes and that these aligned with the main codes. Themes emerged, representing a higher level of abstract structures than the initial keyword hits and served to identify project categories, mostly aligned with existing codes. Some projects had multiple sub-codes, some of which contained codes for both research and non-research projects. Those that did were re-analyzed and manually coded, with a memo to explain the researcher's reasoning for the categorization. Projects lacking codes were checked for common keywords and phrases, which were then added to the appropriate sub-code categories and re-evaluated. This process was repeated, then once more. By the end of the third pass-through, all projects were sub-coded (as "a", "e", "f", "m", "p", and/or "r") and had a main code ("NR" or "R"). This data was then exported, formatted, and compared to the initial, manually coded, Excel UFP list. Where the main codes of R and NR differed between the same project on the two lists, the researcher re-read the project summary and chose the code that most accurately aligned with the primary intent of the project.

Counts. Once each row was coded with a project type (T) of either research (R) or non-research (NR) and reviewed for consistency, the single UFP dataset was separated into three datasets (GFP, UFP, and OFP), then further divided by project years. The resulting six datasets, each on a separate Excel sheet, were named as follows: GFP 2009–2015, GFP 2016–2021; UFP 2009–2015, UFP 2016–2021; OFP 2009–2015, OFP 2016–

2021. This division was made to account for the introduction of quantitative performance measures by USDA-AMS in 2016, serving as the "treatment" in this case. The reason for this division of years, as discussed earlier, was because the projects in the 2009–2015 groups did not have to predict (in their applications) and report (in their annual and final reports) project results using a pre-set list of outcomes and indicators, whereas the projects in the 2016–2021 groups were required to do so. The project types (T) were then tallied, by year, for each of the six datasets, thus providing the counts that were used for analysis against this study's hypotheses.

Data Analysis

An ITS analysis is a quantitative statistical method of a single time series of data known to be interrupted at a known point in time. With this approach, a series of observations on the same outcome before and after the intervention can be used to test its immediate and gradual effects (Ngo et al., 2018). For this study, utilizing the ITS design, the researcher first used dual line graphs to plot datapoints for baseline and treatment observations for abscissa (horizontal axis: year) units and the ordinate (vertical axis: # of research projects by type) target behavior with the treatment (introduction of 2016 measures). With these visual references in place, descriptive statistics (mean, standard deviation, and range) were employed to compare the data and to form the basis of analysis for Research Questions One, Two, and Three. *Stata* (version 15.1) was then used to analyze the quantitative data.

Statistical tests. Within Stata, the researcher utilized the Mann Whitney U test to determine whether the proportion of research projects (R) to total projects (research and non-research [NR]) in 2009–2015 was statistically different from the proportion in 2016–

2021. The Mann Whitney U test is the non-parametric alternative to a *t*-test, which is generally deemed appropriate when the independent variable can be split into two categories and the dependent variable can be quantified. A non-parametric approach may be necessary if the data does not meet the assumption of normal distribution. Here, the 2016 implementation of quantitative performance measures (independent variable) enabled the separation of 2009–2015 and 2016–2021 projects into two distinct groups (pre- and post-intervention) for each of the three datasets studied, with the project types (dependent variables) quantified for each group. This test determined whether the types of projects (R or NR, in Georgia, the U.S. as aggregated, and in 10 other states, individually compared to Georgia and the other U.S. states, as aggregated) differed before and after the implementation of quantitative measures in 2016. A statistical significance level, alpha level or the *p*-value, of .05 was used for this study ($p < .05$), as this is the generally accepted standard for moderate statistical significance.

To further estimate the intervention effect of the 2016 performance measures, a comparison was made between the trend in the outcome after the intervention (2016–2021) and the existing trend in the pre-intervention time period (2009–2015). This was achieved using maximum likelihood event count time series analysis. Should the dependent, or outcome, variable not be normally distributed, maximum likelihood estimation would have been the appropriate statistical technique to use. Initial time series models were generated and plotted on a graph with a line representing the predicted values. Trend variables were added as needed to explain unexpected variation. Separate intercepts and slopes were estimated for each segment (pre- and post-intervention) and statistical tests were used to compare the changes in intercepts and slopes.

Reliability and Validity

This study assumes that the data, obtained from USDA-AMS's public website, contains every SCBGP project submitted by every U.S. state from 2009 to 2021 and that the applicants provided accurate summaries of their planned projects to USDA-AMS. This assumption is based on the USDA Chief Information Office's statement regarding informational validity in its General Requirements:

> These general information quality guidelines apply to all types of information disseminated by USDA agencies and offices:
>
> - USDA will strive to ensure and maximize the quality, objectivity, utility, and integrity of the information that its agencies and offices disseminate to the public.
> - USDA agencies and offices will adopt a basic standard of quality (including objectivity, utility, and integrity) and take appropriate steps to incorporate information quality criteria into their information dissemination practices.
> - USDA agencies and offices will review the quality (including objectivity, utility, and integrity) of information before it is disseminated to ensure that it complies with the standards set forth in these Guidelines.
> - USDA agencies and offices will treat information quality as integral to every step in their development of information, including creation, collection, maintenance, and dissemination. (USDA, 2021d)

As the project data is uploaded to USDA-AMS's website at the end of each award year, it must be assumed that a small number of projects were amended within their three-year

project timeframes, though it remains rare for a project to be amended from research to non-research, or vice-versa.

For the purposes of this study, a total of 8,817 SCBGP projects were categorized by the researcher into two main types: research and non-research, with the criteria for this classification outlined earlier in the *Qualitative Document Analysis and Coding* section of this chapter. Here, the coding of project types, despite the guidance provided by USDA-AMS and described here in the *Defining Project Types* section, ultimately relied on the researcher's personal understanding and interpretation of the intent of the projects as articulated in their individual summaries. Though this study was overall quantitative, the reading, evaluation, and subsequent coding was a qualitative process involving rigorous content analysis. For Creswell (2014), *qualitative reliability* indicates that the researcher's approach is consistent and stable. When manually coding the individual SCBGP projects, the researcher, to the greatest extent possible, ensured reliability by making sure there was no "drift" or shift in the meaning of codes by meticulously examining the summaries and ensuring that the project's chosen code type (of research or non-research) matched the definitions previously described**.** This process was aided by the use of Atlas.ti software to explore, code, categorize, and organize the data. Once all of the projects were examined and exported from Atlas.ti to Excel, the researcher re-sorted the projects by type and summary description, then compared them one last time for coding consistency, then compared this list to the hand-coded Excel list, correcting any discrepancies or errors prior to exporting the dataset to Stata. With these reliability checks in place, the researcher is confident that the qualitative coding of the summaries is valid, consistent, and can be later replicated by another researcher.

Limits of the Research

Population Size.

This study drew conclusions from data gathered from Georgia's SCBGP from a 13-year period, totaling 223 funded projects. The other 10 states chosen for comparison each had an average range of 66% to 166% of Georgia's 2009–2021 average award (~$1.2 million). The researcher acknowledges that these relatively small dataset sizes present limitations to the generalizability and applicability of the statistical results, especially when compared to the relatively large dataset that included every other U.S. state's projects.

Causation.

While this research was intended to evaluate the effect of USDA-AMS's 2016 implementation of quantitative performance measures on SCBGP projects, both in Georgia and the U.S., the researcher was careful in making claims about causation, particularly in regard to RQ2 and RQ3, which compared the change in project types in Georgia, pre- and post-2016, to those observed in the other 49 states, as well as the 10 other states to the entire U.S. For RQ2, even with the data from the other states aggregated, this causation might not have been enough to absorb and account for the myriad of variables unique to each state, nor factor in the subtle changes to the SCBGP program that might have occurred over time due to both internal and external forces. This was also a factor when comparing the selection of 10 U.S. states' projects to the rest of the U.S., as each program exists within its own administrative and political climate. And while the researcher, the sole administrator of the SCBGP in Georgia since 2014, is confident that Georgia's program process has changed little since 2009 (through

experience, as well as an exhaustive review of historical records), it is possible that subtle factors, hereto unaccounted-for, have nonetheless had an effect. These factors could mitigate conclusions the researcher attempted to draw about data relationships for RQ1, which looked at the change to Georgia's funded projects, both before and after 2016. The lack of a comparable control group for any of the datasets also made it difficult to ascertain the true effects of the 2016 measures by limiting possible measures of degrees of change between a control group and the treatment group.

Despite these limitations, the validity of the research was bolstered by the researcher's careful study of USDA-AMS's annually issued SCBGP RFA and Terms and Conditions from 2009 to 2021. These documents, when compared side-by-side by year, differ somewhat in wording but changed minimally in programmatic detail or instruction over this time period, save for the 2016 introduction of the quantitative performance measures and the associated (revised) application template. This lack of variation is likely because the Farm Bill statute that authorized the SCBGP has changed very little since 2008. When audited by USDA-AMS, all U.S. states are held to the parameters defined in these documents, so there is no incentive to deviate from them. This also holds true for Georgia's SCBGP RFA and program manuals, as subgrantees are subject to funds recapture in the event of non-compliance. Another factor limiting programmatic change is GDA's elected commissioner. Using input from the public, he last set the state's SCBGP funding priorities in 2011 (listed in Chapter 2). These have not changed since and will remain in place through late 2022, when he is scheduled to leave office.

Conclusion

This chapter examined the methods and procedures that were used to achieve the objectives of this research. It began by contextualizing these actions within the study's overarching purpose: to explore the impact of USDA's quantitative outcome measures, measured in terms of the types of projects funded by the state both before, then after USDA's 2016 performance measures went into effect. This was accomplished by examining three hypotheses against three analogous research questions using a basic ITS design. Paradigmatically and methodologically, the researcher employed a postpositivist worldview, using systems theory to describe any post-2015 changes in project types, with an understanding that other factors, both internal and external to the SCBGP, might also have influenced the observed changes.

As further explained, the researcher collected secondary source data, the lists of SCBGP Awarded Projects from the 50 U.S. states from 2009 to 2021, from USDA-AMS's public website. A master dataset was created and exported into Excel, with each individual project qualitatively coded as research or non-research, guided by USDA-AMS definitions of what constitutes each. To aid in this process, the researcher utilized Atlas.ti software for coding and categorization, as well as to identify themes. Multiple checks on coding consistency and reliability were performed prior to uploading the final dataset to Stata for statistical analysis. Within Stata, the researcher employed the Mann Whitney U test and used maximum likelihood event count time series analysis to determine the intervention effects of the 2016 performance measures. To close this chapter, the researcher discussed the data collection and analysis in the context of efforts to ensure the reliability and validity of the data, along with assumptions and limitations of the research.

In Chapter 4, this data will be reported, with the results displayed in graphical, tabular, and narrative form. This data will be followed, in Chapter 5, by a thorough discussion of all quantitative results. Through these efforts, it is the researcher's hope that this evaluation will assist Georgia's SCBGP decision-makers to determine how the 2016 measures might have changed the types of projects that were funded, and to what extent. Replicated, it might guide other SCBGP coordinators in determining outcomes for their states. This research is particularly prescient in light of the impending 2022 measures, as this window to the past may yield clues to the future.

Chapter IV

RESULTS

This quantitative basic ITS study sought to determine if there was a change to the types of SCBGP projects funded after the introduction of quantitative performance measures by USDA-AMS in 2016. This investigation was done as a step toward the goal of gaining a better understanding of whether Georgia's SCBGP continues to fulfill the grant's stated mission, "to enhance the competitiveness of U.S.-grown specialty crops" (USDA, 2021a). A general lack of change in program policy and administration over the last 13 years, both in Georgia, as well as throughout the U.S., presented a unique opportunity to isolate any shift in project types that may have resulted from the 2016 performance measures. A high number of projects were available for analysis for the U.S. population: 8,594, lending credence to the findings. But Georgia's projects and those of the 10 other states examined numbered far fewer, and this low sample size must be considered when interpreting results. Regardless, the findings revealed in this chapter necessitate further analysis and interpretation, to follow in Chapter 5, as the varied nature of the results make them worthy of a complex and nuanced discussion, one that will be done in the context of Chapter 2's systems theory framework.

To reach the point where an analysis could be completed, this study began with the collection and compilation of all the SCBGP projects that were awarded funding in every U.S. state since 2009. From there, all projects were coded as either research or non-research focused, based on criteria outlined and discussed in Chapter 3. Once this

dataset was analyzed, the data specific to Georgia was removed from the rest of the U.S. and analyzed separately. From there, the data for Georgia was reintegrated with the U.S. data. The data from 10 other U.S. states was then parsed-out and examined individually, with the states chosen for selection based on the amounts of their past SCBGP awards (in comparison to Georgia's) as well as their possession of a ranked collegiate agricultural research studies program. Presented here are the findings for these three datasets that will serve as the basis for further analysis of funded project-types both before and after quantitative performance measures were mandated by USDA-AMS.

Data Analysis and Results by Question

RQ1

How did the USDA's 2016 implementation of quantitative performance measurements impact the SCBGP in Georgia?

Related Hypotheses.

- $H1_0$: There was no change to the types of SCBGP projects funded in Georgia after the 2016 implementation of quantitative performance measures.
- $H1_a$: There was a change to the types of SCBGP projects funded in Georgia after the 2016 implementation of quantitative performance measures.

Data Analysis. Georgia received funding for 223 projects during the 13-year study period, with 92 (41.2%) projects considered to be research oriented. The yearly mean number of total projects in Georgia was 17.1 (SD = 3.87) with a median of 18 (IQR: 14–

19) and a range of 10–23 (Table 1). The yearly mean number of research projects in Georgia was 7.1 (SD = 2.96) with a median of 8 (IQR: 5–9) and a range of 2–12. The proportion of research projects to total projects ranged from 11.1% to 71.4% and generally increased between 2009 and 2021 (Figure 3).

Table 1

Georgia's SCBGP Projects 2009–2021 (13 years, pre- and post- quantitative measures)

Project Type	Count	Percentage	Mean	Median	Range
Research	92	41.2%	7.1	8	2–12
Non-research	131	58.7%	10.1	9	4–18
Total	223	100%	17.1	18	10–23

2009–2015 (7 years, pre-quantitative measures)

Project Type	Count	Percentage	Mean	Median	Range
Research	37	28.2%	5.3	5	2–10
Non-research	94	71.8%	13.4	13	7–18
Total	131	100%	18.7	18	10–23

2016–2021 (6 years, post-quantitative measures)

Project Type	Count	Percentage	Mean	Median	Range
Research	55	59.8%	9.2	8.5	8–12
Non-research	37	40.2%	6.2	6	4–9
Total	92	100%	15.3	14.5	13–19

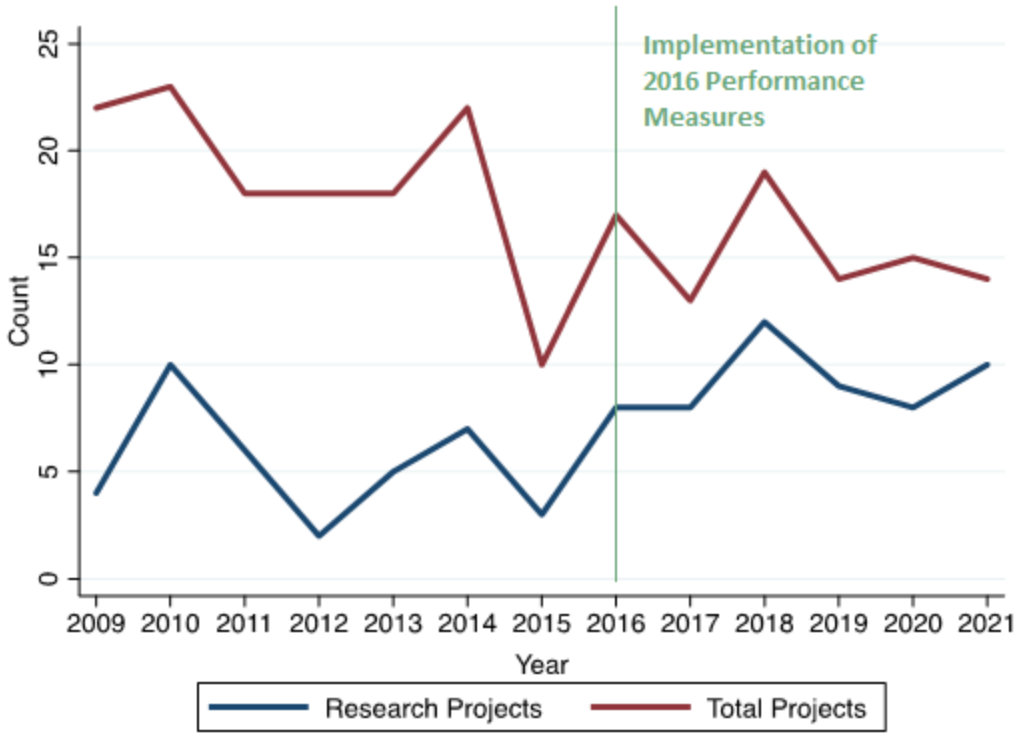


Figure 3

USDA Funded Projects in Georgia, 2009–2021

Mann Whitney U tests showed that there was no statistically significant difference in the total number of projects funded in Georgia after the implementation of performance measures in 2016 (z = 1.73, p = .08), but there was a statistically significant difference in the number of research projects (z = -2.37, p = .02) and in the proportion of research to total projects (z = -3.00, p < .01). The practical significance of these results is discussed in Chapter 5. A time series analysis model of the proportion of research to total projects in Georgia further suggested that this increase was statistically significant (b = 0.76, se = 0.15, p = .000). Figure 4 shows the predicted proportion, which somewhat closely fit the observed proportion. Some variation was seen; however, the addition of a trend term to the time series model did not change the statistical significance of the

implementation of performance measures in 2016 (b = 0.57, se = 0.16, p = .000) or the overall model fit (x^2 = 0.02, p = .90). Therefore, the researcher rejected the null hypothesis that there was no change in the types of SCBGP projects funded in Georgia after the 2016 implementation of quantitative performance measures ($H1_0$) and accepted the alternative hypothesis that there was a change ($H1_a$). Data showed that performance measures likely increased the proportion of research to total projects by a factor estimated between 1.61 to 2.88 (using incidence rate ratios). While statistically significant, there are practical implications to this change as well, as discussed in Chapter 5. It is worth noting the sharp drop in the proportion of research projects in 2015, which mirrored an overall decline in the number of all SCBGP projects across the 50 states. This was due to an overall decrease in funding levels for the entire program from the annual Farm Bill allocation, from $64.7 million (2014) to $61.7 million (2015).

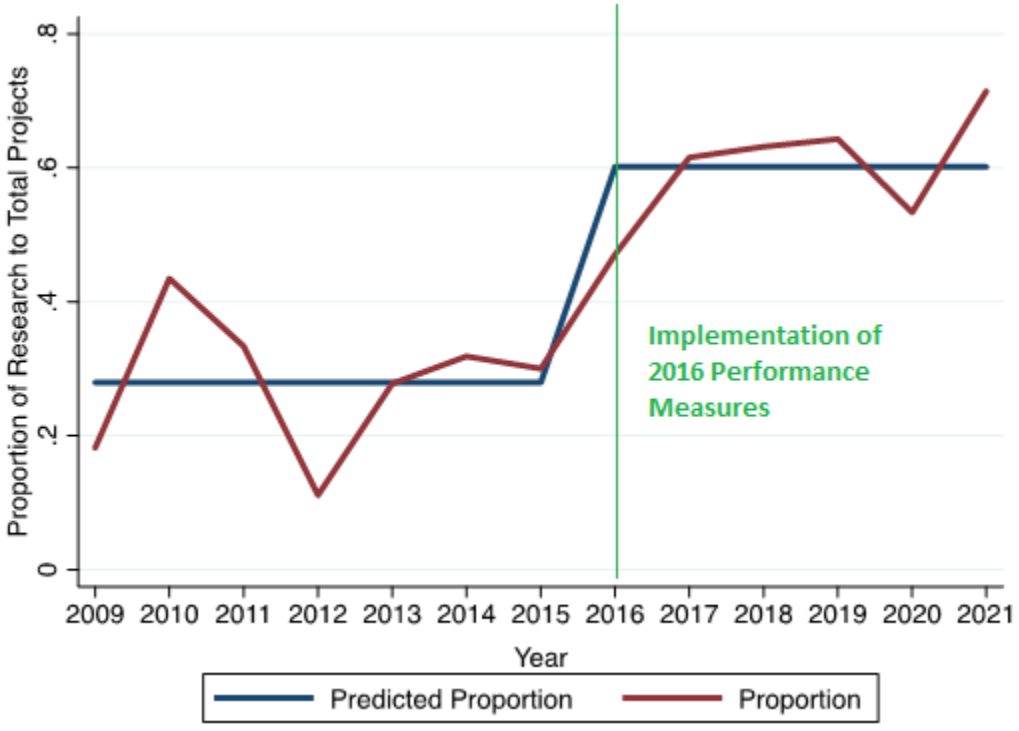


Figure 4

Observed and Predicted Proportion of USDA Funded Research Projects in Georgia, 2009–2021

RQ2

How did the change in project types in Georgia compare to the other 49 states (in total)?

Related Hypotheses

- $H2_0$: There was no change to the types of SCBGP projects funded in the other 49 U.S. states (aggregated) after the 2016 implementation of quantitative performance measures.
- $H2_a$: There was a change to the types of SCBGP projects funded in the other 49 U.S. states (aggregated) after the 2016 implementation of quantitative performance measures.

Data Analysis. Between 2009 and 2021, a total of 8,817 USDA projects were funded across the U.S. (Appendix E). Of the 8,594 projects funded in states other than Georgia, 46.8% (N = 4,023) were coded as research. The mean number of total projects funded per year was 661.1 (SD = 62.3) with a range of 582 –775, and the mean number of research projects funded per year was 309.5 (SD = 55.6) with a range of 241–392 (Table 2). Although the number of total projects decreased significantly after implementation of the performance measures in 2016 ($z = 2.29$, $p = .02$), the number of research projects increased ($z = -2.36$, $p = .02$), resulting in a significantly increased proportion of research projects to total projects ($z = -3.00$, $p < .01$) (Figure 5).

Table 2

U.S. SCBGP Projects, Aggregate of 49 States (Excluding Georgia)

2009–2021 (13 years)

Project Type	Count	Percentage	Mean	Median	Range
Research	4,023	46.8%	309.5	324	241–392
Non-research	4,571	53.2%	351.5	376	235–523
Total	8,594	100%	661.1	672	582–775

2009–2015 (7 years)

Project Type	Count	Percentage	Mean	Median	Range
Research	1,908	39.0%	272.6	252.0	241–369
Non-research	2,984	61.0%	426.3	420	379–523
Total	4,892	100%	698.9	682	618–775

2016–2021 (6 years)

Project Type	Count	Percentage	Mean	Median	Range
Research	2,115	57.1%	352.7	347.5	324–392
Non-research	1,587	42.8%	264.3	263.5	252–302
Total	3,702	100%	617.0	602.5	582–694

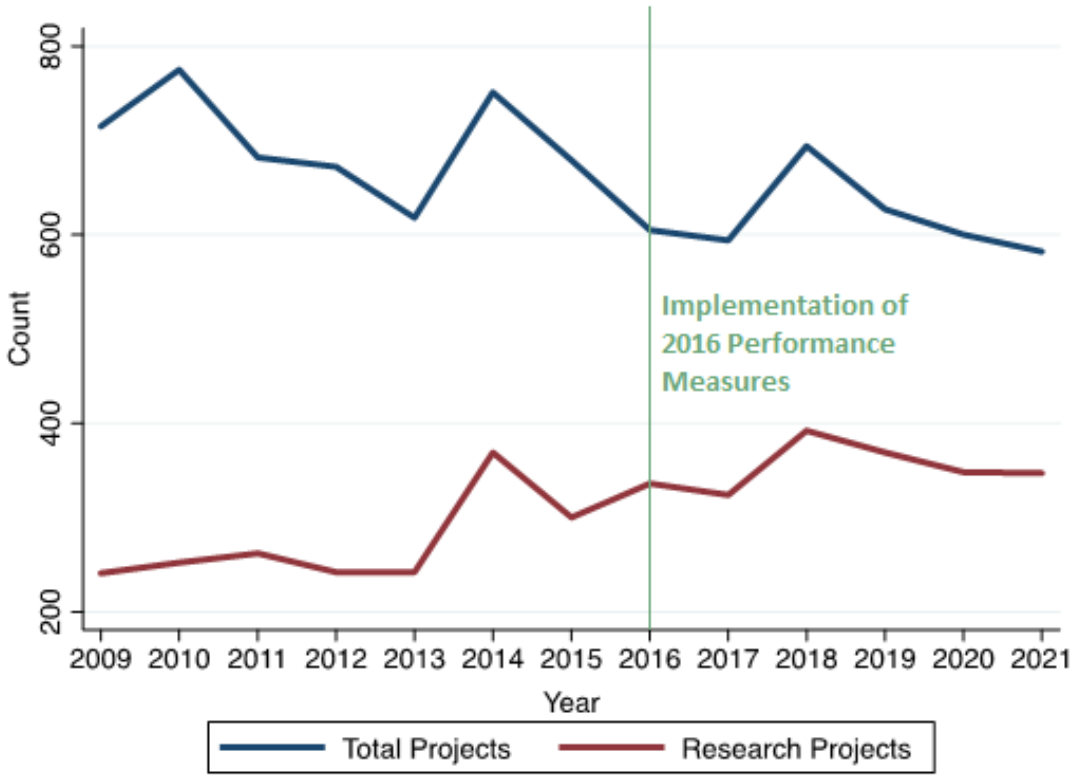


Figure 5

USDA Funded Projects in the U.S., 49 States Excluding Georgia, 2009–2021

An initial maximum likelihood event count time series analysis model supported the finding that the proportion of research projects to total projects significantly increased statistically after the 2016 implementation of performance measures (b = 0.38, se = 0.06, p = .000). While the predicted proportion generally followed the same trends as the actual data (Figure 6), there appeared to have been an increase in the proportion of research to total projects after 2016. After adding a trend term to the time series model, the implementation of performance measures in 2016 retained significance (b = 0.37, se = 0.06, p = .000) while the trend term was not statistically significant (b = 0.00, se = 0.00, p = .77). A comparison of model fit between the initial and second models (i.e., with and without a trend term) did not show significant improvement (x^2 = 0.00, p = .99). These

results suggested that the increase in the proportion of research to total projects in the U.S. was due to the implementation of performance measures in 2016. Thus, the researcher rejected the null hypothesis that there was not a change to the types of SCBGP projects funded across the U.S. after the 2016 implementation of quantitative performance measures ($H2_0$) in favor of the alternative hypothesis that there was a change ($H2_a$).

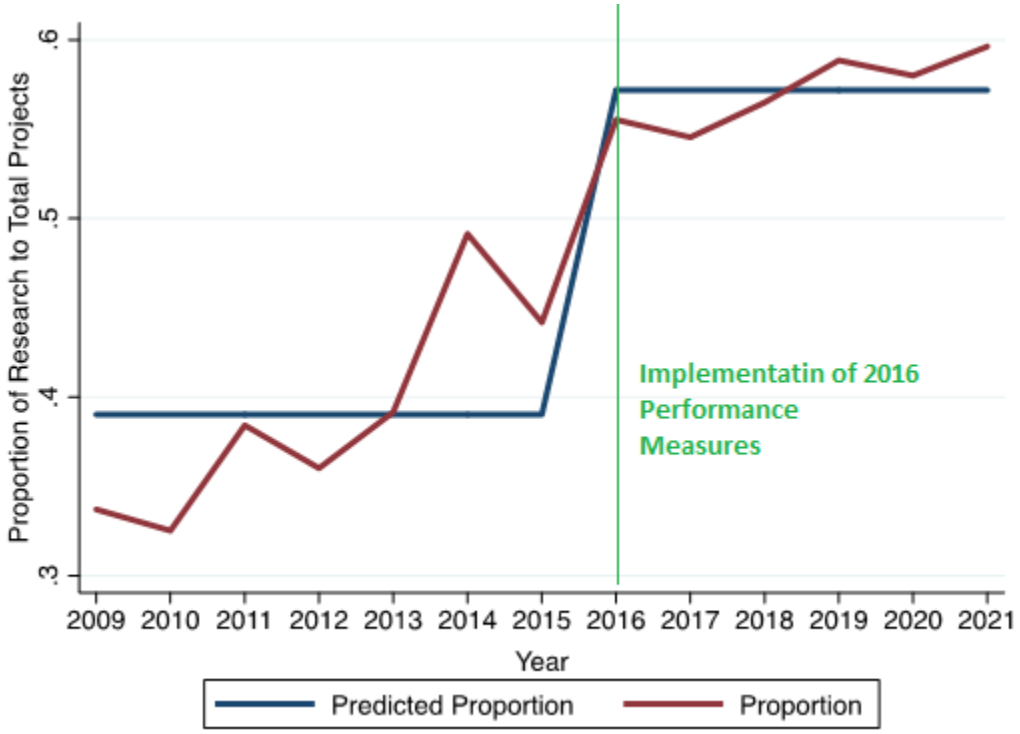


Figure 6

Observed and Predicted Proportion of USDA Funded Research Projects in the U.S., 2009–2021

RQ3

How did the change (in project types) in Georgia compare to the 10 other states (individually) that received similar award amounts?

Related Hypotheses.

- $H3_0$: There was no change to the types of SCBGP projects funded in the *10 other U.S. states that receive award amounts similar to Georgia's* after the 2016 implementation of quantitative performance measures.
- $H3_a$: There was a change to the types of SCBGP projects funded in the *10 other U.S. states that receive award amounts similar to Georgia's* after the 2016 implementation of quantitative performance measures.

Data Analysis. Ten other states identified as receiving similar SCGBP award amounts as Georgia were Arizona, Colorado, Michigan, Minnesota, North Carolina, Nebraska, New York, Pennsylvania, Texas, and Wisconsin. These states received funding for a total of 2,116 projects, over half of which were research projects (N = 1,128, 53.3%). The mean number of total projects funded by these states each year was 16.3 (SD = 4.95) with a median of 16 (IQR: 12–19) and a range of 7–30 (Figure 7). The yearly mean number of research projects was 8.7 (SD = 3.76) with a median of 8.5 (IQR: 6–12) and a range of 1–18. The proportion of research projects to total projects ranged from 7% to 93%. The mean number of total projects funded by these states each year was 12.78 (SD = 10.61) with a median of 10 (IQR: 7–14) and a range of 3–83. The yearly mean number of research projects was 5.71 (SD = 6.80) with a median of 4 (IQR: 2–6) and a range of 0–50. The mean proportion of research projects to total projects was 41.8% (SD = 24.4) with a median of 40% (IQR: 21–60%) and a range of 0% to 100%.

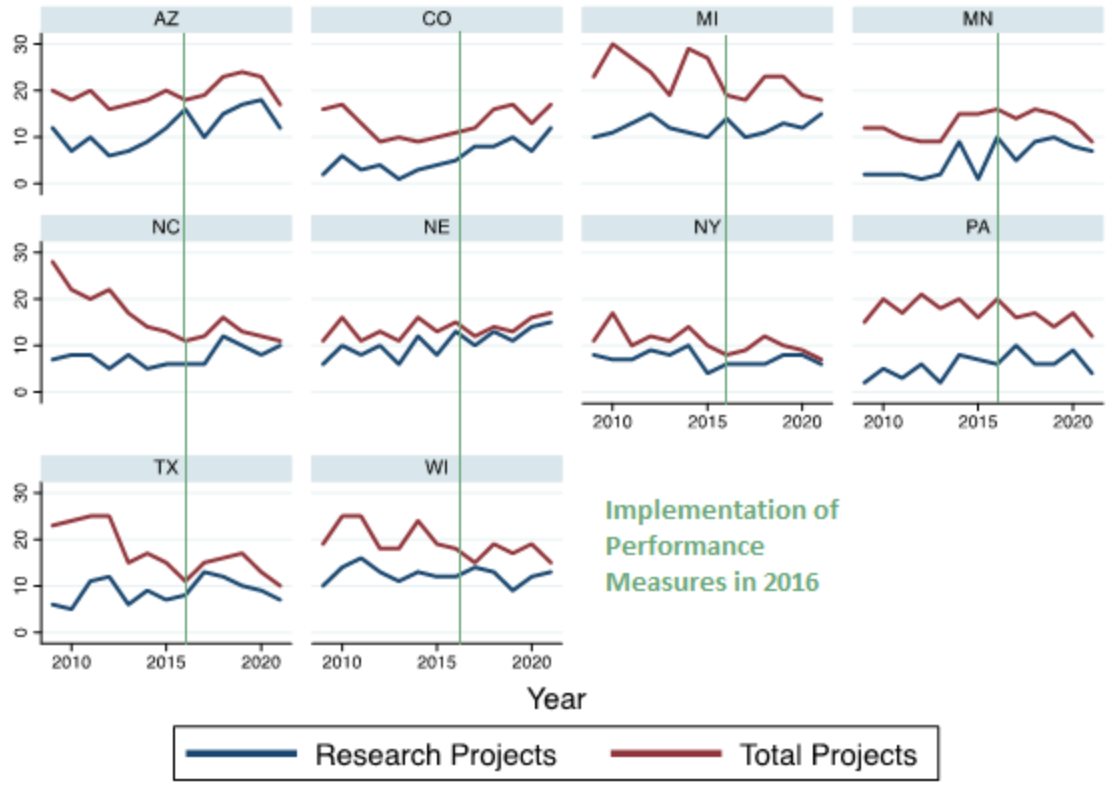


Figure 7

USDA Funded Projects in Ten States, 2009–2021

A series of Mann Whitney U tests showed varying results by state in the 2016 implementation of performance measures' impacts on the proportion of research to total projects funded by USDA (Table 3). Seven states—Arizona, Colorado, Minnesota, North Carolina, Nebraska, Pennsylvania, and Texas—demonstrated a statistically significant increase after 2016. After applying the Bonferroni correction to reduce the risk of a type I error (rejecting the null hypothesis when it is true) and an adjusted *p*-value of .005, four states retained a statistically significant increase in the proportion of research to total projects after 2016: Colorado, North Carolina, Nebraska, and Texas. Therefore, the null hypothesis was rejected due to the changes in the types of SCBGP projects funded in Colorado, North Carolina, Nebraska, and Texas after the 2016

implementation of quantitative performance measures ($H3_0$). The alternative hypothesis was accepted because there was a change in these four states ($H3_a$). For the remaining six states, the researcher fails to reject the null hypothesis, as no clear evidence of a statistically significant changes in the types of SCBGP projects was found.

Table 3

Mann Whitney Test Statistics for Ten States, Before and After 2016 Implementation of Quantitative Performance Measures

State	z	*P*-value	State	z	*P*-value
Arizona	-2.72	.006*	Nebraska	-3.00	.003**
Colorado	-3.00	.003**	New York	-1.50	.132
Michigan	-1.93	.053	Pennsylvania	-2.00	.045*
Minnesota	-2.72	.006*	Texas	-3.00	.003**
North Carolina	-3.00	.003**	Wisconsin	-1.50	.133

*Statistically significant at $p < .05$

**Statistically significant using Bonferroni correction of $p < .005$

Summary of Findings

The primary purpose of this data analysis was to determine if there was a change to the types of SCBGP research projects funded in Georgia and the rest of the U.S. after USDA-AMS began to require performance measures in 2016. To that end, three research questions were developed, along with related hypotheses. The results of statistical tests against these hypotheses are summarized in Table 4.

Table 4

Hypotheses Table

Hypothesis	Comparison	Related Research Question	Null Hypothesis	Alt. Hypothesis	Statistical Test(s)	Statistical Conclusion	Practical Conclusion
H1	Introduction of performance measures in 2016 in Georgia	RQ1: How did the USDA's 2016 implementation of quantitative performance measurements impact the SCBGP in Georgia?	$H1_0$: No change to the types of SCBGP projects funded	$H1_a$: Change to the types of SCBGP projects funded	Measures of central tendencies, Mann Whitney U, time-series	Reject the null hypothesis	There was a statistically significant difference in the types of projects funded (research v. non-research) leading to the conclusion that an association (relationship) exists between the introduction of performance measures and the types of projects funded.
H2	Introduction of performance measures in 2016 in the other 49 states	RQ2: How did the change in project types in Georgia compare to the other 49 U.S. states (in total)?	$H2_0$: No change to the types of SCBGP projects funded	$H2_a$: Change to the types of SCBGP projects funded	Measures of central tendencies, Mann Whitney U, time-series	Reject the null hypothesis	There was a statistically significant difference in the types of projects funded (research v. non-research) leading to the conclusion that an association (relationship) exists between the introduction of performance measures and the types of projects funded.
H3	Introduction of performance measures in 2016 in 10 states (with monetary awards similar to Georgia's)	RQ3: How did the change (in project types) in Georgia compare to the 10 other states (individually) that received similar award amounts?	$H3_0$: No change to the types of SCBGP projects funded	$H3_a$ Change to the types of SCBGP projects funded	Measures of central tendencies, Mann Whitney U with Bonferroni correction	Fail to reject the null hypothesis in 6 states Reject the null hypothesis in 4 states	There was a statistically significant difference in the types of projects funded (research v. non-research) in 4 states, but not in the other 6 states, leading to the conclusion that an association (relationship) exists between the introduction of performance measures and the types of projects funded in 4 states (including Georgia), but not in the other 6.

In addressing RQ1, which asked how the USDA's 2016 implementation of quantitative performance measurements impact the SCBGP in Georgia, the statistical analysis suggested that the implementation of performance measures in 2016 contributed to a change in the types of projects funded in Georgia: in this case, it may have contributed to an increase in research projects. This was initially evidenced by a measurement of central tendencies of the dependent variables: here, the number of

research and non-research projects, both before and after 2015. A time series analysis model of the proportion of research to total projects in Georgia further suggested that this increase was statistically significant.

In addressing RQ2, which asked how the change in Georgia compared to the other 49 U.S. states (in total), the statistical analysis showed that there was also an increase in the proportion of research to total projects after 2016. After adding a trend term to the time series model, these results maintained significance. This suggested that the increase in the proportion of research to total projects in the U.S. was due to the implementation of performance measures in 2016. When comparing the change in project types in Georgia to the other 49 U.S. states (in total), these similar results reveal a shift in project types in Georgia that was also replicated across the entire U.S.

Finally, in addressing RQ3, which compared the change in project types in Georgia to 10 other states that received similar SCBGP award amounts, the results were mixed: For six of the states (Arizona, Michigan, Minnesota, New York, Pennsylvania, and Wisconsin), there was no statistically significant increase in the proportion of research to total projects after 2015. However, in the remaining four states (Colorado, North Carolina, Nebraska, and Texas), there was a statistically significant increase in the proportion of research projects to total projects after 2015. Compared to Georgia's results, only four states had similar results in that they also saw an increase in research projects after 2015.

When viewed together and comparatively, the answers to the three RQs differed in that the results seen in these four states, in Georgia, and across the rest of the U.S. differed from the results seen in the other six states that were extracted for further

analysis for their funding amounts similar to Georgia's. When initially viewed within the context of the systems theory that guided this study, which emphasized the homogeneity of the SCBGP program as dictated across the U.S. by USDA-AMS, these varied results are not as the researcher might have predicted: the implementation of quantitative performance measures should have brought about a significant change in project types-funded, or no change at all, for all states. Alternately, because the SCBGP program size, based on annual award amounts, varies so greatly among states, systems theory might have at least predicted similar results in states receiving similar awards. Again, this was not the case, as the results were nearly evenly divided among the 10 states used comparatively to Georgia. But systems theory was the most appropriate framework from which to examine these results in that it also emphasized the sub-interactions that took place within the overarching system. Given the vast political and programmatic diversity that remains in the SCBGP, beyond USDA's standardized rules and guidance, such variation was to be expected. The variation stands as a further recognition of each states' uniqueness. Yet no cursory discussion of these results and their interrelatedness can be included without mention of the study's primary caveat: the relatively small sample sizes in Georgia and the other 10 states, particularly when considered in relation to the vast amount of data points (projects) present for the entire U.S. Inevitably, some natural smoothing will occur when analyzing an entire population versus a small sample of that population. As such, direct comparisons must be given limited weight considering the political and programmatic differences inherent in each state's SCBGP.

Conclusion

This study's three RQs were formulated and statistically addressed as preliminary steps toward answering one central, overarching question: What do the changes observed (in project types) mean for the SCBGP? This question was asked in the context of the study's purpose: to explore the impact of USDA's introduction of quantitative outcome measures on the SCBGP. Prior to this study, many states' SCBGP administrators noted, albeit anecdotally, a shift in project types after 2015, with the 2016 introduction of quantitative performance measures for the program. When surveyed in 2018, some SCBGP stakeholders suggested that these new performance measures made this grant less understandable and accessible to non-researchers (Burgess et al., 2018), leading to an increase in research projects over non-research projects. From that sentiment, this study was inspired. A quest to examine this phenomenon quantitatively led to the formulation of hypotheses that could be tested with data, to not only reveal if there had been a change in project types, but also the extent of that change. These things are now known: In Georgia, a statistically significant shift in project types was observed in 2016 with a marked increase in research projects funded, a trend that continued through 2020. The same outcome held true for the rest of the U.S., where a statistically significant change was also observed, albeit to a less marked extent. Yet in the ten states chosen for further analysis, the results were mixed. When looking at the data herein, it became clear that, while the 2016 measures might have caused Georgia's and the entire U.S.'s SCBGPs to shift from a program that mostly funded non-research projects to one that now primarily funds research projects, the same did not hold true in every other state. However, it is important to contextualize these results within the limits of the relatively small samples

sizes for each of the six states that did not show a statistically significant increase in the proportion of research projects to overall projects.

Altogether, the data herein indicates a statistically significant relationship between the implementation of quantitative performance measures and an increase in the proportion of research projects to overall projects, at least in Georgia and in the other 49 states, when aggregated. Chapter 5 includes a discussion of the practical significance of these results, an investigation into whether the change was meaningful in the context of the programmatic operation of the SCBGP, and a description of the possible broader implications of the research. Chapter 5 also examines these implications within a discussion as to whether the specialty crops may or may not have benefitted as a result of the introduction of performance measures, toward the goal of fulfilling the SCBGP's overarching purpose, to fund projects that yield the greatest impact to the specialty crop industry.

Chapter V

DISCUSSION

The quantitative results of this study aimed to present statistical observations into the possible effects of the 2016 introduction of pre-set quantitative performance measures to the SCBGP by USDA-AMS. This research was a first step toward a better understanding as to whether Georgia's SCBGP continues to fulfill the grant's stated mission, "to enhance the competitiveness of U.S.-grown specialty crops" (USDA, 2021a, p. 5). The SCBGP, viewed within a systems theory framework, is presented as a highly complex system, wherein the practical implications of these quantitative changes must become the focus.

This research sought to examine how the SCBGP's sub-systems, the states, might have adapted based on a sudden change to their environment. Here, the emergent characteristic was the introduction of quantitative performance measures. Results were gauged in terms of the changes observed in the types of projects—research or non-research—funded by the SCBGP. For the purposes of this study, *research* projects were defined as those that enhance the competitiveness of U.S.-grown specialty crops "by assisting producers with research and development relevant to specialty crops" (USDA, 2021a, p. 5). All projects that did not fit this general description were classified as *non-research* projects.

Through a review of the relevant literature on the introduction of quantitative measures to federal grant programs, as well as the researcher's experience as the SCBGP

administrator in Georgia, it was theorized that requiring quantitative outcome measures would likely influence the types of projects funded within this grant program. This base assumption fomented a pertinent question: Could such measures shift the SCBGP from one that mostly funds non-research projects to one that funds mostly research projects, or vice versa? To determine this, three research questions were developed to examine this situation within Georgia and across the U.S.

- RQ1: How did the USDA's 2016 implementation of quantitative performance measurements impact the SCBGP in Georgia?
- RQ2: How did this change in Georgia compare to the other 49 states (in total)?
- RQ3: How did this change in Georgia compare to the 10 other states (individually) that receive similar SCBGP award amounts?

Summary of Findings

The examination of data from 2009 to 2021 revealed that more research projects were funded in Georgia beginning in 2016, the first year that pre-determined/quantitative performance measures were required for subgrantees. This trend continued through 2021. These findings were consistent with the alternative hypothesis ($H1_a$) that there was a change to the types of projects funded in Georgia after the 2016 implementation of quantitative performance measures. The results were statistically significant and further bolstered by the examination of trends, which indicated that the proportion of research to total projects would not normally have increased to such a degree, and that this single intervention might (likely) have caused the change. These findings were also repeated for the other 49 U.S. states when they were examined in the aggregate. Here, the alternative hypothesis ($H2_a$) was accepted as well, in that there was a statistically

significant change to the types of projects funded in the rest of the U.S. after the 2016 implementation of quantitative performance measures. This finding was also observed, at least initially, in seven of the ten states chosen for further examination. But after further statistical analysis, only four of those states (Colorado, North Carolina, Nebraska, and Texas) retained a statistically significant increase in the proportion of research to total projects after 2016. For these four states, the alternative hypothesis ($H3_a$), that there was a change in project types after 2016, was accepted. However, these results were not observed in the remaining six states (Arizona, Michigan, Minnesota, New York, Pennsylvania, and Wisconsin), leading to a failure to reject the null hypothesis ($H3_0$). Table 5 provides a summary of these outcomes.

Table 5

Summary of Findings

Unit Analyzed	Increase in Proportion of Research Projects to All Projects after 2016 – Initial Analysis	Increase in Proportion of Research Projects to All Projects after 2016 -Secondary Analysis	Hypothesis: Statistically Significant Change Observed after 2016 Perf. Measures
Georgia	Yes	Yes	Yes
49 U.S. states (aggregated, excluding Georgia)	Yes	Yes	Yes
Colorado, North Carolina, Nebraska, Texas	Yes	Yes	Yes
Arizona, Minnesota, Pennsylvania	Yes	No	No
Michigan, New York, Wisconsin	No	No	No

Interpretation of Findings

As discussed in Chapters 1 and 2, Georgia made no notable changes to its process for awarding SCBGP projects between 2009 and 2021. This factor, combined with the increase in the proportion of research projects to overall projects after the implementation of performance measures, shows limited support for the researcher's theory that the introduction of performance measures might have led to the increase in research projects. These findings appear to align with the researcher's empirical observation that USDA's 2016 requirement for quantitative results data might have discouraged potential applicants planning marketing and education (non-research) projects; thus, they did not apply in numbers seen prior to 2016. It is possible that this void was filled by university researchers who were accustomed to providing such information for their research project applications. This possibility supports findings by Burgess et al. (2018), that the 2016 performance measures made the grant less accessible to non-university grant recipients by emphasizing quantitative outcomes as key measures of project success. It also echoes the GTPS study, which found that applicants struggled to determine how to collect data measuring behavior change for their non-research projects (USDA, 2021c). The increase in research projects might also have been compounded by the application Review Committee's ability to see baseline and predicted results data, starting with the 2016 grant applications, which showed the potential quantitative impact of research projects. These projects, given their ability to affect large numbers of growers through applied studies into pest and disease mitigation, as well as new technology development, might have been viewed as more impactful than their non-research counterparts, a view echoed by Paggi (2007) in his evaluation of the SCBGP. Such bias might have led more research projects to receive funding in Georgia, a trend echoed in four of the ten other U.S. states

examined for this project (Colorado, North Carolina, Nebraska, and Texas). It is also possible that non-researchers, with their limited sources of federal grant funding, were not as prepared to provide baseline and future predictions of quantitative outcomes in 2016, whereas university researchers were already well-versed in the practice. But all of the above conclusions must be tempered by an important caveat: Coinciding with the change to the 2016 outcome measures, there might have been an increase in grant applications received from researchers. If so, it would follow that the pool of these applications would be larger, perhaps giving them a better chance of being funded, both in Georgia and in the rest of the U.S.

With the 2016 roll-out of quantitative performance measures by USDA-AMS, the number of SCBGP research projects awarded also increased in the other 49 U.S. states when their numbers were aggregated, but not in six of the ten other states examined for this study. This mixed result lends credence to USDA-AMS's stance that these measures were not designed to increase the number of research projects, as had been theorized, at least anecdotally, by some states' grower associations and commodity commissions, the typical applicants for non-research projects. The primary argument against such speculation is the congressional mandate to measure performance in every one of the 2014 Farm Bill's funded programs, coupled with the federal government's incremental shifts toward requiring performance metrics, starting with the NPM-inspired reforms of the 1980s. The eventual introduction of such measures to the SCBGP may be seen as inevitable when viewed in light of government incrementalism, which has brought about a steady increase in the use of quantitative performance measures for government programs over the last four decades. As with other federal programs, the measures were

implemented to enable quantitative data aggregation across the 50 U.S. states and territories so as to demonstrate the performance of the SCBGP on a national level. This data becomes crucial information to stakeholders seeking to renew or increase funding for the program during Farm Bill discussions and hearings. As the final part of an incremental policy process, evaluation becomes the focus for further policy evolution (Lindblom, 1959). Assigning a dollar figure to the quantitative results of SCBGP projects will lead to fiscal comparisons across programs, which will drive future policy decisions. In the meantime, the new 2022 performance measures, formulated from stakeholder input to improve the 2016 measures, serve as yet another incremental attempt at improvement of the SCBGP.

Across the 50 U.S. states, 1,700 SCBGP research projects were funded in the six years before 2016 (2010-2015), versus 2,170 in the six years after (2016-2021), a raw increase of 27.65% (with a decrease of 37.20% in non-research projects over the same period). In terms of constitutive effects, USDA-AMS officials gave no indication that they expected the 2016 implementation of quantitative performance measures to shift the SCBGP from a program that previously funded mostly non-research projects to one that now funds mostly research projects. Regardless of intent, constitutive effects recognize that numerical indicators can shape the entire process of practices they seek to describe (Heuritsch, 2018). At the outset, it was USDA-AMS's stated purpose to use the 2016 performance measures to provide homogenized, quantifiable data in a format that could be neatly compiled and summarized into comparable statistics to prove the program's worth to Congress and the OMB during Farm Bill-funding discussions (S. Rep. No. 112–281, 2011) and to satisfy the requirements of GPRAMA. Yet the nationwide increase in

research projects funded after 2016 provides evidence that supports the existence of a constitutive change in the SCBGP: In effect, the introduction of performance measures led to a different kind of program. This change echoes SCBGP administrator sentiment that, post-2015, funding for the SCBGP became less accessible to non-research applicants (Burgess et al., 2018; USDA, 2021c). It follows that this decreased accessibility might have caused fewer organizations to apply for the grant. As the data herein indicates, the void that was created might have been filled by researchers, whose applications went on to receive funding in larger numbers than ever before. It remains uncertain if the changes brought about by the revised 2022 measures will reverse such a trend.

Given the statistically significant post-2015 increase in research projects funded in Georgia and in the entire U.S., it was somewhat unexpected that these results were not replicated in every U.S. state, particularly in several of those with similar (to Georgia's) SCBGP funding levels and major agricultural research universities. Again, the small sample sizes inherent for each of these states is both a consideration and a limitation here. The homogeneity of SCBGP policy across the U.S., dictated by USDA-AMS's annual RFA, application, and website messaging, led the researcher to initially suspect that post-2015 research projects would have far outnumbered their non-research counterparts in every state. From a systems theory perspective, which views organizations as social systems that must interact with their environments to survive and thrive (Easton, 1953), emerged a base assumption that the sudden shift to quantitative measures would affect all states similarly. But the results seen here lend credence to the SCBGP program being at least somewhat heterogenous, despite a perceived dynamic of strong principal-agent

control. In some states, the political and or administrative environment might have exerted influence that was too strong to be affected by a marked change in performance reporting methods. Even with USDA-AMS's direction and close oversight, some state SCBGP programs appear to remain more closely bound by their individual political and administrative dynamics. Perhaps they manifest Easton's idea of systems theory in their stronger interactions within their own systems, utilizing internal feedback loops, rather than the larger one put in place by USDA-AMS. In states where no statistically significant increase in research projects was observed, their systems might have absorbed and remained programmatically unaffected by a relatively radical programmatic change, at least when viewed from an outcomes context. Perhaps this was by coincidence or by fiat; it is impossible to know without examining each individually. Given the dissatisfaction with the 2016 measures that was expressed by many state SCBGP administrators in the NASDA-GTPS study, their programs were likely affected in some way, even if the change was miniscule. Given the autonomy afforded by this block grant, the specific point of change might only be found through a careful examination of each states' own feedback loops (inputs, outputs, outcomes, and feedback). Underscoring this need for individualized examination is a lack of programmatic direction from USDA-AMS on the data utilization for the 2016 measures, which might have resulted in an air of business-as-usual in some states, hence no statistically significant change to project types. Unfortunately, this cannot be measured, as the implementation of performance measures was not accompanied by a USDA mandate for states to implement or upgrade technology or tracking systems. The resulting internal changes (or lack thereof) are phenomena that lend themselves to further examination in light of each state's individual administrative

and political climates. Yet these changes also underscore the importance of using this study to examine the SCBGP from the perspective of the entire 50 U.S. states, not parsimoniously. As Bertalanffy (1969) noted, systems theory is a general science of wholeness wherein the system's "constitutive characteristics are not explainable from the characteristics of the isolated parts… [but from] the characteristics of the complex, [and] therefore, appear as new or emergent" (p. 55). Here, the emergent features are attributes of the relationships between the parts, USDA-AMS and the states, though not necessarily among the states, given their inherent autonomy.

Despite unexpected results in the six states chosen for closer examination, it remains a compelling finding that Georgia and the other 49 U.S. states (as aggregated) all saw statistically significant rises in their proportions of research projects awarded after 2015. Beyond mere statistics, this result has practical implications as well. In the context of systems theory, the SCBGP operates separately from all others, within a realm of interconnected elements unique to any other U.S. food-grant program. This system has distinct boundaries in that all 50 states receive the same RFA document from which they launch their annual competitions. The states use the same application template (which is closely reviewed by USDA-AMS staff), and they are awarded funds under a single Terms and Conditions document, from which they must carry out the day-to-day activities of the grant. With very few exceptions, all projects must eventually yield quantitative results against at least one of eight given performance measures, four of which, it could be argued, are tailored specifically for quantifying the outcomes of research and development work. These inputs go through a transformation process within each state, subject to its unique agricultural circumstances, creating outputs in the form of projects.

That this closed-loop system produced a post-2015 shift toward the same type of project across the entire U.S. is not entirely unexpected. The dissatisfaction expressed by stakeholders who initially noted this trend did not go unnoticed by USDA-AMS, which sought their feedback in the 2018 Purdue and 2020 GTPS studies. Seeking input for change is another crucial facet of the systems theory model, and the collaborative formulation of improved metrics will lend legitimacy to the 2022 performance measures. As discussed in Chapter 2, the effectiveness of performance measures often depends on if and how they are used. If part of a plan to improve programmatic performance, they can serve as a useful and effective performance management tool (Poister et al., 2013). This study adds to this literature in its evaluation of the SCBGP in the years leading up to and then following the implementation of the measures. As this study is inclusive of all SCBGP U.S. states' projects through 2021, it might later serve as a benchmark for future studies of the program before the enactment of the 2022 performance measures.

Implications and Recommendations

National Level. While the post-2015 increase in the proportion of SCBGP research projects awarded to all projects awarded in the U.S., for Georgia and the other 49 states, was statistically significant, the practical significance of this change takes precedence within this applied-PA study. When viewed in terms of the SCBGP's aim to enhance the competitiveness of U.S.-grown specialty crops, the trade-off of non-research projects for research projects might appear to be long-term efforts prevailing over short-term ones. Where agricultural marketing or education projects might show immediate gains in sales figures or product awareness, research projects that bring about innovations and changes in technology lead to increased productivity and are the main contributor to

economic growth in U.S. agriculture (USDA, 2021e). Public investment in agricultural research has resulted in large economic benefits with annual rates of return between 20% and 60% (Fuglie & Heisey, 2007). But these efforts are understood as ones that may not yield returns in the short term.

USDA's own observations on this topic reveal that, on average, "Public agricultural research undertaken today will begin to noticeably influence agricultural productivity in as little as two years and that its impact could be felt for as long as 30 years" (p. 6). As pointed out in Chapter 2, federal spending for the specialty crop industry should be evaluated against its real and actual contribution to the public good, where research and development outlays have consistently shown high social rates of return and should therefore be the focus of funding to the sector (Paggi, 2007). Unfortunately, the value of agricultural research, particularly in relation to the increased production of specialty crops, has not been matched by an increase in public agricultural research spending (Alston & Pardey, 2008). Without a significant increase in SCBGP funding levels, the introduction of performance measures in 2016 increased "the competitiveness of specialty crops" (USDA, 2021a, p. 5) in Georgia and for much of the rest of the U.S. by fostering a climate in which research projects were far more likely to receive funding. This additional funding is crucial, as other public sources of agricultural research funding have remained at static levels since 2000 (Somers et al., 2020), and a growing global population and climate change will exponentially increase the need to improve agricultural yields and efficiency (FAO, 2017).

The market for U.S.-grown specialty crops has faced multiple challenges in recent years, owing mostly to labor shortages and growing market competition from South and

Central American imports (Johnson, 2016). The agricultural Trade War tariffs of 2018 acutely affected U.S. specialty crops by severely reducing many export markets (Grant et al., 2019). Before the COVID-19 pandemic, USDA predicted the specialty crop industry to expand rapidly over the next decade with an annual growth rate of 2.6%, faster than the expected U.S. GDP annual growth of 1.8%, mostly due to efficiency gains (USDA, 2020). That growth is now in question, as the pandemic has further exacerbated the U.S. farm labor shortage, as, relative to other crops, many specialty crops are more dependent on agricultural labor for production, harvesting, and processing (Astill et al., 2020). These growing challenges to the specialty crop industry underscore the need for an increased focus on agricultural research, including technology development. By quite possibly transforming the SCBGP into a program that may now favor research, USDA-AMS has taken steps to address this need. This aligns with USDA's Agriculture Innovation Agenda and its goal of increasing U.S. agricultural production by 40%, while cutting its environmental footprint in half by 2050 (USDA, 2021f). As touted by USDA, the Agriculture Innovation Agenda is a "Department-wide effort to align USDA's resources, programs, and research to provide farmers with the tools they need and to position American agriculture as a leader in the effort to sustainably meet future food, fiber, fuel, and feed demands" (p. 9). USDA Secretary Tom Vilsack underscored this philosophy when he said, "As we continue to build back better a fair, equitable, safe and secure food and agricultural system, science and research are at the core of data-driven decisions" (USDA, 2021h).

Despite the 2016 performance measures leading to a statistically significant increase in the proportion of research projects to all projects in Georgia and in the other

49 states, it is important to consider that it may not be the intent of USDA to use the SCBGP as a means to increase agricultural research funding. That this may be the end result of the 2016 measures is not revelatory, as it was a complaint levied by stakeholders in both the 2018 Purdue and 2020 GTPS studies. This study now provides these results in quantitative form. However, if it is the case that USDA would like the SCBGP to remain highly accessible to non-research projects (at levels seen prior to 2016), then an entire revaluation of the program may be in order, particularly in regard to the choice and wording of performance measures. It may also prove illustrative and beneficial to reevaluate the SCBGP in terms of equity and its equitable considerations (or lack of) for traditionally marginalized populations, including Beginner and Socially Disadvantaged Farmers, with a goal to increase the number of grants going to these populations, while maintaining the SCBGP's stated purpose, to enhance the competitiveness of U.S.-grown specialty crops.

State Level. While USDA appears to be shifting its funding focus to research, the 50 U.S. states may not all favor this trend. As a block grant, the SCBGP is touted to states for its flexibility in designing programs and in project funding decisions (Burgess et al., 2018). After gathering public input, states set their funding priorities for the SCBGP, which may or may not directly align with those of USDA-AMS. Some states specifically emphasize project impact to industry in solicitations (GDA, 2021; Missouri Department of Agriculture, 2022). Other states, like California, may allocate some SCBGP funds for projects that address equity and opportunity to traditionally underserved populations (California Department of Food and Agriculture, 2020). The differing political climates of the 50 states and their resulting project types is an area

worthy of further research. But for all states, since 2016, the choice of at least one of eight performance measures (and analogous quantitative indicators) has been a part of the application process. Once chosen, applicants must detail how they plan to obtain data to support their outcome measure(s), a process that can prove challenging to those not accustomed to writing and administering grants, as may be the case for many non-profits and grower associations (Burgess et al., 2018). This deficiency may become readily apparent to reviewers who score applications. By contrast, an application submitted by a professional researcher, with its aim to address a problem plaguing the specialty crop industry, may easily outshine one put forth by a non-researcher, and thus go on to receive funding. For example, one of the questions on the SCBGP application template is "Estimate the number of project beneficiaries" (USDA, 2021a). It follows that the higher this number, the more impressive the application appears to a reviewer.

Knowing that the post-2015 application template and review process may favor the funding of research projects, as this study appears to indicate, state departments of agriculture wanting to counteract this trend should consider instituting countermeasures. However, they should only do so after careful solicitation of stakeholder feedback. At the discretion of USDA, states can place limits on the number of research projects they will fund in a given year. They can also craft application-review scoring matrixes to favor non-research projects, particularly those that benefit beginning and socially disadvantaged farmers, a stated priority of the SCBGP (USDA, 2021a), as well as create marketing and education projects. Outreach efforts aimed at encouraging non-research application submittals can also stimulate a more welcoming and competitive atmosphere for these types of projects, as can training aimed at those not proficient in impactful grant

writing. Future research into the SCBGP might focus on identifying the drop-off point for non-research applications, either at the beginning of the application process or later, at the competitive review panel stage. As a first step in this process, Chapter 3 of this study provides a scalable framework that can be used by states to analyze the project types and trends that are inherent to their SCBGP programs. From there, programmatic decisions can be better tailored to the SCBGP for the state's current and anticipated agricultural needs.

Before launching into reforms of their SCBGP application solicitation and review/selection processes, it may be prudent for states to wait to see how the implementation of the 2022 performance measures affect the types of projects (research versus non-research) that go on to receive funding. Starting in 2022, applicants will again predict and choose project outcomes from a set list, all of which read much like those that have been in place since 2016, albeit in simpler language. The difference lies in the selection of quantitative indicators, which will allow for measures of early-, mid-, and late-stage project progress and impacts, along with extra considerations for external factors. As pointed out in Chapter 2, bureaucratic buy-in to the introduction of performance measures is a key factor in public program success (Rabosky, 2014), and certainly state SCBGP administrators were integral to the formulation of these revised metrics. At the urging of this group, the new indicators removed the burden of obtaining sales data as the sole means of quantifying the success of marketing projects and instead allowed for numerical counts of consumers and business transactions that were affected by promotional efforts. This one change may lead to a renewed interest for the SCBGP to fund marketing projects, as it did in the years prior to 2016. But,

despite these reforms, the momentum gained by research projects could also continue past 2022. It may then be up to each states' review committees to determine if the short-term benefits of marketing projects outweigh the (potential) long-term benefits of research projects when viewed in terms of USDA-AMS guidance to fund projects that enhance the competitiveness of U.S.-grown specialty crops. Yet with 2021's influx of COVID-19 related federal stimulus grants funds that were intended to offset pandemic-induced losses (USDA, 2021g), some applicants might have instead used these sources to fund their specialty crop marketing efforts.

Study Limitations and Further Recommendations

It is difficult to say if the findings of this study, which seem to indicate that the introduction of quantitative performance measures might have caused a constitutive change to the SCBGP, can be extrapolated and generalized to other federal grant programs. As indicated in Chapter 2, the literature on this subject is limited, particularly within the scope of U.S. agricultural grants, for which it was nonexistent to this point. Within the related PA-realms of healthcare and education, prior studies conflicted in terms of the programmatic effectiveness of quantitative performance measures, and many of those studies were undertaken from the perspective of improving programmatic performance, not of observing programmatic change. As discussed by Munro (2010), quantitative performance measures tend to be myopic in their failure to consider nuanced outcomes, a noted complaint of SCBGP administrators after 2016 (Burgess et al., 2018; USDA, 2021c). That USDA sought buy-in from stakeholders is promising for the success of the 2022 measures, as those imposed without such input are often doomed to fail (Patrick & French, 2011). Benchmarking and best practices are also beneficial

(Gerrish, 2016), and states should carefully examine the final quantitative results of their SCBGP projects to determine programmatic success, while also being sensitive to shifts in project types, especially when they occur after policy change. A key component of systems theory is the feedback loop, and quantitative results should be actively used for planning and goal setting (Sun & Van Ryzen, 2014). This sentiment is echoed in other PA literature (Poister et al., 2013; von Bertalaffy, 1969) and underscores the importance of using USDA's quantitative measures to observe and improve the programmatic performance of state SCBGP programs, regardless of the prevalence of certain project types.

Given the impending issuance of USDA-AMS's 2022 performance measures, a reevaluation of the SCBGP in six or seven years, using the methodology of this study, would be beneficial in assessing whether the revised measures lessened or reversed the program's tendency to fund mostly research projects. Time and the addition of this data would also mitigate this study's primary limitation, the relatively small sample size for a given state (Georgia and the other 10 states, in this case). But more data points would still not account for the political and programmatic differences inherent in each state's SCBGP, or for the vast differences in state program sizes, as it seems disingenuous to group California's and Florida's project data with Rhode Island's and Alaska's. To address these differences, a qualitative or mixed-methods study, whereby an individual state or states were chosen for focused evaluation, could prove illustrative. Such an approach may reveal insights into the administrative and political dynamics that influence project type selection and funding. And while systems theory proved useful for contextualizing this study, further insight could be gained in approaching such a study

from the perspective of change theory, with its practical conceptualizations of driving forces, restraining forces, and equilibrium (Coghlan, 2021). Change theory was not used here (in favor of systems theory) due to it necessitating complex linkages of "content, contexts, and processes of change over time to explain the differential achievement of change objective" (Pettigrew, 1990, p. 268), most of which would require evaluation on a state-by-state basis, as well as the researcher's desire to approach this study holistically. Regardless of the parameters, future research on the SCBGP should focus on producing practical insights and recommendations that can help state administrators improve programmatic performance.

Conclusions

This research contributes to the limited body of work examining the effects of programmatic change on federal agricultural grant programs and the impact of the USDA's 2016 implementation of quantitative performance measures on the SCBGP as a first step toward determining if the program continues to fulfill its overarching mission, to "enhance the competitiveness of U.S.-grown specialty crops" (USDA, 2021a, p. 5). This study, building on two other recent studies of the SCBGP, quantified and examined the shift in project types, in Georgia and the U.S., that effectively changed the SCBGP from a program that primarily funded non-research projects to one that mostly funds research projects. Given USDA's increasing focus on agricultural research and development, which the 2016 measures seem to encourage, along with its stated views of research as integral to the future success of American agriculture, this shift appears to fall fully in line with this mission: More research into specialty crops enhances their competitiveness. As U.S. agriculture struggles with a myriad of problems, from labor

shortages to import competition, the long-term solutions offered by research and development work have become increasingly valuable to the federal government. This value is implied and understood without dismissing the critical importance of non-research projects, which (as of 2021) comprise nearly 40% of all SCBGP awards. Whether individual states take steps to mitigate the shift away from non-research projects is up to them but should be based on local observations, needs, and stakeholder input.

REFERENCES

Alston, J. M. & Pardey, P. G. (2008). Public funding for research into specialty crops. *HortScience*, *43*(5), 1461-1470. https://doi.org/10.21273/HORTSCI.43.5.1461

Astill, G., Perez, A. & Thornsbury, S. (2020). *Developing automation and mechanization for specialty crops: A review of U.S. Department of Agriculture programs*. United States Department of Agriculture. https://www.ers.usda.gov/webdocs/publications/95828/ap-082.pdf?v=2276.4

Atkinson, M. M. (2011). Lindblom's lament: Incrementalism and the persistent pull of the status quo. *Policy and Society*, *30*(1), 9-18. https://doi.org/10.1016/j.polsoc.2010.12.002

Behn, R. (2003). Why measure performance? Different purposes require different measures. *Public Administration Review*, *63*(5), 586–606. https://doi.org/10.1111/1540-6210.00322

Burgess, W., Kirkham, L. P., & Bessenbacher, A. (2018). Independent evaluation of the 2013 Specialty Crop Block Grant Program. *Evaluation and Learning Research Center*. http://doi.org/10.7277/Y85Z-AM85

California Department of Agriculture. (2020). *2021 specialty crop block grant program request for concept proposals*. California Department of Food and Agriculture Office of Grants Administration. https://www.cdfa.ca.gov/Specialty_Crop_Competitiveness_Grants/docs/2021SCBGP_RequestForConceptProposals.pdf

Chambliss, D. F., & Schutt, R. K. (2018). *Making sense of the social world.* Sage Publications.

Coghlan, D. (2021). Edgar Schein on change: Insights into the creation of a model. *Journal of Applied Behavioral Science*, *57*(1), 11–19. https://doi.org/10.1177/0021886320924029

Creswell, J. W. (2014). *Research design: Qualitative, quantitative and mixed methods approaches* (4th ed.). Sage Publications.

Cunliffe, A., & Luhman, J. T. (2013). *Key concepts in organization theory*. Sage Publications.

Dahler-Larsen, P. (2014). Constitutive effects of performance indicators: Getting beyond unintended consequences. *Public Management Review*, *16*(7), 969–986. https://doi.org/10.1080/14719037.2013.770058

DeGroff, A., Royalty, J., Howe, W., Buckman, D., Gardner, J. G., Poister, T., & Hayes, N. (2014). When performance management works: A study of the National Breast and Cervical Cancer Early Detection Program. *Cancer*, *120*(S16), 2566-2574. https://doi.org/10.1002/cncr.28817

Deutz, D. B., Drachen, T. M., Drongstrup, D., Opstrup, N., & Wien, C. (2021). Quantitative quality: A study on how performance-based measures may change the publication patterns of Danish researchers. *Scientometrics*, *126*, 3303–3320. https://doi.org/10.1007/s11192-021-03881-7

Easton, D. (1953). *The political system: An inquiry into the state of political science*. Alfred A. Knopf.

Food and Agriculture Organization of the United Nations. (2017). *The future of food and agriculture: Trends and challenges.* https://www.fao.org/3/i6583e/i6583e.pdf

Frankfort-Nachmias, C., & Leon-Guerrero, A. (2018). *Social statistics for a diverse society*. Sage Publications.

Frederickson, H. G., Smith, K. B., Larimer, C. W., & Licari, M. J. (2018). *The public administration theory primer*. Routledge.

Fuglie, K. O. & Heisey, P. W. (2007). *Economic returns to public agricultural research. United States Department of Agriculture Economic Research Service.* https://www.ers.usda.gov/webdocs/publications/42826/11496_eb10_1_.pdf?v=7343.8

Georgia Department of Agriculture. (2021). *GDA 2021 USDA/AMS Specialty Crop Block Grant Program (SCBGP) request for applications (RFA)*. http://agr.georgia.gov/Data/Sites/1/media/ag_news/grants/2021_SCBG_GDA_RFA_020121.pdf

Gerrish, E. (2016). The impact of performance management on performance in public organizations: A meta-analysis. *Public Administration Review*, *76*(1), 48–66. https://doi.org/10.1111/puar.12433

Grant, J., Arita, S., Emlinger, C., Sydow, S., & Marchant, M. A. (2019). The 2018–2019 trade conflict: A one-year assessment and impacts on U.S. agricultural exports. *Choices*, *34*(4), 1–8. https://ageconsearch.umn.edu/record/301008/files/cmsarticle_719.pdf

Heinrich, C. J. (2002). Outcomes–based performance management in the public sector: Implications for government accountability and effectiveness. *Public*

Administration Review, *62*(6), 712–725. https://doi.org/10.1111/1540-6210.00253

Heinrich-Böll-Stiftung. (2017). *Agrifood atlas: Facts and figures about the corporations that control what we eat*. https://in.boell.org/sites/default/files/agrifoodatlas2017_facts-and-figures-about-the-corporations-that-control-what-we-eat.pdf

Heuritsch, J. (2018). Effects of indicators on knowledge production in astronomy. *STI 2018 Conference Proceedings*, 101–106. https://hdl.handle.net/1887/65237

Hood, C. (1991). A public management for all seasons? *Public Administration*, *69*(1), 3–19. https://doi.org/10.1111/j.1467-9299.1991.tb00779.x

Ingraham, P. W., Joyce, P. G., & Donahue, A. K. (2003). *Government performance: Why management matters*. The Johns Hopkins University Press.

Jennings, E. T., & Haist, M. P. (2004). Putting performance measurement in context. *The art of governance: Analyzing management and administration*, 173–194.

Johnson, R. (2016, December 1). *The U.S. trade situation for fruit and vegetable products*. Congressional Research Service. https://sgp.fas.org/crs/misc/RL34468.pdf

Joyce, P. (2011). The Obama administration and PBB: Building on the legacy of federal performance-informed budgeting? *Public Administration Review*, *71*(3), 356–367. http://doi.org/10.1111/j.1540-6210.2011.02355.x

Kelly, M., & Maynard-Moody, S. (1993). Policy analysis in the post-positivist era: Engaging stakeholders in evaluating the economic development districts

program. *Public Administration Review*, *53*(2), 135–142. https://doi.org/10.2307/976706

Kogan, M., Dykton, C., Hirai, A., Strickland, B., Bethell, C., Naqvi, I., Cano, C., Downing-Futrell, S. L., & Lu, M. (2015). A new performance measurement system for maternal and child health in the United States. *Maternal and Child Health Journal*, *19*, 945–957. https://doi.org/10.1007/s10995-015-1739-5

Kroll, A., & Moynihan, D. P. (2020). Tools of control? Comparing congressional and presidential performance management reforms. *Public Administration Review, 81*(4), 599-609. https://doi.org/10.1111/puar.13312

Lindblom, C. (1959). The science of 'muddling through'. *Public Administration Review*, *19*(2), 79–88. https://doi.org/10.2307/973677

Luhmann, N. (2012). *Introduction to systems theory*. Polity.

MacDonald, J. (2020). Tracking the consolidation of U.S. agriculture. *Applied Economic Perspectives and Policy*, *42*(3), 361-379. https://onlinelibrary.wiley.com/doi/abs/10.1002/aepp.13056

Meier, K. J., & O'Toole Jr., L. J. (2003). Public management and educational performance: The impact of managerial networking. *Public Administration Review*, *63*(6), 689–699. https://doi.org/10.1111/1540-6210.00332

Missouri Department of Agriculture. (2022). Specialty Crop Block Grant Program. https://agriculture.mo.gov/abd/financial/specialtycrop.php

Moore, M. H. (1995). *Creating public value: Strategic management in government*. Harvard University Press.

Moynihan, D. P. (2008). *The dynamics of performance management: Constructing information and reform*. Georgetown University Press.

Moynihan, D. P., & Kroll, A. (2016). Performance management routines that work? An early assessment of the GPRA Modernization Act. *Public Administration Review*, *76*(2), 314–323. https://doi.org/10.1111/puar.12434

Muller, R. D. (2009). Transforming grants management: A strategic approach to improving performance and reducing burden. *Journal of the National Grants Management Association*, *17*(1), 25–28. http://www.practicalstrategy.org/images/Home/pdf/Transforming%20Grants%20Management.pdf

Munro, E. (2010). Learning to reduce risk in child protection. *British Journal of Social Work*, *40*(4), 1135–1151. https://doi.org/10.1093/bjsw/bcq024

National Association of State Departments of Agriculture. (2011). *The Specialty Crop Block Grant Program after the 2008 Farm Bill*. https://s3.amazonaws.com/nasda2/media/Pages/Report_SCBG-FB-Final-6-11.pdf?mtime=20171025135653

National Sustainable Agriculture Coalition. (2019). *Specialty crop block grants*. https://sustainableagriculture.net/publications/grassrootsguide/local-food-systems-rural-development/specialty-crop-grants/#:~:text=The%20Specialty%20Crop%20Block%20Grant,the%20competitiveness%20of%20those%20crops

Ngo, H., Forero, R., Mountain, D., Fatovich, D., Man, W. N., Sprivulis, P., Mohsin, M., Toloo, S., Celenza, A., Fitzgerald, G., McCarthy, S., & Hillman, K. (2018).

Impact of the four-hour rule in western Australian hospitals: Trend analysis of a large record linkage study 2002–2013. *PLoS ONE*, *13*(3), 1–17. https://doi.org/10.1371/journal.pone.0193902

Nielsen, P., & Moynihan, D. (2016). How do politicians attribute bureaucratic responsibility for performance? Negativity bias and interest group advocacy. *Journal of Public Administration Research and Theory*, *27*(2), 269–283. https://doi.org/10.1093/jopart/muw060

Noel, J. E., & Schweikhardt, D. B. (2007). Devolution of federal agricultural policy: The case of Specialty Crop Block Grants. *California Institute for the Study of Specialty Crops Report,* 1-47. https://digitalcommons.calpoly.edu/agb_fac/40/

Oguz, F. (2007). *An exploration of the diffusion of a new technology from communities of practice perspective: Web services technologies in digital libraries.* [Doctoral dissertation, University of North Texas]. UNT Digital Library. https://digital.library.unt.edu/ark:/67531/metadc3930/

Osborne, D., & Gaebler, T. (1995). *Reinventing government: How the entrepreneurial Spirit is transforming the public sector*. Plume.

Paggi, M. (2007). *Specialty crops and the 2007 Farm Bill*. https://aic.ucdavis.edu/research/farmbill07/20070515_paggifinal.pdf

Patrick, B., & French, P. (2011). Assessing new public management's focus on performance measurement in the public sector: A look at No Child Left Behind. *Public Performance & Management Review*, *35*(2), 340–369. https://www.jstor.org/stable/44113947

Paulus, T. M., & Lester, J. N. (2016). ATLAS.ti for conversation and discourse analysis studies. *International Journal of Social Research Methodology*, *19*(4), 405–428. https://doi.org/10.1080/13645579.2015.1021949

Penfold, R., & Zhang, F. (2013). Use of interrupted time series analysis in evaluating health care quality improvements. *Academic Pediatrics*. *13*(6). S38–S44. https://doi.org/10.1016/j.acap.2013.08.002

Pettigrew, A. M. (1990). Longitudinal field research on change: Theory and practice. *Organization Science*, *1*(3), 267–292. https://doi.org/10.1287/orsc.1.3.267

Pidd, M. (2012). *Measuring the performance of public services*. Cambridge University Press.

Poister, T. H., Pasha, O., DeGroff, A., & Royalty, J. (2018). The impact of performance-based grants management on performance: The Centers for Disease Control and Prevention's national breast and cervical cancer early detection program. *The American Review of Public Administration*, *48*(5), 444–457. https://doi.org/10.1177/0275074016685804

Poister, T. H., Pasha, O., & Edwards, L. (2013). Does performance management lead to better outcomes? Evidence from the U.S. public transit industry. *Public Administration Review*, *73*(4), 625–636. https://doi.org/10.1111/puar.12076

Rabovsky, T. M. (2014). Support for performance-based funding: The role of political ideology, performance, and dysfunctional information environments. *Public Administration Review*, *74*(6), 761–774. https://doi.org/10.1111/puar.12274

Reichardt, C. S. (2019). *Quasi-experimentation: A guide to design and analysis.* Guilford Publications.

Riccucci, N. M. (2010). *Public administration: Traditions of inquiry and philosophies of knowledge*. Georgetown University Press.

Rossi, P. H., Lipsey, M. W., & Freeman, H. E. (2004). *Evaluation: A systematic approach* (7th ed.). Sage Publications.

S. Rep. No. 112–281, vol. 1 (2011). https://www.govinfo.gov/content/pkg/CHRG-112shrg71630/html/CHRG-112shrg71630.htm

Salamon, L. M. (2002). *The tools of governance: A guide to the new governance. The new governance and the tools of public action: An introduction*. Oxford University Press.

Schelbe, L., Randolph, K., Yelick, A., Cheatham, L., & Groton, D. (2018). Systems theory as a framework for examining a college campus-based support program for the former foster youth. *Journal of Evidence-Informed Social Work*, *15*(3), 277–295. https://doi.org/10.1080/23761407.2018.1436110

Schupp, J. L. (2017). Cultivating better food access? The role of farmers' markets in the U.S. local food movement. *Rural Sociology*, *82*(2), 318–348. https://doi.org/10.1111/ruso.12124

Simeone, R., Carnevale, J., & Millar, A. (2005). A systems approach to performance-based management: The national drug control strategy. *Public Administration Review*, *65*(2), 191–202. https://doi.org/10.1111/j.1540-6210.2005.00444.x

Somers, J., Harris, S., Gallant, G., Wolf, S., Khan, S., & Pandey, D. (2020). *Benefits of increased U.S. public investment in agricultural research.* IHS Markit. https://cafe6d5f-70b2-43ab-9de4-

ab95ce5a8fa8.filesusr.com/ugd/d30782_72e530e6cc0e41a2a660e03281e56b6c.pdf

Stalebrink, O. J. (2009). National performance mandates and intergovernmental collaboration. *The American Review of Public Administration*, *39*(6), 619–639. https://doi.org/10.1177/0275074008326589

Sun, R., & Van Ryzin, G. G. (2014). Are performance management practices associated with better outcomes? Empirical evidence from New York public schools. *The American Review of Public Administration*, *44*(3), 324–338. https://doi.org/10.1177/0275074012468058

United States Department of Agriculture. (2016). *Specialty Crop Block Grant Program fiscal year 2016 evaluation plan*. https://www.ams.usda.gov/sites/default/files/media/SCBGP%20FY15%20PerformanceFINAL_10272015.pdf

United States Department of Agriculture. (2017). *Census of agriculture*. https://www.nass.usda.gov/Publications/AgCensus/2017/index.php

United States Department of Agriculture. (2019). *Specialty Crop Multi-State Program fiscal year 2019 request for applications*. https://www.ams.usda.gov/sites/default/files/media/2019_SCMP_Final.pdf

United States Department of Agriculture. (2020). *USDA agricultural projections to 2029*. https://www.ers.usda.gov/webdocs/outlooks/95912/oce-2020-1.pdf?v=8874.3

United States Department of Agriculture. (2021a). *Specialty Crop Block Grant program fiscal year 2021 request for applications*. https://www.ams.usda.gov/sites/default/files/media/2021_SCBGP_RFA.pdf

United States Department of Agriculture. (2021b). *Census of agriculture*. https://www.nass.usda.gov/AgCensus/

United States Department of Agriculture. (2021c). *Agricultural Marketing Service program evaluation framework* [Unpublished manuscript].

United States Department of Agriculture. (2021d). *Information quality activities*. https://www.ocio.usda.gov/policy-directives-records-forms/information-quality-activities

United States Department of Agriculture. (2021e). *Agricultural research and productivity*. Economic Research Service. https://www.ers.usda.gov/topics/farm-economy/agricultural-research-and-productivity/

United States Department of Agriculture. (2021f). *U.S. agriculture innovation strategy: A directional vision for research*. https://www.usda.gov/sites/default/files/documents/AIS.508-01.06.2021.pdf

United States Department of Agriculture. (2021g). *USDA pandemic assistance for producers*. https://www.farmers.gov/coronavirus/pandemic-assistance

United States Department of Agriculture. (2021h). *USDA appoints new members to science and research advisory board*. https://www.usda.gov/media/press-releases/2021/10/28/usda-appoints-new-members-science-and-research-advisory-board

U.S. News & World Report. (2021). *Best global universities for agricultural sciences in the United States*. https://www.usnews.com/education/best-global-universities/united-states/agricultural-sciences

von Bertalaffy, L. (1969). *General system theory: Foundations, development, applications.* George Braziller.

APPENDIX A

2016 Performance Measures for the SCBGP

2016 Performance Measures for the SCBGP

Outcome 1: To enhance the competitiveness of specialty crops through increased sales

Indicator:

Sales increased from $_____ to $_____ and by _____ percent, as result of marketing and/or promotion activities

Outcome 2: Enhance the competitiveness of specialty crops through increased consumption

Indicators (choose only 1 or 2):

1. Of the _____total number of children and youth reached,

a. The number that gained knowledge about eating more specialty crops

b. The number that reported an intention to eat more specialty crops

c. The number that reported eating more specialty crops

2. Of the ____total number of adults reached,

a. The number that gained knowledge about eating more specialty crops

b. The number that reported an intention to eat more specialty crops

c. The number that reported eating more specialty crops

3. Number of new and improved technologies and processes to enhance the nutritional value and consumer acceptance of specialty crops (excluding patents) _____

4. Number of new specialty crops and/or specialty crop products introduced to consumers____

Outcome 3: Enhance the competitiveness of specialty crops through increased access and Awareness.

Indicators:

1. Of the _____total number of consumers or wholesale buyers reached,

a. The number that gained knowledge on how to access/produce/prepare/preserve specialty crops _____

b. The number that reported an intention to access/produce/prepare/preserve specialty crops _____

c. The number that reported supplementing their diets with specialty crops that they

produced/preserved/obtained/prepared_____

2. Of the ____total number of individuals (culinary professionals, institutional kitchens, specialty crop entrepreneurs such as kitchen incubators/shared-use kitchens, etc.) reached,

a. The number that gained knowledge on how to access/produce/prepare/preserve specialty crops _____

b. The number that reported an intention to access/produce/prepare/preserve specialty crops _____

c. The number that reported supplementing their diets with specialty crops that they produced/prepared/preserved/obtained _____

3. Number of existing delivery systems/access points of those reached that expanded and/or improved offerings of specialty crops

a. _____farmers markets

b. _____produce at corner stores

c. _____school food programs and other food options (vending machines, school events, etc.)

d. _____grocery stores

e. _____wholesale markets

f. _____food hubs that process, aggregate, distribute, or store specialty crops

g. _____home improvement centers with lawn and garden centers

h. _____lawn and garden centers

i. _____other systems/access points, not noted

j. _____total (if not reported above)

4. Number of new delivery systems/access points offering specialty crops

a. _____farmers markets

b. _____produce at corner stores

c. _____school food programs and other food options (vending machines, school events, etc.)

d. _____grocery stores

e. _____wholesale markets

f. _____ food hubs that process, aggregate, distribute, or store specialty crops

g. _____home improvement centers with lawn and garden centers

h. _____lawn and garden centers

i. _____other systems/access points, not noted

j. _____total (if not reported above)

Outcome 4: Enhance the competitiveness of specialty crops though greater capacity of sustainable practices of specialty crop production resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.

Indicators:

1. Numbers of plant/seed releases (i.e., cultivars, drought-tolerant plants, organic, enhanced nutritional composition, etc.) _____

2. Adoption of best practices and technologies resulting in increased yields, reduced inputs, increased efficiency, increased economic return, and conservation of resources (select at least one below).

a. Number of growers/producers indicating adoption of recommended practices

_____

b. Number of growers/producers reporting reduction in pesticides, fertilizer, and/or water used per acre _____

c. Number of producers reporting increased dollar returns per acre or reduced costs per acre _____

d. Number of acres in conservation tillage or acres in other best management practices

_____

3. Number of habitat acres established and maintained for the mutual benefit of pollinators and specialty crops_____

Outcome 5: Enhance the competitiveness of specialty crops through more sustainable, diverse, and resilient specialty crop systems

Indicators:

1. Number of new or improved innovation models (biological, economic, business, management, etc.), technologies, networks, products, processes, etc. developed for specialty crop entities including producers, processors, distributors, etc. _____

2. Number of innovations adopted _____

3. Number of specialty crop growers/producers (and other members of the specialty crop supply chain) that have increased revenue expressed in dollars _____

4. Number of new diagnostic systems analyzing specialty crop pests and diseases. _____

5. Number of new diagnostic technologies available for detecting plant pests and diseases. _____

6. Number of first responders trained in early detection and rapid response to combat plant pests and diseases_____

7. Number of viable technologies/processes developed or modified that will increase specialty crop distribution and/or production_____

8. Number of growers/producers that gained knowledge about science-based tools through outreach and education programs _____

Outcome 6: Enhance the competitiveness of specialty crops through increasing the number of viable technologies to improve food safety

Indicators:

1. Number of viable technologies developed or modified for the detection and characterization of specialty crop supply contamination from foodborne threats ____

2. Number of viable prevention, control and intervention strategies for all specialty crop production scales for foodborne threats along the production continuum_____

3. Number of individuals who learn about prevention, detection, control, and intervention

food safety practices and number of those individuals who increase their food safety skills and knowledge_____

4. Number of improved prevention, detection, control, and intervention technologies_____

5. Number of reported changes in prevention, detection, control, and intervention strategies_____

Outcome 7: Enhance the competitiveness of specialty crops through increased understanding of threats to food safety from microbial and chemical sources

Indicators:

Number of projects focused on:

1. Increased understanding of fecal indicators and pathogens _____
2. Increased safety of all inputs into the specialty crop chain _____
3. Increased understanding of the roles of humans, plants and animals as vectors _____
4. Increased understanding of preharvest and postharvest process impacts on microbial and chemical threats _____
5. Number of growers or producers obtaining on-farm food safety certifications (such as Good Agricultural Practices or Good Handling Practices) _____

Outcome 8: Enhance the competitiveness of specialty crops through enhancing or improving the economy as a result of specialty crop development

Indicators:

1. Number of new rural careers created _____
2. Number of new urban careers created _____
3. Number of jobs maintained/created_____
4. Number of small businesses maintained/created _____
5. Increased revenue/increased savings/one-time capital purchases (in dollars) $_____
6. Number of new beginning farmers who went into specialty crop production _____
7. Number of socially disadvantaged famers who went into specialty crop production _____

APPENDIX B

2022 Performance Measures for the SCBGP

2022 Performance Measures for the SCBGP

Outcome 1: Increasing consumption and consumer purchasing of specialty crops

Indicators:

1.1 Total number of consumers who gained knowledge about specialty crops

1.1a Adults

1.1b Children

1.2 Total number of consumers who consumed more specialty crops

1.2a Adults

1.2b Children

1.3 Number of additional specialty crop customers counted

1.4 Number of additional business transactions executed

1.5 Increased sales measured in:

1.5a Dollars

1.5b Percent change, or

1.5c Combination of volume and average price as a result of enhanced marketing activities

Outcome 2: Increasing access to specialty crops and expand production and distribution

Indicators:

2.1 Number of stakeholders that gained technical knowledge about producing, preparing, procuring, and/or accessing specialty crops

2.2 Number of stakeholders that reported producing, preparing, procuring, and/or accessing more specialty crops

2.3 Total number of market access points for specialty crops developed or expanded

Of those:

2.3a Number of new online portals created to sell specialty crops

2.3b Number with expanded seasonal availability

2.3c Number of existing market access points that expanded specialty crop offerings

2.3d Number of new market access points that established specialty crop offerings

2.4 Number of stakeholders that gained knowledge about more efficient and effective distribution systems

2.5 Number of stakeholders that adopted best practices or new technologies to improve distribution systems

2.6 Total number of partnerships established between producers, distributors, and/or other relevant intermediaries related to distribution systems.

Of those established:

2.6a Number formalized with written agreements (i.e., MOU's, signed contracts, etc.)

2.6b Number of partnerships with underserved organizations

2.7 Total number of new/improved distribution systems developed.

Of those, the number that:

2.7a Stemmed from new partnerships

2.7b Increased efficiency

2.7c Reduced costs

2.7d Increased specialty crop grower participation

2.7e Expanded customer reach

2.7f Increased online presence

2.8 Number of specialty crop-related jobs

2.8a Created

2.8b Maintained

2.9 Total number of new individuals who went into specialty crop production as a result of marketing

Of those, the number who are:

2.9a Beginning farmers or ranchers

2.9b Socially disadvantaged farmers or ranchers

2.10 Number of market access points that reported increased

2.10a Revenue,

2.10b Sales, and/or

2.10c Cost-savings

Outcome 3: Increasing food safety knowledge and processes

Indicators:

3.1 Number of stakeholders that gained knowledge about prevention, detection, control, and/or intervention food safety practices, including relevant regulations (to improve their ability to comply with the Food Safety Modernization Act (FSMA) and/or meet the standards for aligned third party food safety audits such as Harmonized GAP/GHP)

3.2 Number of stakeholders that:

3.2a Established a food safety plan

3.2b Revised or updated their food safety plan

3.3 Number of specialty crop stakeholders who implemented new/improved prevention, detection, control, and intervention practices, tools, or technologies to mitigate food safety risks (to improve their ability to comply with the Food Safety Modernization Act (FSMA) and/or meet the standards for aligned third party food safety audits such as Harmonized GAP/GHP)

3.4 Number of prevention, detection, control, or intervention practices developed or enhanced to mitigate food safety risks

3.5 Number of stakeholders that used grant funds to:

3.5a Purchase

3.5b Upgrade food safety equipment

Outcome 4: Improve pest and disease control processes

Indicators:

4.1 Number of stakeholders that gained knowledge about science-based tools to combat pests and diseases

4.2 Number of stakeholders that adopted pest and disease control best practices, technologies, or innovations

4.3 Number of stakeholders trained in early detection and rapid response practices to combat pests and diseases, and of those:

4.3a the number of additional acres managed using integrated pest management.

4.4 Number of stakeholders that implemented new diagnostic systems, methods, or technologies for analyzing specialty crop pests and diseases

4.5 Total number of producers/processors that enhanced or maintained pest and disease control practices. Of those, the number that reported:

4.5a Reduction in product lost to pest and diseases

4.5b Improved crop quality

4.5c Reduction in labor costs

4.5d Reduction in pesticide use

4.6 Number of producers/processors improving the efficiency of pest and disease control diagnostics and response testing, as reported by:

4.6a Improving speed

4.6b Improving reliability

4.6c Expanding capability

4.6d Increasing testing (i.e., survey work for pests)

Outcome 5: Develop new seed varieties and specialty crops

Indicators:

5.1 Number of cultivar and/or variety trials conducted and of those:

5.1a Number that advanced to further stages of development

5.2 Number of cultivars and/or seed varieties developed

5.3 Number of cultivars and/or seed varieties released

5.4 Number of growers adopting new cultivars and/or varieties

5.5 Number of acres planted with new cultivars and/or varieties

Outcome 6: Expand specialty crop research and development

Indicators:

6.1 Number of research goals accomplished

6.2 For research conclusions, the number that:

6.2a Yielded findings that supported continued research

6.2b Yielded findings that led to completion of study

6.2c Yielded findings that allow for implementation of new practice, process or technology

6.3 Number of industry representatives and other stakeholders who engaged with research results

6.4 Total number of research outputs published to industry publications and/or academic journals.

For each published research output, the

6.4a Number of views/reads of published research/data

6.4b Number of citations counted

Outcome 7: Improve environmental sustainability of specialty crops

Indicators:

7.1 Number of stakeholders that gained knowledge about environmental sustainability best practices, tools, or technologies

7.2 Number of stakeholders reported with an intent to adopt environmental sustainability best practices, tools, or technologies

7.3 Number of producers that adopted environmental best practices or tools

7.4 Number of new tools/technologies developed or enhanced to improve sustainability/ conservation or other environmental outcomes

7.5 Number of additional acres managed with sustainable practices, tools, or technologies that focused on:

7.5a Water quality/ conservation

7.5b Soil health

7.5c Biodiversity

7.5d Reduction in energy use

7.5e (Optional) Other positive environmental outcomes

7.6 Number of additional acres established and maintained for the mutual benefit of pollinators/specialty crops

APPENDIX C

IRB Approval

Institutional Review Board (IRB)
For the Protection of Human Research Participants

PROTOCOL EXEMPTION REPORT

Protocol Number: 04135-2021 **Responsible Researcher(s):** Jen Erdmann

Supervising Faculty: Dr. Bonnie Peterson

Project Title: *An Evaluation of Changes to Georgia's Specialty Crop Block Grant Program as a Result of USDA's 2016 Quantity.*

INSTITUTIONAL REVIEW BOARD DETERMINATION:

This research protocol is **Exempt** from Institutional Review Board (IRB) oversight under Exemption **Category 4.** Your research study may begin immediately. If the nature of the research project changes such that exemption criteria may no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research.

ADDITIONAL COMMENTS:

- *Upon completion of this research study all collected data must be securely maintained (locked file cabinet, password protected computer, etc.) and accessible only by the researcher for a minimum of 3 years.*

☒ ***If this box is checked, please submit any documents you revise to the IRB Administrator at irb@valdosta.edu to ensure an updated record of your exemption.***

Elizabeth Ann Olphie *02.09.2021*
Elizabeth Ann Olphie, IRB Administrator

Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-253-2947.

Revised: 06.02.16

APPENDIX D

Atlas.ti Coding

Codes	**Coding categories**	**Associated keywords/phrases**	**Associated sentences/phrases**
Research	Research	analysis, analyze, bacteria(l), college, data, disease(s), evaluate(ing)(s), evaluation(s), experiment(ing)(s), experimental, e.coli, feasibility, investigate(ing)(s), microbe, microbial, pathogen(s), pathogenic, pathologist(s), pest(s), protocol(s), research(ers)(ing), salmonella, study(ing), studies, survey(ing)(s), trial(ing)(s), university('s)	"conference presentations" "decrease crop loss" "disease-resistant" "improve growth" "provide recommendations" "pest resistant"
Non-research	Access	access, accessible, accessing, aware(ness), community, CSA(s), community, communities, incubate(s), poverty, SNAP, underserved	
Non-research	Education	children, demonstrate, demonstrations, educate, educational, guide, instruct(ions)(ional)(ors), kids, learn(s), learning, lesson(s), literacy, school(s), student(s), teach(er)(es)(ing), train(ing), vocational	"farm to school" "educational materials" "increase knowledge"
Non-research	Food Safety	audit(s), FSMA, GAP	"food safety" "good agricultural practices" "good handling practices" "on farm"
Non-research	Marketing	ad(s), advertise, advertising, advertisement(s), aware(ness), billboard(s), buy(s), buyer(s),	"increase awareness" "increasing awareness" "increase the purchase" "increasing purchases"

		campaign(s), consumer(s), commercial(s), customer(s), market(s), magazine(s), marketing, media, promote, preference(s), promotion(s), publication(s), publish(ing), promotion(al)(s), purchase(s), purchasing, radio, television, TV	"in-store" "social media"
Non-research	Production	distribute, distribution, facilitate, facilitation,	"increas(e)(ing) efficiency", "increas(e)(ing) production"

APPENDIX E

SCBGP Projects

SCBGP Projects

Year	GA only	USA (49 states)	AZ	CO	MI	MN	NC	NE	NY	PA	TX	WI
2009-R	4	241	12	2	10	2	7	6	8	2	6	10
2009-NR	18	474	8	14	13	10	21	5	3	13	17	9
2010-R	10	252	7	6	11	2	8	10	7	5	5	14
2010-NR	13	523	11	11	19	10	14	6	10	15	19	11
2011-R	6	262	10	3	13	2	8	8	7	3	11	16
2011-NR	12	420	10	10	14	8	12	3	3	14	14	9
2012-R	2	242	6	4	15	1	5	10	9	6	12	13
2012-NR	16	430	10	5	9	8	17	3	3	15	13	5
2013-R	5	242	7	1	12	2	8	6	8	2	6	11
2013-NR	13	376	10	9	7	7	9	5	3	16	9	7
2014-R	7	369	9	3	11	9	5	12	10	8	9	13
2014-NR	15	382	9	6	18	6	9	4	4	12	8	11
2015-R	3	300	12	4	10	1	6	8	4	7	7	12
2015-NR	7	379	8	6	17	14	7	5	6	9	8	7
2016-R	8	336	16	5	14	10	6	13	6	6	8	12
2016-NR	9	269	2	6	5	6	5	2	2	14	3	6
2017-R	8	324	10	8	10	5	6	10	6	10	13	14
2017-NR	5	270	9	4	8	9	6	2	3	6	2	1
2018-R	12	392	15	8	11	9	12	13	6	6	12	13
2018-NR	7	302	8	8	12	7	4	1	6	11	4	6
2019-R	9	369	17	10	13	10	10	11	8	6	10	9
2019-NR	5	258	7	7	10	5	3	2	2	8	7	8
2020-R	8	348	18	7	12	8	8	14	8	9	9	12
2020-NR	7	252	5	6	7	5	4	2	1	8	4	7
2021-R	10	346	12	12	15	7	10	15	6	4	7	13
2021-NR	4	236	5	5	3	2	1	2	1	8	3	2
TOTAL	**223**	**8594**	**253**	**170**	**299**	**165**	**211**	**178**	**140**	**223**	**226**	**251**
Total R	92	4023	151	73	157	68	99	136	93	74	115	162
Total NR	131	4571	102	97	142	97	112	42	47	149	111	89

R: research projects

NR: non-research projects