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Critical Issues Facing the Agriculture, Forestry, and Natural Resources Industries in the State of Georgia

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Abstract: Throughout the United States, the agricultural, forestry, and natural resource industries are facing a multitude of challenges. While each industry is facing unique challenges on a national level, these challenges vary in scope and topic, and they are not necessarily generalizable to smaller geographic regions. Based on the socio-economic importance of agriculture in the state, along with five distinct geographic regions ranging from coastal to mountainous, this study compiled a comprehensive list of critical issues facing the agricultural, forestry, and natural resource industries in the state of Georgia. The study used the Delphi methodology with an expert panel composed of agricultural, forestry, and natural resource opinion leaders. Using a three-round consensus-building process, a total of 40 critical issues were identified with eight items receiving 100% agreement amongst the panelists. The final list of items were then analyzed using the constant comparative method to identify themes within the retained items. Six themes emerged based on the analysis, including (alphabetically) economic considerations, operations and infrastructure, policy, public perceptions, regulations, and workforce. The proposed themes, and subsumed critical issues, represent a heuristic framework within which to facilitate dialogue amongst agricultural, forestry, and natural-resource-related industries, as well as inform future research and praxis oriented efforts.

Keywords: agricultural issues; Georgia; forestry; Delphi method

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1. Introduction

Throughout the United States, the agricultural, forestry, and natural resource industries are facing multiple challenges (e.g., [1]). For example, the USDA Forest Service has identified many challenges facing forests at a national level. Items such as a growing metropolitan population, the loss of forest land due to urban growth and development, the spread of invasive species, changing climate, and worsening fire seasons are all large-scale challenges facing the forestry industry [2]. Similarly, Lamm et al. [3] found seven areas of issues on a national scale facing the animal and food industry, ranging from industry image and relationship with the public to animal and human health/well-being. While each industry is facing unique challenges on a national level, such challenges are not necessarily generalizable to smaller geographic areas [4]. Identifying challenges at a more local level can help inform more appropriate outreach, communication, and educational efforts. According to the latest U.S. census [5] estimates, there are approximately 10.9 million residents in Georgia, with the state contributing approximately USD 9.5 billion to the total national agricultural commodity receipts [6]. Based on these values, Georgia was ranked 16th in nation in commodity receipts, representing approximately 2.2% of the national total. Within the state, agriculture has been identified as the oldest and largest industry, contributing over USD 69.4 billion to the state economy each year [7]. Although there are national level studies identifying critical issues facing many agriculture-related industries

(see [1,8]), there are a limited number of studies specifically focused on regionally specific agriculture, forestry, and natural resource industry related issues. A more geographically focused analysis may be beneficial based on the unique characteristics associated with local environments. For example, Georgia has five discrete geographic regions ranging from coastal to mountainous. The geographic diversity thus results in distinctive agricultural, forestry, and natural resource industries and associated issues. A focus on local challenges and critical issues is consistent with previous research which has indicated "we need collective action at the local level" [9] (p. 1918).

The natural resource industry is also prominent within Georgia. The natural resource industry provides the enabling environment which supports commodities to be produced which are then processed before being sold to consumers. For instance, goods produced in Georgia can include a wide variety of natural resource touchpoints, such as forests and lumber, rivers and lakes, coastal shores, marshes and wetlands, arable farmland, marble, coal, oil, stone, and more [10]. Additionally, Georgia has a large and diverse forestry industry with large tracts of commercially available timberland, large annual timber harvests for lumber and pulpwood production, and seedling production for reforestation [11].

The importance of critical issue identification within specific domains has been well established in both theory and practice. For example, the United Nations Sustainable Development Goals (UN SDGs) [12] are widely known and serve as a harmonizing schema within which to focus and coordinate international development efforts. The SDGs themselves were identified through a participatory process whereby the input and insights from stakeholders and the public were sought and integrated, ultimately resulting in 17 primary goals. Within goal 2, End Hunger, achieve food security and improved nutrition and promote sustainable agriculture; issues such as conflict, inequality, climate change, and COVID-19 were identified as contributing to food insecurity. Similar participatory approaches have been successfully employed identifying critical issues associated with short food supply chain sustainability [13] and animal welfare [14].

Previous research has found the use of agricultural opinion leaders to be an effective conduit to elicit industry related perspectives (e.g., [15,16]). For example, Lamm et al. [17], found agricultural opinion leaders to have significantly different opinions and awareness of water-related issues relative to the general public. Advancing Georgia's Leaders in Agriculture and Forestry (AGL) is an adult leadership development program which "educates, empowers, and connects professionals in agriculture, forestry, natural resources, and allied sectors to be dynamic industry leaders" [18] (para. 1). Program participants are emerging or established leaders within the state agricultural and forestry industries in Georgia, "Individuals within AGL become more effective spokespeople for their industries, establish strong allegiances across the state and nation, and further develop their leadership skills" (para. 1). During the 16-month program, members attend five in-state institutes, a national institute, and an optional week-long international experience. Program participants are exposed to range of industry-related issues, as well as leadership development opportunities. The program participants are generally considered to represent opinion leaders within their respective industries based on their selection and participation in the program [19].

1.1. Study Framework

The current study is based on the theories of opinion leadership [20] and consensus building [21]. Opinion leaders are generally credible and trustworthy individuals who serve as the head of a communications network [22]. Furthermore, opinion leaders are generally considered to be more knowledgeable and informed than others within the network and are typically well respected and admired. The opinion leadership model typically consists of one person (the opinion leader) receiving novel information, then sharing the information with their constituents. The constituents then share the information within their networks. Previous research has examined the role of opinion leaders in agricultural contexts (see [19]) and found this group to have unique characteristics and

insights relevant to the industry. These findings are consistent with opinion leadership research within health-related contexts [22].

The consensus building theory is an approach which requires key stakeholders of a group to make a good-faith effort to reach an agreement amongst all members of the group [23]. The consensus building theory has been used previously in environmental and public policy contexts [21]; however, the theoretical approach has also been applied across a range of uncertain, complex, and controversial planning and policy tasks [24]. Linking the insights and awareness from opinion leadership with the intended outcomes from consensus building theory provides a robust framework within which to examine unique and complex agricultural related topics [21].

1.2. Study Purpose

The purpose of this study, informed by the following research objectives, was to identify critical issues in facing the agriculture, forestry, and natural resources industries in the state of Georgia. The research objectives were to:

1. Create a comprehensive list of potential critical issues facing the agriculture, forestry, and natural resources industries in the state of Georgia.
2. Generate a consensus on the specific critical issues facing the agriculture, forestry, and natural resources industries in the state of Georgia.
3. Develop a heuristic thematic grouping of critical issues facing the agriculture, forestry, and natural resources industries in the state of Georgia.

2. Materials and Methods

2.1. Delphi Technique

This study was conducted using the Delphi technique. "The Delphi Technique was originally used to help make predictions about the future" [25] (p. 23). The Delphi technique was developed and introduced by RAND Corporation by Dalkey and Helmer [26] in the 1950s to predict "the effect of technology on warfare" [27] (para. 1) with the main object of conducting the Delphi technique to "obtain the most reliable consensus of opinion of a group of experts" (para. 1). The Delphi methodology has been applied to a variety of fields such as in education, social work, management, environmental science, agriculture, extension, and so forth [25,27–29]. The Delphi technique requires a series of data collection and analysis activities intended to establish consensus amongst a panel of experts.

2.2. Expert Panel

Andranovich [28] highlighted the process and importance of selecting a sample for the Delphi technique. Specifically, researchers should (1) develop the initial Delphi questions with a clear purpose of the study, (2) identify experts to participate in the study, and (3) determine the number of participants. For the current study, 24 opinion leaders were identified and invited to participate as experts in a three-round Delphi process. Experts were identified based on their role in agriculture, forestry, and/or natural resources in the state of Georgia and their participation on the AGL advisory board. Panelists represented industries and organizations, such as forestry, horticultural specialty crops, beef, poultry, cotton, higher education, government and regulatory, retail supermarkets, and banking and lending. Additionally, panelists held professional roles with titles such as State Commissioner of Agriculture, President/CEO, Director, Vice President, and Manager. All 24 of the AGL board members were invited to participate on the expert panel.

2.3. Data Collection and Analysis

Based on recommendations within the literature, the current study included three rounds [25,28,30,31]. The study instrument was developed based on methodological recommendations in the literature [32], as well as previous Delphi studies employed to examine similar agricultural-related topics (e.g. [3]). In the first round of the process, panelists responded to an online questionnaire and were asked to provide up to five open-

ended responses to the question, "What are the most critical issues facing the agriculture, forestry, and natural resources industries in Georgia?" There were 21 respondents for an 87.5% response rate. A total of 80 critical issues were identified. The issues were then cleaned with duplicates removed [32], resulting in 67 unique critical issues. The results from the first round of the process were used to develop the second-round survey.

During the second round of the process, participants were asked to indicate their level of agreement or disagreement with each of the 67 critical issues through an online questionnaire using a five-point Likert-type scale ranging from 1—Not at all important to 5—Extremely important. Data were analyzed using the SPSS v26 software package. A mean score for retention of 3.75 was established a posteriori, a total of 47 items were retained and presented in round three of the process.

Round three was conducted in person using a paper-based survey with a sub-set of 11 of the original 24 individuals attending the annual advisory board meeting, a 100% response rate was obtained. The round three survey asked panelists to indicate whether each issue should be retained or not using a dichotomous yes or no variable. A minimum level of consensus was established at 80% a posteriori. The panel achieved consensus on 40 specific critical issues facing agricultural, forestry, and natural resource industries. A total of 21 items achieved a level of consensus between 90% and 100%, with 8 of those achieving 100% consensus.

Following the Delphi process the research team thematically analyzed the retained issues using the constant comparative method [33]. In general, this method of analysis allows researchers to generate a heuristic thematic grouping of items through repeated comparison. For the purposes of this research, heuristic was defined as "a method which, on the basis of experience or judgement, seems likely to yield a reasonable solution to a problem" [34] (p. 936). Data were reviewed and coded into categories for analysis at the initial stage. Themes emerged through repeated coding and comparison. Higher-order categories emerged through these repeated comparisons [33]. To reduce bias and improve the trustworthiness of the analysis, peer debriefing, and member checking were used amongst the research team [33,35].

3. Results

The first round of the study produced 67 unique responses following item consolidation (Table 1). The list of 67 items were then presented to the panel in round two of the process. The means for the critical issues provided in round two ranged from 2.62 to 4.46. The critical issue gaining the highest level of agreement related to water quantity. The remaining top 10 critical issues related to labor, regulation, and cost and profit. There were 47 items retained following the round two analysis.

In the third round, participants were given the opportunity to share their level of agreement about the remaining 47 items. Levels of agreement ranged from 50% to 100%. In total, 16 critical issues fell below the 80% cutoff point, while 31 critical issues were retained (Table 2). An agreement of 100% was reached for eight critical issues. These top critical issues included public perception issues, communication issues, and shifting political alliances from rural to urban. Additional critical issues agreed upon by all research participants included voter's perspective and their understanding of the industry, advocacy, accessibility to markets and labor. In total, 13 critical issues achieved levels of 90.00% to 90.91% agreement, while 10 critical issues achieved levels of 80.00% to 81.82% agreement.

Following the completion of the Delphi process the remining 40 items were analyzed using the constant comparative method (CCM). A total of six overarching themes were identified, each theme had between five and eight individual issues. The results of the CCM analysis are presented in Table 3. The emergent themes included (in alphabetical order) economic considerations, operations and infrastructure, policy, public perceptions, regulations, and workforce.

Table 1. Delphi round one and two results: level of critical issues facing the agriculture, forestry, and natural resources industries in Georgia (1 = least important; 5 = most important) (*n* = 67).

Issue	1	2	3	4	5	Mean
Water quantity	0	0	2	3	8	4.46
Access to labor	0	0	1	5	6	4.42
Dependable labor	0	0	1	6	6	4.38
Affordable labor	0	0	1	6	6	4.38
Regulatory restrictions increasing operating costs	0	0	3	3	7	4.31
Regulatory reform and relief	0	0	3	3	7	4.31
Long term–urban voters and perspectives	0	0	1	7	5	4.31
Cost of Production	0	0	1	8	5	4.29
Profitability	0	0	0	10	4	4.29
Public perception issues	0	0	2	6	5	4.23
Regulatory issues	0	0	2	6	5	4.23
Government regulation–State	0	1	1	5	6	4.23
Shifting political alliances–rural to urban	0	0	1	8	4	4.23
Consumer perception of agriculture and forestry	0	0	2	6	5	4.23
State leadership	0	1	2	4	6	4.15
Mis-informed consumers	0	0	2	7	4	4.15
Restrictive Laws	0	1	2	4	6	4.15
Government regulation–National	0	2	1	3	6	4.08
Fewer voters and legislators understand the industry	0	1	1	7	4	4.08
Communication of agriculture importance	0	0	4	4	5	4.08
Pesticide restrictions	0	0	4	4	5	4.08
Watering restrictions within horticulture industry during periods of drought	0	0	4	4	5	4.08
Aging workforce in the agricultural sectors	0	0	3	6	4	4.08
Generational transition in production agriculture	0	0	3	7	3	4.00
Combating negative information on agriculture production practices	0	0	4	4	4	4.00
Labor for production facilities	0	0	4	5	4	4.00
Irrigation rights	0	0	4	4	4	4.00
Public and consumer acceptance	0	0	4	5	4	4.00
Return on investments	0	0	4	6	4	4.00
Water quality	0	0	5	3	5	4.00
Farm viability	0	0	5	5	4	3.93
Fair trade	0	1	2	7	3	3.92
Irrigation permits	0	0	5	4	4	3.92
Lack of public awareness of importance	0	0	5	4	4	3.92
Access to markets	0	1	2	7	3	3.92
Vocational training in our high schools	0	0	5	4	4	3.92
Immigration issues	0	0	5	4	4	3.92
Technology	0	0	4	6	3	3.92
Advocacy	0	0	3	7	2	3.92
Internet services in rural areas are too slow	0	0	6	3	4	3.85
Social awareness of issues farmers face	0	1	4	4	4	3.85
Succession	0	0	4	7	2	3.85
CDL [commercial driver's license] drivers	0	1	4	3	4	3.83
Input cost	0	1	3	8	2	3.79
Commodity prices	0	1	4	6	3	3.79
Trade policy	0	2	2	6	3	3.77
Government regulation–Local	1	1	1	7	3	3.77
Property taxes	0	1	4	7	2	3.71
Export markets	0	1	4	6	2	3.69
Salaries vs. other industries	0	0	7	5	2	3.64
Farm viability of small farms	0	2	3	7	2	3.64
Transportation	0	1	7	1	4	3.62
Value added	0	2	4	4	3	3.62
New markets	0	2	4	4	3	3.62
Environment	0	0	7	4	2	3.62
Soil resources	0	1	6	4	2	3.54
Insects/beetles affecting forestland	0	1	6	4	2	3.54
Capital availability	0	1	6	4	2	3.54
Sustainability issues	0	0	8	3	2	3.54
Infrastructure (roads, bridges, etc.)	0	1	7	3	2	3.46

Table 1. *Cont.*

Issue	1	2	3	4	5	Mean
Land prices	0	1	7	5	1	3.43
Trade issues	0	3	4	4	2	3.38
Possible tariff war	0	3	3	6	1	3.38
Truck driver insurance is too high	0	3	5	3	2	3.31
It is hard to get millennials to move to rural areas to work	1	1	5	5	1	3.31
Urban area expansion	0	1	9	2	1	3.23
Climate change	2	2	8	1	0	2.62

Table 2. Delphi round three results: level of consensus for critical issues facing the agriculture, forestry, and natural resources industries in Georgia (n = 47).

Issue	Consensus (%)
Public perception issues	100.00
Communication of agriculture importance	100.00
Shifting political alliances–rural to urban	100.00
Long term–urban voters and perspectives	100.00
Fewer voters and legislators understand the industry	100.00
Advocacy	100.00
Access to markets	100.00
Access to labor	100.00
Water quality	90.91
Regulatory issues	90.91
Government regulation–National	90.91
Social awareness of issues farmers face	90.91
Lack of public awareness of importance	90.91
Consumer perception of agriculture and forestry	90.91
Combating negative information on agriculture production practices	90.91
State leadership	90.91
Vocational training in our high schools	90.91
Input cost	90.91
Immigration issues	90.91
Government regulation–State	90.00
Government regulation–Local	90.00
Water quantity	81.82
Irrigation rights	81.82
Regulatory restrictions increasing operating costs	81.82
Public and consumer acceptance	81.82
Aging workforce in the agricultural sectors	81.82
Farm viability	81.82
Affordable labor	81.82
Internet services in rural areas are too slow	81.82
Fair trade	81.82
Restrictive Laws	80.00
Trade policy	72.73
Regulatory reform and relief	72.73
Labor for production facilities	72.73
Cost of Production	72.73
Commodity prices	72.73
Technology	70.00
CDL drivers	70.00
Generational transition in production agriculture	70.00
Profitability	70.00
Pesticide restrictions	63.64
Mis-informed consumers	63.64
Dependable labor	63.64
Return on investments	60.00
Watering restrictions within horticulture industry during periods of drought	54.55
Irrigation permits	50.00
Succession	50.00

Table 3. Constant comparative method thematic analysis results (n = 40).

Issue	Number of Issues	Number of Issues with 90–100% Agreement
Economic Considerations Commodity prices Cost of Production Farm viability Input cost Profitability	5	1
Operations and Infrastructure Access to markets Internet services in rural areas are too slow Irrigation rights Technology Water quality Water quantity	6	2
Policy Advocacy Fair trade Fewer voters and legislators understand the industry Long term–urban voters and perspectives Shifting political alliances–rural to urban State leadership Trade policy	7	5
Public Perceptions Combating negative information on agriculture production practices Communication of agriculture importance Consumer perception of agriculture and forestry Lack of public awareness of importance Public and consumer acceptance Public perception issues Social awareness of issues farmers face	7	6
Regulations Government regulation–Local Government regulation–National Government regulation–State Regulatory issues Regulatory reform and relief Regulatory restrictions increasing operating costs Restrictive laws	7	4
Workforce Access to labor Affordable labor Aging workforce in the agricultural sectors CDL drivers Generational transition in production agriculture Immigration issues Labor for production facilities Vocational training in our high schools	8	3

4. Discussion

Based on the results of the current study there were eight critical issues with 100% consensus. The eight critical issues were subsumed across six primary themes which

were identified through the CCM, including economic considerations, operations and infrastructure, policy, public perceptions, regulations, and workforce. These core categories are interrelated and represent many issues across the consensus spectrum. These data indicate that the issues of accessibility of jobs, immigration issues, and vocational training significantly impact agriculture, forestry, and natural resources industries and are perceived as critical issues in the state of Georgia.

4.1. Limitations

Although the results of the study are intended to provide insights regarding the critical issues facing agriculture, forestry, and natural resource industries in the state of Georgia, there are several limitations which should be acknowledged. First, as a Delphi study the results are limited to the insights and perspectives of the expert panel. Although selection of the panel was performed purposively with recognized leaders within the industry, there is the potential for limited awareness of potential issues. Additionally, the interpretation of items generated throughout the process may have different working definitions among respondents; consequently, there is no way to ensure a common definition of concepts such as water quantity or fair trade. Despite these limitations, the results of the study are further analyzed with associated implications and recommendations provided.

4.2. Study Implications for Research and Practice

The results of the current study provide a unique perspective from which agricultural, forestry, and natural-resource-industry-related initiatives may be informed. Using the six primary themes which emerged from the analysis as a working framework, additional conclusions, implications, and recommendations are provided. Beginning with the economic considerations theme, there are several items which are likely anticipated and well established within the literature. For example, the unpredictability of commodity prices coupled with the cost for production inputs can significantly impact profitability and subsequent viability of operations [36,37]. Based on these results, a recommendation would be to continue to examine both the input and market sides of the industry. For example, Vo et al. [38] found crude oil price to have a major role in explaining agricultural commodity price fluctuations. Therefore, a recommendation would be to ensure future industry professionals have the requisite economic and managerial capacities necessary to navigate the environment [39]. From a policy perspective, a recommendation would be to consider adopting a model similar to the UN SDGs. Specifically, developing both targets and indicators may help to focus efforts. The current research provides a foundation for future development.

As it relates to the operations and infrastructure theme, there are both anticipated and somewhat unanticipated items which emerged. For example, many of the macro-level issues related to water quantity and quality are consistent with previous research [40,41]. These observations are somewhat related to the additional issue observed related to irrigation rights [42]. However, there were items related to technology, generally, as well as the very specific challenge of slow Internet service in rural areas, which was somewhat unexpected. With U.S. census [5] data indicating that broadband Internet subscriptions reached over 86% of Georgia residents, versus a U.S. average of 87%, Internet and broadband would not necessarily have been predicted as a critical issue. Nevertheless, the results of the study are, therefore, informative from this perspective, as it may be important to address both general challenges, as well as very specific, localized challenges which may impact producers. For example, many of the newest irrigation technologies require either Internet connectivity or cellular service to function properly and provide maximum benefit and utility [8]. However, without sufficient Internet service in some rural areas, the benefits of such technologies are limited, which may, in turn, impact the efficient use of irrigation water. A recommendation would be to ensure innovations intended to address critical issues are implemented using a systems-based approach. Specifically, not only looking for linear cause-and-effect type relationships, such as adoption of irrigation technology,

but also antecedent conditions, such as limited broadband access, which may impact the applicability of such solutions.

The policy theme was identified based on a number of items which were related to conditions within which agriculture, forestry, and natural resource industries tend to operate. For example, the shift in rural to urban voting patterns was unanticipated as a critical issue across respondents; additionally, the need for representation relating to trade related decisions was also emergent. Consistent with the advocacy item within the policy theme, a recommendation would be to ensure industry leaders are aware of, and engaged in, the policy process [43]. Providing support and training necessary to equip such leaders would be a role which agricultural education may be well positioned to support. This recommendation is consistent with existing literature which also encourages international trade policy to involve the interests of stakeholders in the development of complex food system trade [44].

As it relates to public perceptions, there are several items which are similar, yet distinct from the policy thematic area. For example, policy may be conceptualized as the interface between perception and direct impact on agriculture, forestry, and natural resource industries; however, public perception may serve as a logical entry condition to such policy consequences. There were several issues identified which relate to a general lack of consumer and public awareness gaps associated with agriculture, forestry, and natural resource industries. These awareness gaps are consistent with previous critical issue analysis within specific agricultural contexts, such as the animal and food industry [3], crop production [1], and pesticide use [45]. Awareness gaps may, in turn, lead to potential negative perception is of the industry [46,47]. A recommendation based on these findings would be to continue to look for opportunities to educate and empower producers to better communicate with both consumers, as well as the general public. For example, previous research has found agricultural awareness campaigns may be successful in improving public understanding using emotional appeals [48]. Future research is recommended to further examine the most effective message framing and channels to affect public perception.

Another thematic area which had conceptual similarities to a previous theme was regulations. Although similar to policy, regulations may be considered as more of the functional rules under which agriculture, forestry, and natural resource industries must operate [49,50]. The results of the study indicate the number of regulations under which industries must operate and adhere may potentially have a deleterious effect on the productivity of producers. Based on these identified issues within the thematic area, a recommendation would be to look for opportunities to provide education and support to producers as it relates to regulation adherence [51]. For example, providing guidance on implementing best management practices, and supporting the tracking of regulation adherence, may help to lower the perceived challenges and costs associated with making such changes. From an agricultural education perspective there may be opportunities to assist in developing support materials related to regulation, communicating the most salient information more effectively to producers. This recommendation is consistent with previous research which has proposed similar tracking mechanisms which may improve regulation adherence and performance [52].

Lastly, the workforce thematic area also had items which were both anticipated and unanticipated based on previous themes within the literature. For example, the aging workforce within agricultural sectors and generational transitions in production agriculture are generally well established [53]. However, some of the issues related to labor affordability and immigration may be more localized in nature [54]. Another unexpected issue was the very functional lack of commercially licensed drivers (CDL) available to support the industry. This finding again highlights the importance of considering the entire agricultural, forestry, and natural resource industries from a systems-based perspective. For example, without CDL drivers to take commodities to markets there is a gap in the supply chain which may have a direct and material impact on producers [55]. From a policy perspective, a recommendation would be to continue to look for opportunities, particularly within

educational contexts, to provide information to the next generation of the workforce and encourage the development of skills directly applicable to industry related needs. These recommendations are particularly relevant within the context of Industry 4.0 and the trend towards more automation and data intensive activities [56]. However, despite these changes, the central role of individuals throughout the value chain is paramount. Without properly trained personnel there are several links in the supply chain which are vulnerable [57].

5. Conclusions

One of the main challenges associated with agricultural production is volume and simultaneous importance of multiple critical issues. The current study provides a model for collecting, codifying, prioritizing, and harmonizing many such issues. Specifically, the six themes identified in the study may serve as a heuristic framework for categorizing and addressing critical issues facing Georgia's agriculture, forestry, and natural resources industries. Similar to the ubiquity of the U.N. SDGs from an international development perspective, a common framework within a specific domain, in this case the state of Georgia, may help to focus efforts and plans to address identified issues across agricultural commodity areas. The results of the study also provide a benchmark and foundation upon which to analyze critical issues facing such industries from the local level (e.g., in the state of Georgia) to the macro level (e.g., nationwide). Future studies derived from the outcome of this study may be used as case studies in other states or even outside of the United States.

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