

Fresno County Farmer Perspectives on Water Management and the Sustainable Groundwater Management Act (SGMA)

Meredith T. Niles, PhD ¹

Courtney Hammond Wagner, PhD ²

Results from a 2019 farmer survey

¹ Food Systems Program & Department of Nutrition and Food Sciences
² Rubenstein School of Environment and Natural Resources

Background

California is currently implementing the Sustainable Groundwater Management Act (SGMA), which became law in 2014. SGMA requires local groundwater sustainability agencies (GSAs) to develop sustainable water management plans and implement them to achieve groundwater sustainability (defined by avoidance of six undesirable results) by 2040. Agriculture is the largest human user of water in California; therefore farmers are an important stakeholder for SGMA implementation and achieving water sustainability. This research surveyed farmers in four California counties (Fresno, Madera, San Luis Obispo, and Yolo) to understand their perspectives on water issues, current and future water management practices, SGMA and policy preferences. This brief details the results of the survey for Fresno County, where 359 farmers responded to the survey. The survey was deployed via mail in the spring of 2019 in collaboration with the Fresno County Farm Bureau.

Key Findings

1. The majority of farmers are concerned about groundwater issues and believe they are occurring now or in the next five years.
2. Farmers have already adopted many water management practices, and are likely to adopt more.
3. Majority of farmers believe the SGMA process is managed locally, is fair, and involves farmers; less than half understand the process and how to participate.
4. The majority of farmers support incentive programs, recharge credits, permits for new wells, and water trading through markets.
5. Majority of farmers believe SGMA is necessary in Fresno County and California; however, they don't believe other farmers think SGMA is necessary in these places.

Farmer and Farm Characteristics

Farmer respondents (92% male, 7% female, 1% prefer not to answer) were on average 64 years old, had farmed 34 years in Fresno County and 64% were full-time farmers. Average farm size was 554 acres, with 80% on average owned by the farmer. The most common crop types were nut trees (45%), vineyard grapes (40%), fruits crops (30%), and row crops (8%). Most common water sources (in a "normal year") mix of surface and groundwater (47%), groundwater only (38%), surface water only (26%), and no irrigation (2%). Farmers indicated in which GSAs they had land, with the most frequent the Fresno County GSA (39%), North Kings (18%) and Central Kings (13%). Given the high percentage in the Fresno County GSA, it is possible that farmer's misidentified themselves, thinking this was a more general county-level term, rather than the specific GSA unique to a small portion of Fresno County.

Current and Future Water Management Practices

Farmers in the region have already adopted many water management practices, most commonly drip irrigation (61%), crop insurance (45%), and soil moisture sensors (43%) (Figure 1). Among non-adopters, farmers also indicated interest in adopting multiple water technologies in the future (Figure 2) especially drip irrigation (75%), water monitoring technology (64%), and soil moisture sensors (64%).

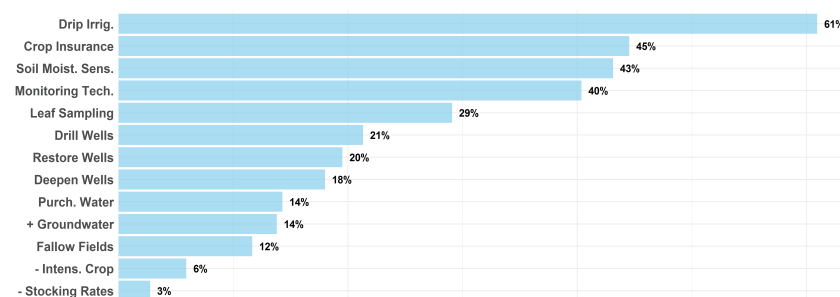


Figure 1. Current farmer adoption of water scarcity management practices.

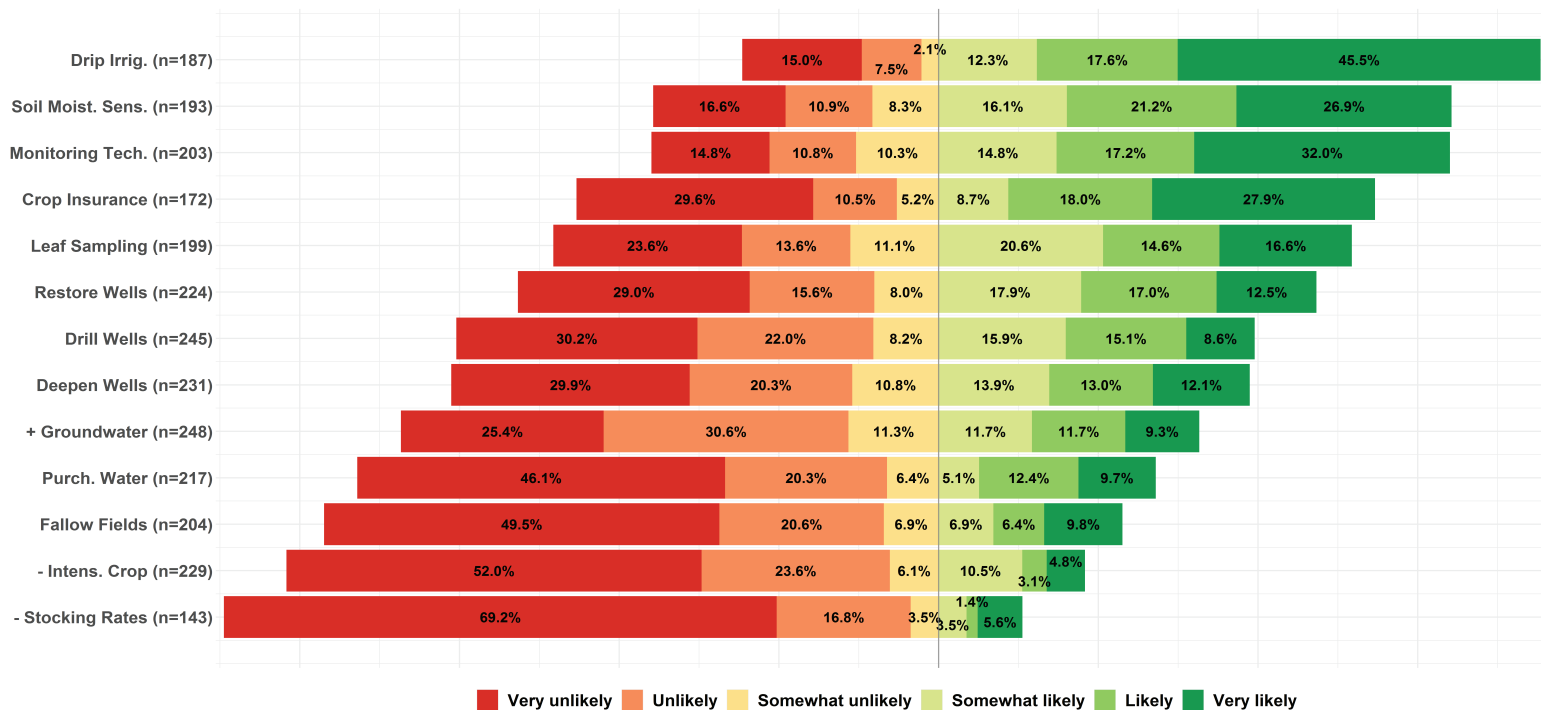


Figure 2. Farmers' likely adoption of water scarcity management practices.

Concern for Groundwater Issues

The majority of farmers (77% or greater) are at least somewhat concerned with each of the six SGMA undesirable results (Figure 3). As well, the majority of farmers believe that these undesirable results are already happening or will occur in five years. (Figure 4).

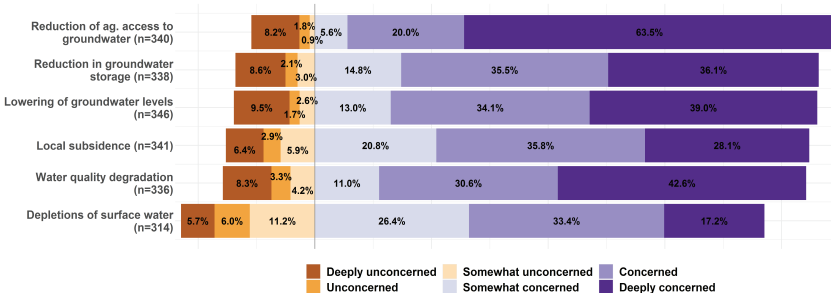


Figure 3. Farmer concern for groundwater management conditions (i.e. SGMA undesirable results" in Fresno County).

Farmer Preferences for Groundwater Sustainability and SGMA

The majority of farmers at least somewhat agree that the SGMA process is being managed locally (67%), is fair (51%), and has involved farmers (64%). However, fewer than half of all farmers agreed that they knew how to participate (47%) or clearly understood the SGMA policy process (45%). (Figure 5). Most farmers believe that water allocation based on standard crop water requirements (68%), historical average pumping (66%), and correlative rights (64%) are at least somewhat fair. The majority of farmers prefer standard crop water requirement indexes (63%) for water monitoring in the future, if necessary.

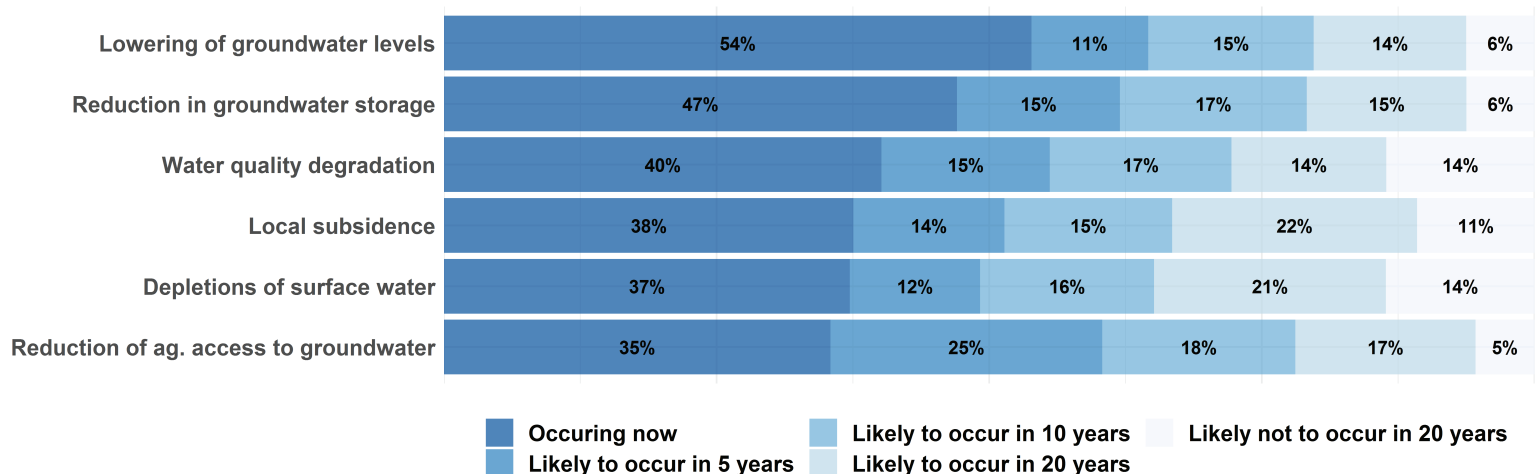


Figure 4. Farmer perceptions of likely timeframe in which groundwater management conditions will occur without interventions.

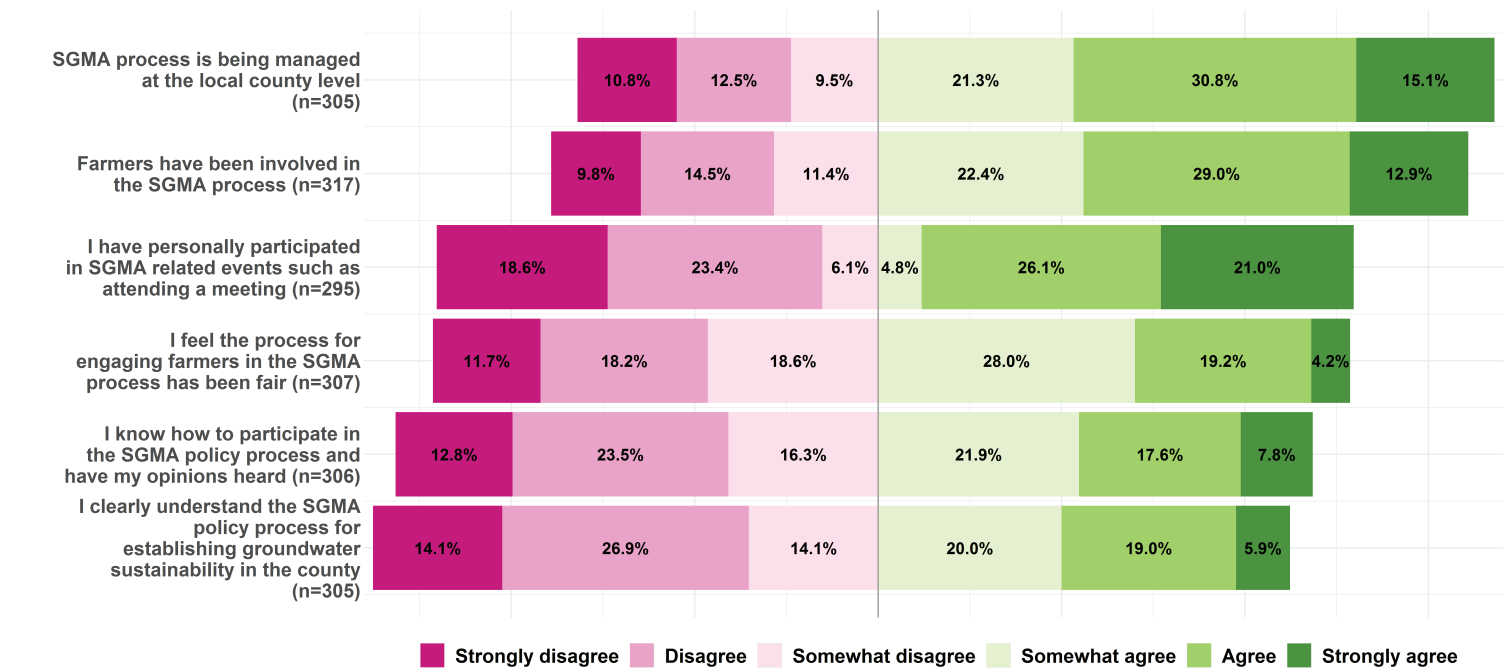


Figure 5. Farmer perceptions of SGMA policy process and participation

Farmers have mostly received information about SGMA from the local irrigation district (36%), which is also the entity that farmers would most trust for SGMA information (41%), and would like to receive information from (36%). However, farmers also indicated that they would trust SGMA information from the County Agricultural Commissioner (35%), commodity organizations or grower cooperatives (34%), and The University of California Cooperative Extension (31%). Farmers support a diversity of water policy and management strategies that may be components of SGMA (Figure 6).

SGMA Cost and Policy Need

Most farmers believe that SGMA is necessary in both Fresno County (61%) and California (58%); however, the majority of farmers don't believe that other farmers think SGMA is necessary in Fresno County (33%) or California (34%) (Figure 7). This suggests a disconnect between farmer's individual policy preferences and those of their peers. Twenty-two percent of farmers believe SGMA will be affordable to implement; on average, farmers thought SGMA would cost them \$438 per acre.

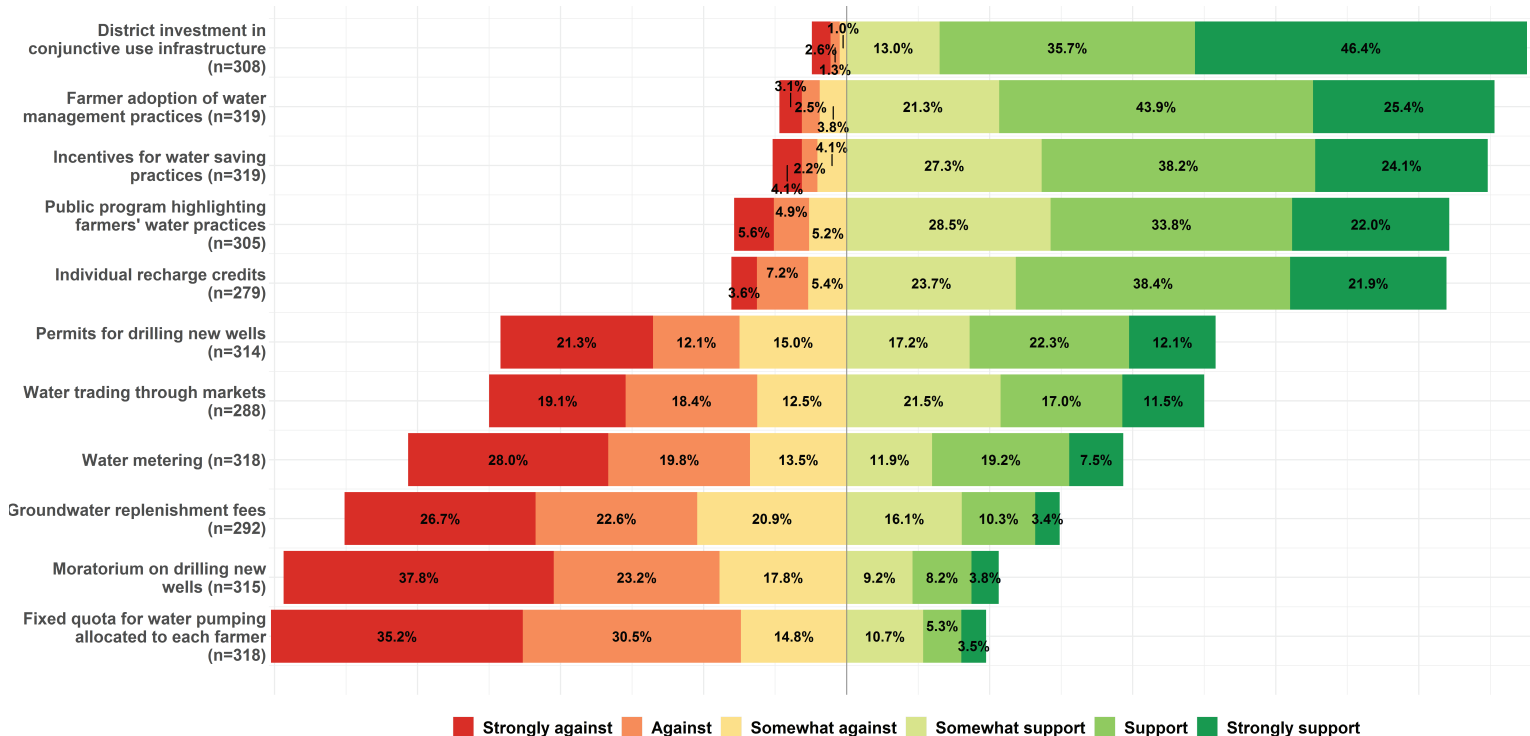


Figure 6. Farmer preferences for potential water management options.

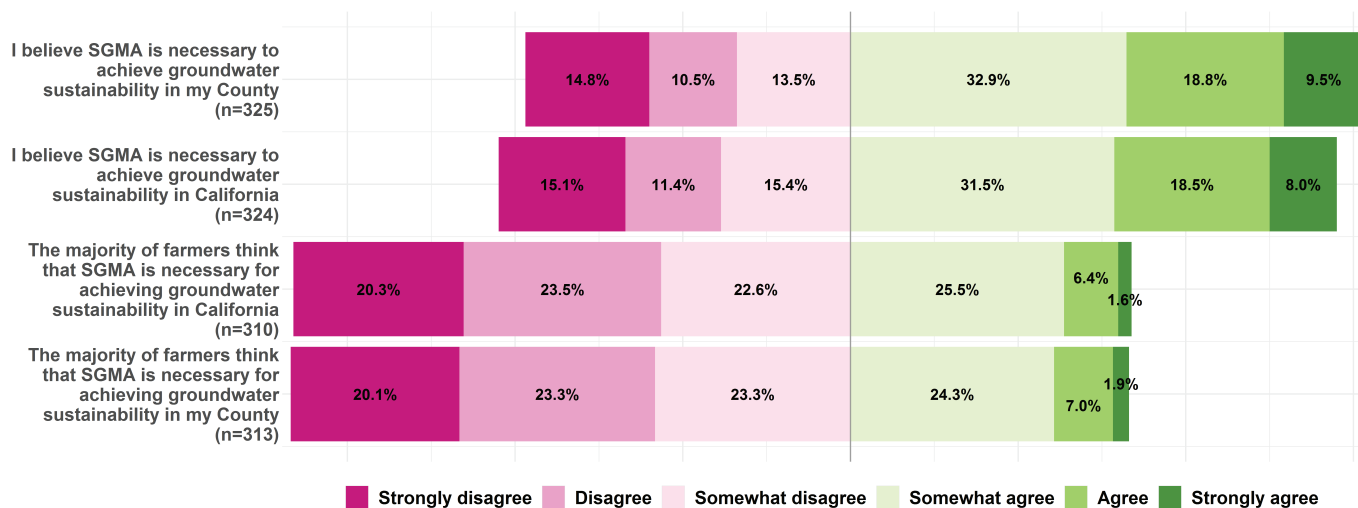


Figure 7. Farmer support for SGMA in Fresno County and California.

Perceptions of Change

Farmers expressed a number of changes in land, policy and climate had occurred recently. A majority of farmers felt that nut acreage (96%), urban land use (85%) and corporate-owned farms (81%) had increased in the last five years. Conversely, 77% of farmers felt that family owned farming operations had decreased in the same time period. Ninety-six percent of farmers also felt that number of regulations for farms and the amount of reporting and paperwork for regulations had increased in the last five years while 56% felt that farmer engagement in the policy process increased.

The majority of farmers (52%) agreed that the global climate is changing, while 46% agreed that average global temperatures are increasing and 34% agreed that human activities are an important cause of climate change. Forty-four percent of farmers felt that climate change presents more risks than benefits to

agriculture globally and 41% agreed that climate change presents more risks than benefits to agriculture in Fresno County. Finally, a majority (55%) disagreed that water availability has changed because of climate change (Figure 8).

Acknowledgements

Thank you to the Fresno County Farm Bureau for their collaboration and partnership on this project. We are grateful to the farmers from Fresno County who participated in the survey. We also thank Amanda DeMarco from UC Davis and Vishal Mehta of the Stockholm Environment Institute for their assistance with survey processing. Thanks to Thomas Wentworth and Serge Wiltshire for their assistance in data management and visualizations. Funding for this research was provided by the Water Foundation.

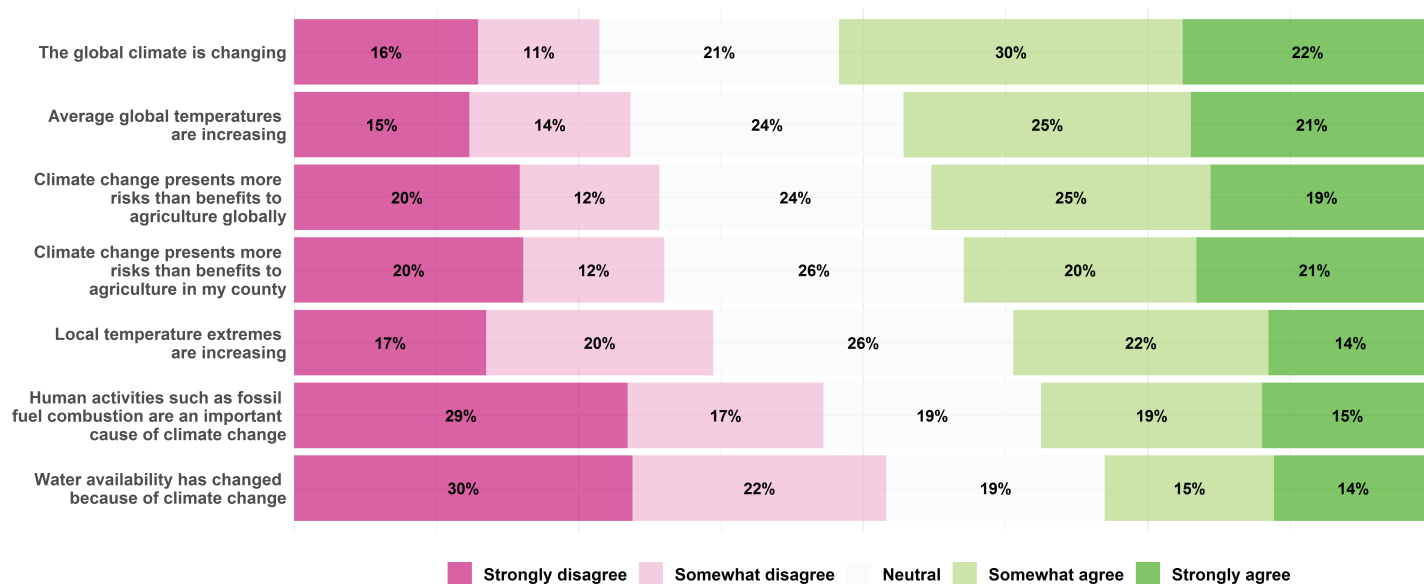


Figure 8. Farmers' level of agreement with climate change and weather risk statements.