

Diffusing Climate Information for Agriculture Management

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INTRODUCTION

Climatologists have a unique role in their position as they provide climate and weather information to public data users, including the agricultural sector. In order to create effective agriculture risk management portfolios for use in mitigating and adapting to variable weather conditions, farmers need to access site-specific, short and long-term weather information. However, scientific climate information is rarely translated for application in developing useable agriculture management decision support tools¹. This may be a result of social and political influences contributing to contrasting perceptions of global climate change and hindering the ability of scientific experts to diffuse climate discourse throughout the public community². Understanding how Climatologists communicate climate information will be valuable for informing the development of appropriate agriculture management decision support tools to ensure the profitability and resiliency of corn-grain cropping systems in response to increasingly variable environmental conditions.

RESEARCH QUESTION

What is the role of Climatologists in diffusing scientific climate information for use in developing agriculture management decision support tools for grain producers in the North Central Region of the United States?

METHODS

State and Extension Climatologists in the North Central Region of the United States were interviewed (N=22) and surveyed (N=19) regarding the process of communicating climate information for producers of corn-grain cropping system in their region. Survey and interview instruments are available for review upon request.

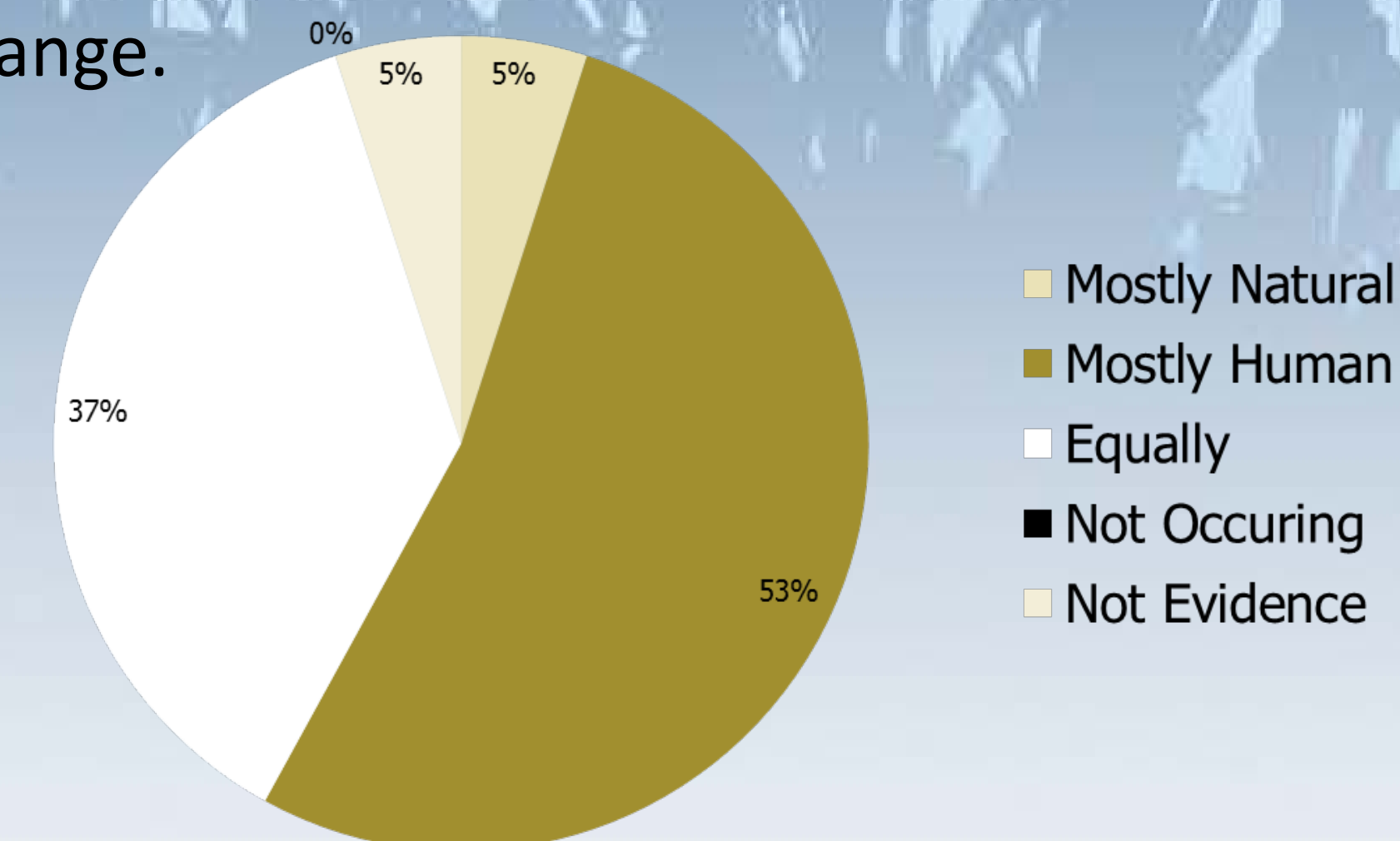
Climatologist Survey results will be directly comparable to the Producer Survey led by Dr. Arbuckle, and qualitative interview analysis will be valuable for supporting and further examining quantitative findings. Interview transcripts will be analyzed with open, axial, and selective coding using NVivo software, and reconciled by a PI social scientist as well as an Extension Watershed Specialist with a background in agronomy and expertise in agricultural management.

“A couple of things you need to understand about farmers: First, there aren’t any dumb ones. If there was ever such a thing as the old dumb farmer, they’ve been out of business now for decades....

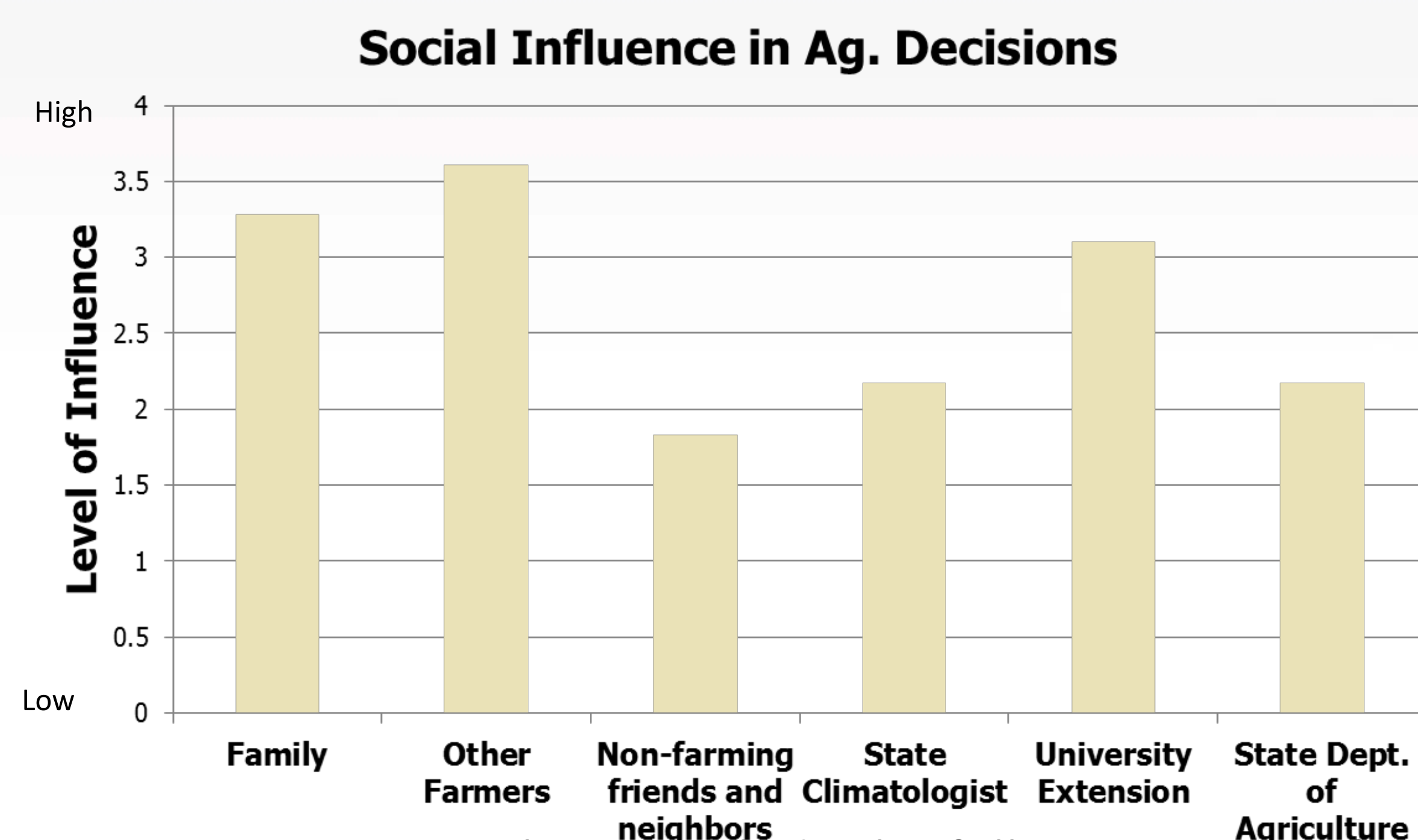
And they’ll decide if they want to be impressed with what you’ve got to teach. You don’t have to impress them. You’re not dealing with a fourth grader. You’re dealing with a very intelligent person when you deal with farmers.” –EC #3

PRELIMINARY SURVEY RESULTS

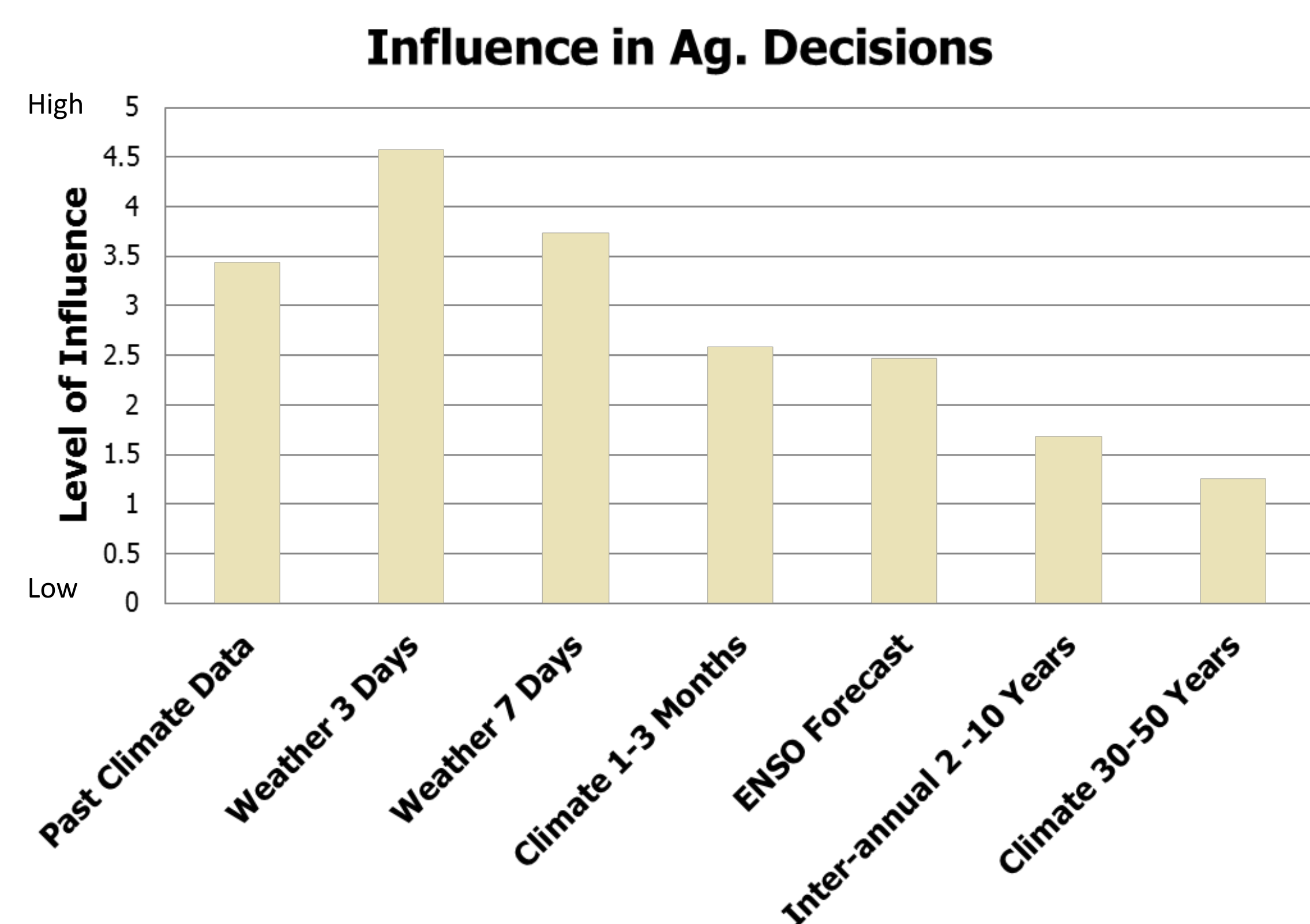
Q#1. There is increasing discussion about climate change and its potential impacts. Please select the statement that best reflects your beliefs about climate change.



Q#2. Please indicate how influential you think the following groups and individuals are to producers when they make decisions about agricultural practices and strategies.



Q#3. From your experience, how much do the following types of information influence farmers’ decisions?



PRELIMINARY INTERVIEW THEMES

Qualitative themes are developed by analyzing the interview transcripts and assessing common topics, prominent categories, distinctive patterns, areas of emphasis, and word use frequencies.

1. Objectivity (Phase 1)
2. Citizen Science (Phase 2)
3. Trust (Phase 3)

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PHASES OF COMMUNICATION (Adapted from Fischhoff³)

To understand the diffusion of information between Climatologists and Farmers, it is important to consider the techniques of communicating diffuse and uncertain risks³. Fischhoff’s Scientific Communication Framework provides a tool for understand the spectrum of techniques and formats employed among Climatologists to communicate climate information.

1. We have to provide objective information

“In a scientific process, we will not simply say ‘yes.’ We will go through the reasoning and say ‘these are the indicators, these are the question, these are the answers we say yes, and therefore we conclude “yes.”’ To assume that common individuals will have that leap of faith, or that synthesis, is expecting too much.” -SC #10

2. We have to do make the information relevant

“We look at the most relevant models, whether they’re ENSO-based, atmospheric patterns—we try to identify what’s going on and try to project that type of pattern as we move to the growing season to give the producers a risk assessment.” - SC#5

3. We have to translate the message through a trusted source

“I think it needs to come from, or have the branding of, somebody that they trust. And I think university extension would probably be a good one. Because they’re local agents, they live in the same communities, they interact with these producers on a regular basis, so that familiarity is important, I would think.” -SC#7

INITIAL CONCLUSIONS

1. Climate information must be translated through local and trusted information sources, such as University Extension.
2. Public citizen weather observation may be a valuable tool for gaining localized and site-specific climate information.

DISCUSSION

Preliminary results of the Climatologists interview and survey analysis indicates the importance of providing not only accurate and objective climate information, but also making the information relevant to Farmers. Members of Objective 5 are already addressing this issue by compiling climate fact sheets for each climate region within each state of the CSCAP region. Objective 6 has also begun working to address the issue of educating citizens about weather and climate science, with particular emphasis directed towards grade school curriculum.

CITATIONS

¹Field, C.B., L.D. Mortsch,, M. Brklacich, D.L. Forbes, P. Kovacs, J.A. Patz, S.W. Running & M.J. Scott. (2007). *North America, Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 617-652.

²Pidgeon, N., & Fischhoff, B. (2011). The role of social and decision sciences in communicating uncertain climate risks. *Nature Climate Change*, 1(1), 35-41.

³Fischhoff, B. (1995). Risk perception and communication unplugged: Twenty years of progress. *Risk Analysis*, 15, 137-45.

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