

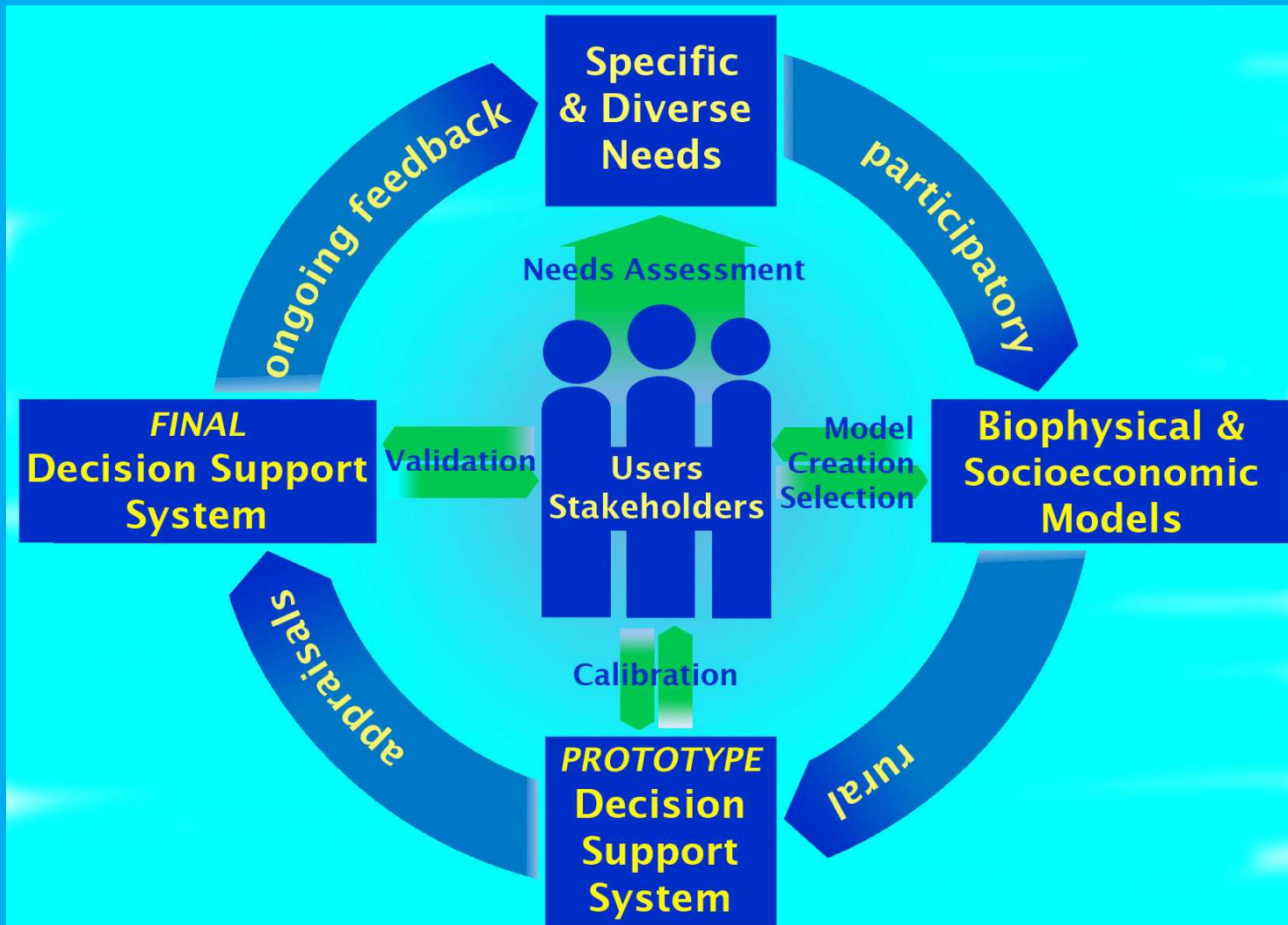
Climate Forecasting and Agricultural Production: Participatory Development of Decision Support Tools

NE Breuer, C Roncoli, T Crane, KT Ingram, and K Broad

5th Climate Prediction Applications Science Workshop (CPASW)
Seattle, Washington, March 20-23, 2007



Climate-Society Research Framework

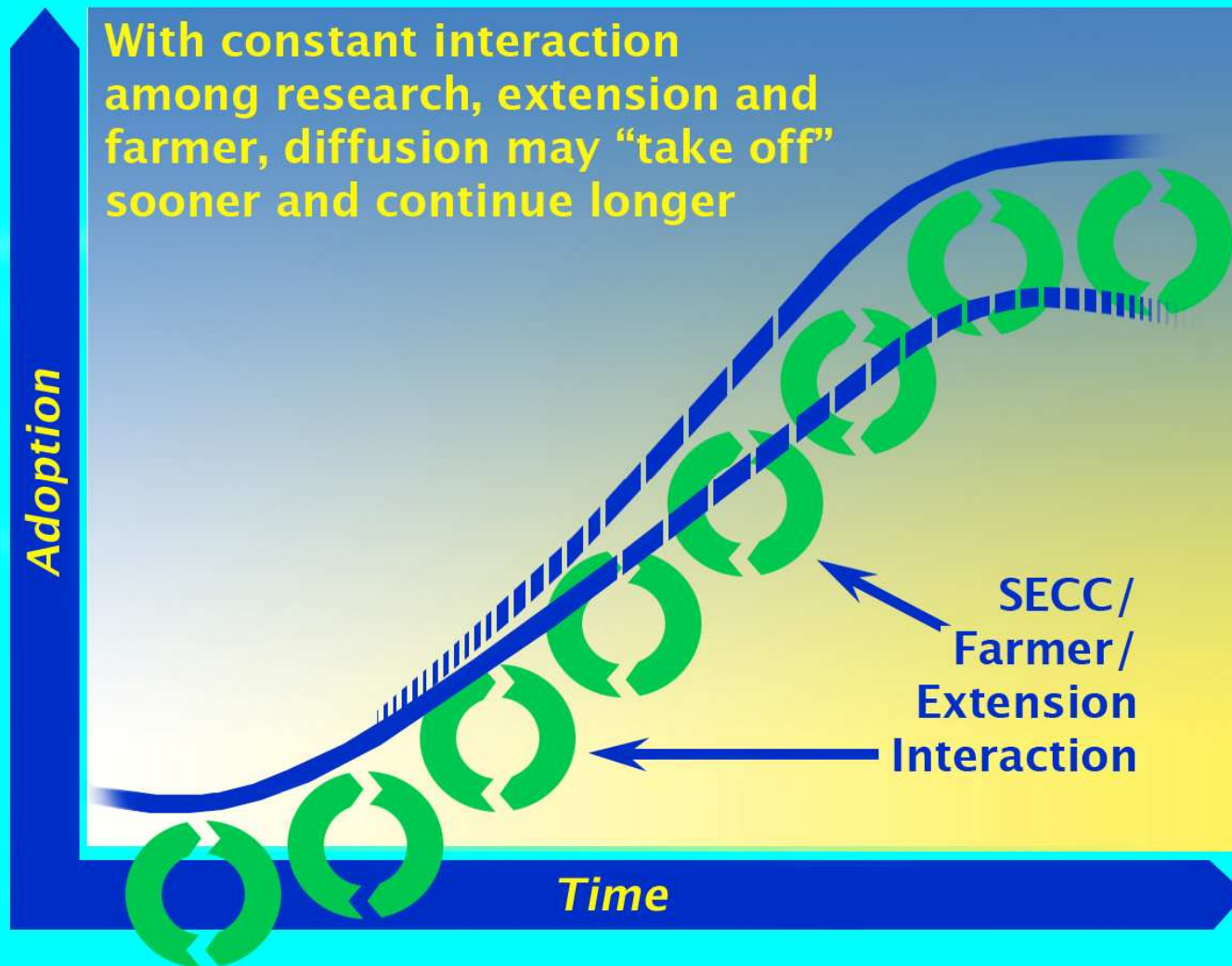


Decision Analysis and Assessment Goals

- Identify end users, understand decision processes, and the role of climate forecasts
- Assess the accessibility, relevance, utility of SECC tools from end-users' point of view
- Evaluate SECC tools in terms of their actual use and impacts

Methodological Approach

Continuous Stakeholder Feedback

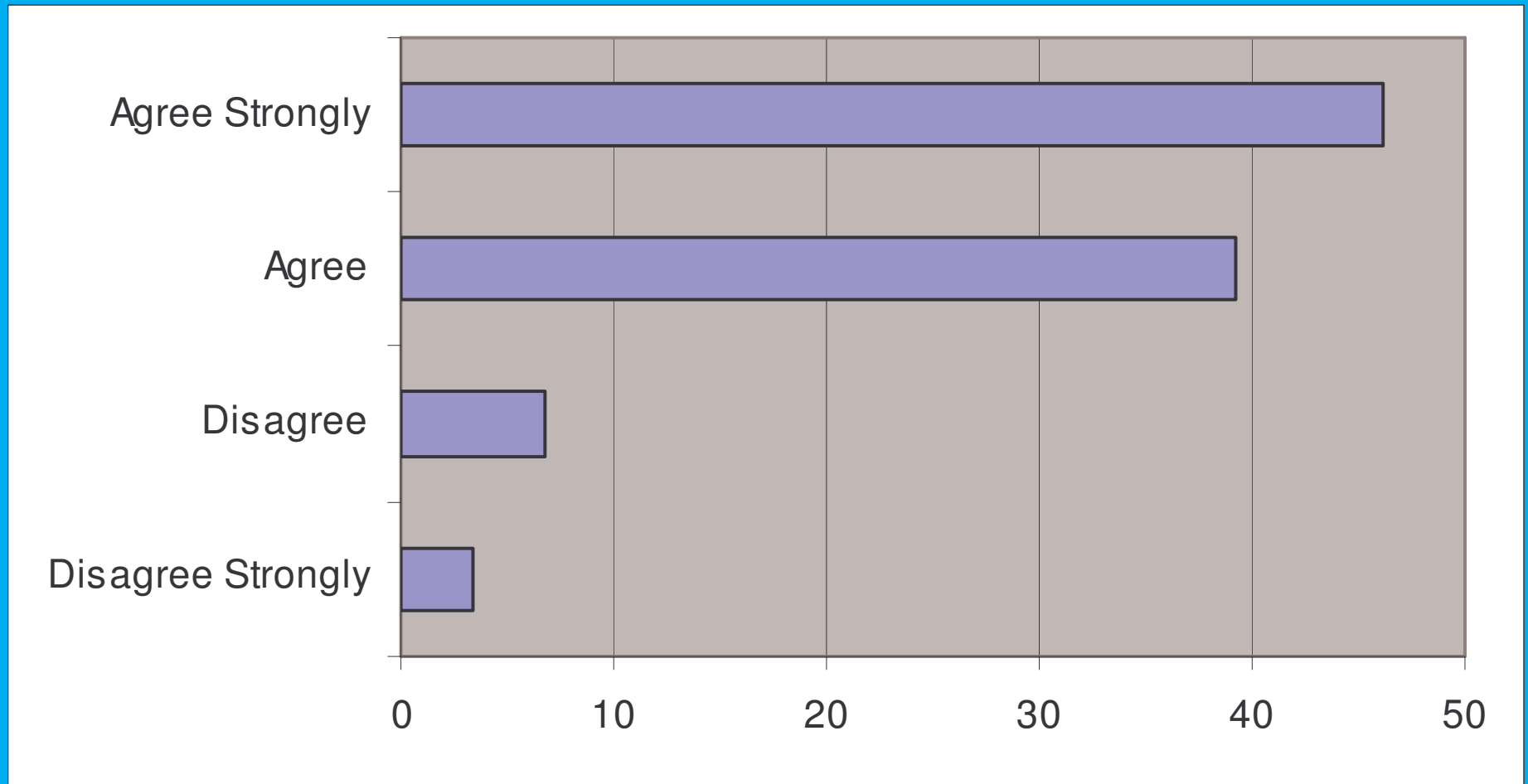


Diversity of Research Activities

| Activity | N |
|---|----------|
| Web-based Baseline Survey of Extension Agents | 252 |
| Sondeos (Conversational Rapid Appraisals) | 7 |
| Farmers Interviews | 100+ |
| Focus Groups and Site Visits | 8 |
| Feedback from Workshops | 8 |
| On-line Users' Feedback | 33 |

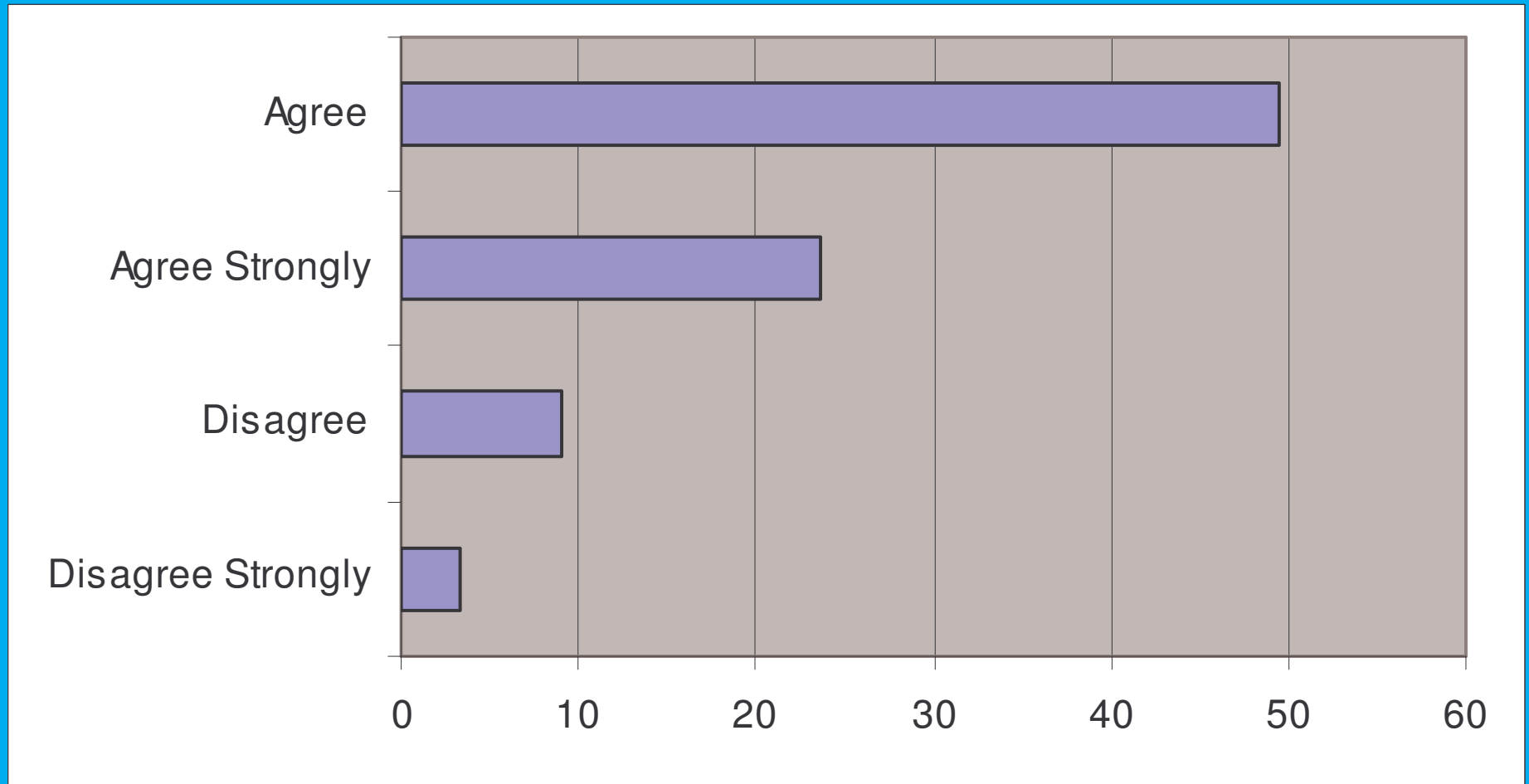
Baseline Survey of Extension Agents

My work is affected by El Niño



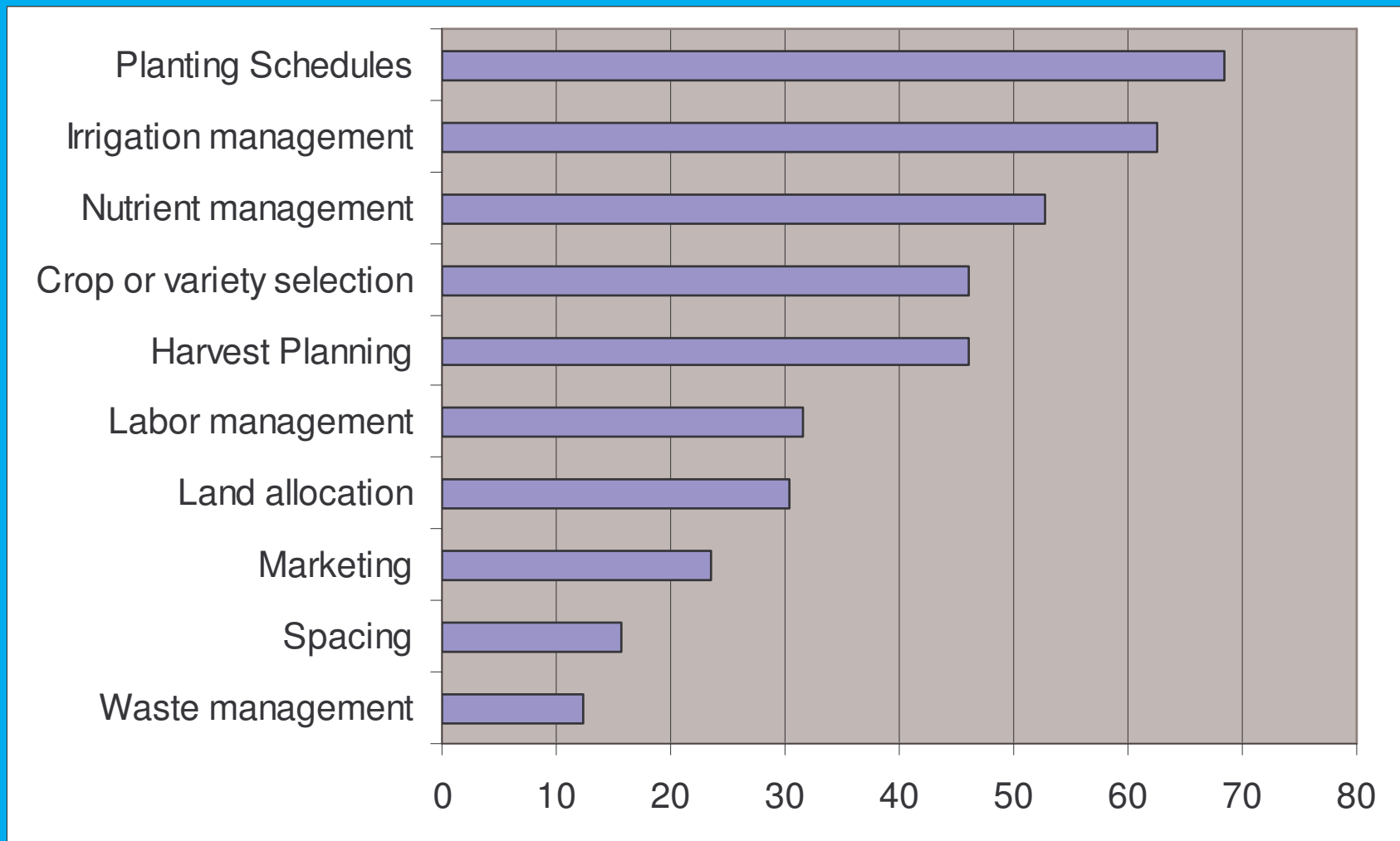
Baseline Survey of Extension Agents

I would like to provide climate information to my clients



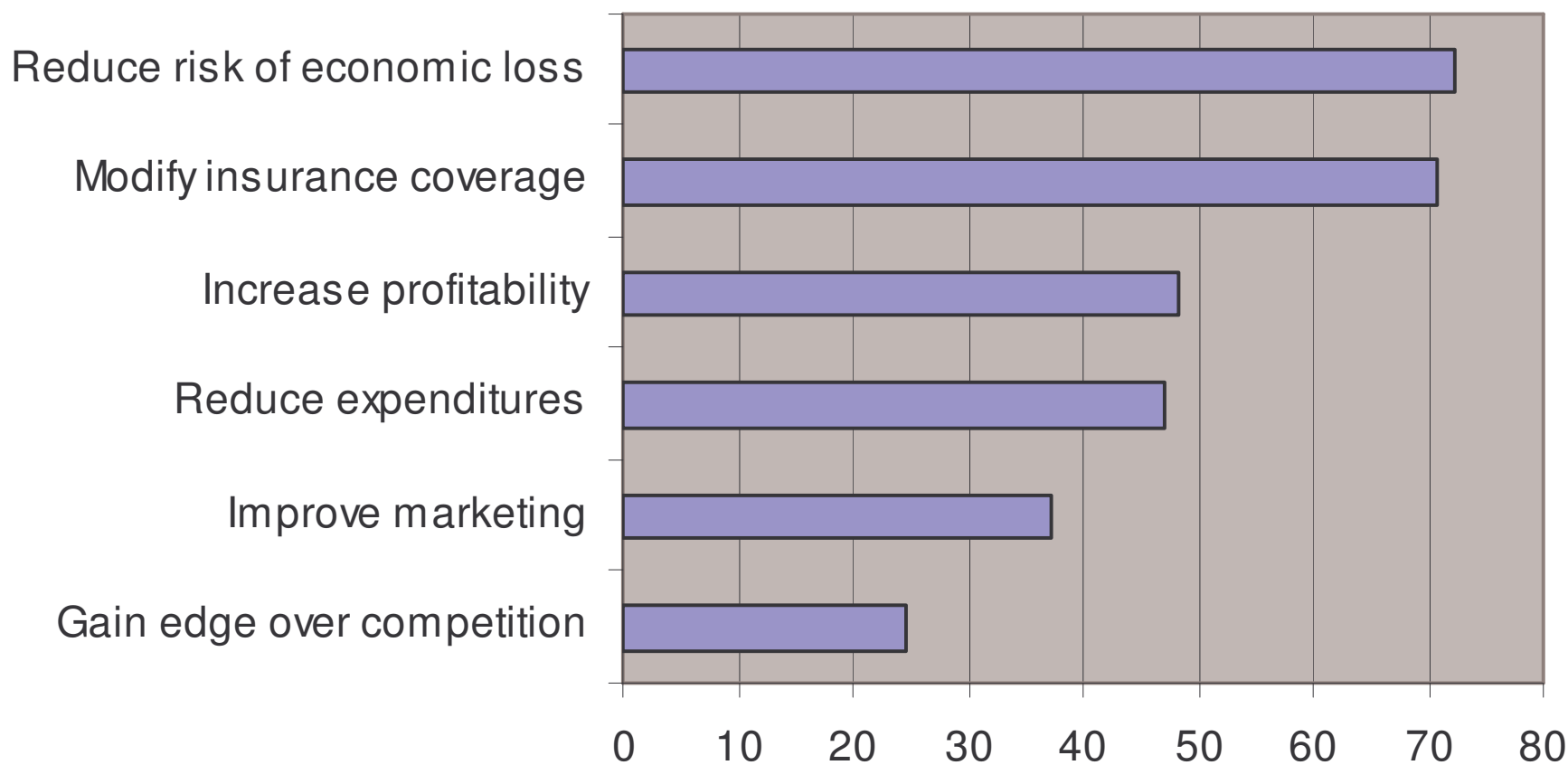
Baseline Survey of Extension Agents

Producers can use climate forecasts
to adjust management



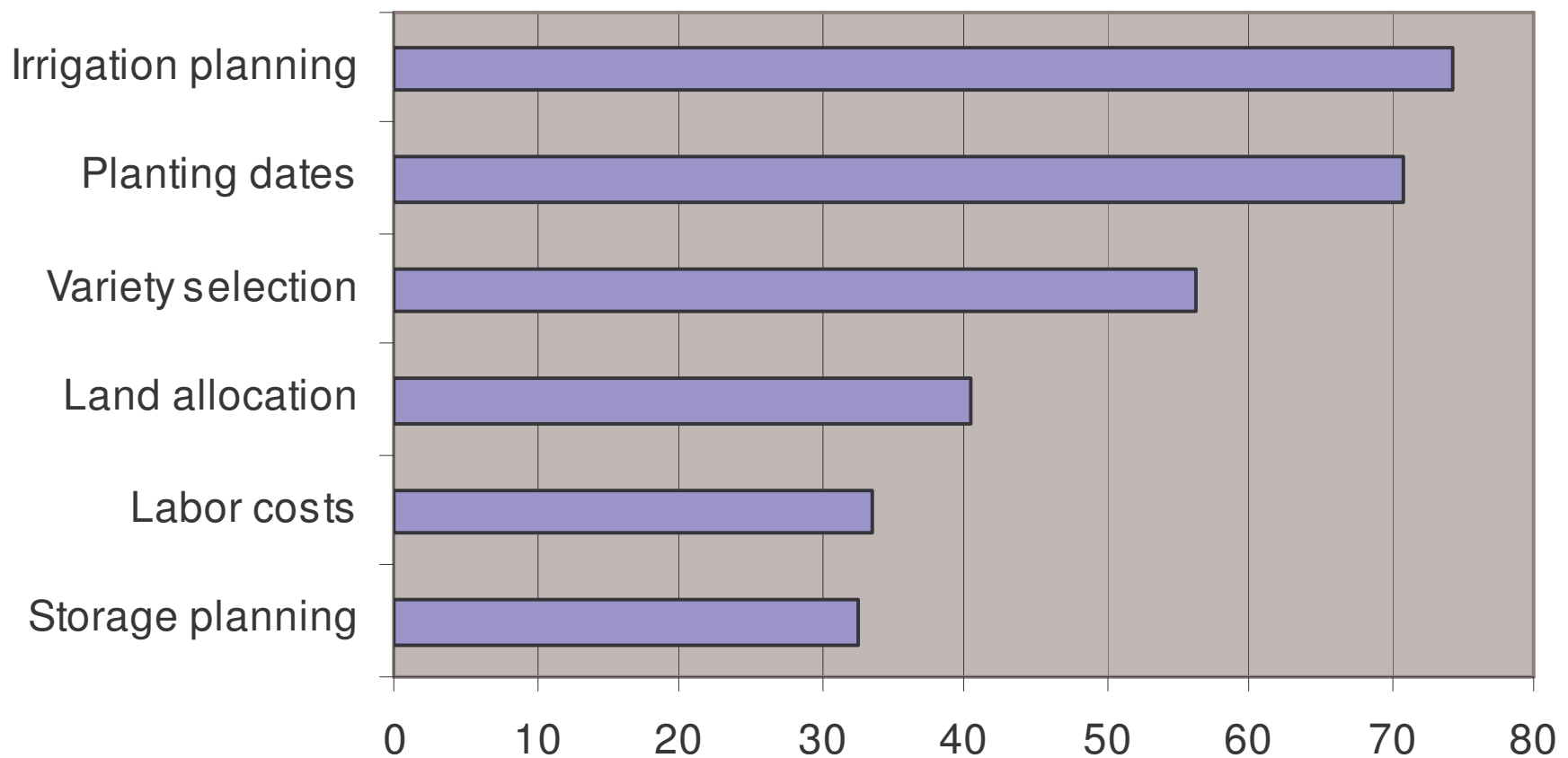
Baseline Survey of Extension Agents

People I work with would be able to use climate forecasts to . . .



Baseline survey of Extension agents

With better climate information,
producers could improve. . .



Sondeos: “sounding out”

- **Producers want information to be:**
 - accurate and reliable
 - concise
 - site specific
 - in lay terms
- **Forecast must be customized to fit:**
 - agricultural calendar
 - agricultural commodities
 - agro-climatic zones

Farmer Interviews

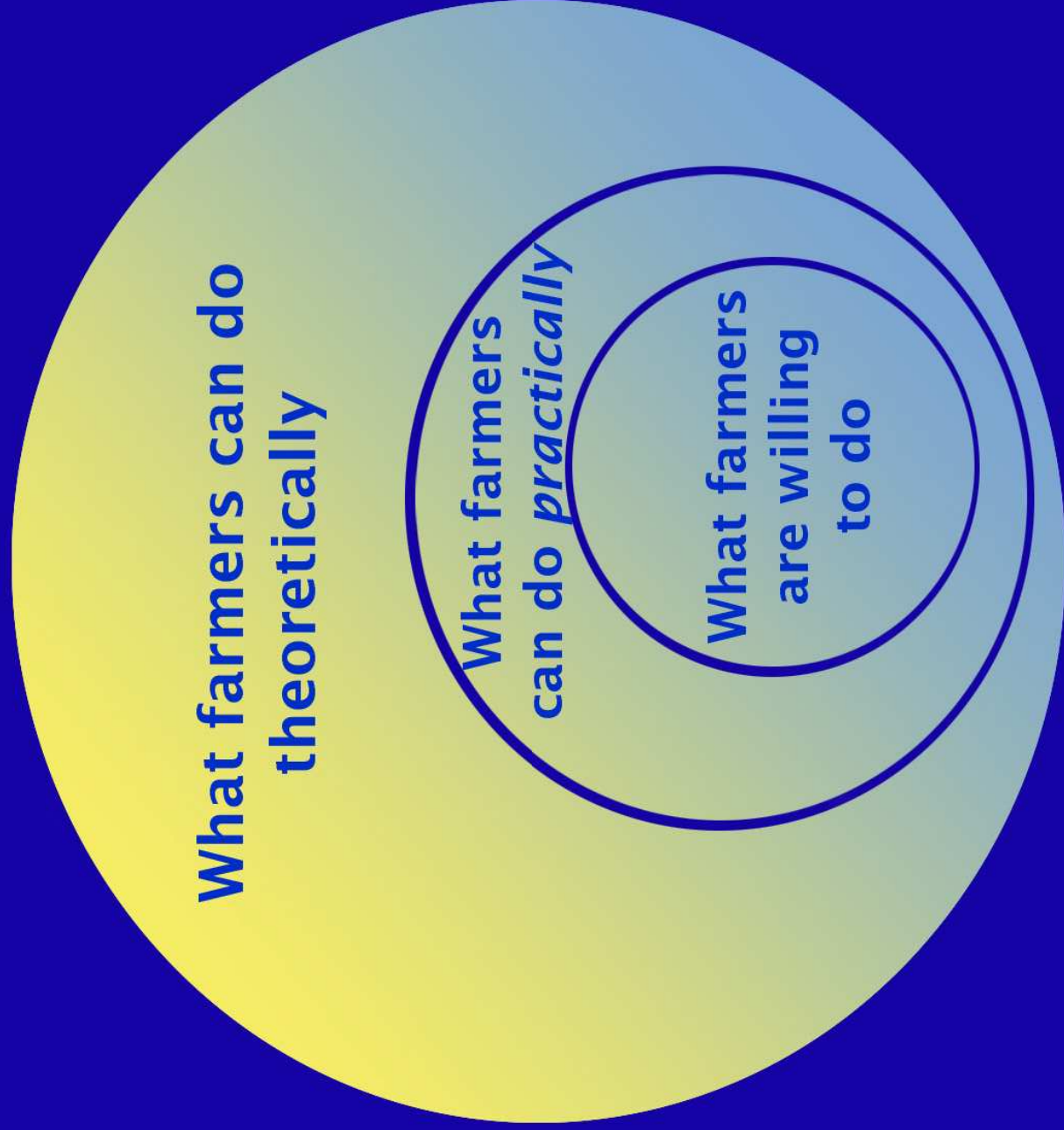
Decision-Making Principles

- Avoid catastrophic losses, disinvestment
- Cover living expenses
- Repay debt
- Attain consistent production levels
- Ensure timely market delivery

**What farmers can do
theoretically**

**What farmers
can do *practically***

**What farmers
are willing
to do**



Changeable Management Practices

Land preparation, varieties, labor, market, regulations, IPM, irrigation, harvest, insurance, field management, pesticide application, etc.



Planting date, variety insurance, area planted

Farmer Interviews

Potential Responses to Climate Forecasts

Row crops

- Change planting date
- Adjust fertilization, input application
- Modify insurance coverage
- Adjust marketing strategy

Vegetable

- Clear ditches
- Switch variety
- Plan input purchases
- Adjust planting date
- Manage timing of farm work

Farmer Interviews

Potential Responses to Climate Forecasts

Livestock

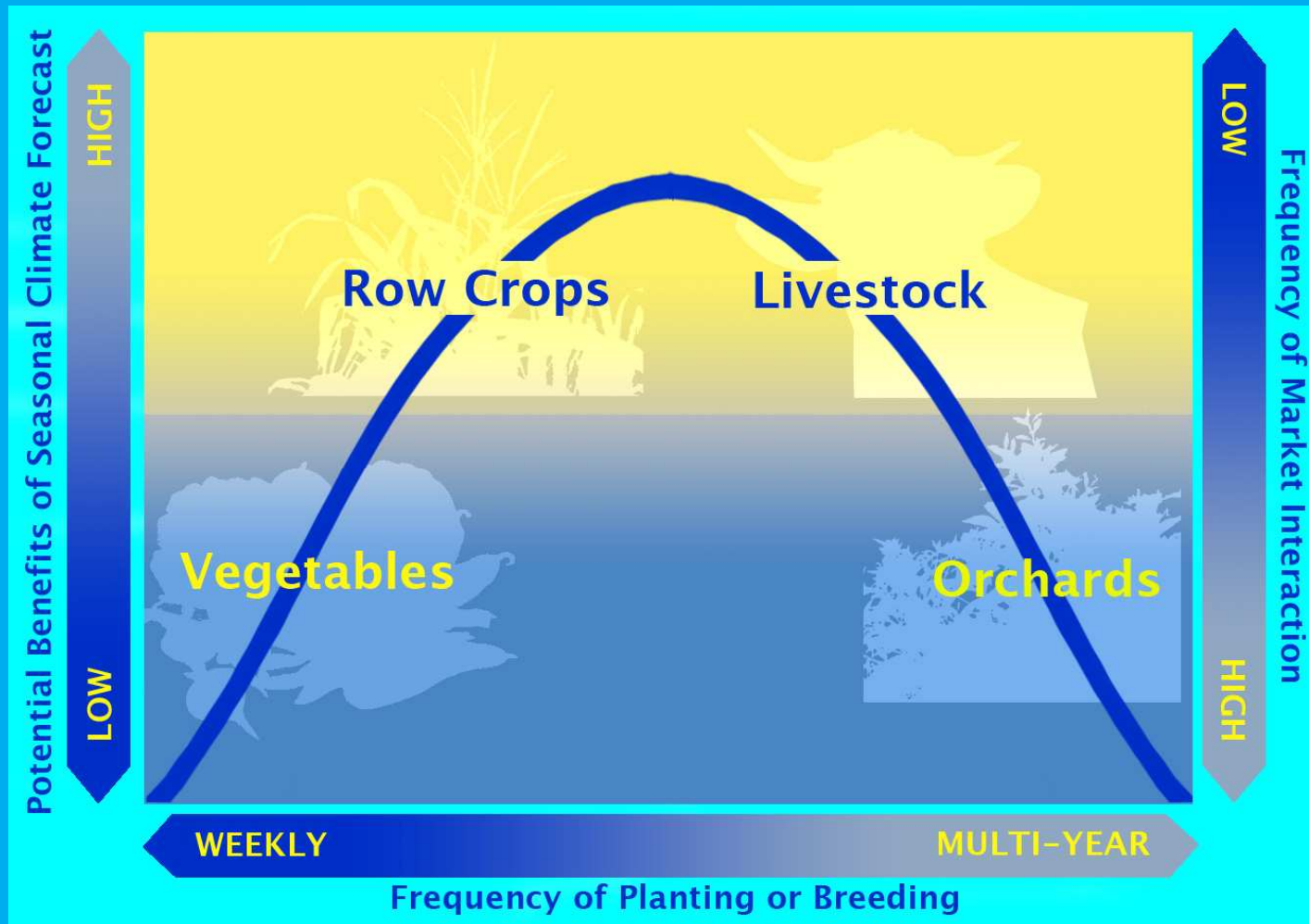
- Plant winter forage
- Adjust forage fertilization
- Manage herd size
- Buy feed ahead of time

Forestry

- Avoid planting in La Niña winters
- Harvest early before El Niño winters
- Adjust timing of prescribed burning
- Prepare resources to control wildfire

Focus Groups and On-site Visits

Potential Forecast Use by Different Types of Farm Operations



Workshops and Online Feedback

- Provide bio and contact information for the “people behind the tools”
- Add help functions, clear labels for variables and figures, mouse-over definitions, list of key terms
- Provide clear site map and mechanism so users know where they are and how they got there
- Facilitate experiential learning with photographs and personal accounts to illustrate uses and impacts of climate forecasts
- Website should consider that many farmers have limited computer skills and slow dial-up connections
- Develop content relevant to urban counties (gardening, landscaping, recreation, etc.)

Conclusions

- Social science research elicits valuable feedback from stakeholders. This feedback can guide the development of an effective and user-friendly information system.
- Placing the stakeholders at the center of the research paradigm produces invaluable insight into practical potential adaptations to climate forecasts.
- The learning process is continuous, iterative and two-directional. Working closely with Cooperative Extension Service and farmers permits research and dissemination to occur simultaneously.

Acknowledgements

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NOAA-RISA

Regional Integrated Sciences and Assessments



USDA RMA

Risk Management Agency



USDA CSREES

Cooperative State Research, Education and Extension Service