Agricultural Research Service

Water Availability and Watershed Management Customer/Stakeholder Workshop

May 20, 2015

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TNC MISSION: Preserve the plants, animals and natural communities that represent the diversity of life on earth by protecting the lands and waters they need to survive.

* More than 3,500 employees, with more than 400 of whom are scientists.
• Helped protect more than 119 million acres of land worldwide.
• Manage more than 100 marine projects around the globe.
• Own and manage the largest network of private preserves in the United States.
• Nearly 60 years of experience.
• Support from more than one million members.
Conservation by Design
Adaptive Management
Sustainable Agriculture

Goal: Protect Lands & Waters

Options:
- 4R’s
- Infield/EOF Practices

Concerns:
- Water Quality
- Habitat
- Flood/Drought
- Food Supply
- Cost

Decision Tools:
- Watershed Models
- Precision Conservation

Implement:
- Location x 3
- Stakeholder Concerns
- Design

Monitoring & Evaluation:
- Field- & Watershed-Scaled

Decent grasp

Needs work
ARS' (Many) Accomplishments:
• Better link water storage and water quality objectives.
  – Ex: Design models based on water volume; targeting tools based on average annual loads.

ARS Challenges:
• Refine “habitat quality”
  • Better link water storage and water quality objectives.

Customer/Stakeholder Concerns: Definitions
• Water Quality
• Habitat
• Flood/Drought
• Food Supply
• Cost
ARS Accomplishments:

- Develop prioritization algorithms
- Evaluate (structural) uncertainty
- Predict management outcomes in the face of climate change.

ARS Challenges:

- Develop prioritization algorithms
- Evaluate (structural) uncertainty
- Predict management outcomes in the face of climate change.

Customer/Stakeholder Concerns: Uncertainty

Decision Tools:
- Watershed Models
- Precision Conservation

Watershed Model Comparison: Targeting Implications

Climate Change Effects
Implement:
• Location x 3
• Design
• Stakeholder Concerns

Customer/Stakeholder Concerns:
Trust & Credibility with Landowners, Value Recognition

USDA Accomplishments:

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<tr>
<th>Table 1—USDA Conservation Programs and Targeting</th>
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<tr>
<td>Program</td>
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<td>Conservation Reserve Program (CRP)*</td>
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<td>Environmental Quality Incentives Program (EQIP)</td>
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<td>Wetlands Reserve Program (WRP)</td>
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<td>Farm and Rangelands Protection Program (FRPP)</td>
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*The targeting impacts define the program's implementation.

USDA Challenges:

- Understand socio-economic & political factors driving landowner concerns.
- Better capitalize on NRCS Soil Conservation Districts to transfer information.
ARS Challenges:

- Develop models describing how/why BMP efficiency changes over space & time
- Prescribe conceptual monitoring approaches to improve consistency of methods.
- Promote development of centralized database of field-scaled studies.

Customer/Stakeholder Concerns: Uncertainty, Part II

ARS’ many, MANY Accomplishments:

A “ton” of state-of-the-art monitoring programs.

Decision Tools:
- Watershed Models
- Precision Conservation
Summary Recommendations for Future Watershed Management Research:

- **Address Broader Array of Stakeholder Concerns:**
  - Tie water storage & drought/flood mitigation with water quality work
  - Define objectives for “good habitat” and “healthy watersheds”

- **Promote Precision Conservation:**
  - Continue development of regional decision tools that model local conditions, including hydrologic connectivity, to optimize bmp location: confront uncertainties
  - Based on Precision Conservation models, explore social, economic, and political factors limiting our capacity to implement well designed practices in the most optimal location.

- Prioritize integrated, field-scaled designed explicitly to explore (alternative hypotheses of) how bmp performance varies across space and through time.
Questions?

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