



State of Hawai'i Office of Planning and Sustainable Development

Soil Classification Systems & Use in Regulating Agricultural Lands Study

Land Use Commission Meeting

June 5, 2024

“This project was funded through an appropriation of the Hawai'i State Legislature for a soil classification system study in Act 189, Session Laws of Hawai'i 2022.”



Agenda

- ▶ Project Update
- ▶ Findings
- ▶ Development of Recommendations
- ▶ Initial Recommendations
- ▶ Next Steps
- ▶ Q&A



Project Update



Interim Report

- ▶ Provides:
 - ▶ Evaluation of Existing Systems
 - ▶ Stakeholder Perspectives
 - ▶ Applicable State and County Codes and Regulations
- ▶ Submitted to the Hawai'i State Legislature on December 26, 2023



Project Timeline

Phase I

July 2023
Project Kick-off

July-Aug 2023
Preliminary
Research

October 2023
Initial Focus &
County Group
Meetings

Nov-Dec 2023
Interim Report

Jan-May 2024
Initial
Recommendations

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Oct-Nov 2024
Final Report

Phase II



Findings

- System Review Summary
- Assessing Existing Systems
- Codes and Regulations
- Initial Outreach
- Best Practices in Other Jurisdictions



System Review Summary

LSB (1950s)

- ▶ Rapid urbanization led to concerns over ag land loss
- ▶ Developed with 1930s soil data and 1950s economic data to rate overall productivity
- ▶ Currently applied to:
 - ▶ land use control
 - ▶ district/zoning definitions
 - ▶ agricultural planning
 - ▶ land transfer
 - ▶ environmental reporting

ALISH (1970s)

- ▶ Developed to identify prime and unique farmlands in response to national initiatives
- ▶ Classifies land into Prime, Unique, and Other Important Agricultural Lands based on soil surveys and committee input
- ▶ Currently used in:
 - ▶ district/zoning definitions
 - ▶ agricultural dedication
 - ▶ economic priority setting



System Review Summary

LESA (1980s)

- ▶ Driven to creation by the **1978 State constitutional amendment** and **1983 legislation** to identify **Important Agricultural Lands (IAL)**
- ▶ Incorporates **land evaluation and site assessment factors** to guide land use decisions and farmland preservation
- ▶ Currently applied in:
 - ▶ **district/zoning definitions**
 - ▶ **housing development proposal requirements**

SSURGO

- ▶ Developed by the **USDA Natural Resources Conservation Service (NRCS)** as a **detailed soil survey database**
- ▶ Provides **comprehensive soil data**, including soil properties, classifications, and interpretations
- ▶ Referenced in:
 - ▶ **tree farm planning**
 - ▶ **environmental reporting requirements**
 - ▶ **often in conjunction with other classification systems**





Assessing Soil Classification Systems

Criteria	LSB	ALISH	LESA	SSURGO
Accuracy in identifying quality agricultural lands	Moderate	High	High	High
Adaptability to changing conditions & crop production	High	Moderate	High	Moderate
Transparency , understandability, and documentation	High	High	High	High
Non-soil factors incorporated	High	High	High	Low
Geographic coverage extent	Moderate	Moderate	Moderate	High
Productivity & Agricultural Value	Moderate	Moderate	High	Moderate
Irrigation Infrastructure	Moderate	Moderate	High	Low
Cultural & Indigenous Considerations	Low	Moderate	Low	Low

Legend

- High
- Moderate
- Low

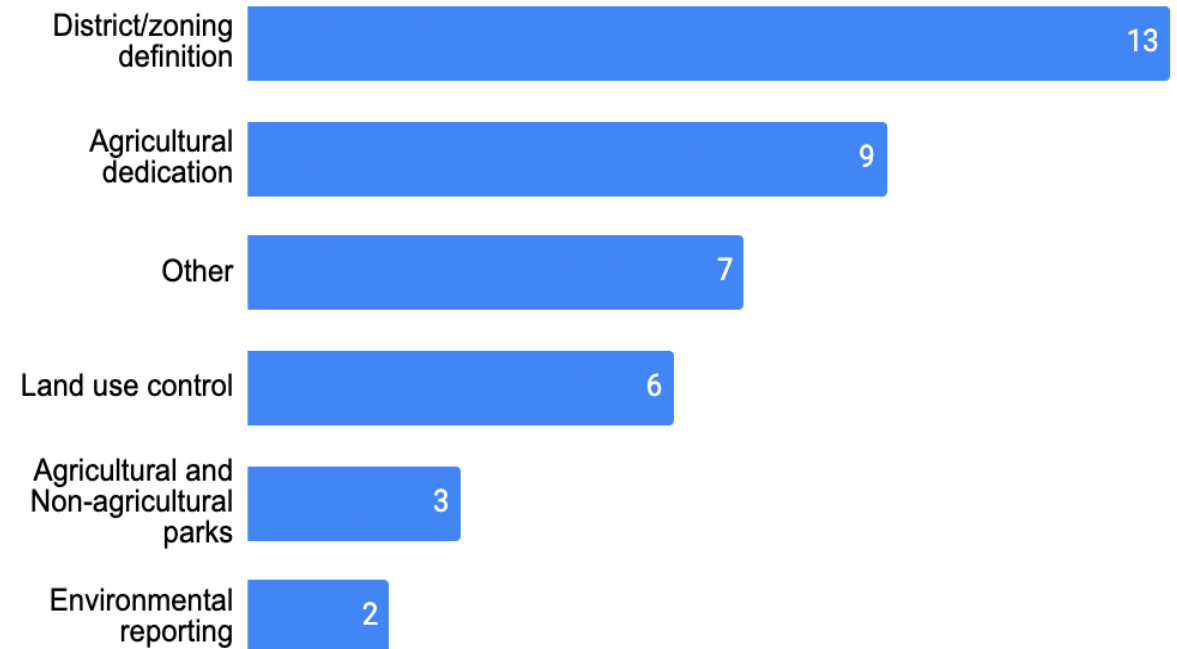




State & County Codes and Regulations

- ▶ 40 references compiled
 - ▶ Jurisdiction: State (18) & County (22)
 - ▶ Type: Laws (26) & Admin Rules (14)
- ▶ System: 25 explicit, 17 unspecific
 - ▶ LSB most frequent, then ALISH
 - ▶ LESA only referenced in admin rules
 - ▶ Unspecific items in each jurisdiction
- ▶ Focus

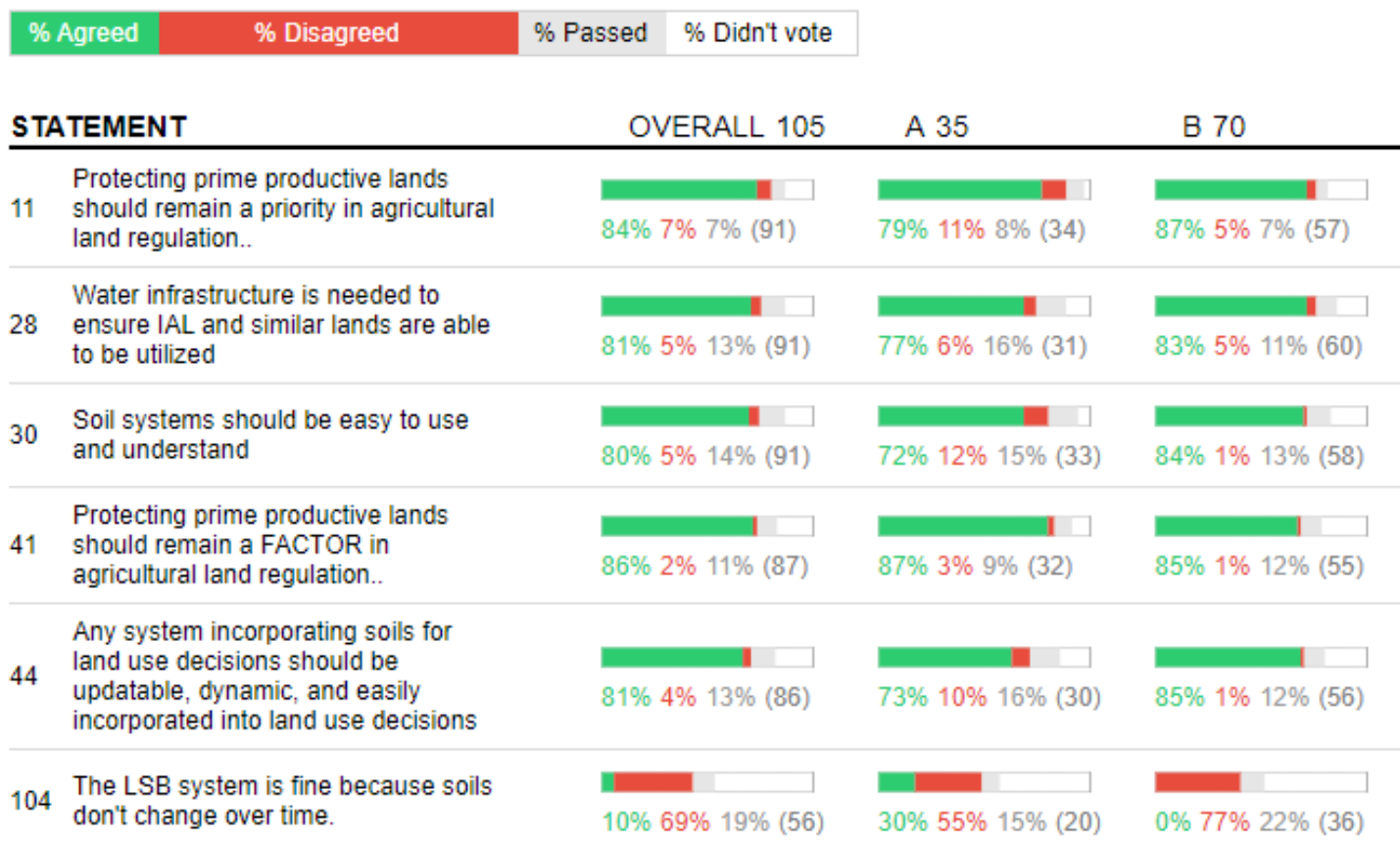
References by Focus Area





Stakeholder meetings + Pol.is Feedback

- ▶ Interest by participants to update the current soil classification systems
- ▶ Stakeholders were interested in incorporating a wide variety of factors
 - ▶ But disagreed as to what those factors should be



*Pol.is majority results





Best Practices Research

Purpose

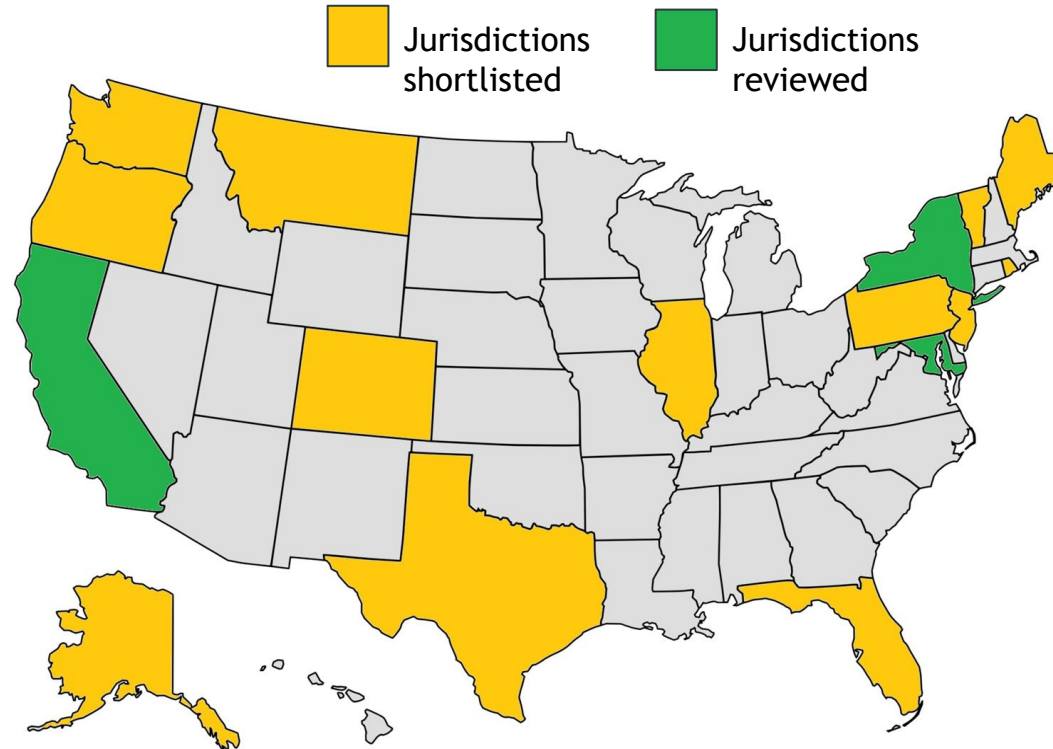
- ▶ Identify effective approaches using land quality in regulations

Jurisdiction Determination

- ▶ Desk Research, Comment Review, Expert Asks, Interest Areas:
 - ▶ Policy link of soil class & land law
 - ▶ Productivity plus other factors
 - ▶ Update frequency
 - ▶ Plantation history

Initial Review

- ▶ **California**
 - ▶ Multiple programs & digital update
- ▶ **Maryland**
 - ▶ Former plantation landscape with similar farm size and amount
- ▶ **New York**
 - ▶ Exploring soil health and carbon assessments



SunCatcherStudio.com
Also shortlisted: Puerto Rico, Australia



Best Practices Findings

State	Takeaway
California	Base the soil classification system on regularly updated data
	Stack tools to serve multiple purposes
	Make data and maps available and accessible in digitized format
Maryland	Integrate soil classification systems into existing state land protection funding programming
New York	Partner with a university or similar institution to establish regular soil classification system updates.
	Provide sustained funding to support regular soil classification system updates
	Use Agricultural Land Classification as an input for other tools , not a replacement
	Carefully select the crops used in productivity analysis



Development of Recommendations



Goal

Provide actionable guidance that enhances the role of soil classification systems in agricultural land use regulation in Hawai‘i, informed by a comprehensive understanding of the current context, challenges, and opportunities.



Key Objectives & Activities

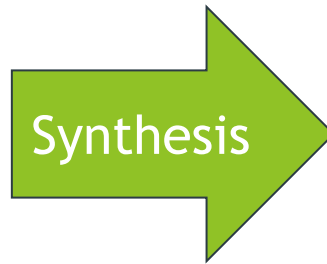
- ▶ **Determine System(s):** Select appropriate soil classification system for State and County use
- ▶ **Provide Options:** Offer continued use or revisions to Hawai‘i’s soil classification systems
- ▶ **Incorporate Feedback:** Create additional suggestions based on study findings and stakeholder input
- ▶ **Identify Requirements:** Outline operational needs, including statutory and rule changes, for implementing improvements





Methodology

- ▶ **Preliminary Research:**
 - ▶ Review Existing Systems
 - ▶ Research Best Practices
 - ▶ Compile Regulations
- ▶ **Stakeholder Outreach:**
 - ▶ Conduct Focus Groups
 - ▶ Engage County Groups
 - ▶ Review Pol.is Results
 - ▶ Consult Steering Committee
- ▶ **Compile Best Practices:**
 - ▶ Maryland
 - ▶ California
 - ▶ New York



Initial Recommendations:

- ▶ General Framework
- ▶ **Soil Capability**
- ▶ Multifunctional Suitability
- ▶ Smart Solar
- ▶ Ancillary





Initial Recommendations





Initial Recommendation: Update Existing Soil Classification System

1. **Update Outdated Classifications in Regulations**
 - a. Use advanced technologies and methodologies
 - b. Enhance effectiveness and relevance

1. **Establish a Statewide Updatable Soil Capability System**
 - a. Use recent data and physical soil characteristics
 - b. Adapt to changes in soil composition, erosion, other factors

1. **Integrate Historical and Current Land Use into the Soil Capability System**
 - a. Incorporate land use history, current practices, and predominant mineralogy
 - b. Use with decision support tools to support resilient management practices





Initial Recommendation: Update Existing Soil Classification System

4. Base the Soil Capability System on Latest Data

- a. Update regularly
- b. Maintain accuracy and reliability

4. Select Crops Strategically for Productivity Analysis

- a. Conduct economic analysis
- b. Reflect current and future agricultural needs

4. Retain LSB Title While Overhauling the Model for Multifunctional Use

- a. Incorporate and link to updated data sources
- b. Automate to align with current regulatory frameworks





Initial Recommendation: Improve Connection Between Soil Classification Systems and Agricultural Land Regulations

7. Establish Soil Capability as Baseline for
Statewide Agricultural Governance
 - a. Implement across jurisdictions
 - b. Allow Counties flexibility to tailor to local needs





Initial Recommendation: Secondary Recommendations

8. Clarify Classification References in Regulations

- a. Ensure clear, standardized criteria are applied consistently
- b. Facilitate uniform application across diverse contexts

8. Address Classification Disparities at the Parcel Level

- a. Develop methodologies to resolve rating disparities at the parcel level
- b. Ensure accuracy across diverse landscapes



Next Steps



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Questions and Answers



Mahalo

Project website:

<https://storymaps.arcgis.com/stories/aceb7c1d500e4cfe9eaf57274c0db123>

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