

# Carbon Sequestration: challenges and opportunities for Hawaii's farmers

**Tyler Jones**

**Hawaii Agriculture Research Center**

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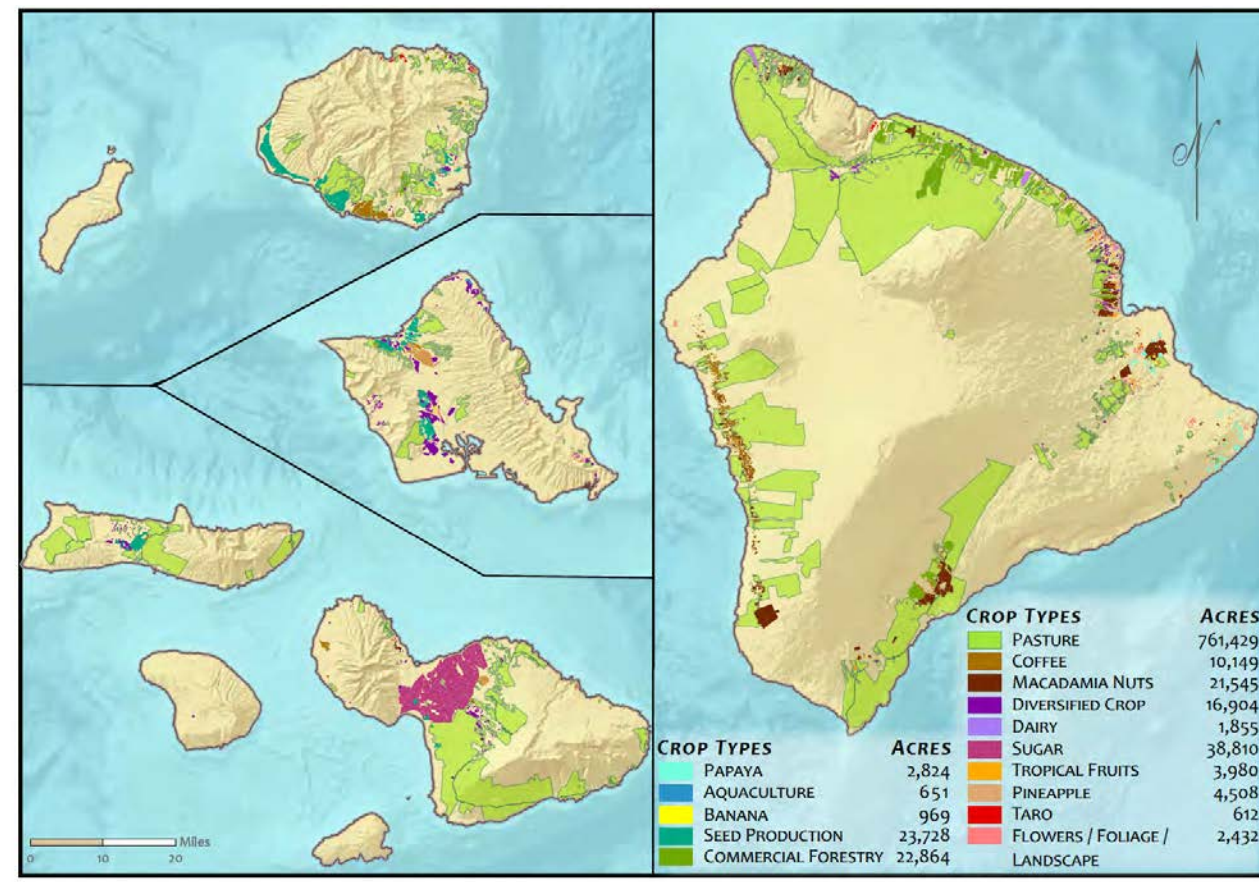
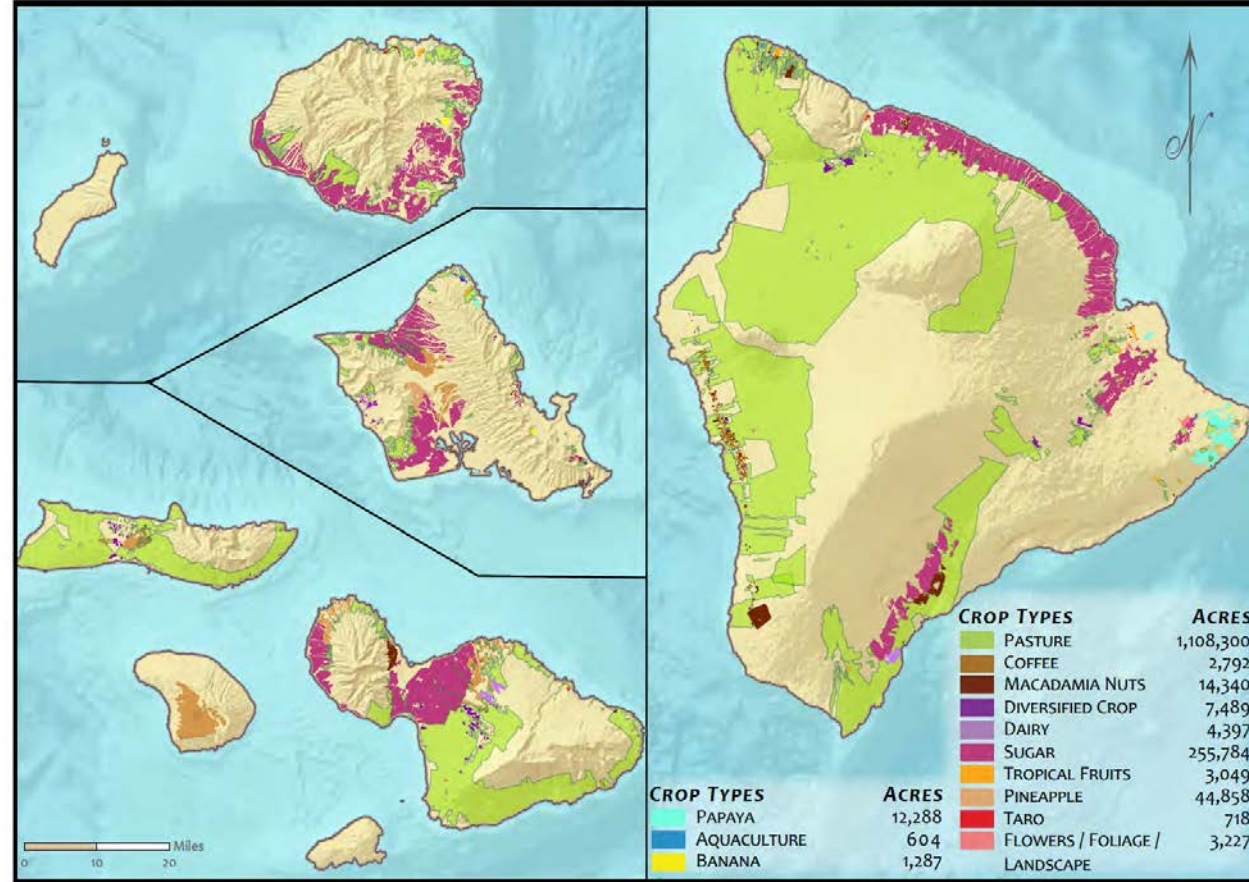


# Statewide Agricultural Land Use Baseline 2015 (SALUB 2015)

- <http://hdoa.hawaii.gov/wp-content/uploads/2016/02/StateAgLandUseBaseline2015.pdf>
- Commissioned by Hawaii Department of Agriculture
- Prepared by University of Hawaii at Hilo, Spatial Data Analysis & Visualization Research Lab
- Jeffrey Melrose, Ryan Perroy and Sylvan Cares
- THANK YOU!!!!!!



# Agricultural Land Use in Hawaii: 1980 vs 2015



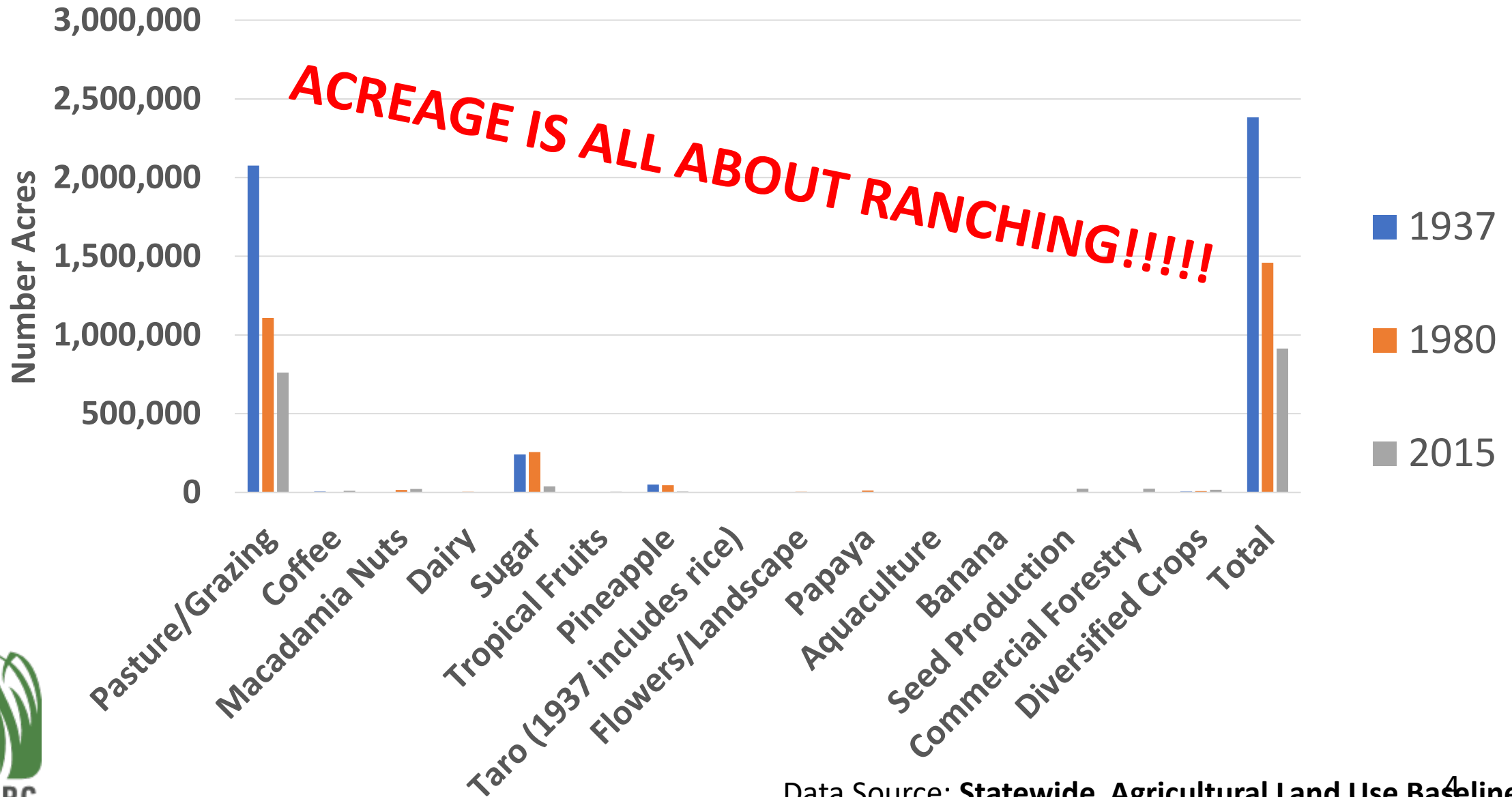
HAWAII'S AGRICULTURAL LAND UTILIZATION (1980)  
SOURCE: DEPARTMENT OF AGRICULTURE AND STATE OFFICE OF PLANNING



HAWAII AGRICULTURAL LAND UTILIZATION (2015)



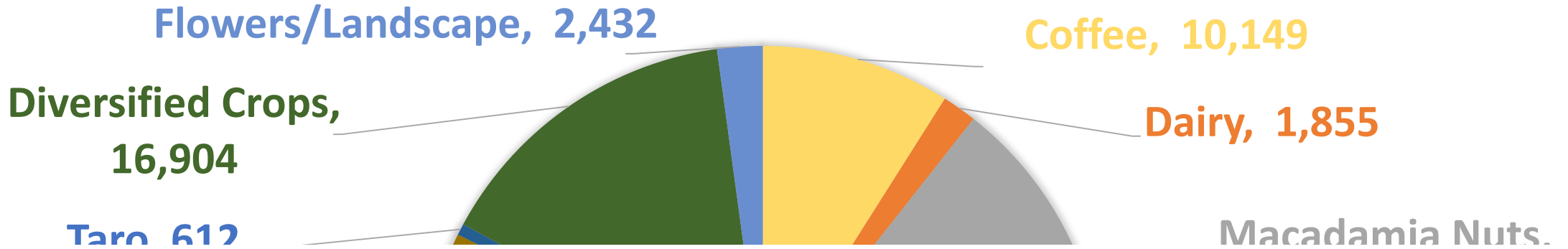
# Agricultural Land Utilization: 1937, 1980 and 2015



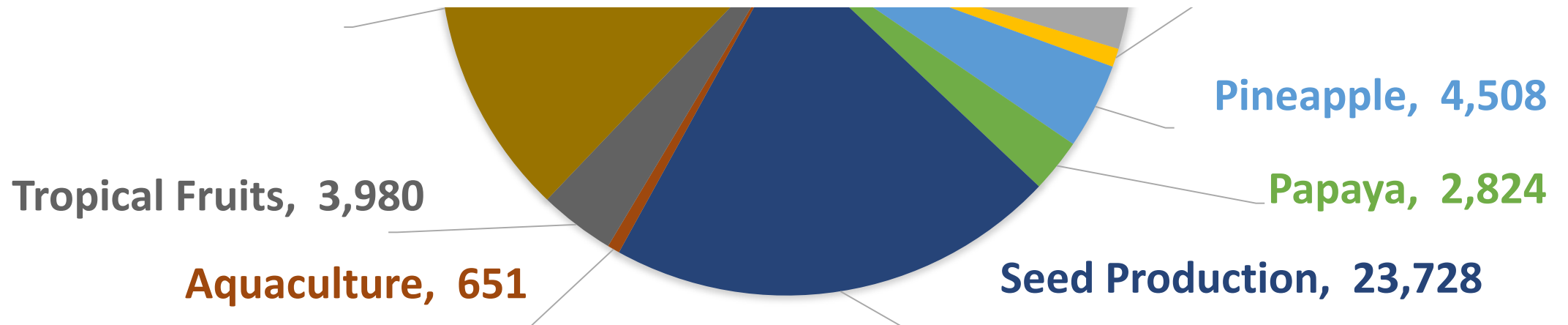
# Hawaii Agriculture Footprint: 2015

(ranching and sugar removed)

Total Footprint: 113,021 acres



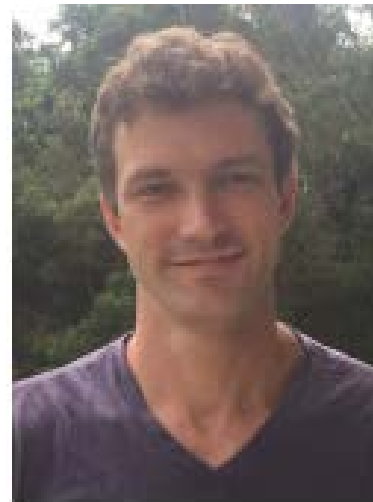
**Seed Production, Commercial Forestry, Macadamia Nuts and Coffee represent 69% of Acreage**





# Average Hawaii Farm Size

- Approximately 7,000 farms
- “Average” farm size in Hawaii is 160 acres
- Average farm size in US is 234 acres
- Simple average (mean) can be very misleading.....



Average Net Worth =  
\$65 Billion

Data Source: 2012 USDA Census of Agriculture

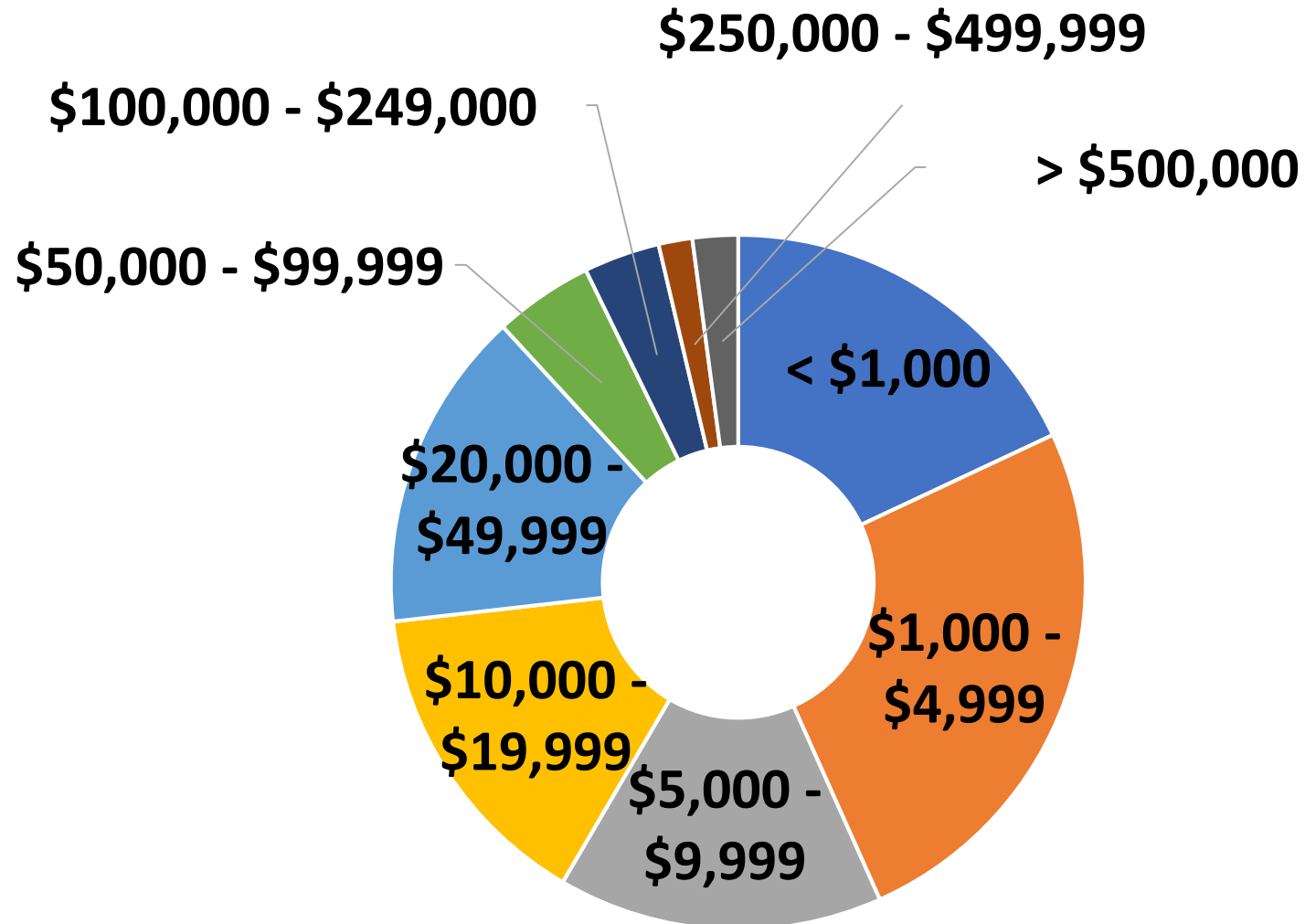
# Typical Farm Size in Hawaii

- Hawaii Median Farm size is 5 acres: half of HI farms less than 5 acres
- US median farm size is 45 acres
- Limited information distribution of HI farm size
  - 6,816 farm less than 500 acres
  - 57 between 500-1000 acres
  - 127 farms over 1000 acres



Data Source: 2012 USDA Census of Agriculture

# Farm Size by Revenue in Hawaii



Data Source: 2012 USDA Census of Agriculture

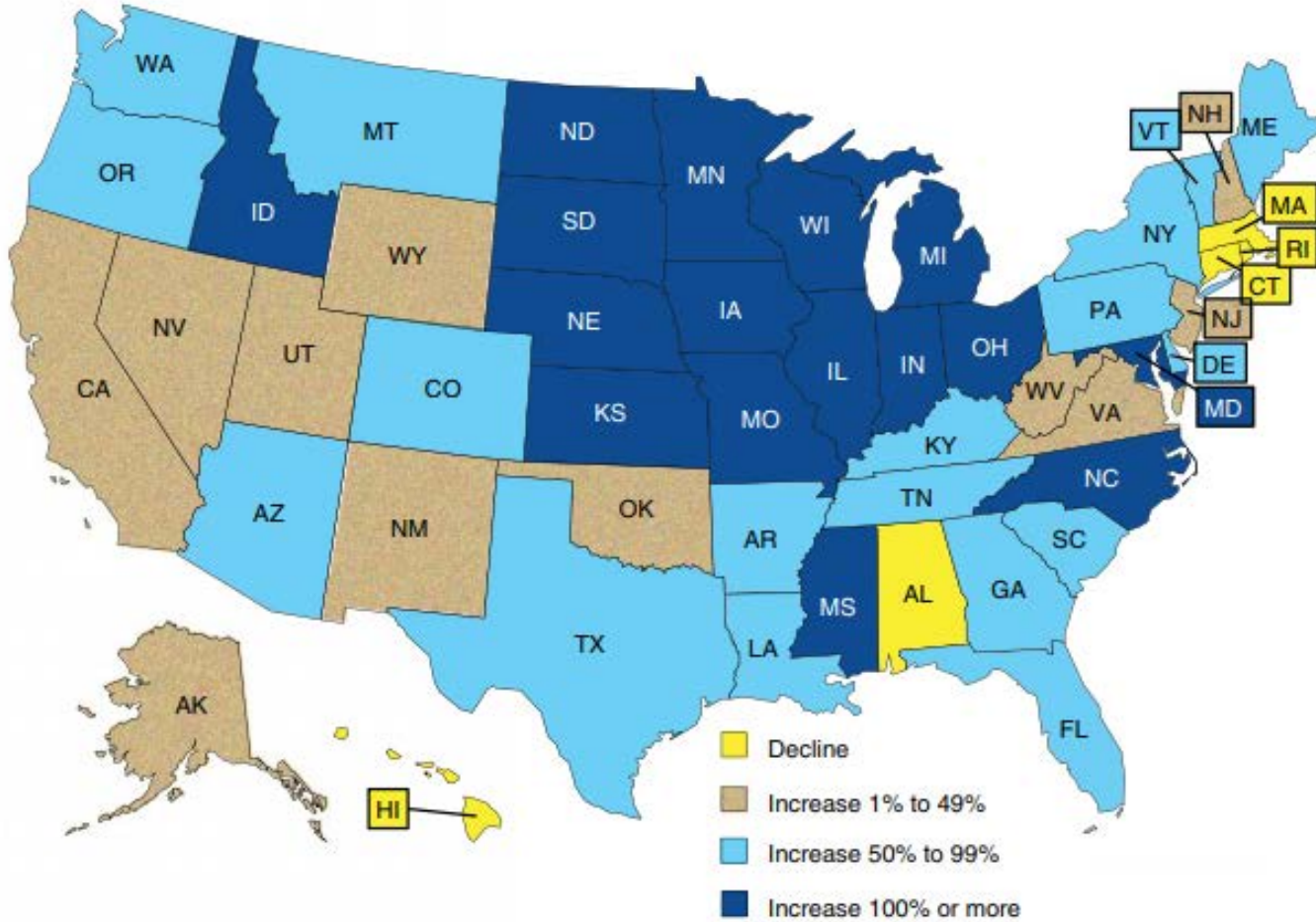




# Farm Size and the Organization of US Crop Farming

[www.ers.usda.gov/webdocs/publications/45108/39359\\_err152.pdf](http://www.ers.usda.gov/webdocs/publications/45108/39359_err152.pdf)

Figure 4  
Changes in midpoint acreage for cropland, by State, 1982-2007



Note: Estimates are "midpoint acreages," for which half of all cropland acres are on farms with more cropland than the midpoint, and half are on farms with less.



# So....why does this matter??

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- Direct measuring of carbon sequestration is cost prohibitive
- Carbon sequestration credits are focused on implementing management practices proven to increase carbon in soil
- Need established best management practices to determine carbon sequestration
- Need certification process



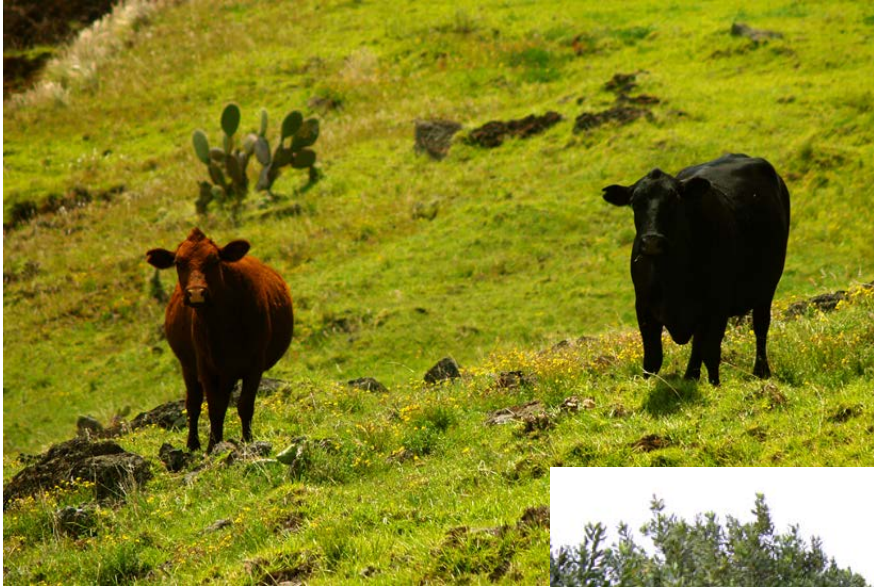
# Administrative Costs.....

- The small size of most Hawaii farms is significant challenge
- What are breakeven points for administrative costs?
  - At what carbon price?
  - Minimum acreage

Can farmers charge premium to help cover administrative costs???



# Low hanging fruit...



# Conservation Planning Capacity in Hawaii

- Natural Resource Conservation Service
  - Significant budget cuts → Reduced capacity for conservation planning
  - AGI restrictions prevent many of largest farms from participating
- Soil and Water Conservation Districts
  - Existing mechanism for conservation plan approval
  - Historically employs conservation planners
- Resource Conservation and Development Councils (RC&D)
  - Oahu RC&D: currently has three conservation planners on staff
  - With increased resources and capacity, could serve to plan and certify additional best management practices
- Private conservation planners/certifiers similar to USDA organic model



# Thanks!

Revenue neutral carbon tax with carbon dividend to all Hawaii residents!!!!!!!!!!!!!!

