

Local Food Connection: 2011 Conference

WORKSHOP: *How will a Changing Climate Affect Your Food Business?*

Description: *Climate change is impacting the physical systems (such as temperature and precipitation patterns) that we depend on to grow our food. Learn from the experts what changes are already beginning, what changes you can expect over the coming decades, and how you can take action to mitigate your risks.*

Speakers: Stephanie Page, Renewable Energy Specialist, Oregon Department of Agriculture; Jim Rue, Managing Director, Oregon Department of Land Conservation and Development; Kathie Dello, Research Associate, Oregon Climate Change Research Institute.

Moderator: Kelly Hoell, Associate, Good Company

Workshop Notes:

Introduction from Kelly Hoell:

She explains current situation and the emissions breakdown in the US and looking at the emissions in the US from a sector view versus a systems view. EPA report – “Opportunities to Reduce GHGs through materials and land management practices” 2009

Focus of this presentation is physical risk – specifically the large concern for farmers

Kathy from OCCRI – Oregon Climate Change Research Institute

Discussing the “Oregon Climate Assessment Report” (can be downloaded at: <http://occri.net/ocar>)
Drew from peer reviewed literature - WA and CA both produced reports

Chapters in report:

Climate, defining the problems & causes, freshwater resources, agriculture, vegetation coasts and estuaries, fish and wildlife, economics, human dimensions

Annual mean warming trend – it is predominantly warming

- Future predictions show significant warming
- Models also show potential for warmer, drier summers
- Likelihood for more precipitation overall annually

Oregon is one of the few states with a larger piece of its emissions being made up of transportation rather than energy.

There are large implications about the change of peak stream flow.

Agriculture in Oregon

- State is top producer of 15 US commodities
- Agriculture makes up about 9%

Wine slide – as we shift into a warmer climate, Oregon’s wine variety may change

Future projections of vegetation type – forest and tundra diminish significantly
Wild fire will increase if continued business as usual

There are parts of the Oregon coast where sea level will rise faster than the land.

Observed species changes – fish and wildlife began to shift towards more southern species
- Could be natural variability or climate change

Algal blooms shut down shellfisheries factories – Closures are becoming more frequent

Economic risks: Global estimates of costs 1-5% GDP

- Reduction in snow and water supply
- Energy
- Agriculture crop yield due to water supply

Oregon population – 60% think climate change is a moderate-extreme problem

Key findings:

- Increases in annual temp, warmer drier summer
- Summer water shortage
- Potential opportunities in the ag sector
- Wildfire is projected to increase

Moving forward

- Measures in adaptation should be taken now!

*Jim Rue – Deputy Director of Oregon Department of Land Conservation and Development
Oregon Climate Change Adaptation Framework*

- This is all built on the science
- Climate Integration Group’s Framework for Addressing Rapid Climate Change

Governor Kulongoski called for report – identify climate conditions that pose major risks for Oregonians.

Three elements:

- Eleven climate risks
- Short-term priority actions
- Recommendations

Risks – “very likely”:

- Increase in average annual air temp and extreme heat events
 - o Enhance ability to respond to heat waves
- Changes in hydrology and water supply; reduced snow pack and water availability in some basins; changes in water quality and timing of water availability
 - o Provide assistance to landowners to improve capacity for natural water storage
 - o Improve management of stored water
 - o Increase capacity to increase water storage and conservation

Risks “likely” to occur:

- Increase in wildfire
 - o Include wildfires in planning to reduce vulnerability to natural hazards
 - o Develop climate change adaptation strategies for forests and other fire-prone
- Increase in ocean temp and change in chemistry
- Increased incidence of drought
- Increased coastal erosion and risk of inundation from increasing sea levels and wave heights and storm surges
 - o Inventory and map coastal shore lands that are at risk of erosion or inundation, or are barriers to shoreline migration; develop shore land management strategies
- Changes in abundance and geographical distribution of plants and animals
- Increase in diseases, invasive species and insect, animal and plant pests
- Loss of wetland ecosystem services

Risks “more likely than not” to occur:

- Increase incidence and magnitude of damaging floods and frequency of extreme precipitation events
 - o Define and map future flood conditions
 - o Improve ability to assess, repair and reopen transportation corridors damaged by floods
- Increased incidence of landslides

Recommendations for Implementation

- Ongoing informal working group
- Work with OCCRI to identify research priorities
- Agency program assessment
- Integrate economic analysis into next round of adaptation planning
- Integrate local, private and federal entities into next round of adaptation planning

Stephanie Page – Oregon Department of Agriculture

Agriculture and Climate Change – Impacts, Adaptation & Emissions Reduction Strategies

- Ag is a contributor to GHGs
- Temp increases/drought
 - o Longer growing season
 - o Warmer temps – day/night?
 - o Shift in crops grown
 - o Increased drought
- Opportunities
 - o Research to help adaptation plans
- Precipitation
 - o Water irrigation could be reduced
 - o Less snowpack
 - o Timing/nature of precipitation events
 - o Water infiltration and storage in soil
 - o Erosion
- CO2 concentrations
 - o Higher water use efficiency

- Greater biomass production
- Mixed impacts on crop yields and quality
- May favor invasive species or pests
- Climate/CO2 impacts on ocean chemistry/seafood
- Invasive, pests, diseases
 - Longer growing seasons
 - CO2 fertilization
 - Greater crop biomass/sugar content
 - Range expansion
 - Range contraction

Adaptation needs

- Water supply
 - Irrigation water management
 - More storage
 - Crops that use water more efficiently
 - Restoration
- Crops
 - Drought-tolerant crop research and cropping decisions
 - Cropping systems that build soil organic matter and hold soil moisture
- Invasive species
 - Increase monitoring and detection
 - Increase control measures
- Ag GHG reduction strategies
 - Reduce energy consumption
- Soil sequestration
 - Cropping intensity
 - Pasture/range management
 - Some data for east side
 - Less data for west side
 - Per-ton incentives will probably be fairly low for Eastern Oregon
 - Lots of other benefits available
- Nitrous oxide reductions
 - Fertilizer application
 - Irrigation water management
- Livestock diet management
 - Animal selection/breeding
 - Feed use efficiency
 - Additional research is needed (GHG tool available specifically for dairies)
- Manure management
 - Minimize anaerobic conditions – aerate manure in lagoons
 - Avoid long storage periods
 - Avoid application to saturated soils
 - Anaerobic digesters

We are going to be struggling with issues – we have a toolbox of strategies to adapt but need continued research to accomplish these strategies

Q&A Discussion:

It is important for farmers to track temperatures and weather on their own land.

- One participant said he has done this for the last 40 years and sited his view that solar spots are the cause of current warming trends and suggested that the trends will not last.

Potential areas for farmers to get information and help include:

Soil and water districts, watershed districts, OSU extension offices and consultants

Adaptation helps build resilience into your operation.

Reports are available publicly at <http://occri.net/ocar>

Q: What plans are available publicly for water irrigation information:

- How are we going to decrease domestic consumption?
- There is a project that is going to start metering water consumption
- Oregon Department of Environmental Quality just came up with a report to help home owners reduce energy consumption – house size is very much tied to energy consumption
- Important to look at what you buy to target and reduce emissions

Longer growing seasons is a macro level comment – however for farmers with specific crops, on a micro level this isn't true – specifically for berries

Q: How do the reports integrate with other state policy – No child left indoors?

- Need to broaden net of people that are part of the educators
- State Board of Education needs to be convinced this is important.

Q: At what point is the data prescriptive rather than descriptive?

- Climate change is starting now