Climate Change at the Farmer’s Market: 
Effect of Climate Change on Agriculture in the Pacific Northwest

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Introduction

It's easy to think of climate change as an issue that’s not happening here at home, because we have not really felt many effects of it yet. However, in the next few decades, agriculture in the Pacific Northwest could experience some significant changes.

- Pests
  - The Pacific Northwest and Palouse region are critical to the cereal industry
  - Increase in global temperatures can produce a more pest-friendly climate
  - Climate change will alter precipitation patterns
  - Affects water availability during the spring and summer

Precipitation

- More precipitation during fall and winter months will fall as rain due to warmer temperatures, which then is not stored as snow.
- Spring runoff will peak earlier in the spring, lowering summer flow for rivers that depend on snowmelt.
- Example: snowpack in Cascade Mountains down by 25% in the last 40-70 years, due to 2.5 degree F increase during cold seasons.
- Climate models project an average increase of 5.3 degree F increase by the 2080s in some parts of the PNW.
- Models also project wetter winters and drier summers, further straining agricultural production during the main growing season.

Source: U.S. Fish & Wildlife Service and The Washington Climate Change Impacts Assessment

Areas shaded in orange and red are considered the highest risk snowpack for water storage during winter.

Pests

- With increased temperatures, agricultural pests are more likely to survive the winter
- Increases the population of pests
- Some pests thrive with increased populations and competition from other species
- Highly damaging to agricultural crops
- Climate change has led to more frequent drought in the Pacific Northwest, aphids and other pests are more likely to survive in these conditions
- With changing climate conditions, plant physiology attempts to adapt and in turn weakens the plants' immunity to pests
- Range expansion and greater alteration of host plant physiology could drive heavy losses in overall cereal crop productivity
  - Current agricultural pest populations, such as the Cereal Leaf Beetle, are controlled by parasitic wasps
  - With increased Leaf Beetle population, the parasitic wasp will be unable to control them, leading to erratic and out of control beetle populations

Source: Regional Approaches to Climate Change for Pacific Northwest Agriculture and REACCH (Regional Approaches to Climate Change)

Other issues to consider

- Higher temperatures may make crops grow faster, but can also be a limiting factor.
- Higher CO2 levels can increase yields, by up to 30% for some species.
- Many pests, weeds, and fungi like warmer temperatures and wetter environments; farmers spend around $11 billion a year controlling these issues.
- Increases in carbon dioxide may increase growth of pasture grasses, but may also decrease their quality. Cattle may need to eat more to get the same nutritional value.
- Atmospheric carbon dioxide dissolves into the ocean, making it more acidic. This threatens the Northwest coastal shellfish industry.
- Warmer water can effect the lifecycles of salmon and increase the likelihood of pathogens. The West may see a further decrease in salmon populations.
- The length of the growing season for various plants and crops has been increasing the last few decades, and is likely to continue.

Source: Climate Impacts on Agriculture and Food Supply. Environmental Protection Agency.

This image shows the cereal leaf beetle and the damage it does to plants.

Conclusion

Climate change will potentially become a serious issue in the Pacific Northwest, with some sectors of agriculture and other industries already feeling the effects. Both citizens and governments alike should take notice of this problem and work together to start coming up with adaptation and mitigation solutions.