

# Tracking dryland wheat yields across the landscape: Results of a longitudinal survey of wheat producers in the Inland Pacific Northwest

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## Objectives

The longitudinal survey consists of in-person interviews with a set of 47 wheat producers representing the varied producing regions in the REACCH study area. In addition to providing detailed economic data on yields, production practices, and machinery, these growers answered questions from other REACCH scientists on a wide range of topics, from pest problems to opinions on Extension and climate change.

## Approach

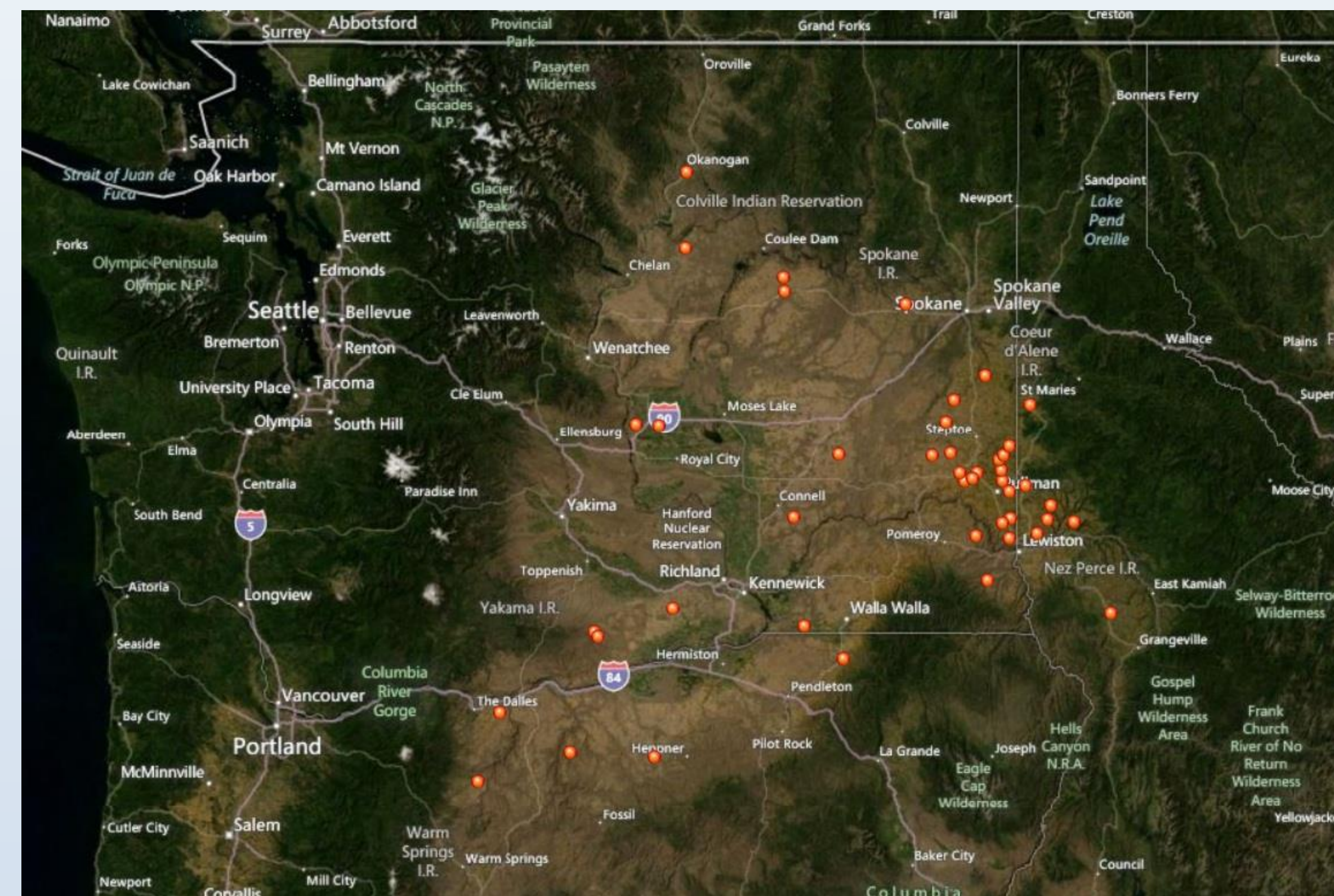
The longitudinal survey (LS) provided an in-depth examination of farming practices by a group characterized by frequent university collaboration and early adopters of technology. Both agronomic and economic impacts by year are compared for 47 participating growers.

Growers were grouped by **agroecological class (AEC)**, a classification system based on cropping intensity:

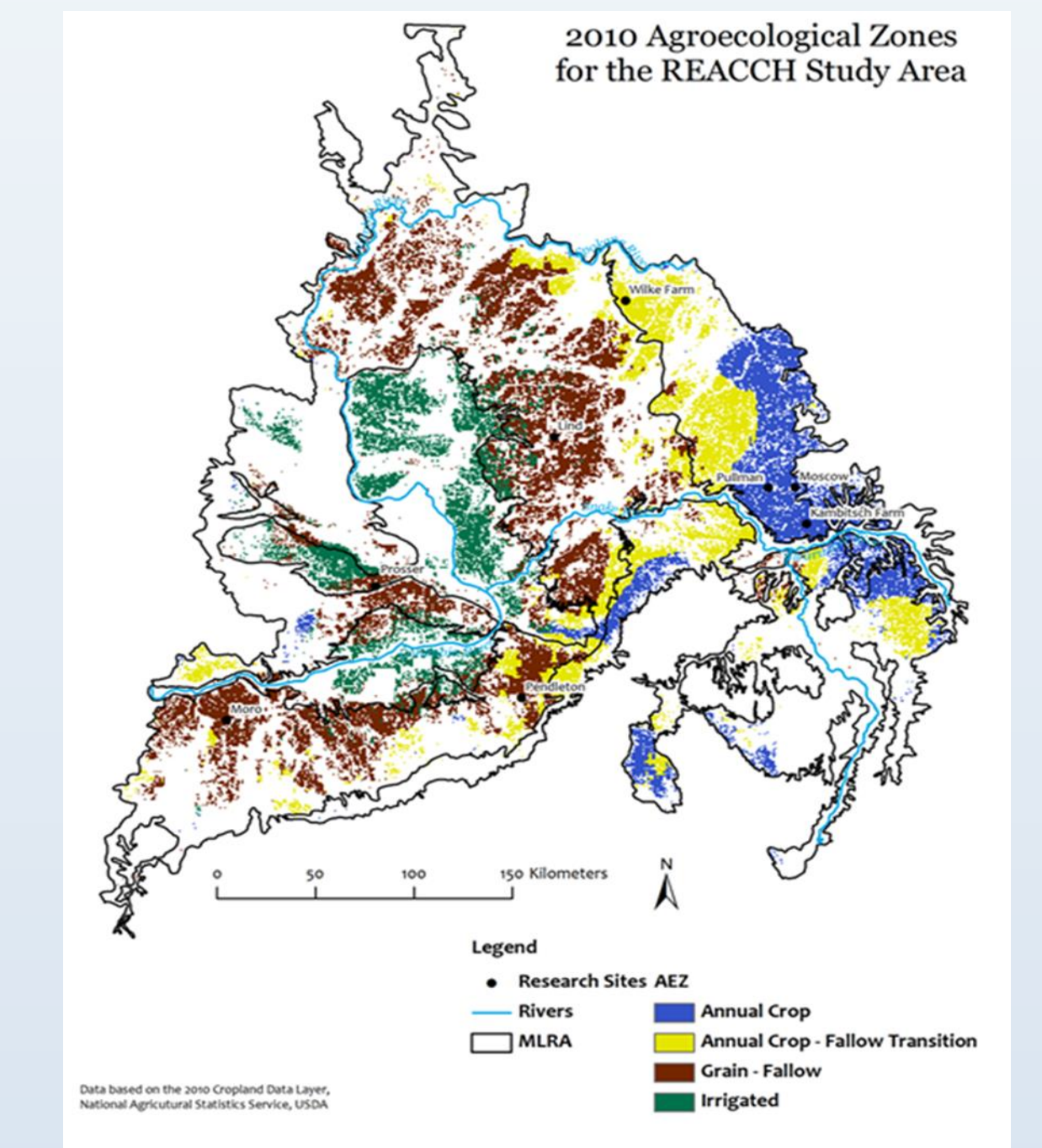
**Annual cropping**, 20 survey participants;

**Transition** (cropping two years out of three), 11 participants;

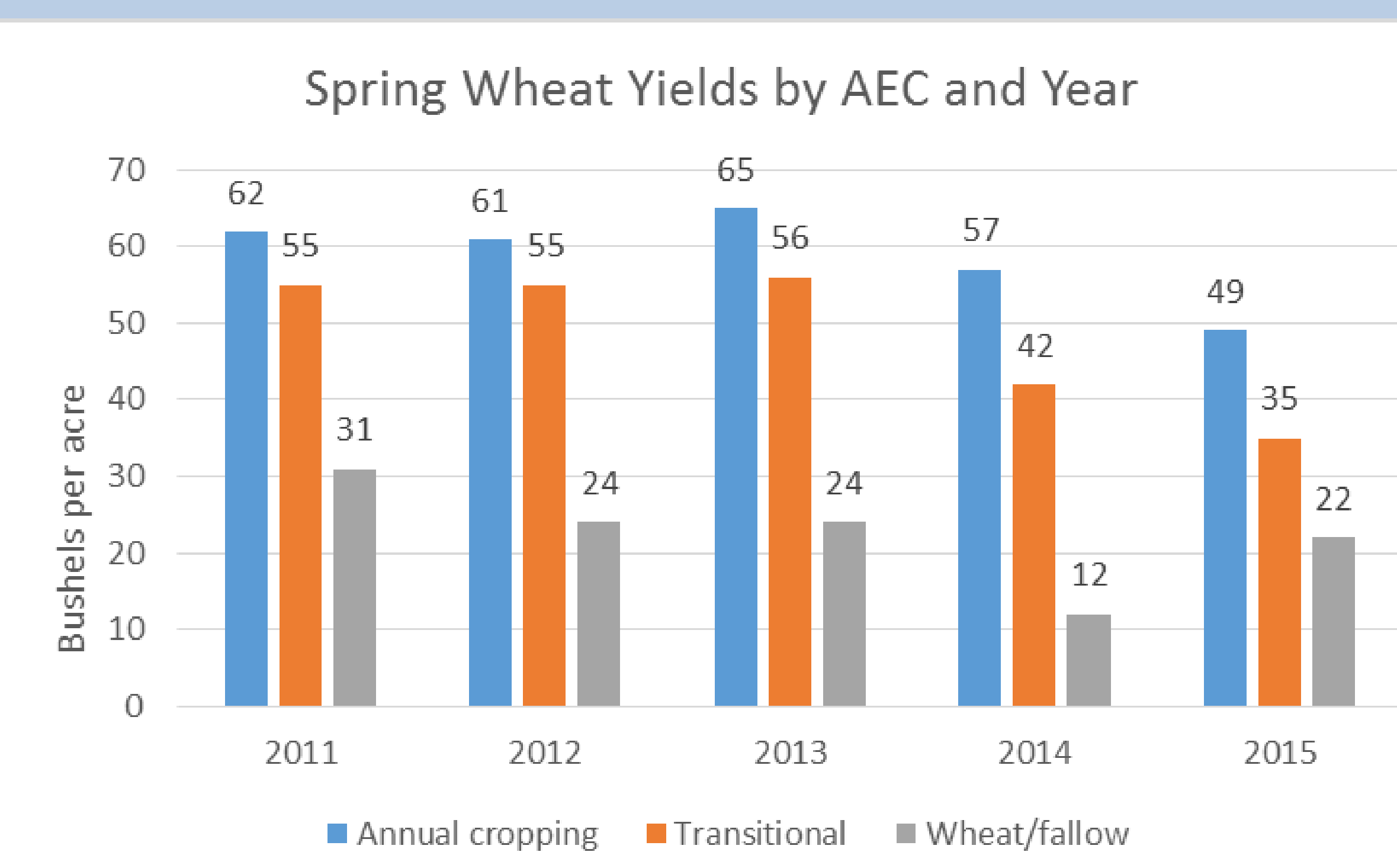
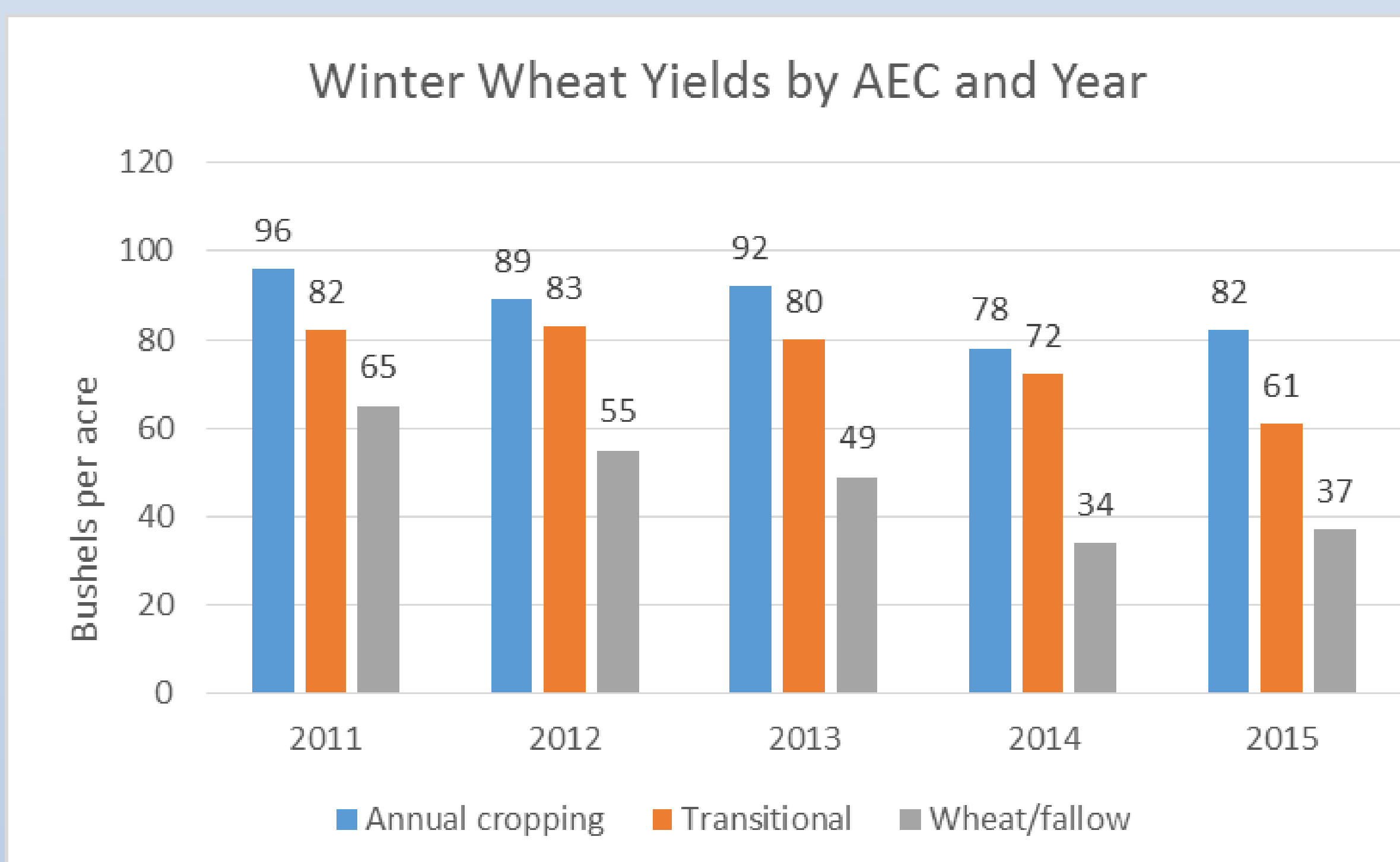
**Grain-fallow** (one crop year followed by one fallow year), 14 survey participants. See more information by AEC below.



Sampling locations of producers in the longitudinal survey

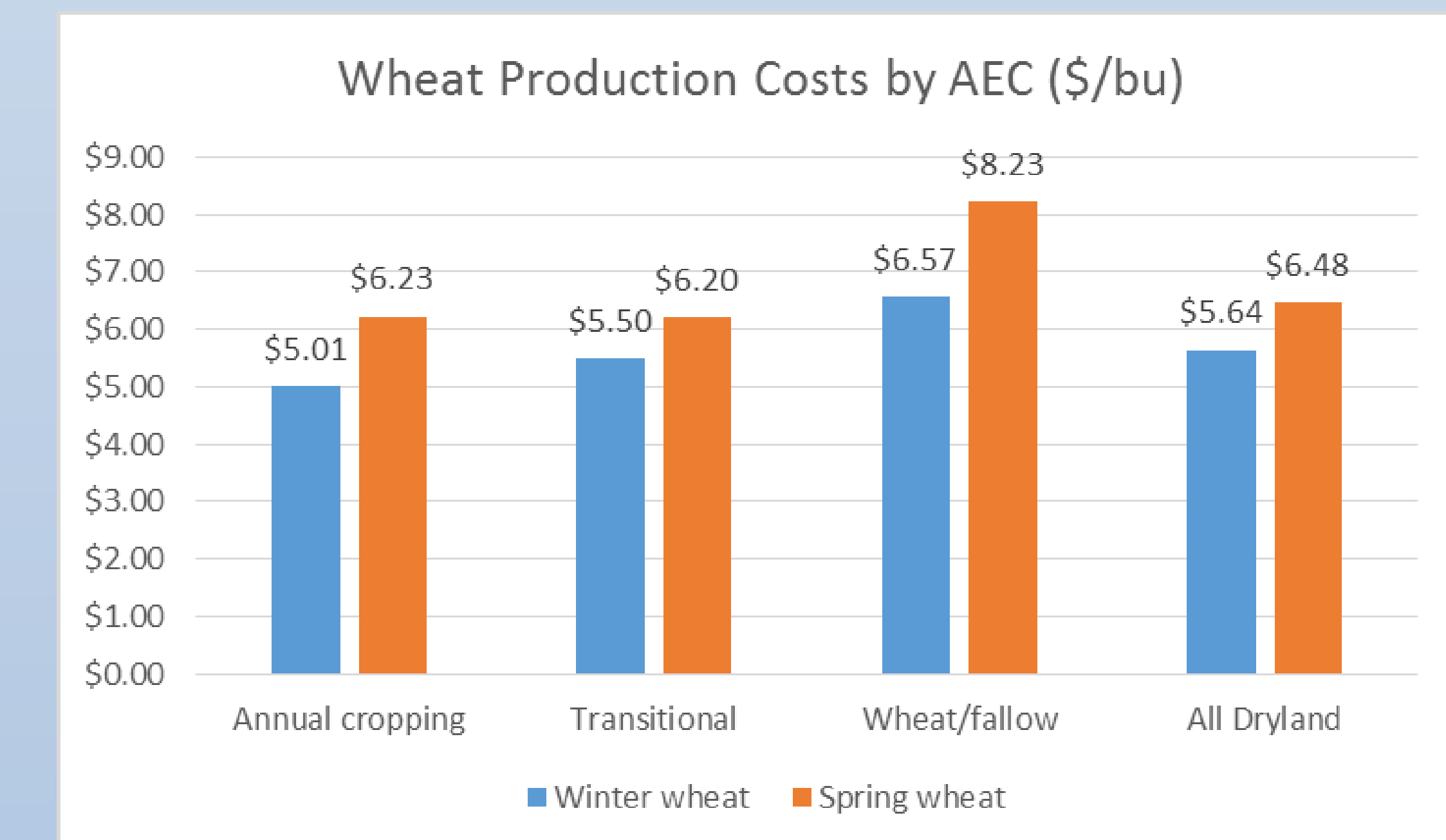


Huggins et al., 2011. Dynamic Agroecological Zones for the Inland Pacific Northwest.



## Economic Impacts of Yield Variability

Higher than average precipitation in 2011 and 2012 resulted in record yields across the region, particularly for the wheat-fallow zone. In 2014 and 2015, poor growing conditions and drier than normal conditions resulted in poor yields (see left). Because the lower precipitation zones are lower yielding, their costs per bushel are higher (see below).



## Summary of AEC characteristics from the longitudinal survey data

Agroecological Class (AEC)	Average Precipitation (in/year)	Rotation	3-Year Winter Wheat Yield Average (bu/ac)
Annual	21	winter wheat, spring grain, legume	92
Transition	16	winter wheat, spring grain, fallow	82
Grain-Fallow	12	winter wheat, fallow	56
Irrigated	6	varies	142

## Conclusions

While a 5-year period is insufficient to document trends in climate change, the 2011-2015 period encompassed unusual weather for the region, from much wetter to much drier than usual. Growers' yields across the region varied significantly from long-term averages over this time period. Production costs, calculated for each grower and averaged by AEC, are higher than market prices for the drier production zones, implying economic hardships and vulnerability for these areas.