**REACCH 5th Grade Curriculum – Overview Document**

The Regional Approaches to Climate Change (REACCH) project is designed to enhance the sustainability of cereal production systems in the Inland Pacific Northwest region under ongoing and projected climate change, while contributing to climate change mitigation by reducing emissions of greenhouse gases. A main goal of the REACCH project is to prepare scientists and educators to create and promote practical science-based agricultural approaches to climate change adaptation and mitigation. The REACCH education team has developed innovative approaches to incorporating agriculture and climate change topics into K-12 curricula in order to prepare citizens and professionals for the climate- and agriculture-related challenges they will face in the future. As the Greek philosopher Diogenes once said, “The foundation of every state is the education of its youth.”

This 5th grade curriculum is designed to assist K–12 teachers in incorporating agriculture and climate change science into their classrooms. This is a four-week curriculum aligned to meet fifth grade standards for Science (NGSS and Idaho State) and ELA Common Core standards for Oregon, Washington and Idaho. [Note: One lesson also hits a Common Core Math standard.] This curriculum is designed to be place-based (Inland Northwest) and scientifically sound, based on current research conducted by REACCH scientists. All lessons are designed to be hands-on, inquiry-based and standards-based to actively engage students in successful learning. Below are an overview of the major topics covered in the four-week curriculum and an overview of individual lesson plan components.

**5th grade curriculum overview**

***Wheat Farming and Climate Change in the Inland Pacific Northwest***

* **Week 1 – How plants grow**

**Topics covered in lessons**: What plants need to grow, photosynthesis, water cycle and role of plants, wheat plant structure/function, wheat life cycle, wheat plant system models (end of week assessment)

* **Week 2 – Wheat farming in the Inland Northwest (INW) and the impacts of climate change**

**Topics covered in lessons**: History of wheat farming in the INW, inputs and outputs of a wheat farm, global climate change (carbon dioxide, temperature, greenhouse effect), INW regional climate change (temperature and precipitation), how climate change is influencing wheat agriculture in the INW, wheat farm system models (end of week assessment)

* **Week 3 – What is happening on my wheat farm? Analyzing Scenarios**

Students will be divided into groups and each group will receive one of three scenarios. They will analyze data to discover what is happening on their farm, and then spend the week learning about potential solutions to address the problems they are facing on their farm. The topics of the three scenarios are:

- Scenario #1 – Aphids on a wheat farm in Moscow, Idaho

- Scenario #2 – Hotter, drier summers on a wheat farm in Pendleton, Oregon

- Scenario #3 – Wetter, warmer winters on a wheat farm in Walla Walla, Washington

* **Week 4 – Evidence-based opinion essays**

Students will spend the week writing opinion essays about what they think they should do to address the problems they are facing on their farm. Students will cite textual evidence from their research to support their thesis statements and all supporting opinions and claims. At the end of the week students will present their cases and proposed solutions to their class. The REACCH education team encourages all teachers using this curriculum to have students make their presentations to a group of local farmers and scientists. Research has shown that student work and interaction in real-world contexts enhances student motivation, engagement and learning.

**Lesson Plan Components**

**Detailed lesson plans for each day are provided. Each lesson plan includes the following:**

* Lesson overview
* Alignment to 5th grade ELA Common Core and Science standards (for Oregon, Washington and Idaho)
* Learning targets for the lesson, aligned to specific standards
* List of materials needed
* Complete lesson descriptions – all lessons are designed to be hands-on, inquiry-based, standards-based, place-based, and scientifically sound
* List of resources used in lesson development – some lessons also include additional resources or recommendations for extension activities
* Handouts, graphic organizers, and supplementary materials are included in each lesson plan document (unless otherwise noted and attached as separate documents)

REACCH has also created a high school curriculum, and elementary teachers are welcome to use this as an additional resource if desired.