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LARC: Local Agricultural Resource Conservation

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**“LARC: Local Agricultural Resource Conservation”**

Dash Justice, Josh Davis, Sid Crumble, Ashlie Kinney  
*Portland Youth Builders Technology*

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**PROBLEM**

In America today, over 75% of the nation’s water is used in the irrigation of agriculture. The main users—and abusers—of water in the United States are farmers. In addition, many areas in the U.S. are facing drought conditions, especially in western states. Also, while the drought conditions in California are receding, water shortage as an issue demands a long-term solution.

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**CONCLUSIONS**

By watering plants only as they need it, we cut down the amount of water that gets wasted using timers. Plants don’t run on a schedule, they need based on how much they need and when they need it. By using moisture sensors in the soil adjacent to the roots, we can accurately disclose when the crop is running low on water.

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**DESCRIPTION**

Our watering system uses an Arduino Uno with breadboard circuitry connected to a moisture sensor and pump to distribute water efficiently based on the water reading of the soil. The process is as automated as possible, to save both water and energy when soil is running low on moisture.

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**KEY OBSERVATIONS**

Considering the majority of water is used in agriculture, our team decided to tackle the issue of water usage in food production. At first, we thought of focusing on the agricultural areas of the state of Oregon, but then decided to focus on the methods in which we could use water use closer to home, in Portland. Our intention is to find a way to grow crops while effectively reducing water waste. Many places in Portland, including restaurants like the Noble Rot Wine Bar, already have rooftop greenhouses. To develop an unique innovation, we chose to focus on creating a more efficient water system to compliment to implemented in the design of a rooftop greenhouse garden. Water is usually wasted when crops are watered excessively. Remarkably, our system detects the moisture levels in the soil as well as determines the correct amount of water needed for each crop and determining specifically when it needs to be watered.

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