



PNW environmental potential highest in U.S.

COLFAX, Wash. — In the Pacific Northwest, weather — and more specifically rain — is credited in high-yielding years and conversely blamed in low-yielding years.

However, environmental analysis and prediction modeling as part of the international Maximum Wheat Yield Project indicates the potential achievable yield in the Pacific Northwest to be higher than any other high-yielding wheat region in the United States, and among the highest in the world. The main driver comes down to the PNW’s remarkable solar radiation resource (i.e. sunlight).

Modeled after the United Kingdom’s Yield Enhancement Network, The Maximum Wheat Yield Project (MWYP) examines the gap between current yield, achievable yield, and potential yield in the Pacific Northwest. MWYP is led by a collaborative international research team including growers, retailers, BASF, and university researchers from the top wheat production regions of the world. The project aims at uncovering where the largest yield building opportunities are, and how to influence those gaps specific to each growing region.

Fundamentally, yield is a simple math equation. It is our ability to capture and then convert water, mineral, and solar resources into yield. In dryland agriculture, metrics indicate that water is a well-utilized, but unpredictable, resource.

Solar radiation (sunlight), however, is a much more consistent and reliable resource — particularly in the Pacific Northwest. With longer days, and considerably more sunny days, the MWYP has evalu-

ated the PNW’s environmental potential to be among the highest in the United States and higher than that of the United Kingdom.

The opportunity to fill the yield gap by fully capitalizing on the solar radiation resource of the PNW is what led Cat Salois, Director of Research for The McGregor Company, to question what yield improvements could be made when focusing on extending grain fill at the peak of solar capture.

“We have huge environmental potential, yet our region has one of the biggest gaps between current and achievable yield,” Salois says, referencing her work with the Maximum Wheat Yield Project. “Often, we HOPE water is the limiting factor, but don’t truly KNOW where, when, and how our yield losses are happening,” she continues. “Identifying major yield gaps and understanding how those gaps affect the yield components of the crop, stands to dramatically impact yield response.”

There are three major yield components in wheat — heads per acre, grains per head, and weight per grain. Each of these yield components have a critical growth period during which they are most sensitive to stresses and most responsive to management inputs.

“Knowing what tools to use, and at what timing, is critical in order to reduce yield losses and help drive higher returns on resources from the crop inputs that have already been made,” says Salois. According to research through the Maximum Wheat Yield Project, the PNW has

a similar head per acre metric as the UK, but consistently lags behind in grains per head and weight per grain. While each yield component is significant, extending grain fill is key in driving heavier grain and capitalizing on the PNW’s solar resources. Increasing the grain weight by just 1 gram per thousand grains adds up to 3 bushels per acre of yield gain.

Research indicates that the health and viability of the flag leaf is the conduit to extending the grain fill period and increasing weight per grain. Beed et. al. out of the UK in 2007, demonstrated that the flag leaf, glumes and awes produce 60-70% of the photosynthate required for grain fill. “The ‘stay green,’ or longevity, of the flag leaf contributes more to yield than any other photosynthetic trait associated with wheat by prolonging the length of time contributed to grain filling,” says Salois. “On average, 4 bushels per day are lost for each day grain fill is cut short.”

By consciously moving a portion of the crop inputs later into the season, Salois and her team have been able to successfully extend the “stay green” of the flag leaf keeping it actively photosynthesizing, prolonging grain fill, and increasing weight per grain. A combination of foliar nutrition and plant health fungicides applied at Feekes stages 9 to 10 (full flag leaf emergence to head emergence) has consistently shown a 10% yield gain, according to research by The McGregor Company. Salois attributes this to the plant’s ability to keep energy stores focused on yield production rather than being diverted to survival.



Chemeketa Community College’s Agriculture Complex site.

Chemeketa’s Ag Complex on track for 2021 opening

Construction is underway on Chemeketa Community College’s new 14,000-square-foot agriculture complex. Set to open in January 2021, the complex will serve as a hub for students, industry professionals, and the community.

“From high school students and college partners, to small family-owned farms and large grass seed companies, this will be the place for one of the Willamette Valley’s largest industries to come together in one learning space,” said Holly Nelson, Chemeketa’s executive dean of Regional Education and Academic Development.

Housed on the grounds of the College’s Salem campus, the indoor-outdoor design of the complex will provide multiple learning and gathering spaces, as well as:

- A commercial greenhouse.
- Woody ornamental, pollinator, and soil labs.
- Demonstration gardens and plant collections.
- Organic vegetable gardens.
- A hoop house.
- Farmland plots.
- Onsite stormwater management.

This facility will play an important role in

meeting the agricultural education and workforce needs of Marion, Polk, and Yamhill counties, with the design of the facility advised by county, city, and industry leaders.

“We’re currently operating in spaces that are old and not up to current industry standards,” said Nelson. “We’re creating good, educational spaces to build upon our existing programs, serve as a resource for our industry, and welcome the community.”

Chemeketa’s Agricultural Sciences department currently offers degrees, certificates, and courses in Horticulture, Wine Studies, and Pesticide Training. Additionally, the College serves 65 local farms through its Agribusiness Management program, with classes focusing on agricultural recordkeeping and financial management.

The complex is supported through state investment, grants, and College funds. An additional \$400,000-\$500,000 is still needed to build the College’s new greenhouse, where students will receive hands-on training in sustainability, regulations, and management of greenhouse and nursery operations.

To learn how to support the project, contact Holly Nelson at holly.nelson@chemeketa.edu.

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