PRESS RELEASE

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Media Contacts:

Kayla Almond

The McGregor Company

Director, Marketing Communications

509-475-0454

kayla.almond@mcgregor.com

Cat Salois

The McGregor Company

Director, Research & Technology

509-397-4355

cat.salois@mcgregor.com

PNW ENVIRONMENTAL POTENTIAL HIGHEST IN U.S.

COLFAX, Wa. – 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 evaluated 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.  “Applying a true plant health type fungicide will cause a plant to think it has a low-energy status, which then leads the plant to begin taking up more carbon and nitrogen thus increasing photosynthesis beyond what would have occurred without those applications,” observes Salois.  “Plant health fungicides have also been shown to downregulate ethylene gas production, which is the hormone that signals the plant to ripen and mature.  This allows the plant to grow through stresses longer into the season.”

Capitalizing on the tremendous environmental potential of the PNW’s solar resource availability will require a fundamental shift in the thought processes for WHY we need to address flag leaf timing in the wheat crop.  Today, a majority of the effort is made on the front end, or vegetative portion, of the season.  In order to close the yield gap, that same effort must be put into the back half, or reproductive portion, of the season as well.  Plant health fungicides in combination with the right foliar nutrition package upregulates photosynthesis and prolongs grain fill, leading to heavier grain and increased yields at the finish line.

For additional information on nutritional crop inputs and propelling yield potential through grain fill, visit [www.mcgregor.com](http://www.mcgregor.com/) or contact a McGregor Certified Crop Adviser at (509) 397-4355.

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