

## Our Commitment to Sustainable Agriculture



The Monsanto vision for sustainable agriculture strives to meet the needs of a growing population, to protect and preserve this planet we all call home, and to help improve lives everywhere. For our farmer partners, this means:

### PRODUCING MORE

We work with farmers to get more from every acre of farmland through improved yield gains by producing a combination of advanced plant breeding, biotechnology, and improved farm-management practices.

### CONSERVING MORE

Our goal for improved crop yields is strengthened by a commitment to reduce resources such as land, water, and energy per unit produced. This means developing better seeds and improved on-farm practices to help farmers to better manage weeds, pests, and environmental stresses.

### IMPROVING LIVES

Our technology is helping to improve lives of farmers and the people who depend on them, through increased yield and productivity.



Michael Doane

### Eco-Efficiency from Wheat Field to Market

**A**t the WestBred brand, we define Sustainability as “Resource Conservation through Enhancements in Agronomic Traits and Practices”. But what does this really mean to wheat farmers?

“Monsanto often gets credit for our close working relationship with farmers,” said Michael Doane, VP, Sustainable Agriculture Policy. “We really care about this incredible challenge of feeding a growing population with a constrained natural resource base. Getting more with less is important, and this plays out in our working partnership with farmers.”



### Field to Market

As an example, Monsanto is a charter member of the Field to Market alliance, along with members such as NAWG, Cargill, General Mills, Coca-Cola, McDonald’s, and Wal-Mart. The group is a science-based initiative to build a platform for sustainable sourcing.

### Trends in Wheat

The Field to Market Environmental and Socioeconomic Indicators Report (July 2012) states reductions in the following indicators from 1980 to 2011 to produce one bushel of wheat:

Reduction in Land Use	▼ 18%
Reduction in Soil Loss	▼ 47%
Reduction in Irrigated Water Use	▼ 12%
Reduction in Energy Use	▼ 22%
Reduction in Greenhouse Gas Emissions	▼ 15%



Dale Clark surveys KELDIN during growth season.

## Improved Wheat Farm Management Practice in Action

By **Nathan Blake**  
Northwest Regional Commercial Manager

What does sustainable wheat farm management look like in reality? To produce more with less, farmers need tools to help them get the most from their land. Farm management practices cover a broad range of factors.

### Varietal Choices

- Varieties that have early spring growth help out-compete weeds and cover the ground quicker, resulting in less water evaporation.
- Early varieties grow more when water is available and finish grain fill before weather patterns turn more hot and dry.

### Conservation Tillage or Direct Seed

- This practice increases water infiltration and reduces soil erosion by wind and water, while also decreasing incoming solar radiation.
- Less tillage means fewer passes over the field, resulting in reduced fuel use and less wear-and-tear on equipment.

### Use of Crop Rotations

- Aids in weed and disease control, while reducing reliance on chemicals and maintaining yield potential.
- Enables the use of different herbicide families, thus decreasing the likelihood of weed resistance.

### Timing and Method of Fertilizer Application

- Efficient use of fertilizers increases yield potential.
- Reduces fertilizer loss through leaching and de-nitrification.

## Wheat-Canola Rotation: Increase Yield for Added Sustainability

There are numerous ways to improve sustainability on a wheat farm. One of these is through the use of crop rotation. Here is an excellent example of how wheat rotates well with canola for improved yield potential in the Central and Southern Plains.

By **John Fenderson**  
Central/Southern Regional Commercial Manager

Only the hearty survive in the Great Plains. That is how wheat became the staple crop here. It fits the environment better than alternative crops. Wheat is tough and can endure the conditions Mother Nature dishes out... drought, excessive wind, extreme heat and cold. However, as time passed and the cost of wheat production went up, sustainability became fleeting. Soon, other areas of the world produced more wheat, keeping prices subdued.

Wheat breeding and technologies, such as seed treatments and weed control, help to improve productivity. However, it is critical that producers use business management practices that maximize yield while minimizing costs.

In 2002, as a researcher in Kansas, I planted my first winter canola crop. We needed an alternative crop to rotate

with wheat. Not sure what to expect or if it would be successful, we tried canola. Fast forward to 2013. Winter canola is finding its niche, just like wheat did 100 years ago... and promises to make wheat much more profitable.

Canola is important because, first, it allows management of problematic weeds that rob wheat yield potential, cause dockage and reduce end-product value. Second, wheat yields improve significantly following a canola crop. Growers report 10-30% yield increases vs. wheat after wheat.

Canola rotation best practice is for continuous wheat growing areas with > 20" of annual rainfall. It fits best south of I-70 in Kansas and east of Hwy 283 through Oklahoma and Texas (except for the panhandle).

*If you are looking to maximize returns on your wheat investment, consider sustainability-enhancing canola as a part of your wheat production system.*

# PRODUCT SPOTLIGHT

## WB-PATRON Contributes Eco-Efficiency to Southwest

By **Dale Clark**  
Southwest Regional Commercial Manager

"Globalization of the dairy industry will increase in the coming years, with a significant impact on domestic and international trade. Demand for dairy products will grow faster than available supply, driven disproportionately by emerging markets, according to the Innovation Center for U.S. Dairy. However, traditional sources of supply will not be able to fully meet growing dairy demand<sup>1</sup>."

This creates enormous opportunity for industries supporting the dairy industry, such as forage wheat. Jim Kautz of Barkley Seed, Inc., is fond of WestBred WB-PATRON for this reason. WB-PATRON is a strong straw forage variety that can efficiently utilize nitrogen and other nutrients present in dairy wastewater used to irrigate crops. The higher protein level of WB-PATRON means more nitrates in the form of manure that can be applied back to each acre. Combining the increased



Bob Samuelson, Seedsman at Lockwood Seed (left), and Jim Kautz, Agronomist for Barkley Seed, Inc., discuss potential crop yields of WestBred brand forage varieties.



Swathing WB-PATRON in Chowchilla, WA.

forage yield and higher protein levels, with the efficient use of the dairy wastewater, has resulted in a higher level of milk production on a per-acre basis.

From start to finish, forages grown on every acre must be managed for maximum feed value and overall energy. WB-PATRON, a new WestBred wheat variety, is a perfect fit for this rotation. A beardless forage wheat with high yield potential, WB-PATRON provides the increase in quality demanded by dairymen.

<sup>1</sup> Innovation Center for U.S. Dairy, "The Impact of Globalization on the U.S. Dairy Industry: Threats, Opportunities, and Implications", Presentation to the USDA Dairy Industry Advisory Committee, Tom Suber, June 3-4, 2010.

## Tips & Techniques

### Planting Spring Varieties in the Winter

Planting spring wheat varieties in the fall is not a new practice for WestBred, especially in the Southwest. More and more growers are adopting this practice in the Northwest. Kirk Jungers, a WestBred Seed Supplier in the Northwest Region, for example, is extremely satisfied with the EXPRESSO Hard Red Spring variety for winter planting.

"I have been farming all my life and have planted many WestBred varieties in the last 20 years in east Washington state," explains Jungers. "I like EXPRESSO for its yield and excellent protein content of 14-15%. The reason I plant this variety in the fall, around October 20, is to avoid high winds in the spring". And, in his growers' experience, it requires significantly less water input.

When he plants in the fall instead of the spring, Jungers has experienced yield increases in the range of 10 to 30 bushel per acre. "I harvest EXPRESSO early, usually before July 20. It is important for crop rotation that I use: beans or onion, then EXPRESSO, alfalfa, hairy vetch or mustard."

Contact your WestBred Regional Commercial Manager or Seed Supplier to see if this planting practice is suitable for your area.

September						
Su	M	Tu	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

  

October						
Su	M	Tu	W	Th	F	Sa
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

  

November			
Su	M	Tu	Th
3	4	5	6
10	11	12	13
17	18	19	20
27	28	29	30



*"Every day we are met with the challenges of a growing planet. With a population of more than seven billion people and growing, we will need more food, water and land than ever before. Our commitment to advancing sustainable agriculture is key to ensuring the world's farmers are ready to meet the demands of today and tomorrow."*

*Jerry Steiner, Monsanto's  
EVP of Sustainability and  
Corporate Affairs*



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