Patent Focus: Growing a Multimillion Dollar Industry for the State of Kansas

Tiffany Roney
Kansas State University

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The years of 2016 and 2017 will go down as bin-busters for Kansas State University plant breeders.

K-State normally produces one wheat variety every one or two years, but in 2016 and so far in 2017, K-State breeders have produced six new varieties of wheat. The breeders also were productive with canola, soybeans and grass, putting out two canola varieties, one soybean variety and the first turfgrass variety in several years.

According to K-State plant breeders and licensing experts, these 10 new varieties will generate millions of dollars for the state, the university and Kansas farmers.

For example, in the last five years, Everest, a top-performing wheat variety developed at K-State, yielded 1-2 bushels per acre more than other wheat varieties, said Daryl Strouts, CEO and president of the Kansas Wheat Alliance. Across the approximately 1 million acres where Everest was grown, experts estimate that Everest brought in an additional $10 million per year, which translates to roughly $70 million more revenue for the Kansas agricultural industry since the variety was released in 2009.

K-State plant breeders are also saving Kansas farmers from catastrophic losses. Five of the six new wheat varieties are resistant to stripe rust, which destroyed 9.1 percent of the Kansas wheat crop in 2016 — equating to a loss of about $134 million, according to K-State’s Allan Fritz, professor of agronomy, and Erick DeWolf, professor of plant pathology. Early estimates for the 2017 harvest are that the disease caused an 8 percent loss, said K-State’s Romulo Lollato, assistant professor of agronomy and wheat and forage extension specialist.

“When people plant K-State seed, we want them to know they are planting the best,” said Chris Brandt, president and CEO of the Kansas State University Research Foundation.
New K-State plant varieties

WHEAT
Lead breeders: Allan Fritz, professor of agronomy; and Guorong Zhang, associate professor of agronomy at the K-State Agricultural Research Center in Hays.

- **Joe** — More than your average Joe, this variety has an excellent yield record, good drought tolerance, and a good disease package with resistance to stripe rust, leaf rust and wheat streak mosaic virus. The variety is named after T. Joe Martin, a retired wheat breeder at the K-State Research and Extension Agricultural Research Center in Hays.

- **Kanmark** — With very good drought tolerance, this variety offers excellent straw strength, good winter hardiness and consistently high yields. It also could make a good component in blends, and it has especially good yields under irrigation.

- **Larry** — This variety is taller than Everest and has better overall quality than Everest, according to the Kansas Wheat Alliance. Named after Larry Patton, a longtime technician in K-State’s wheat breeding program, Larry wheat has good acid soil tolerance, high yield potential, moderate drought tolerance and acceptable quality for milling and baking.

- **Tatanka** — Like the buffalo that this wheat variety is named after, Tatanka wheat is drought-tolerant and can thrive in the dry areas of western Kansas. Tatanka is moderately resistant to acid soils and is highly resistant to soil-borne mosaic virus. It also shows good resistance to stripe and stem rust, and intermediate resistance to leaf rust.

- **Zenda** — As a successor sired from the high-performing Everest, Zenda is a variety that carries high hopes from agronomists. Like Everest, Zenda has good acid soil tolerance, a strong yield record statewide and excellent potential for growing after corn. It outperforms Everest in baking quality. “Wherever you hear the name ‘Everest’ today, you’ll likely be hearing the name ‘Zenda’ within a few years,” Brandt said.

- **Hot Rod** — Offering excellent straw strength and yields, Hot Rod is highly resistant to lodging, or the bending of stems near the ground. Lodging renders crops difficult to harvest, so strong stems are a desirable trait. Hot Rod works well with stripper headers and combines during harvest. After harvest, the standing stubble traps snow, benefiting the following crops.

SOYBEAN
Lead breeder: William Schapaugh Jr., professor of agronomy

- **K11-2363/KS4117NS** — This soybean variety is adapted to a wide range of soil types and climates, and it provides a very good yield — 3-6 bushels per acre more than K-State’s 2013 soybean variety, KS4313N. The variety has excellent resistance to lodging, moderate resistance to soybean sudden death syndrome, and good resistance to the nematode pest.

WINTER CANOLA
Lead breeder: Michael Stamm, associate agronomist

- **DKW45-25** — Crop rotation is important to keep land healthy and continue producing high yields. DKW45-25 is great for crop rotation because, unlike typical canola varieties, it can grow in fields where sulfonylurea herbicide products were applied to previous crops. Also, it maintains great yields in rotation with winter wheat, and it is tolerant to glyphosate, a broad-spectrum herbicide.

- **Griffin** — This variety carries on the legacy of its namesake, a Reno county canola producer who used canola as forage for his grazing program. Griffin is a good candidate for dual-purpose use — grazing and grain production — because of its high-protein, highly digestible forage, ability to recover after grazing by livestock and winter hardiness.

TURFGRASS
Lead breeder at K-State: Jack Fry, professor of horticulture and natural resources

- **KSUZ 0802** — Of all K-State’s new crop varieties, this cold-hardy zoysia grass variety could have the farthest geographical reach. In the next few years, it may be found on golf courses and home lawns from southwest Kansas to the Mid-Atlantic region of the East Coast and locations farther south. It offers a fine leaf texture and good density. K-State and Texas A&M University jointly released the turfgrass. Sod Solutions Inc., a national marketing company, recently signed a licensing agreement for the variety.

More information on K-State’s latest varieties, including climate zones, pest susceptibilities, resistance to viruses and diseases, and other data, is available at agronomy.k-state.edu/extension/crop-production.