Triticale - A Step Towards Diversity

We often wish there were more alternatives to corn and soybeans. But often when we describe what we need, it sounds much like... corn and soybeans. A grain that can be sold at the local elevator, high yielding, etc. But any new crop that comes along will not enjoy the infrastructure or markets that have evolved with corn and beans. And a new crop won't have years of development behind it, as do the established crops. So how can a potential alternative crop "get its foot in the door" of Midwest agriculture?

Producers might be willing to try a new crop if it filled a need on the farm and never had to leave the farm. Such a crop might be consumed by livestock, for example. One of the latest entries in the category is a cross of durum wheat and winter rye called "triticale." (The common Iowa pronunciation seems to be "TRIT-ih-cale-ey," but some regions make a three-syllable word out of it.) In the past few years, ISU agronomy professor Lance Gibson has evaluated this crop on two northwest Iowa PFI farms, that of **Paul and Karen Mugge** (Sutherland) and the **Dordt College Agricultural Stewardship Center** (Sioux Center) (Table 10, Click to View). Now this research is part of the ISU Extension bulletin PM-1994, Feeding Small Grains to Swine.

Paul Mugge has raised triticale since 2003

As the crop's heritage suggests, this is a small grain. Like other small grains, triticale is good at scavenging nutrients left by previous crops, good at breaking up weed cycles, and helpful in evening out the cropping labor demands. Unlike oats, barley, and wheat, there isn't an established market for the grain. However, triticale is superior to most of the other small grains as a livestock feed. Its energy content is closer to corn than to oats. Like oats, it has a higher lysine content than corn, but its crude protein content, 12.5%, is higher than either corn or oats. Perhaps most importantly, the fiber content of triticale is less than half that of oats. The fiber in oats makes it a useful feed for young livestock, but it also makes it less efficient for use in growing/finishing animals. Finally, the phosphorus in triticale is utilized three times more efficiently than that in corn, reducing the potential for P buildup on the farm.

Caution should be exercised when feeding triticale. With swine or poultry, substitute triticale for 50% or less of the corn in a ration until you are comfortable that your animals are doing well. Like wheat, triticale is a "hot" feed capable of causing bloat and acidosis in ruminants. Start at a 10% substitution rate and increase gradually to no more than 40%. Mix the triticale with dietary roughage to ensure livestock do not overindulge on triticale.

The Dordt College Agricultural Stewardship Center maintained a dairy herd, and Paul and Karen Mugge finish pigs. Both raised small grains for feed and as a nurse crop to establish forage or green manure crops.

Table 11. Triticale varieties with low ergot levels and good agronomic characteristics for grain production. (From PM-1994.)

Winter varieties	Spring varieties
Alzo	AC William
Décor	
Kitaro	
Lamberto	
NE426GT	
Presto	
Roughrider	
Trimark Brand 336	
Trical Brand 815	
Sorento	
Vero	

Older varieties of triticale were lower yielding, had lower test weight, did not stand well, sometimes contained feeding inhibitors, and were subject to the fungus that causes ergot. Recent work has improved these traits (Table 11), and has led to varieties specifically for either grain production or for forage. Forage types should not be grown for grain because of the risk of ergot. The variety that Dordt College and the Mugges grew was a spring variety (Trimark 37812) from Resource Seeds, in California. However, outside northwest Iowa, where drier conditions usually prevail, this variety is susceptible to ergot. In fact, Lance Gibson recommends against raising any of the currently available varieties of triticale east of Interstate 35.

In 2003, the Dordt College Agricultural Stewardship Center and Paul and Karen Mugge both compared triticale to oats (Table 10, Click to view). In both cases, the oat yield (in 32-lb bushels) was much greater than triticale's, but the harvested pounds were very similar. (Triticale test weight is now typically 56 pounds per bushel, the same as corn.) In 2004, the harvested weights were similar on the Mugge farm, while at the Ag Stewardship Center the harvested weight of oats was significantly greater.

Spring triticale can also serve as a nurse crop for spring-seeded forages, but it does not yield as well as winter triticale. In the fall of 2003, Paul Mugge seeded NE426GT, a variety of winter triticale developed at the University of Nebraska. The yield in the test plot was 90 bushels per acre (5,040 lbs/acre), nearly double that of the spring triticale. Overall for the farm, NE426GT yielded 79 bushels in 2004, and it has continued to do well since then (Table 10, Click to view).

How do you place an economic value on triticale? There is no established market price for the crop. Lance Gibson suggests basing it on the value of corn. Pound-for-pound, triticale is a superior feed to oat. So for similar oat and triticale pound yields, a farmer in a position to feed these crops is better off with the triticale.

Breeding programs continue to release improved varieties, and with continued work, triticale may "come in the back door" of Midwest agriculture, becoming less an alternative crop and more a standard option for producers who can utilize the feed and who like the idea of having another crop in the rotation.

Table 10. Triticale & Triticale vs. Oats Trials

Triticale & Triticale vs. Oats Trials

COOPERATOR	YEAR	TRITICALE TREATMENT			OAT TREATMENT	OAT TRT.		DIFFERENCE				COMMENT
		DESCRIPTION	YIELD (bu.)	UNITS	DESCRIPTION	YIELD	UNITS	YIELD DIFF.	YLD LSD	YLD SIG.	TRITICALE $ BENEFIT	
DORDT COLLEGE	2003	SPRING TRITICALE (Trimark 37812)	91.3	(BU.)	OAT	153.8	(BU.)	–62.5	20.3	*		OAT MARKET VALUE ($1.56) VS. TRITICALE PRICE BASED ON CORN ($2.45)
			5,112	(LBS GRAIN)		4,922	(LBS GRAIN)	–190	805	N.S.	–$72.90	ACTUAL GRAIN WEIGHTS ARE ALMOST THE SAME
			1.88	(T STRAW)		2.29	(T STRAW)	0.41	0.15	*		TRITICALE HAS GREATER FEED VALUE PER POUND
MUGGE	2003	SPRING TRITICALE (Trimark 37812)	67.1	(BU.)	OATS ('JERRY')	121.5	(BU.)	–54.4				OAT MARKET VALUE ($1.56 CONVENTIONAL) VS. TRITICALE PRICE BASED ON CORN ($2.45 CONVENTIONAL)
			3,756	(LBS GRAIN)		3,888	(LBS GRAIN)	–132	373	N.S.	–$69.07	ACTUAL GRAIN WEIGHTS ARE STATISTICALLY THE SAME
			1.1	(T STRAW)		1.4	(T STRAW)	–0.3				TRITICALE HAS GREATER FEED VALUE PER POUND
DORDT COLLEGE	2004	SPRING TRITICALE (Trimark 37812)	59.3	(BU.)	OAT	153.4	(BU.)	–94.1				OAT MARKET VALUE ($1.48) VS. TRITICALE PRICE BASED ON CORN ($2.39)
			3,320	(LBS GRAIN)		4,909	(LBS GRAIN)	–1,589	364	*	–$108.89	
			0.73	(T STRAW)		1.41	(T STRAW)	–0.68		—		TRITICALE HAS GREATER FEED VALUE PER POUND
MUGGE	2004	SPRING TRITICALE (Trimark 37812)	53.2	(BU.)	OAT	103.4	(BU.)	–50.2				YIELDS WERE NOT STATISTICALLY DIFFERENT, SO THE ECONOMICS PROBABLY ACTUALLY FAVOR TRITICALE
			2,980	(LBS GRAIN)		3,308	(LBS GRAIN)	–328	1,074	N.S.	–$22.70	
			—	(T STRAW)		—	(T STRAW)			—		NO STRAW YIELDS COLLECTED
MUGGE	2003/2004	FALL TRITICALE (NE 426GT)	90.0	(BU.)								79 BU. OVERALL FOR FARM. FALL VARIETIES YIELD BETTER THAN SPRING VARIETIES OF TRITICALE. SPRING VARIETIES ARE BETTER NURSE CROPS FOR FORAGE ESTABLISHMENT.
			5,040	(LBS GRAIN)								
MUGGE	2004/2005	(NE 426GT)	70/3,920	(BU./LBS)								OVERALL YIELD FOR FARM
MUGGE	2005/2006	(NE 426GT)	84/4,704	(BU./LBS)								OVERALL YIELD FOR FARM
MUGGE	2006/2007	(NE 426GT)	65/3,640	(BU./LBS)								APRIL FREEZE REDUCED STAND

Oat prices: 2003, $1.56; 2004, $1.30. Triticale prices based on corn: 2003, $2.05; 2004, $2.10.