

WHEAT GRAIN QUALITY AND THE CLEARFIELD* WHEAT PRODUCTION SYSTEM

The price a grower receives for a shipment of wheat at the elevator is based on the market price and the quality of the grain delivered. Good timing and marketing skills help growers to get their best “market” price for their grain shipments. Good overall production skills help growers avoid discounts that can add up quickly to reduce their overall *return on investment* (ROI).



Discounts taken at the elevator include anything that reduces the uniformity and usability of the grain. The CLEARFIELD* Wheat Production System allows many growers to produce higher quality grain, to reduce discounts and to increase their ROI. Due to the ability of CLEARFIELD* Production System to control troubling weeds like jointed goatgrass and feral rye, growers can expect to see reductions in *dockage* and *foreign material* and the discounts that would otherwise be taken. Also, CLEARFIELD* Wheat can help growers to reduce the level and incidence of *contrasting classes* as Beyond™ herbicide for CLEARFIELD* Wheat removes the contaminating grains from production fields.

DOCKAGE

Dockage is any non-wheat material that can be easily removed. Dockage hurts the grower in two ways. First, since this non-wheat material is easily removed at the elevator the grower does not get paid for delivery of dockage. Second, elevators discount the load as the percent of dockage increases to recover the cost of cleaning. Overall, the entire grain industry is under pressure to increase grain quality and reduce dockage as the first step toward increasing ROI for growers.

Table 1. Dockage discount survey averages from receiving stations and grain merchandizers in Colorado.

% Dockage	Deduct \$/Bushel*
0.0 – 0.4%*	no deduct
0.5 – 0.6%	-\$.01
0.7 – 1.0%	-\$.03
1.0 – 1.5%	-\$.04
1.6 – 2.0%	-\$.06
2.1 – 2.5%	-\$.07
Over 10%	Sample Grade

** Per bushel discount per each tenth of one percent dockage.*

FOREIGN MATERIAL

Foreign Material is all non-wheat material that **remains** after removal of dockage and shrunken and broken kernels. Since it is similar in size and weight to wheat, it cannot easily be removed. Thus, foreign material remains in the load and affects not only the price received for the shipment but also the overall “grade”. Foreign material includes weed seeds like feral rye. By decreasing this discount, growers again can see an increase in their ROI.

Table 2. Central Plains Foreign Matter (FM) discount survey averages from receiving stations and grain merchandizers in Colorado.

% FM	Deduct \$/Bushel*
0.0 – 0.4%*	no deduct
0.5 – 0.7%	-\$.03
0.8 – 1.0%	-\$.05
1.1 – 1.5%	-\$.07
1.6 – 2.0%	-\$.08
2.1 – 2.5%	-\$.11
Over 10%	Sample Grade

* Per bushel discount per each tenth of one percent foreign matter.

CONTRASTING CLASSES

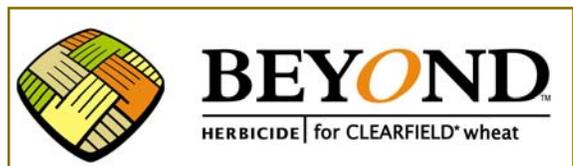
Most grain production occurs in fields under a rotation scheme involving multiple crops and/or multiple classes of wheat. When this occurs, it can be hard or impossible to remove a **volunteer** wheat plant of another class from the field. At harvest, these plants contribute to the yield and cannot be removed from the load. Discounts for contrasting classes can be rather steep and the only way to manage contrasting classes would be to use a **herbicide tolerant** wheat production system that allows selective removal of the volunteer plant. The result would be a reduction or elimination of the contrasting class discount and an increase of ROI to the grower.

Figure 1. Example of contrasting classes with Hard White winter wheat, dyed pink, in a Hard Red winter wheat sample.



THE CLEARFIELD* WHEAT PRODUCTION SYSTEM

CLEARFIELD* Wheat is a new, herbicide tolerant production system designed by BASF to allow growers to increase the quality of the grain produced. Beyond™ herbicide provides control of many grass and broadleaf weeds, including those previously not controlled by herbicides such as jointed goatgrass and feral rye. Further, non-CLEARFIELD* Wheat varieties previously grown in a field would be controlled by Beyond™ herbicide as volunteer plants reducing the incidence of contrasting classes.



REDUCING WHEAT DOCKAGE: THE FIRST STEP IN INCREASING GRAIN ROI

The original reason for developing CLEARFIELD* Wheat was for control of tough grass weeds in wheat like jointed goatgrass. In fields infested with this weed, the jointed goatgrass seeds contaminate the harvested grain and increase the dockage deduction. Control of jointed goatgrass by Beyond™ herbicide is exceptional. The benefits include not only reduced competition and increased grain yields, but also significant reductions in dockage at the elevator.

In this study conducted at the University of Nebraska, High Plains Ag Laboratory in Sydney Nebraska, dockage levels were reduced by 95% or more when Beyond™ was applied; reducing dockage from 13.5% to 0.7% of the harvested grain. This is an extreme case but imagine how well the CLEARFIELD* Wheat production system can affect your ROI by reducing dockage.

For example:

If you have a 40 bushel yield, with 1.5% dockage from jointed goatgrass, your gross profit per acre would be:

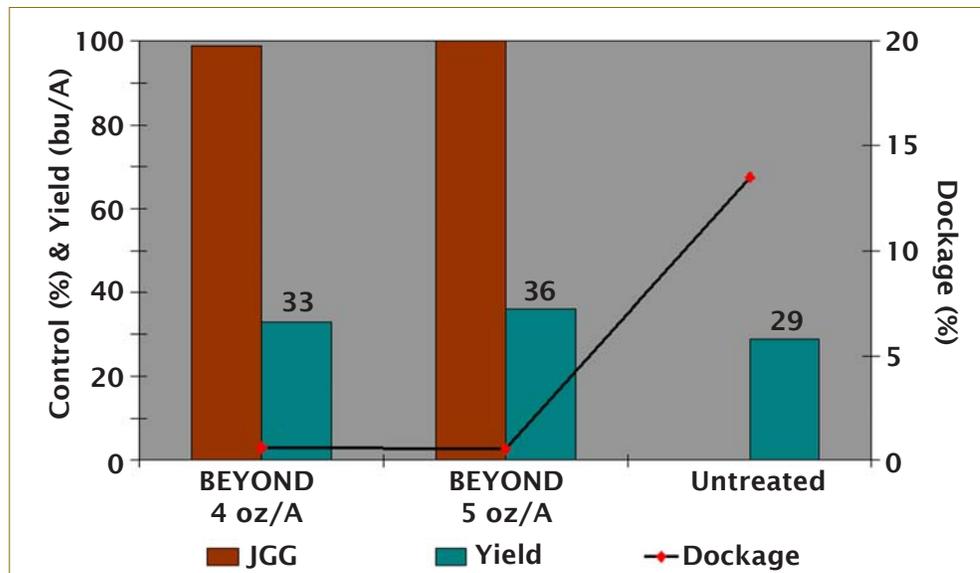
• 40 bu/acre * 2.66 \$/bu (estimated dockage discount of 0.34 \$/bu)= **\$106.40 /acre**

If you used CLEARFIELD* Wheat and did not see a discount due to dockage:

• 40 bu/acre * 3.0 \$/bu (no discount on < 0.5% dockage)= **\$120.00 /acre**

Increased ROI for grain quality and reduced dockage= \$13.60 /acre

Figure 2. Jointed goatgrass control (JGG), grain yield, and dockage reduction with Beyond™ in CLEARFIELD* Wheat. 2001 trial, Beyond™ applied in the spring to 1-3 tiller jointed goatgrass; wheat was 1-3 tillers. JGG control was evaluated in June prior to harvest.



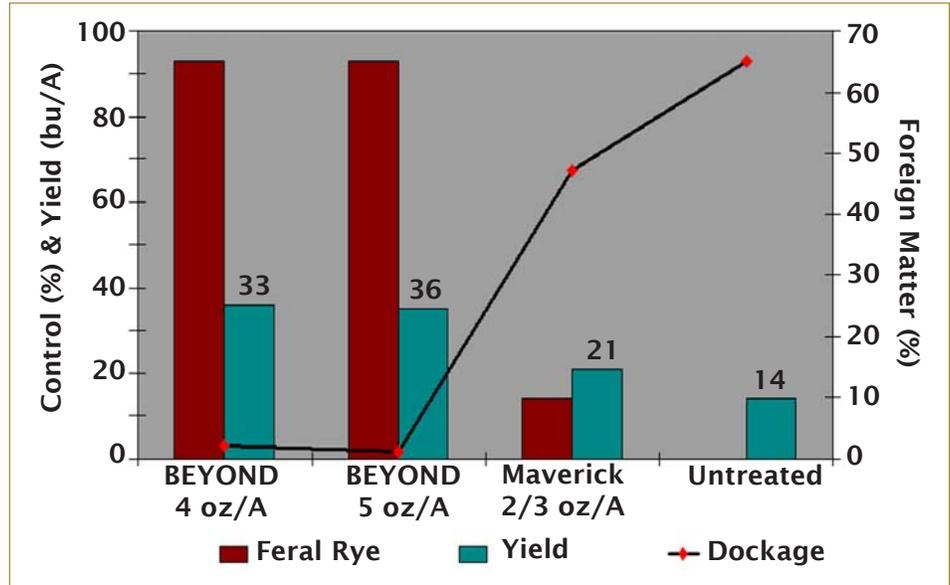
REDUCING FOREIGN MATERIAL IN WHEAT: ANOTHER BENEFIT FROM FERAL RYE CONTROL

Beyond™ herbicide is also very efficacious on other grass weed species. Feral rye is a difficult grass weed, especially in wheat. Data from CLEARFIELD* Wheat studies with Beyond™ herbicide show excellent feral rye control. The benefit to the grower includes cleaner fields, reduced weed competition, increased yields, and as shown in this study from the Oklahoma State University, over 96% reduction in foreign material (dropping from 65.1% to 2.1% or less) due to feral rye. Foreign material discounts for this level of infestation would force the grower to sell this grain for feed. But, due to the efficacy of Beyond™ herbicide against this weed, the grain is marketable resulting

in a huge increase in ROI for the grower.

Also, note the increased yield that can be achieved when this weed is controlled. The ROI calculation would include a 235% increase in yield on top of the increase in grain quality.

Figure 3. Feral rye control, grain yield, and foreign matter reduction with Beyond™ in CLEARFIELD* Wheat. Data are the average of four trials conducted from 1997-1999. Herbicides were applied in the fall to 1-3 leaf feral rye. Feral rye control was evaluated in June prior to harvest.



CLEARFIELD* WHEAT AND CONTRASTING CLASSES

Since every grower has unique production systems and rotation programs, only you can determine if the CLEARFIELD* Production System can help you manage contrasting classes in your grain. The discount schedule, however, is rather steep, and if this has been a concern for you over the years you know how it can affect your ROI.

CLEARFIELD* Wheat is unique in its ability to help grower manage this grain quality issue. Since CLEARFIELD* Wheat varieties are focused on certain wheat classes, you will be able to control your volunteer wheat in a CLEARFIELD* Wheat crop effectively, increasing your grain quality and your ROI.

CLEARFIELD* WHEAT AND YOUR BOTTOM LINE

The CLEARFIELD* Wheat Production System is unique in the number of ways it can help growers to increase their return on investment and their bottom line.

1. It controls a vast array of grass and broadleaf weeds, resulting in cleaner fields and higher yields.
2. It can help growers reduce their overall dockage, the first step toward increasing grain quality.
3. It helps manage other grass weeds like feral rye that can not only affect yields but cause discounts due to increased foreign material.
4. It helps growers to manage contrasting classes in wheat fields thereby reducing this costly discount.

Add up all of these elements and you will find that your investment in CLEARFIELD* Wheat and Beyond™ herbicide will add to your bottom line.

ALWAYS READ AND FOLLOW LABEL DIRECTIONS

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