



CLEARFIELD[®] PRODUCTION SYSTEM FOR WHEAT

- CLEARFIELD wheat is new technology for wheat production that will allow producers to control many problem grass and broadleaf weeds that infest wheat .
- It was developed using enhanced, traditional plant breeding techniques.
- BASF researchers identified a naturally occurring gene in wheat that provides tolerance to imazamox, the active ingredient in Beyond[™] herbicide.
- Today, this tolerance gene is called the CLEARFIELD Trait.

CLEARFIELD wheat is not bioengineered and is a non GMO

- No foreign DNA was inserted into the wheat plant at any time during the development of CLEARFIELD wheat.
- CLEARFIELD wheat has no market barrier domestically or internationally.

BEYOND HERBICIDE

- Beyond[™] herbicide received EPA Federal Registration for use in CLEARFIELD wheat in December 2001.
- Beyond is a broad-spectrum herbicide (grass and broadleaf weeds) that provides postemergence and in-season residual weed control.
- Applied according to label recommendations, Beyond will control key grass and broadleaf weeds, such as:
 - Key grasses: jointed goatgrass, feral (cereal) rye, *Bromus* species (downy brome, Japanese brome, cheat), Italian ryegrass, wild oats and volunteer cereals.
 - Key winter annual broadleaf weeds: flix weed, henbit, chickweed, shepherdspurse, field pennycress and other mustard species.
 - Spring applications of Beyond will control or suppress summer annual broadleaf weeds such as common lambsquarters, pigweed and wild buckwheat.

STEWARDSHIP

To ensure that the benefits of the CLEARFIELD* Production System for wheat are available to wheat producers, certain stewardship practices need to be followed. CLEARFIELD wheat producers will be asked to help protect and prolong the usefulness of this technology by following specific requirements and recommendations to help prevent weed resistance.

Requirements

- Growers must purchase new seed (registered or certified) every year from a CLEARFIELD seed retailer. This means that **saving seed to plant next year's crop will not be allowed** (NO "brown-bagging" or "bin-running").
 - Seed increase fields (Foundation, Registered, and Certified) are grown following strict guidelines that ensure the fields are free of noxious weeds and "off-type" wheat.
 - Use of registered or certified seed ensures proper herbicide tolerance to Beyond and prevents contamination from a non-CLEARFIELD variety.
 - Proof-of-purchase records for CLEARFIELD wheat seed and Beyond herbicide must be provided to BASF prior to servicing of any claim.
- If a grower uses Beyond, he agrees to use it in accordance with the product label, including stated label rate and timing.

Recommendations

- Avoid continuous use of CLEARFIELD wheat on the same land.
 - Reduces the reliance of Beyond in selection of herbicide resistant weed biotypes and promotes crop rotation and use of alternate control methods.
- Utilize crop rotation.
 - Rotation of CLEARFIELD winter wheat with spring crops such as corn, sorghum, sunflowers, soybeans or peas breaks the cycle of winter annual weeds and allows the use of alternate mode-of-action herbicides.
- Use herbicides with different modes-of-action.
 - Limit the sole reliance on ALS-inhibiting herbicides; no more than 2 out of 4 years unless other control practices are implemented on target weeds.
 - Where applicable, use sequential or tankmix partner herbicides with multiple modes-of-action on target weed species.
 - This strategy should span across crops and years to provide sound weed resistance management.
- Properly manage weeds in wheat-fallow-wheat rotations.
 - In the fallow year, control weeds (especially winter annuals) before they set seed. Control should be obtained through the use of burndown (non-ALS) herbicides or tillage.



JOINTED GOATGRASS MANAGEMENT



Wheat and jointed goatgrass are genetically related, both sharing the D genome. Both are primarily self-pollinated, however, a low level of cross pollination can occur (1 to 2%). Since wheat and jointed goatgrass both share similar genetic material, the potential exists for CLEARFIELD* wheat to outcross with jointed goatgrass. This would result in a hybrid plant (CLEARFIELD wheat X jointed goatgrass). If the hybrid is allowed to backcross with

jointed goatgrass in subsequent years, a herbicide resistant biotype may occur. This biotype may be tolerant to Beyond and other ALS inhibiting herbicides.

When jointed goatgrass is present, additional management should be followed to limit development of hybrid populations. Weed resistance and outcrossing can be easily managed by employing the stewardship practices mentioned previously in addition to following these specific practices:

Specific Recommendations for Jointed Goatgrass

Treat entire field with a labeled rate of Beyond herbicide.

- In vegetative growth stages, jointed goatgrass and wheat are difficult to distinguish. Only treating field borders can result in escaped jointed goatgrass that may outcross with CLEARFIELD wheat.
- Applying the labeled rate of Beyond will provide a high level of jointed goatgrass control, further reducing the threat of any outcrossing.

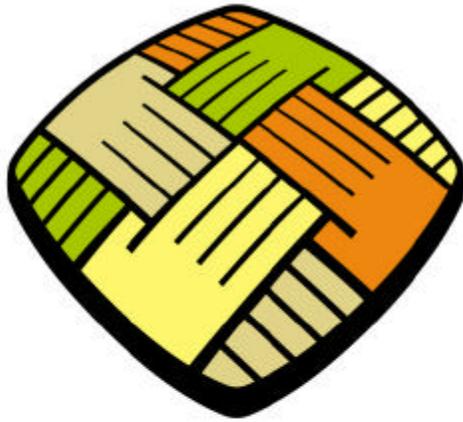
Control jointed goatgrass in fencerows, road ditches and pastures around CLEARFIELD wheat fields.

- Controlling jointed goatgrass before seed set in adjacent areas will eliminate the outcrossing.



Always read and follow label directions
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BASF



BEYOND™

HERBICIDE | for CLEARFIELD* wheat



Check with your local BASF Representative for specific crop rotational guidelines and Beyond herbicide recommendations