Clearfield®
Production System

Wheat Stewardship Guidelines 2011–2012

The **Clearfield®** trait is a novel, non-genetically modified (non-GMO) crop herbicide tolerance technology discovered by BASF researchers that provides wheat tolerance to imazamox, the active ingredient in **Beyond®** herbicide. Proper stewardship should be practiced to ensure consistent performance and benefit from the **Clearfield** technology for years to come.

Benefits of **Beyond** Herbicide

Yield: Beyond provides excellent management of yield-robbing weeds like jointed goatgrass, feral rye, downy brome, cheatgrass and kochia (non-ALS-resistant)

Grain Quality: Excellent weed control translates into cleaner grain at harvest and less discounts taken at the elevator

Land Value: Controlling weeds before they go to seed reduces the weed seed bank in the soil, thereby improving the ground you farm

Simple: Broad-spectrum utility of **Beyond** takes the guesswork out of weed control

Beyond herbicide provides effective management of weeds which translates into a cleaner grain at harvest

Technical Information Bulletin

BASF
The Chemical Company

To ensure that the benefits of **Clearfield®** wheat technology continue to be available to wheat producers, certain stewardship practices should be followed. **Clearfield** wheat producers are asked to help protect and prolong the usefulness of this technology by following specific requirements and recommendations to help prevent the onset of herbicide resistance in weeds. To obtain the maximum benefit of the **Clearfield** wheat technology, Grower should apply an imidazolinone herbicide registered for use on **Clearfield** wheat, such as BASF's **Beyond®** herbicide.

- In the event that Grower elects to apply an imidazolinone herbicide registered for use on **Clearfield** wheat or to the area where **Clearfield** wheat is grown, Grower must obtain a license from BASF or a BASF-authorized designee for such purposes.
- In the event that Grower elects to obtain a license from BASF or a BASF-authorized designee to apply imidazolinone herbicide registered for use on **Clearfield** wheat or to the area where **Clearfield** wheat is grown and uses **Beyond** herbicide, then Grower agrees to do so in accordance with the product label, including stated label rate and timing.
- Grower may obtain a license to apply an imidazolinone herbicide registered for use on **Clearfield** wheat, such as **Beyond** herbicide from BASF, by purchasing such registered herbicide.
- Grower must purchase new seed (registered or certified) every year from an authorized **Clearfield** seed retailer. This means that saving seed to plant next year's crop is not allowed (NO "brown-bagging" or "bin-running").
  - Seed increase fields (foundation, registered, and certified) are grown following strict guidelines which ensure the fields are free of noxious weeds and "off-type" wheat.
  - Use of registered or certified seed ensures proper herbicide tolerance to **Beyond** herbicide and prevents contamination from a non-**Clearfield** variety.

In the event that Grower elects to obtain a license from BASF or a BASF-authorized designee to apply imidazolinone herbicide, and uses such an herbicide, on **Clearfield** wheat or on the area where **Clearfield** wheat is grown, Grower should:

- Utilize crop rotation.
  - Avoiding continuous cropping of **Clearfield** wheat on the same acre(s) may reduce the onset of weedy off-types (ex., out-crossed, imidazolinone-tolerant jointed goatgrass).
  - Rotation of **Clearfield** wheat with spring crops such as corn, sorghum, sunflowers, soybeans, dry beans or peas, breaks the cycle of winter annual weeds and allows the use of alternate mode-of-action herbicides.
  - 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-inhibiting) herbicides and/or tillage.
- Use herbicides with different modes of action.
  - Limit the sole reliance on ALS-inhibiting herbicides (Group 2); no more than 2 out of 4 years in an effort to lessen the onset of ALS-resistance in weeds.
- Always use a certified adjuvant and a nitrogen source with **Beyond** herbicide.
  - On 1-gene **Clearfield** winter wheat varieties: Use a non-ionic surfactant (NIS at 0.25% v/v) with at least 80% active load (ex., 80/20) with **Beyond** herbicide.
  - On 2-gene **Clearfield** wheat (spring and winter) varieties: Use either a NIS at 0.25% v/v or MSO at 1% v/v with **Beyond** herbicide only. Only use MSO in **Beyond** tank-mixes with other herbicides if the tank-mix partner allows the use of MSO.
  - Always apply **Beyond** with a nitrogen fertilizer, such as liquid or dry spray-grade AMS, 28%N, 32%N or 10-34-00. AMS/nitrogen substitutes or replacement products are not recommended in place of AMS, 28%N, 32%N or 10-34-00 unless recommended by BASF.
- Rogue seed production fields for **Clearfield** wheat variety off-types and weedy biotypes (ex., wheat x jointed goatgrass hybrids).
- Thoroughly clean equipment used to plant, harvest, transport and condition **Clearfield** wheat to avoid the spread of weed seed.

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Always read and follow label directions

For more information on BASF Crop Protection products, visit agproducts.basf.us

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