

Get the Bugs Out



ATTRIBUTE vs. standard sweet corn

Note: ATTRIBUTE sweet corn varieties are relatively new and have only been observed in a limited number of large-scale field trials. Performance may vary under more adverse weather or insect pressure. So, we strongly encourage ATTRIBUTE sweet corn growers to carefully monitor their fields for insect infestation and use chemical control measures, if necessary, to prevent economic damage.

ATTRIBUTE® insect-protected hybrids are sweet corn varieties that have been genetically enhanced to provide strong protection against damage by European corn borers, corn earworms and fall army worms. These hybrids carry a gene that enables them to produce the same insect control protein as *Bacillus thuringiensis* (Bt) – a naturally occurring soil bacterium that some growers spray on their fields to control these pests. When target insects consume a small amount of plant tissue from an ATTRIBUTE insect-protected hybrid, the Bt protein binds to their digestive systems causing them to stop feeding and die within 48 hours.

BENEFITS

ATTRIBUTE insect-protected hybrids produce the Bt protein throughout their leaves, silks, stalks and ears throughout their lives, enabling them to provide season-long protection against these potentially devastating insect pests – protection that won't wash off in the rain or degrade in the sun. The Bt protein is more targeted than other types of insect control, so beneficial insects such as ladybugs and assassin bugs tend to thrive in ATTRIBUTE sweet corn fields, providing another layer of pest control.

ATTRIBUTE insect-protected hybrids enable growers to reduce their use of the chemical pesticides they would normally apply to control European corn borers, corn earworms and fall army worms by as much as 50%. The potential benefits of applying chemical pesticides less frequently include:

- ▶ Lower input costs.
- ▶ Less spray drift.
- ▶ Less run-off.
- ▶ Less frequent need for spray-related worker safety regimens.
- ▶ Less plant damage from spray-related machinery.

SAFETY

- ▶ ATTRIBUTE insect-protected hybrids have received regulatory approval from the USDA, EPA, and FDA.
- ▶ In the field, the Bt protein found in ATTRIBUTE insect-protected hybrids is only targeted to lepidopteron insects that naturally feed on corn plants or pollen; it does not produce adverse effects in other types of insects or other species.
- ▶ A 1996 nutritional analysis by an independent laboratory found the nutritional profile of ATTRIBUTE hybrids was substantially equivalent to similar non-Bt hybrids.
- ▶ All ATTRIBUTE insect-protected sweet corn seed is clearly labeled as such on the packaging.
- ▶ A distinctive blue seed coating further differentiates ATTRIBUTE seed from traditional sweet corn seed, which typically has a pink coating.

Your Role in Resistance Management

With the help of EPA officials, university scientists and others in the seed industry, Syngenta Seeds has developed the following insect resistance management practices for ATTRIBUTE sweet corn hybrids. As a grower, you play a critical role in this process. By following these simple steps, you can help prevent the development of resistant insect populations.

- 1. Sign the Grower Stewardship Agreement.**
The Grower Stewardship agreement is our way of insuring that you received the information that you need to use ATTRIBUTE sweet corn hybrids. This also confirms that you agree to follow the simple, but necessary, steps to keep ATTRIBUTE hybrids as an effective IPM tool for many years to come. You may not purchase ATTRIBUTE sweet corn varieties without signing this agreement and following the guidelines. Failure to follow the guidelines will preclude the future purchase of ATTRIBUTE sweet corn varieties.
- 2. Scout for non-target pests and use IPM strategies.** ATTRIBUTE sweet corn fields will not be insect free, so regular scouting for insects not controlled by ATTRIBUTE sweet corn will still be required. Judiciously use conventional insecticides to control other pests before economic loss occurs.
- 3. Scout for resistant corn borers and corn earworms.** Routine inspection throughout the season is critical for successful IPM. During this routine scouting process inspect your Bt sweet corn fields for higher than expected levels of European corn borer and corn earworm damage. Evaluate your ATTRIBUTE fields during the mid to late whorl stage, looking for leaf and mid rib feeding damage by corn borers. Prior to harvest, look for damaged ears or evidence of corn borers feeding on ears, ear shanks and stalks. Some damage from corn earworms may be present on the ear under some environmental conditions, inspect for corn earworm damage extending beyond the first inch of the ear or larva, which are larger than the third instar. Contact Syngenta Seeds at 1-800-600-8056 if you observe any unexpected damage.
- 4. Destroy any ATTRIBUTE sweet corn stalks that are remaining in your fields no later than 30 days following harvest, but preferably within 14 days.** This will reduce the possibility of larvae surviving to produce the next generation of target insects.
- 5. Destruction of the stalks must be accomplished by rotary mowing, discing or plowdown.**
- 6. Do not double crop ATTRIBUTE sweet corn hybrids.** In areas where there are two crops of sweet corn in a year, do not plant ATTRIBUTE hybrids in the same field in back to back growing seasons.

