How does my seed treatment help my crop?

It is a rare event for a spring to have ideal growing conditions from the time the seed is planted all the way through to early season seedling development. Planting can occur when conditions are less than ideal, or conditions can worsen for an extended period after planting. In both cases, the seed or seedlings are vulnerable to infection by one or several soil-borne pathogens. Delayed planting may require additional weed control prior to planting. Weedy fields can be attractive to migrating black cutworm moths, resulting in damaged seedlings by subsequent larvae. Weeds incorporated into the soil can be attractive to egg laying by seedcorn maggots. A long-term alfalfa/grass stand terminated in the spring and incorporated into the soil can increase the likelihood of injury by true white grubs or wireworms.

Some of these situations are planned, and the risks understood, but in others the situations are unpredictable and the risks unknown. The value of a seed treatment is the protection it provides to the seed from many of the risks that can occur from planting until the early growth stages of the seedling.

//What seed or seedling diseases can be controlled with a seed treatment?

Control varies with the fungicide or fungicides applied to the seed. Acceleron® Seed Applied Solutions BASIC is a combination of fungicides that helps to provide protection against common seed and seedling diseases caused by various Fusarium and Pythium species as well as Rhizoctonia solani in corn and early season Phytophthora in soybean. Consult the Acceleron Seed Applied Solutions web page for more information at https://www.cropscience.bayer.us/seedgrowth/acceleron or visit your seed provider for the seed or seedling diseases controlled by the seed treatment.

//Can rescue treatments help to control seed and seedling pests?

Rescue treatments for most seed feeding insects have not been developed or are not available with current technology. Although sampling protocols for some insects have been developed (wireworms and true white grubs) the adoption of the techniques by crop consultants and farmers has not been substantial.[1] The most widely used rescue treatment for corn seedlings is for the black cutworm. The treatment threshold for black cutworm is met when 5% of the plants are cut. In soybean seedlings, a rescue treatment is recommended if the bean leaf beetle population averages two to three beetles per foot of row at the V1 stage and significantly higher at the V2 stage.[2]

Another option to help control seed and seedling insect pests is an in-furrow application of insecticide, but this is a preventative management tactic and not one that is a responsive management tactic.

//Will seed treatments help manage the risk of early planting?

Data from Land-Grant Universities continue to indicate that early planting, if conditions are fit, provides the highest yield potential for both corn and soybeans. Early planting does present some risks that planting later in the season does not, such as colder soil conditions at and after planting. Colder soil temperatures delays germination and emergence and places the seed at great risk of infection by disease and injury from insects. If combined with wet soil conditions, it can predispose the seed to infection. Seed treatments that contain both an insecticide and fungicide(s) can help protect the seedling for several weeks after planting, reducing the risk by unforeseen weather conditions.

How does my seed treatment help my crop?

//Do some of the Bt traits in corn products help to provide protection against seed and seedling pests?

It depends on the insect pest. Except for black cutworm and possibly other cutworm species, the Bt traits do not provide protection against the major seed or seedling pests of corn.

//If cover crops are being used prior to planting corn, is a seed treatment still needed?

While cover crops offer many agronomic benefits, the amount of biomass produced can increase the insect pests that attack the seed or seedling. Research from Louisiana State University indicated that corn yield was significantly increased following several legume-based cover crops when the corn seed was treated with an insecticide. The researchers hypothesized that the yield increase was a result of control of below ground insect pests that can reduce vigor and stand.[3] The seedcorn maggot is attracted to decaying vegetation when incorporated into the soil and could be a concern when a cover crop is terminated prior to planting.[1]

//Will a seed treatment help to provide protection against plant feeding nematodes?

There are seed treatments available that can help provide protection against some nematodes. Acceleron® Seed Applied Solutions corn offering includes Poncho® Votivo® seed treatment comprised of Poncho® (Clothianidin) and VOTiVO® (Bacillus firmus 1-1582) helps to provide protection against damage from a wide range of nematode species. Acceleron Seed Applied Solutions offerings for soybean includes ILeVO® (Fluopyram) seed treatment, which also helps to protect against the causal agent for sudden death syndrome.

//Are there biologicals that can be added to the seed to help to improve yield potential?

There are many biologicals that are being developed and are available for use as a seed treatment. Consult with your seed provider to determine what products are available on your corn or soybean product.

//Do I need a seed treatment insecticide when planting later in the season, when temperatures are warmer?

In soybean, planting later or as a double crop following the primary crop a seed treatment insecticide may be beneficial. If soybean aphids are a concern, planting later may have an increased risk of aphids colonizing small seedlings by dispersing from existing nearby earlier planted soybean fields.

//Sources

[1] Sappington, T., Hesler, L. Allen, C., Luttrell, R. and Papiernik, S. 2018. Prevalence of Sporadic Insect Pests of Seedling Corn and Factors Affecting Risk of Infestation. Journal of Integrated Pest Management. Volume 9. https://academic.oup.com/jipm/article/9/1/16/5033787.

[2] Gray, M. Bean leaf beetle thresholds: where do they come from? University of Illinois Extension. https://ansc.illinois.edu/news/bean-leaf-beetle-thresholds-where-do-they-come.

[3] Brown, S. The value of insecticide seed treatments in corn following cover crops. 2016. Louisiana State University College of Agriculture. https://www.lsuagcenter.com/profiles/truffin/articles/page1567617795189.

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