

INTEGRATED CROP MANAGEMENT

Cold weather stresses corn; herbicide injury possible

Recent reports of emergence problems in corn (see photos) suggest that the earlier cold temperatures and heavy rains have had a lasting impact on corn stands. Reports are widespread across Iowa and the symptoms have been variously described as a "toughened" coleoptile or membrane that does not allow the seedling corn plant to emerge properly. The result of a coleoptile that fails to "release" the developing leaves is a plant that "cork screws" underground, or leaves that rupture out of the coleoptile on the side rather than emerging through the tip. The problems with the coleoptile are primarily the result of the cold and wet conditions.

In addition to cold temperatures, soil crusting and herbicide injury may have contributed to emergence problems. Amide herbicides (e.g., metolachlor, acetochlor, etc.) and growth regulator herbicides can affect emergence under certain conditions. There is little one can do to resolve the coleoptile problem except let warmer weather improve the health of the corn. If soil crusting is a problem, mechanical tactics (rotary hoe) may be helpful, particularly to resolve soil crusting issues.

The other major consideration is whether or not fields with corn under stress should be treated with herbicides. Rains have resulted in many growers changing from soil-applied herbicides to postemergence programs. Conventional wisdom suggests that postemergence herbicide applications should be delayed until the corn recovers from environmental stress. Corn seedlings that are stressed from cold weather may be particularly sensitive to herbicide injury. Postemergence applications should be evaluated carefully until corn begins to demonstrate "normal" growth and development. If weeds are small and growing slowly, there is likely sufficient time to allow delayed application timing. However, if weed pressure is high, and if weeds are large relative to the optimum size for control, growers should consider the risks of crop injury and the benefits of weed control before making a herbicide application. Given current conditions, it is suggested that the risk of poor weed control or loss of potential yield attributable to weed interference with the corn is greater than the risk of herbicide injury.

However, to better assess benefits (weed control and protecting corn yield) versus risks (herbicide injury), consider these general observations. Growth regulator herbicides such as 2,4-D and dicamba may represent a greater risk of injury to stressed corn. If these herbicides are applied in combination with other herbicides that require surfactants or crop oils, the potential for injury increases significantly. Contact herbicides such as bromoxynil also may have a higher risk of significant corn injury if applied to stressed seedling plants, but often the injury is more "cosmetic" and does not represent a loss of potential yield.

If weeds are small, rotary hoeing or careful cultivation may be a better management option than a post-emergence herbicide application. Each field must be evaluated to determine the

best weed control strategy. Generally, current conditions will result in rapid corn recovery, but it is important to note that weeds also will respond quickly to better weather. Thus, if you are planning a postemergence herbicide application, it may be better to make the application rather than to delay. If weed pressure is heavy or if existing weeds are getting overly large, there is greater urgency to apply sooner rather than later.



[1]

Cold temperatures, heavy rains, soil crusting, and herbicide injury create emergence problems in corn. The [photos](#) [2] accompanying this article were taken by John Kennicker, ISU Extension field specialist in crops, this past week in area fields, but he reports that there is little permanent damage.

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