



Agronomic Alert

Rapid Growth Syndrome in Corn

- Rapid growth syndrome (RGS) describes a situation where random plants across a corn field exhibit tightly rolled upper plant leaves that do not unfurl normally.
- Within a week, twisted leaves usually unfurl and affected plants resume normal growth.
- RGS has been observed in years when cool, cloudy weather was followed by a sharp transition to warm, sunny weather, exposing corn plants to a rapid change in improved growing conditions.

Symptoms

Rapid growth syndrome (RGS) can also be known as buggy whipping, accelerated growth syndrome, roping, wrapped whorls, onion leafing, twisted corn syndrome, and twisted whorls. Affected corn plants exhibit tightly rolled upper leaves that do not unfurl normally. The whorl at the top of the plant may be so tightly wrapped that it bends over at a right angle to the ground. Lower leaves are generally not affected.

Within a week, twisted leaves usually unfurl and affected plants resume normal growth. Younger leaves that were trapped inside the whorl may emerge as pale green or yellow because they were shaded and unable to photosynthesize for an extended period of time. Within a few weeks, the only evidence that remains of RGS is the crinkled appearance of the most tightly-wrapped leaves. RGS most often appears between the late V5 and early V6 growth stages. The appearance of RGS in any given year is not uncommon, but does not typically affect a large number of fields or large percentage of plants in a field.

Possible causes

The physiology of RGS is not well understood, but may have something to do with the elasticity (or lack thereof) in the cells. RGS has been observed in years when cool, cloudy weather contributed to slow initial corn growth, which was followed by a sharp transition to warm, sunny, humid weather favorable for rapid corn growth. When corn plants are exposed to this rapid change in improved growing conditions, they may grow too quickly, resulting in RGS.

Other Causes for Similar Symptoms

Herbicide Injury. RGS may be mistaken for herbicide injury; however, the occurrence is not related to herbicide application. Herbicide injury usually occurs in a spray pattern or across a more widespread area of the field, unlike the random appearance of RGS. Herbicide injury

resulting in twisted whorls may occur in young plants when cell growth inhibitor or growth regulator herbicides such as dicamba or 2,4-D are applied pre-plant or preemergence, and emerging seedlings take up the herbicide through the coleoptile.

In older plants, late application of growth regulators can also cause twisted whorls to develop when a significant amount of herbicide is taken up by the leaves and whorl. This usually occurs in areas of spray overlap, where plants are exposed to more of the herbicide.

Hail Damage. Injury from hail can also cause corn whorls to twist and become damaged. Additionally, wind damage might exaggerate or mimic hail injury. Although from the road, bent plants may look like they are suffering from severe weather damage, closer inspection may reveal signs of RGS. Severe weather affecting plants with RGS may cause additional stress by adding minor crop injury.

Genetic Stripe. The yellow leaves resulting from RGS are not the same as those related to Genetic Stripe, a genetic condition causing white or yellowish stripes. After some exposure to the sun, pale green or yellowed leaves from RGS should turn a normal, dark green color.

Yield Impacts

Periods of twisted growth that are caused by weather usually do not affect yield potential. Plants affected by RGS may cause initial concern, but should grow out of most symptoms. By the time corn reaches chest height, the only evidence of RGS should be a crinkled appearance on the most-affected leaves.

Sources:

Elmore, R. and Robertson, A. 2008. Twisted whorls. Iowa State University. Extension. <http://www.extension.iastate.edu>; Nielsen, R. L. 2011. Wrapped and twisted whorls in corn. Purdue University Extension. <http://www.agry.purdue.edu>; Potter, B. 2011. Southwest Minnesota IPM Staff 2011-4. University of Minnesota Extension. <http://swroc.cfans.umn.edu>. Web sources verified 5/25/15



Figure 1. Tightly-wrapped, twisted whorls (A, B), yellow tops seen shortly after corn unwraps (C), and resulting crinkled leaves (D).

For additional agronomic information, please contact your local seed representative. Developed in partnership with Technology, Development & Agronomy by Monsanto.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. **ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** ©2015 Monsanto Company. 130619060655 JMG06192013