

AGRONOMIC ALERT



Recovery & Damage Assessment of Hail Damaged Soybean

Recently, localized areas were affected by hail. Hail damaged soybeans can be difficult to examine; however, evaluating plant health and stand loss is important in determining management options.

Potential yield loss in soybean due to hail damage can result from:

1. Leaf area reduction caused by hail-damaged leaves and plant bruising.
2. Stand loss caused by plant death.

The severity of each of these factors is important to accurately assess the extent of hail damage and how yield potential will likely be affected. Evaluating the health of the growing point can be done soon after the storm, but making a decision regarding the yield potential of the field is premature because the plants have not been given enough time to recover. It takes about 4 to 7 days to see regrowth on soybeans after hail. To more accurately assess potential yield loss from hail, soybean plants should be evaluated 7 to 10 days after the storm. At that time, it should be possible to more accurately distinguish between living plants and plants unable to withstand the hail damage itself or subsequent disease infection.



Figure 1. VC soybean with growing point still intact.

Table 1. Estimated soybean yield loss from plant defoliation.

Data source: Univ. of Nebraska NebGuide G85-762.

Soybean Growth Stage	Plant Defoliation (%)								
	20	30	40	50	60	70	80	90	100
————— Estimated %Yield Loss —————									
R1-2	2	3	5	6	7	9	12	16	23
R3	3	4	6	8	11	14	18	24	33
R4	5	7	9	12	16	22	30	39	56
R5	7	10	13	17	23	31	43	58	75
R6	6	9	11	14	18	23	31	41	53

Leaf Defoliation and Bruising Effects

Because the soybean was damaged before flowering, plants may not be significantly affected by loss of leaf area (Table 1). At this stage, the soybean plant has the ability to branch out after leaf defoliation or with reduced plant stands caused by hail. If either the stem apex (growing point at the top) or axillary buds remain intact after the hail event, new branches and leaves can be produced even though the hail may have destroyed nearly all the above-ground foliage.

Leaf damage usually looks worse than it really is, especially in the first few days after the storm passes. Shredded leaves that remain green and attached to the plant will often continue to produce photosynthates for the plant.

Additionally, soybean loss estimates can be complicated because potential effects of lower stem bruising (which may

to pg. 2

from previous page

Recovery & Damage Assessment of Hail Damaged Soybean

lead to lodging later in the growing season) can be difficult to evaluate. Bruising may also allow an avenue for infection, which can affect plant health and productivity.

Stand Losses

Because soybean plants have the ability to recover by branching out after a hail event, potential yield loss from stand reduction during early growth stages is not of major concern. If severe stand losses occur, replanting may be a viable option. **Fields with a uniform stand of 90,000 plants per acre may realize full yield potential.**

Estimating Total Potential Yield Loss

Defoliation, stand loss, plant bruising, possible disease infection of damaged plants, lodging later in the season, and environmental conditions during the remainder of the growing season are factors involved in estimating total potential yield loss. Growers should scout for stem rot, lodging, and late-season weed flushes due to increased light penetration in defoliated areas. Expected yield loss figures due to damaged or missing plants are only estimates. True yield loss from a hail storm cannot be fully determined until harvest.



Figure 2. Soybean with leaves damaged by hail.

Source: P. Pedersen. 2004. Soybean Growth and Development. Iowa State Univ. Extension. PM 1945. May 2004.

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.

Technology Development by Monsanto and Design(SM) is a servicemark of Monsanto Technology LLC. ©2010 Monsanto Company. SEK06.02.2010.