



# Soybean ALERT



## Hail Damaged Soybeans: Recovery & Damage Assessment

Severe storms swept across southwest Minnesota bringing along hail and winds that damaged soybeans. After the initial shock of viewing a severely damaged soybean field has diminished, the stages of determining the extent of the damage begin.

Yield loss in soybeans due to hail damage results from:

- Leaf area reduction caused by hail-damaged leaves and plant bruising.
- 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 will likely be affected. Evaluating the growing point health 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 4-7 days to see regrowth on soybeans after hail. To accurately assess potential yield loss from hail, soybean plants should be evaluated 7-10 days after the storm. At that time, you should be able to distinguish between living plants and plants unable

to withstand the hail damage itself or subsequent disease infection.

### Leaf Defoliation and Bruising Effects

If soybeans are damaged before flowering, plants should not be significantly affected by loss of leaf area (Table 1 on Page 2). At this stage, the soybean plant has the ability to branch out after leaf defoliation or reduced plant stands caused by hail. If either the stem apex (tip growing point) or axillary buds remain intact after the hail event, new branches and leaves will be produced even though the hail may destroy nearly all the above-ground foliage. However, if the plant is cut off below the cotyledon, it will not regrow.

Leaf damage (Photo 1) always 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 continue to produce photosynthates for the plant.

Hail loss estimates on soybeans are complicated because the effect of lower stem bruising is difficult to evaluate. Deep bruising can result in soybean lodging later in the season. Bruising may also allow an avenue



Photo 1. Soybean leaves damaged by a hail storm.

for infection, which can impact plant health and productivity.

### Stand Losses

Because soybean plants have the ability to recover by branching out after a hail event, yield loss from

*(Continued on page 2)*

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(Continued from page 1)

stand reduction during V3 through V5 stages is not of major concern. At this point in the season replanting is still an option, but the decision to replant should be made sooner rather than later. As the middle of June approaches, consider using an early season soybean variety to help avoid frost damage in the fall and optimize yield potential.

### Estimating Total Yield Loss

Many factors are involved in estimating total yield loss, including effects from 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. Growers should monitor stem rot and lodging and late-season weed flushes due to increased light penetration in defoliated areas. Remember, expected yield loss figures due to damaged or

Table 1. Estimated soybean yield loss from plant defoliation.

Soybean Growth Stage	Plant Defoliation (%)								
	20	30	40	50	60	70	80	90	100
	% Yield Loss								
Pre - V4	1	*	*	4	*	7	*	*	21
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

Data source: Univ. of Nebraska NebGuide G85-762. \*Data not available for all defoliation percentages.

missing plants are only estimates. True yield loss due to the hail storm cannot be fully determined until harvest.

Please consult with your local DEKALB®/Asgrow® representative if you need assistance with assessing damage caused by hail.

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

**Always read and follow pesticide label directions.** 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. Asgrow® and the A Design, Growing Knowledge® and Design, Monsanto imagine®, and the vine symbol are trademarks of Monsanto Technology LLC. DEKALB® and the Winged Ear Design are registered trademarks of DeKalb Genetics Corporation. ©2007 Monsanto Company.

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