

# Agronomic Spotlight

## Pod Shattering in Soybean

- Pre-harvest pod shattering can occur when pods weaken from adverse weather conditions or when harvest is delayed.
- Four seeds per square foot on the soil surface is equal to about one bushel per acre of lost yield potential.<sup>1</sup>
- Potential yield losses can be reduced with combine adjustment, timely harvest, and product selection.

#### Causes Weather

**Conditions.** Pod shattering in soybean can be caused by several conditions and can affect final yield. A loss of four seeds per square foot on the soil surface equals about one bushel per acre yield loss.<sup>1</sup> The



soybean pod has a shell that encloses the central cavity where the seeds are contained. Along the length of the pod are seams (sutures) on both sides where the pod opens when maturity is reached. If mature pods are rehydrated from precipitation and dry again, they may open more easily because the seam attachment breaks down with the cycles of wetting and drying. Drought conditions during pod maturation may result in a weak pod structure which can make the pod more prone to cracking open. Also, hail earlier in the season may lead to empty, twisted pods at harvest.

**Harvest Delay.** Ideally, seeds are harvested at 13 percent moisture content and pods will remain intact until they have matured. Shattering may occur if there is a long interval between maturation and harvest. In cases where a farmer plants the same soybean product across numerous fields and all are ready for harvest at the same time, the risk of shattering increases each day for those fields which are harvested weeks after they have matured.

**Other Factors.** Pod shattering may occur in fields with poor fertility or severe pod-feeding from grasshoppers and bean leaf beetles. Also, conditions that can accelerate soybean senescence, such as late-season spider mite infestations, can increase pod shattering.

### Management

**Early Harvest.** Harvest soybean fields as early as possible if pod shatter is an issue. To reduce pod shattering during harvest, start harvesting somewhat earlier in the day when plant material is moist. Harvest as much of the crop as possible before the moisture level falls below 11 percent in order to reduce splits and cracked seed coats.

**Combine Adjustment.** Slowing down the harvesting speed can reduce shatter and stubble losses. Soybean pods can be stripped from the stem, shatter, and drop to the ground when harvested at high speeds. Refer to the manufacturer's manual before performing any maintenance and to confirm the correct settings are being used to minimize harvest losses.

**Product Selection.** If pod shattering has been a consistent problem in a field, soybean products should be selected for tolerance to shattering. The shattering response of a soybean product is measured after the product has been left in the field for about two weeks after maturity or about one week later than the optimum harvest time.

To help reduce the risk of pod shattering due to overmature pods, avoid situations where all acres are ready to be harvested at the same time, such as when the same product was planted over a large number of acres. Select a variety of products with relative maturities (RM) that vary by three days for every week of harvest time required for your operation. Therefore, if soybean harvest takes two weeks, it is recommended to plant three or four different maturities that vary collectively in maturity by six days or more. This process may allow for your collective soybean crop to mature over time.

#### Sources

<sup>1</sup> Lindsey, L. 2012. Watch out for shattering soybeans. The Ohio State University. Ohio's Country Journal. http://ocj.com/2012/10/watch-out-for-shattering-soybeans/<sup>2</sup> Hanna, M. 2012. Combine settings for drought. Integrated Crop Management News. Iowa State University. www.extension.iastate.edu. <sup>3</sup> Soybean shatter discussion. 2013. Technology Development and Agronomy. http://www.channel.com/Agronomics/Pages/Soybean-Shatter-Discussion.aspx. <sup>4</sup> Conley, S. 2012. Drought-induced shatter of pre-harvest soybeans. University of Wisconsin. http://ipcm.wisc.edu/blog/2012/09/drought-induced-shatter/. <sup>5</sup> Schapaugh, W.T. 1997. Selection of soybean varieties. Soybean Production Handbook. C-449. Kansas State University. http://www.harper.k-state.edu/ <sup>6</sup> Hellevang, K. 2013. Soybean maturity, moisture variations may pose problems. North Dakota State University. www.ag.ndsu.edu/. Web sources verified 07/31/15. 141014143005

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