WHOLE SOYBEAN PHYSICAL FACTORS – SOYBEAN DAMAGE

U.S. compared with other origins

Total damage is a key consideration in determining the overall quality of soybeans. Total damage includes heat damage, mold damage, insect damage and other factors that cause material damage to the bean. Soybeans harvested at high moisture levels are susceptible to mold and may require drying with heat. Drying increases the risk of heat damage, impacting the quality of the soybean meal that will be produced from the soybean.

Soybeans in Brazil have higher moisture content compared to the U.S. and are commonly dried to more acceptable levels in order to preserve soybean quality. The most common method of drying in Brazil is burning wood to produce heat. Proper drying conditions may maintain the quality of soybeans, but the method matters. While gas drying allows for better and more precise control of the drying process, wood drying is much more prevalent in Brazil as wood is affordable and easily accessible. The lack of control with wood drying results in more heat damage to soybeans.

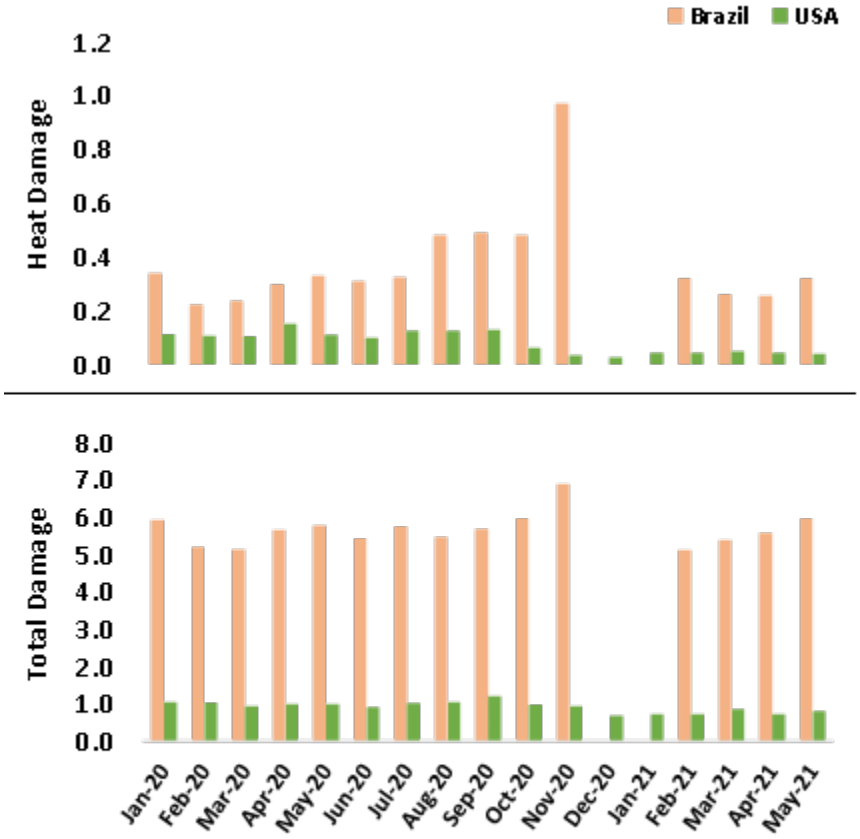
Further, significant variability exists in the amount of heat damage in Brazilian soybeans as growing conditions vary considerably by region.

U.S. SOYBEANS HAVE VERY LITTLE HEAT DAMAGE AS THE CROP IS TYPICALLY HARVESTED AT OPTIMAL MOISTURE LEVELS.

Based on the results of testing samples of monthly soybean exports[1], **the Brazilian soybean samples had four to six times more heat damage than the U.S. samples** in 2020 and 2021 (to date). Further, total damage was six to seven times more in the Brazilian soybean samples in 2020 and 2021 (to date).

NUTRITIONISTS ARE CONCERNED THAT DAMAGE TO THE SOYBEAN CAN IMPACT PROTEIN QUALITY AND THE DIGESTIBILITY OF AMINO ACIDS, REDUCING THE VALUE OF SOYBEAN MEAL IN THE DIET.

These factors highlight the U.S. Soy advantage when considering the quality of the whole soybean and the implications for the value of soybean meal in animal diets.



	2020			2021 Avg (Jan-May)		
Quality Factor	Brazil	USA	Mag. Diff	Brazil	USA	Mag. Diff
Heat Damage	0.41	0.10	4.3x	0.29	0.05	5.8x
Total Damage	5.70	0.98	5.9x	5.51	0.77	7.2x

[1] *Data summarize soybean quality results from U.S. and Brazilian soybean exports. U.S. data are from the USDA FGIS public database. Brazilian data are collected from different surveyors. The data is based on limited samples and is not meant to reflect a statistically significant sample size of the overall soybean crop. Due to lack of soybean supplies in Brazil in December 2020 and January 2021, no data were available for those two months.*

To learn more about how U.S. Soy can enable your business, please contact your U.S. Soybean Export Council (USSEC) region or country representative; or submit your contact details via https://ussec.org/contact/.

ABOUT THE U.S. SOYBEAN EXPORT COUNCIL (USSEC)

Soybeans are the United States' number one food and agricultural export. The U.S. Soybean Export Council (USSEC) is devoted to building preference, improving the value, and enabling market access for the use of U.S. Soy for human consumption, aquaculture, and livestock feed in 82 countries across the world. USSEC is a dynamic partnership of U.S. soybean producers, processors, commodity shippers, merchandisers, allied agribusinesses, and agricultural organizations; and connects food and agriculture industry leaders through a robust membership program. USSEC is farmer-funded by checkoff funds invested by the United Soybean Board, various state soybean councils, the food and agriculture industry, and the American Soybean Association's investment of cost-share funding provided by U.S. Department of Agriculture's (USDA) Foreign Agricultural Service (FAS). To learn more, visit www.ussoy.org and www.ussec.org, and engage with us on Linkedin, Twitter, Facebook, Instagram and YouTube.