Concealed Damage Field Studies

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PROJECT SUMMARY

Objectives:

- Test the role of different field conditions and practices on the development of concealed damage (CD) in the Monterey variety. Field work was conducted at the Nickels Soil Lab near Arbuckle, CA during the 2011 and 2012 harvests and coordinated with ongoing studies led by Alyson Mitchell at Food Science and Technology, UC Davis. The field samples were submitted for drying, roasting and CD analysis to Dr. Mitchell's lab.

Background and Discussion:

Concealed damage can significantly reduce grower returns in years with late harvests and/or early rains. Following roasting, the kernel interiors turn darker than undamaged nuts and flavor can be bitter. In extreme cases, kernel internal color and flavor are altered before roasting.

Prolonged moisture at elevated temperatures (above field temperatures) appears to contribute to this condition, but the influence of specific combinations of field moisture and temperature on the appearance of concealed damage has not been extensively examined – especially for the Monterey variety.

This project was begun in an effort to better understand the field conditions that contribute to concealed damage and management practices that can reduce the risk of concealed damage when rain is forecast.

In the field in 2011 and 2012, Monterey nuts in windrows were conditioned or left unconditioned prior to wetting by 1" of artificial rain. Following this "rain", nuts were either conditioned or left "as is" for several weeks and then picked up, hulled, shelled and transported to Dr. Mitchell's lab at UC Davis for roasting and concealed damage assessment. Windrow temperature and kernel moisture were tracked in the field.

A preliminary study using nut bins to simulate stockpile conditions was conducted in 2011, but not repeated in 2012. Conditioned nuts were left as is or wetted with 1" of artificial rain and held for 10 days (turned 2x or unturned) and then taken to Dr. Mitchell's lab in Davis for roasting and concealed damage assessment. Stockpile temperatures were tracked in the field.

In the 2011 studies, temperatures in nut holding positions – windrows or bins – never exceeded 85^{o}F. In this relatively cool, late season environment, conditioned nuts had lower kernel moisture levels and showed less kernel discoloration compared to unconditioned nuts. These results indicate that CD can develop when field storage conditions are relatively cool if nut moisture is elevated.

Project Cooperators: Alyson Mitchell, University of California, Davis; Stan Cutter, Nickels Soil Lab, Arbuckle, CA; Bobby Johnson, University of California Cooperative Extension.

For More Details, Visit

- Poster location 22, Exhibit A & B during conference; or on the web (after January 2013) at www.almondboard.com/researchreports
- 2011.2012 Annual Report CD (11.HORT14.Niederholzer); or on the web (after January 2013) at www.almondboard.com/researchreports
- Related Projects: