

Research Shows Hot Nights Can Affect Rice Yield And Quality

FAYETTEVILLE, ARK.

The latest research on effects of high nighttime air temperatures during grain-filling stages of rice growth was a topic at the annual Industry Alliance Meeting of the University of Arkansas Division of Agriculture's Rice Processing Program May 23-24 in the John W. Tyson Building auditorium on the U of A campus.

Terry Siebenmorgen, Rice Processing Program director and University Professor of Food Science, said industry leaders from 14 companies in the U.S., Europe and South America who support the program's research attended the meeting. The Arkansas Rice Research and Promotion Board also supports the program.

Siebenmorgen said variation in grain quality from year to year is a long-term research topic. A multi-year and multi-location research project in Arkansas has documented that rice yield and quality in the Mid-South is correlated to nighttime air temperatures, and these correlations were strengthened during the very high summer temperature years of 2010 and 2011.

Studies by Siebenmorgen, Sarah Lanning,

James Patindol, Paul Counce and others in Rice Processing Program projects have documented that high nighttime temperatures interfere with kernel development during the grain filling stage.

"The more we understand what's happening, the closer we are to developing ways to avoid or reduce dramatic swings in grain quality and yield due to temperature variations," Siebenmorgen said.

Lanning and Patindol have recently documented effects of excessive nighttime temperatures on chemical and physical changes in the kernel, which affect the yield and quality of milled rice and functional attributes of rice for end-use processors.

They found that different rice varieties respond differently to high nighttime temperatures, which can complicate the adjustments required by end-users, Lanning said. But it also indicates the presence of genetic traits for resistance to high temperature effects, which might eventually be bred into improved rice varieties. Δ