Microbial Activity of Stored Cotton Bales with Ambient and Moderate Moisture Levels

Authors: David T.W. Chun, David D. McAlister, and Dean R. Cobb
Pages: 24-29
Engineering and Ginning

Full Text PDF (94K)

Studies on moisture augmentation of cotton bales have shown that excessive amounts of water lead to a reduction in fiber quality. To identify an acceptable range of cotton bale moistures that could be used for moisture restoration without degrading fiber quality during long-term bale storage, cotton was treated with moderate amounts of supplementary moisture and examined after storage for 1 yr (6 mo under ambient warehouse conditions and then 6 mo under processing room conditions). The target moisture contents were 10, 8, and 6%, and a non-treated control bale. The actual initial moisture contents were 9.5, 8.0, 5.4, and 5.0%, respectively. When the bales were opened for sampling, the control and low-level moisture treatment bales gained moisture, while the two high-level moisture treatment bales lost moisture. The bale moisture content tended to equilibrate to between 6 and 7% during storage, so bales treated with higher moisture would most likely be delivered a lower weight bale to the end user. Except for a small color grade change and increase in the short fiber index at the highest moisture treatment, cotton dust potential and fiber quality, especially with regard to color grade, reflectance or yellowness, from the different treatments were not significantly different. Lower viable microbial populations were observed with increasing moisture content, but this did not appear to have any practical significance based on the lack of differences in fiber quality.