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Changes in quality of rice grains after storing in controlled nitrogen atmosphere

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ABSTRACT

The use of controlled atmosphere with more than 98% N₂ is one of the most successful storage techniques, while the flavor change of grain after stored with N₂ is still unclear. High-quality rice grain was sealed in warehouses filled with 98% N₂ and stored at 20°C for 6 months; then unsealed and stored at 20°C for 6 months. The water loss, fatty acids value, appearance, pasting properties, texture properties and volatile compounds of rice grain after controlled nitrogen atmosphere were measured every month. The results showed that the controlled nitrogen atmosphere treatment reduced water loss and fatty acids value increase of rice grain, further reducing the production of off-odors in rice grain. This study provided a meaningful basis for large-scale application of nitrogen-controlled grain storage.

Keywords: Controlled atmosphere, Nitrogen, Volatile compounds, Shelf life