Title Postharvest changes in glutamine synthetase activity and ammonia content in two young soybean cultivars at different storage temperatures

Author Matsui T., Kosugi Y. and Okuda N.

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Abstract

In this study, we investigated the postharvest changes in glutamine synthetase (GS ; EC 6.3.1.2) activity in relation to ammonia content, respiration rate and pod color changes after harvest of young soybeans (Glycine max Merr of the 'Ajigen' and 'Fuuki' varieties) stored at 5 and 20degC for up to 10 days. GS activity slightly increased throughout the experimental period for both storage temperatures and cultivars. Ammonia content increased approximately 2-fold after a 10-day storage. Postharvest ammonia content increased was enhanced with storage. This phenomenon followed the same trend as that for other perishable vegetables, such as broccoli and asparagus. GS activities in these vegetables usually decreased during storage. Thus, the increase in GS activity in soybean implies that GS has a role in protein synthesis. The low-temperature storage of soybeans at 5degC resulted in the retention of good bean pod color and quality because it effectively decreased respiration rate and suppressed ammonia accumulation after harvest.