Title Effect of controlled atmosphere storage on storage life of onion and garlic cultivars

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Abstract

The garlic 'Ziemiai', pungent onions 'Hercules' (yellow) and 'Hyred' (red), and salad onion 'Exhibition' were tested during two experimental periods. The experiment in regular atmosphere (RA) was carried out in a refrigerated storage room held at 2±1°C, with a RH ranging from 58 to 75%. In controlled atmosphere (CA) storage, the temperature was set to 2±1°C and the RH in onion storage chambers ranged from 52 to 87%. The CA storage regime for all cultivars was 1% O2 and 5% CO2. The storage loss was monitored monthly starting from January and the experiment was ended when storage loss had reached 30%. In the first year, 'Hercules' had satisfactory quality in RA for 7 months and in CA for 8 months with storage losses of 32.6 and 28.2%, respectively. 'Hyred' was stored in RA for 6 months (storage loss 28.5%) and in CA for 7 months (26.4%). 'Exhibition' was stored in RA for 5 months (storage loss 27.3%) and in CA for 6 months (31.2%). Garlic 'Ziemiai' maintained good quality in CA store for up to 6 months. In the second year, storage loss of 'Hercules' in RA and CA was 13.4 and 10.1%, and of 'Hyred' 7.6 and 6.0%, respectively. Spoilage of 'Exhibition' in RA was 25.1% by January (4 months) and 55.6% by March (6 months), whereas in CA it was only 16.9% by March. Although the breeding company has advised that this cultivar should only be stored for up to 2 months, the current experiment proved that, in a CA regime, it can be successfully stored for 6 months. Storage loss of garlic 'Ziemiai' was significantly greater in RA than in the CA (41 and 13%, respectively). For all cultivars, bulb dry matter and soluble solids content was higher in controlled atmosphere conditions compared to regular atmosphere storage.