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Wound healing, keeping quality, and compositional changes during curing and storage of sweet potatoes

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Abstract

California's mild climate has led to handling and storage practices with sweet potatoes that do not necessarily provide optimum conditions for wound healing. Experiments were conducted during a four-year period with three varieties on San Joaquin Valley farms to determine whether a curing period in a warm house, such as is customary in other areas, would favor wound healing and reduce storage losses and quality changes. A two-week curing period in a warm house, with a temperature of around 85° F and high relative humidity, was compared with a similar period in a field pile, the method commonly used in California, and with direct placement in an unheated storage house.

The experiments indicated that where storage of sweet potatoes for several months is economically sound, a warm-house curing period will usually reduce rot (except black rot), improve the appearance of roots, and decrease handling and sorting at the end of storage. The improvement was more consistent in the Porto Rico and Hawaiian varieties than in Yellow Jersey, which was more heavily infected with black rot. The treatments had little effect on sugar percentage, or, except toward the end of the storage period, on loss of dry weight.

Anatomical studies and photomicrographs were made of changes in the natural uninjured periderm and in wound tissue on broken ends and cut sides of roots under the three methods of treatment. The natural periderm increased during the curing period in the Hawaiian and Porto Rico varieties but not in the Yellow Jersey. In all varieties the cork layer of wound tissue in roots cured in the warm house was thicker, more regular, and lighter in color than under the other treatments. Healing was similar in the two types of wounds. In the wound area on the broken ends of roots, sieve tubes and laticifers were compressed and pinched off, and vessel elements became filled with tyloses, which sometimes divided to produce across the vessel lumen a cork layer continuous with that in surrounding tissue.

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Wound healing ability of cultivars has been associated with good root storability. In this study, two orange fleshed sweetpotato cultivars (Apomuden and Nane) were either cured in-ground by dehaulming prior to harvest or field-piled over a seven-day period to study their responses to wound healing and changes in dry matter content. Picha H.D., Weight loss in sweetpotatoes during curing and storage: Contribution of transpiration and respiration. American Societyfor Horticultural Science, 1986, 111, 889-892Google Scholar. Walter W.M., Hammett L.K., Giesbrech F.G., Wound healing and weight loss of sweet potato harvested at several soil temperatures. Journal of the American Society for Horticultural Science, 1989, 114, 94-100Google Scholar. Wound healing, keeping quality, and compositional changes during curing and storage of sweet potatoes. Morris, Leonard L . ; Mann, Louis K. Hilgardia, 12/1955, Vol.24(7), pp.143-183. Item is removed from Favorites. 4. Book. The family album of favorite poems. P. Edward Ernest editor. 1959. Sweet potatoes belong to the morning glory family, while potatoes are members of the Solanaceae family. Sweet potatoes became popular very early in the islands of the Pacific Ocean, spreading from Polynesia to Japan and the Philippines. Bruises and abrasions must be kept at a minimum. The sweet potato may be cut or bruised if they are placed in containers having sharp edges or roughly hauled or handled (Sumner, 1984). Impact loggers located at the centre of sacks indicated that the most severe impacts (greater than 20g) occurred during unloading and loading from road vehicles and ships. Harvesting, Storage And Curing Of Sweet Potatoes, Cooperative Of Extension, The University Of Georgia College Of Agriculture, pp.2-10.

The high perishability of sweet potato roots during storage remains a major constraint to actors across sub-Sahara Africa. By using appropriate pre-storage treatments against microbial decay and sprouting, shelf-life can be extended up to 1 year at 12-15Â°C and 85-90% relative humidity. However, cold storage facilities are not available to the smallholder producers and traders due to cost. Quality of the potatoes cannot improve during storage. Bruise prevention is an important part of keeping quality of potatoes with minimum weight loss and storage diseases. Many attempts have been made by researchers to investigate the suitability of various storage systems over the years for safe storage of agricultural commodities. Conventional refrigerated room, ventilated cold room, bulk storage facilities, jacketed storage and various types of controlled atmosphere (CA) storage like Marcellin and Atmolysair have been used.Â (1985) investigated the potato losses during the first three months of storage for processing. It was observed the sampling of three respondent groups includes a local storage region, the processing industry, and the federal inspection service (USDA). To measure the optimum curing condition, wounded potatoes and sound potatoes were stored at 13C, 15C, and 18C with RH 90%. At 18C, it took 6 days before a good periderm layer was formed. Periderm formation was completed after 10 days at 15C and 12 days at 13C. To measure the reconditioning effects, potatoes stored at low temperature (5C) for 28 days were reconditioned at 15C for 20 days. The reducing sugar contents decreased slowly during the reconditioning period. The longer the reconditioning period, the better the potato chip color. Citation. Kim, H.O. and Lee, S.K. (1993). Effects of curin...