

[Abstract:](#)

In order to clarify the mechanism of water core development in apple fruit, changes in the development of watercore in fruit of three cultivars, either on trees or stored at 2 °C after harvest, were examined. The water core developed in fruit of 'Koutoku' and 'Redgold', but not in 'Mutsu'. Formation of the water core was first confirmed in mid-October. The size of the water core was maximum at harvest time, then reduced gradually in stored fruit. Tissues of the fresh fruit were observed with a cryo-scanning electron microscope (Cryo-SEM), with which samples can be observed without dehydration. The Cryo-SEM image showed that all the intercellular spaces were filled with ice crystals (aqueous fluid) in the water core tissue, but not in the non-water core area. Water core tissue seems to be formed with aqueous fluid overflow in the apoplast just before harvest.