

Prevention of sweet cherry fruit cracking using sureseal, an organic biofilm

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Abstract

Rain-induced fruit cracking in sweet cherries can be a major problem. In the Pacific Northwest United States, due to high labor costs, when fruit cracking exceeds 25% at harvest, fruit are not picked. Oregon State University Horticulture and Pharmacy Faculty have collaborated in producing and patenting a novel, elastic, organic biofilm, SureSeal, which significantly reduced sweet cherry fruit cracking by up to 250% in Milton Freewater, Oregon and Loftus, Norway. Formulations of SureSeal are hydrophobic and consist of a copolymer of complex carbohydrates, phospholipids and calcium. Collaborative research undertaken over three years throughout the Pacific Northwest and overseas found that two applications of 1% SureSeal applied at straw color, and again ten days later, reduced fruit cracking consistently when compared to untreated control fruit. In Norway, fruit cracking was reduced from 24.6 to 9.8% when trees were treated with SureSeal in combination with plastic ground covers and a preharvest fungicide (fenhexamid). Furthermore, studies throughout Oregon and Idaho found that SureSeal resulted in significantly ($P < 0.001$) higher total soluble solids (TSS) and increased Stem Pull Force (g) (retention force between the pedicel and the fruit) than untreated control fruit. In 2008, 'Bing' fruit had higher TSS both before (18.5°Brix) and after (18.9°Brix) two weeks of regular atmosphere storage at 2°C than untreated control fruit (17.4 and 17.2°Brix, respectively). In Norway, 1% Biofilm increased TSS to 21.4°Brix compared to untreated control fruit (18.6°Brix). Two applications of 1% Biofilm applied at straw color and again ten days later has the potential to significantly reduce fruit cracking, accelerate maturity by significantly increasing TSS levels, and increase stem pull force. The concurrent reduction in fruit firmness observed may be a function of maturity but, in all instances, fruit firmness still exceeded the minimum standard of 250 g mm⁻¹.