

EFFECT OF AUTUMN CALCIUM SPRAY AT A HIGH RATE ON 'GRANNY SMITH' APPLE QUALITY AND STORABILITY

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□ *The aim of the study was to examine effect of autumn calcium (Ca) spray at a high rate on apple quality and storability. The investigation was carried out during 2005–2006 in Isparta district, Turkey, under semi-arid conditions, on mature 'Granny Smith' apple trees/M.9 EMLA, planted at a spacing of 3.5 × 1.5 m on fine-textured soil rich in Ca. The trees were sprayed with Ca in summer and/or in autumn, using organically complexed Ca to avoid possible leaf and fruit injuries. In autumn (10 days before harvest), the trees were sprayed with Ca at a rate of 8 kg ha⁻¹. In summer, the another trees were sprayed with Ca six times at a rate of 1.5 kg ha⁻¹ in each measure; the first spray treatment was performed 6 weeks after full bloom, and the others at 7–9 day intervals. The third part of the trees was sprayed with Ca in summer as well as in autumn, at the same terms and rates as given above. Trees unsprayed with Ca served as the control. It was found that Ca sprays in autumn or in summer plus in autumn damaged leaves; however those treatments did not caused defoliation. Calcium sprays had no effect on apple yield, mean fruit weight, fruit skin russeting, and firmness, soluble solids concentration and titratable acidity of fruit at harvest. Fruit flesh Ca concentrations of the control trees were high. However, the highest fruit Ca concentration was recorded on the trees sprayed with Ca in summer plus in autumn. Calcium sprays in summer or in autumn increased fruit Ca concentrations but their effects were weaker than summer plus*

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autumn Ca applications. After 100 days of refrigerated air storage, soluble solids concentration of fruit did not differ between the studied combinations. Only apples sprayed with Ca in summer plus in autumn were firmer and contained more organic acids than the control fruit. During storage, there were neither pathogenic diseases nor physiological disorders. Based on the obtained results we conclude that Ca sprays in summer plus in autumn at high rate can prolong 'Granny Smith' apple storage even though initial fruit Ca concentration is as high as 502–504 mg Ca kg⁻¹ DW or 84.1–84.8 mg Ca kg⁻¹ FW.

Keywords: apple trees, autumn calcium spray at high rate, storability