Potassium nitrate sprays improved leaf K content, fruit size and peel thickness of clementines

This study was carried out in mature Clementine trees "Nules" (

Citrus Clementine Hort. Ex. Tan

) grafted on Troyer citrange (

Citrus sinensis x Poncirus trifoliata

) rootstock in Puzol, Spain. The experiment was laid out in a randomized complete block design with 4 replicates per treatment, conducted over 3 years (1998-1999-2000) on an alkaline sandy loam soil. Three doses of foliar potassium nitrate sprays (0,5% equals 25 kg KNO_3/ha, 1,0% equals 50 kg KNO_3/ha and 1,5 % equals 75 kg KNO_3/ha) were used in different stages of the growth cycle. Three sprays were applied: May-June-July (M-J-J), June-July-August (J-J-A) or July-August-September (J-A-S).

The three doses increased the leaf K concentration with regard to the control. In particular those at 1,5% were effective in increasing leaf K concentrations, mainly when applied at the earlier moments of applications (M-J-J) and (J-J-A), whereas leaves were less responsive to late applications (J-A-S). The yield was scarcely affected by the treatments, and this value was kept almost constant during the three years. The individual fruit weight was improved by any treatment times and doses, but mainly with the dose of 1,5%. The peel thickness increased with the treatments, and the highest values were found with the higher dose. Varieties that produce small fruits and thin peel, will benefit from KNO_3 sprays, preferably at 1,5% concentration. However, the peel and juice percentages were slightly affected, the total soluble solids and acidity percentages always increased with any dose applied, but the higher values were reached with 1,5%. The colour index (orange colour intensity) at the

harvest time was favoured with the potassium nitrate treatments when compared with the control trees.