

**Title** Dehydration kinetics of Roma type tomatoes in relation to temperature and air flow

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### **Abstract**

This work examined the interactive effects of cultivar, temperature and air flow on drying kinetics of Roma type tomato halves. Drying trials were carried out using fresh, ripe tomato fruits from two cultivars: 'SXT 7705' and 'Maya', grown in greenhouse and field culture systems respectively. Tomato fruits were carefully washed and cut in halves, blanched in water at 98°C for 2 minutes and pretreated with a sodium metabisulphite solution at 500 mg.L<sup>-1</sup>. Tomato halves were dehydrated in a closed loop tunnel type drier with longitudinal air flow. The samples were placed onto perforated stainless steel trays (25 x 27 cm) and dried at 60, 70 and 80°C with an air flow rate of 1 or 2 m.s<sup>-1</sup>. A completely randomized experimental design with a factorial array 2 x 3 x 2, and 2 replications was used. Drying rate, first moment response, final moisture content and water activity were determined. Temperature and air flow had an interactive effect on drying rate. Both initial and final moisture content were significantly affected by cultivar and there was an inversely proportional relationship between temperature and water activity. The first-moment response was not a representative indicator of the time of drying because the obtained value for this variable was larger than the time used for the whole drying process.

The shortest drying time, lowest water activity and acceptable moisture content was obtained by drying cultivar 'SXT 7705' at 80°C with an air flow of 2 m.s<sup>-1</sup>.