

Title Overcoming fumigation damage of Tasmanian 'Fuji' apples for Japan  
Author Schimanski, L., Brown, G., Potter, K. and Jennings, D.  
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### **Abstract**

Tasmania-grown Fuji apples destined for Japan were studied to identify the impact of each step of the supply chain (protective drenches (S1), grading line (S2), pre-fumigation storage temperatures (S3), fumigation and assessment (S4)) on fumigation damage and determine potential methods to overcome problems. For S1, fruits were either untreated, drenched for one minute in 1 or 2% Stopit (SI), 1 or 2% ascorbic acid (AA) or DPA or fumigated with 1-MCP for 24 h, and then loosely packed in boxes stored at 5 deg C. For S2, fruits collected from seven locations from two commercial grading lines were loosely packed into boxes and stored at 5 deg C. For S3, boxed fruits were placed into each of three storage temperatures (0, 5 or 12 deg C) for 14 days before fumigation. For S4, fruits were removed from cold storage three days before transport to the fumigation centre, where they were tempered (17 deg C, 24 h) and fumigated alongside commercial lines. Simulated transport occurred in a refrigerated container (2 deg C, 16 days). All the drenches applied were associated with reduction in scald occurrence, compared to the current practice of no treatment. MCP fumigation increased the scald occurrence. DPA resulted in the lowest internal browning levels, however, 2% SI and 2% AA were also effective treatments in reducing IB compared to the untreated control. The incidence of scald at the end of grading was 3 times higher than at the beginning. IB increased 66% by the end of grading. Pre-fumigation fruit storage at ambient (12 deg C) increased scald 3-fold. There was over a 100% increase in IB between 5 and 12 deg C.