

[Abstract:](#)

The air flow and heat transfer in an empty cool room for horticultural products was investigated with Computational Fluid Dynamics. The 2D Reynolds-averaged Navier-Stokes equations with the Boussinesq approximation of buoyancy and wall functions were applied using the commercial code CFX 4. The standard k- ϵ model, the RNG k- ϵ model and the full Reynolds stress transport model of turbulence were compared. Inlet conditions were $3 \text{ m} \cdot \text{s}^{-1}$, 07°C and different values for the turbulence intensity and the dissipation length scale. The walls were given a constant and uniform temperature ranging from 0°C to 25°C . Different mesh sizes were studied. The sensitivity of the velocity and temperature distribution with respect to mesh quality, wall treatment and inlet boundary conditions for the turbulence quantities was larger than with respect to the turbulence model used.