GWorkS-model simulates crop operations in greenhouses

April 25 2014, by Dr. J (Jan) Bontsema

Wageningen UR Greenhouse Horticulture and Wageningen University, group Farm Technology developed a simulation model for labour in greenhouses.

Global competition urges growers to continuously improve labour efficiency and to innovate crop operations in order to control labour

costs and to offer appealing jobs and healthy work conditions in greenhouses. Computer simulation was used to find effects of organizational and technical modifications in crop operations. For this purpose the GWorkS-model was developed.

The GWorkS model was applied in rose cultivation. It creates short-term work schedules and simulates the crop operations harvest, disbudding and bending of roses with a limited number of employees and trolleys. Several labour management scenarios were simulated. A real labour management scenario as applied in a Dutch cut-rose grower company was used as a reference. Harvesting, disbudding and bending represent more than 90% of crop-bound labour time in the greenhouse. The model calculates the labour time in these processes well with 10.9 per s rose in the simulation and 11.5 s per rose in practice.

The scenarios showed that labour management is important because difference in labour time for harvest, disbudding and bending was up to 5 s per cut-rose. The maximum difference in labour costs was € 7.1 m-2 per year. The best scenario showed labour cost saving of € 4 m2 per year compared to practice.

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