

Harvesting and in-field sorting of citrus with a self-propelled machine

A. Gutiérrez, J. Blasco, P. Chueca, C. Garcerá, S. Alegre, S. López, S. Cubero, E. Moltó

Acta Horticulturae 965: 149-152. 2012.

Abstract

Increase of productivity is crucial for the Spanish production of oranges and mandarins destined for the fresh market. Harvest and handling operations represent 50% of the field production costs. Fruits are currently manually harvested, loaded in boxes and transported to a packinghouse where fruit are sorted. In the early season, sorting is aimed at color classification and in the mid and late season, oranges and mandarins are sorted by size. The present work shows the development of an automatic sorting system capable of separating citrus fruit in three user-defined color or weight categories while fruit are harvested. Limited energy and space availability have been critical issues for the electronic and mechanical designs. All the subsystems are commanded by a central unit that can be easily adapted to each orchard and is operated by one worker. The current version of the machine has a throughput of eight fruit per second and has successfully worked in the field during one Spanish harvesting season (September-June).