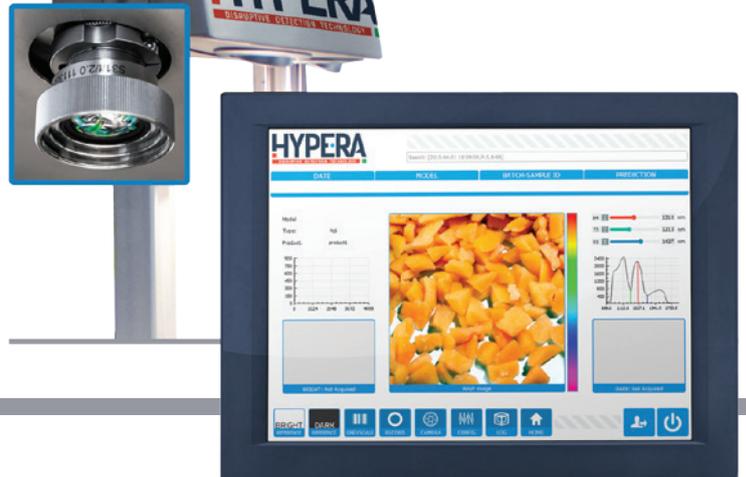# DETECTION OF PEACH WORMS IN PEACH PIECES

## The next generation for quality control and food safety

- Automated detection of contaminants barely visible by the human eye

- Takes chemical image and detects chemically different contaminants

- Can be combined with alarm and sorting systems

HYPERA: Automated end-product control to detect peach worms in peach pieces

The peach worm (peach twig borer, Anarsia Lineatella Zeller) is a major pest of stone fruits, such as peaches, nectarines and apricots. Some preventive orchard treatments with insecticides, mating disruption, biological and cultural controls may destroy a significant portion of larvae, but they may not reduce twig borer populations below economically damaging levels for food processing companies and harvested fruits still can contain some peach worms. The quality control of processed out by means of human inspection. However, there are no relevant colour differences between peach worms and peach pieces which makes human-eye larvae detection difficult.
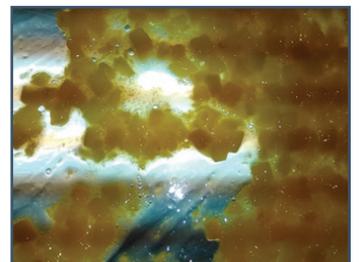
Case study

Typical pieces of peach –taken from the processing line- have been analysed with the HYPERA chemcial imaging system. This system is capable to detect chemical differences: As peach worms differ –in terms of chemical composition- from the peach pieces, the peach worm can be easily detected. In fact, fat, proteins and water are major components of worms; on the contrary, peaches are mainly made of sugars, cellulose and water.

From an initial comparison of the peach pieces spectra versus the peach worm spectra (illustration below), it can be concluded that, in fact, the peach spectra (upper group) are clearly different from the peach worm spectra (lower group).

PEACH PIECE SPECTRA

PEACH WORM SPECTRA

Wavelenght
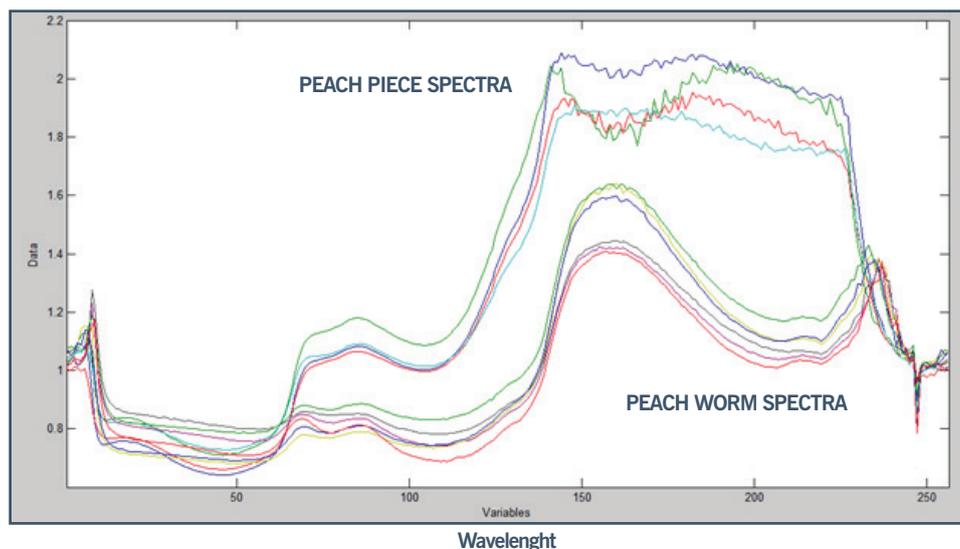
In a second step, a chemical image of peach pieces containing peach worms has been acquired by means of the **HYPERA** system and a dedicated chemometric model was developed in order to detect worms in peach pieces. After applying the predictive model to the chemical image, peach worms (blue false colour) are clearly identified on different peach pieces.

LARVAE

LARVAE
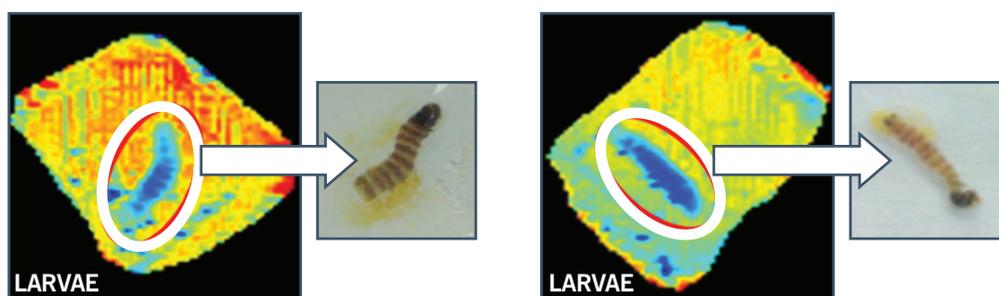
Conclusions

> **HYPERA** is capable to detect piece worms on peach pieces: An automated and efficient way to provide high quality end products without contaminants.