DEVELOPMENT OF A TRAINING PROGRAM FOR ENHANCING THE USE OF ICT TOOLS IN THE IMPLEMENTATION OF PRECISION AGRICULTURE

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Training Package 4

Case 4 South Europe: Selective Harvesting of Grapes (SHG)

Student guidelines

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Contents

1 Objective

The aim of Case 4 of Training Package 4 on Information and Communication Technologies (ICT) Devices is to present a great example of Precision Agriculture (PA) technologies; Selective Harvesting of Grapes (SHG). This example allows farmers to identify the potential use SHG and the benefits and drawbacks to select this strategy on wine production.

This activity will present the theory behind the selective harvesting of grapes and the expected benefits. Through a reading of a paper students will go in deeply on the methodologies that allows this SHG.

2 Guidelines

2.1 Practical information

- **Main target group**: Agricultural advisers, extension workers, farmers and other agricultural professionals who are interested in SHG and how to benefit from it.
- **Expected duration**: 4 hours
- **Student preparations before the course**:
    - Bring a personal computer with internet access to download the document to read and answer the questions.
    - If you want to work on specific farm, bring your field characteristics (size, rows orientation, varieties, and variability) and harvesting configuration (type of harvesting machinery, operational time, forward speed harvesting)
- **Homework after the course**:
    - Exchange practical experience with other participants: Did they have pre-experience on SHG? Did anybody work with SHG afterwards, and with which results?

2.2 Suggested agenda

1. Welcome and presentation of participants (*10 mins*)

2. Brief presentation of the AgrICT e-training Platform, of the five training packages (TPs) of the platform, and of this case study as part of TP4 (ICT) (*10 mins*)

3. The program of today and alignment of expectations (*10 mins*)

4. Lecture: The theory behind Selective Harvesting of Grapes (*60 mins*)

5. Review of the instructions to the exercise and composition of groups (1-3 persons) for the exercise (*15 mins*)

6. Exercise (*105 mins*)

7. Questions, clarifications and conclusion (*30 mins*)

2.3   Learning goals

- The participants will be able to understand the procedure to obtain the opportunity index of SHG.
- The participants will learn about the main benefits and drawbacks of implementing SHG.
- The participants will understand when the use of SHG is suitable according the winery structure.
- The participants will understand which main parameters that allows SHG are.

3   Exercise

3.1   Goal

Introduce student to selective harvesting of grapes, its technical requirements and procedure to determine the opportunity to introduce this methodology when harvesting.

3.2   Instructions to the exercise

To reach the learning goals of the exercise, students has to read the document available on the following link and answer the questions proposed on this guidelines:

[Assessing opportunities for selective winery vintage with a market-driven composite index](#)

From: *Jaume Arnó & José A. Martínez-Casasnovas | (2017) Assessing opportunities for selective winery vintage with a market-driven composite index, Cogent Food & Agriculture, 3:1,1386438, [DOI: 10.1080/23311932.2017.1386438](#)*

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Questions:

1. What is the minimum row distance for the same grape quality that justifies SHG? How can it be calculated?

2. How can we determine the quality of the grapes to be harvested?

3. Is there a minimum area that justifies using Selective Harvesting of Grapes?

4. Is it easy to apply SHG in an SME farm?

5. According to the case study, does the final value of Opportunity Index always match the conditions of the specific field? Is it necessary to adjust the OI_{SV} value according the grower's experience?

6. Considering the images of Figure 5 of the document, describe the main reasons that explains null OI_{SV} index, medium OI_{SV} index and high OI_{SV} index.

4   Final considerations

Through the lecture of a Case Study, student will learn that the authors propose an opportunity index that can be useful as a first approximation given the numerical and graphical information it provides. With that information, winery managers can then identify those fields suitable for selective harvesting but containing small-sized areas of quality grapes.

In practice, the Opportunity Index must be viewed only as a support tool for decision-making; harvesting decisions should not be based solely on the OI_{SV}. Any decision resulting from the use of remote high-spatial resolution images must be supported with appropriate ground-truthing and sampling.

The OI_{SV} is designed to be used mainly by wineries. Since winemakers need to plan production according to grape varieties and quality, it is of great importance to have advanced information about which fields are homogeneous and can be harvested evenly and which are non-homogeneous and prone for selective harvesting.