

Reduction of cracking in the Fuji apple variety

Summary

Thanks to its organoleptic quality, the Fuji apple is one of the varieties most sought after and accepted by consumers. Despite the agronomic difficulties associated with cultivating this variety, apple producers consider it to be a high-profit product, if minimum production levels are achieved. These minimum levels are not achieved in many years because there is a high percentage of fruit that cannot be sold due to a number of skin defects. One of these defects is cracking. Cracking occurs slightly before the harvest and can individually or jointly affect the stalk area, the calyx or the flesh of the apple. In just a few hours, a little cracking in any of these areas of the fruit can quickly result in the cleaving of the pulp, which often leads to the complete or partial rotting of the fruit, making its sale impossible. Cracking frequently affects 10 to 20% of total production and in some years as much as 50%, with the resulting economic losses. There are numerous causes that trigger this condition, although there is one that is always present: rain or high relative humidity a few days before the fruit harvest. To solve this problem, the application of solutions cited in the literature on this subject that have proven to be somewhat effective in other countries or areas is proposed.

Objectives

The general objective is to reduce losses caused by cracking in the production of the Fuji apple.

The specific objectives are:

1. Develop a harvest management protocol that minimises the likelihood of the appearance of cracking without affecting the potential quality of this variety.
2. Assess the technical viability of the installation of anti-rain nets in order to prevent the appearance of this physiological disorder.
3. Assess the effect of different nitrogen fertilisation strategies on the risk of the development of cracking.
4. Design a strategy on the use of authorised bioregulators to reduce losses caused by cracking.
5. Assess the effect of different irrigation strategies on total losses caused by cracking.

Description of initiatives outlined in the project

Five actions are to be implemented in accordance with the objectives in order to minimise the effects of cracking in Fuji apples. These actions are based on: 1) comparing two different harvesting times on different plots to determine the most suitable state of ripeness; 2) installing anti-rain nets on different plots so comparisons can be made with unprotected trees; 3) conducting tests to compare nitrogen fertilisation applied close to harvest time with that applied in the spring; 4) testing to assess the efficacy of the individual or combined application of auxins (NAA), gibberellins and calcium solutions; and 5) comparing two types of irrigation system on a commercial plot: drip irrigation and sprinkler irrigation.

Expected results and practical recommendations

The expected results are as follows:

1. Integrated protocol that includes crop management and harvest management aspects to minimise the likelihood of the appearance of cracking while maintaining the potential quality of Fuji apples.
2. Recommendation of best practices to reduce the risk of cracking in Fuji apples.

Task force leader

Entity: **FRUCTÍCOLA EMPORDÀ SL**

Contact e-mail:
emporda@empordasl.com

Typology of entity:
Agri-food company

Task force coordinator

Entity: **FRUCTÍCOLA EMPORDÀ SL**

Contact e-mail:
emporda@empordasl.com

Typology of entity:
Agri-food company

Other task force members (grant beneficiaries)

Entity: **BAGUDA FRUITS SL**

Contact e-mail:
jordibagudafruits@gmail.com

Typology of entity:
Agri-food company

Entity: **FRUITS SANT PERE SL**

Contact e-mail:
fruitssantpere@gmail.com

Typology of entity:
Agri-food company

Other task force members

Entity: **Fundació Mas Badia**

Contact e-mail:
joaquim.carbo@irta.cat

Typology of entity:
Research centre

Subject area(s) of application

Agricultural production system
Farming practice
Fertilisation and nutrients management
Plant production and horticulture
Water management

Geographical area(s) of application

Province(s)	Region(s)
Lleida	Garrigues
Girona	Noguera
Barcelona	Urgell
	Pla d'Urgell
	Segrià
	Baix Llobregat
	Baix Empordà
	Alt Empordà

Dissemination of the project *(publications, conferences, multimedia...)*

One of the most important aims of the project is to inform producers of the results. Therefore a number of transfer seminars will be held aimed at technicians and producers in the sector.

Project website

More information on the project

Project dates

Starting date (month-year): June 2018

Completion date (month-year):

Current status: *Underway*

Budget approved

Total budget: €137,376.00

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Resolution ARP/1868/2017, of 20 July, calling for applications for grants for the year 2017.

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