

Cover page

Name: María del Rosario García Gil

Subject of the research fellowship: **Genome Studies on Fruit Trees for adaptability to climate change**

Host institution: Instituto Valenciano de Investigaciones Agrarias (IVIA), Valencia, Spain

Collaborator at the host institution: Maria Luisa Badenes

Dates of your fellowship: 12th of August, 2019 to 1st of December 2019

Your consent to your report being posted on the Co-operative Research Programme's website, or alternatively, a short paragraph about your fellowship which could be used anonymously.

You have my consent to post my report on the Co-operative Research Programme's website

1. What were the objectives of the research project? Why is the research project important?

Motivation of the research project:

Fruits are important components of the human diet with global annual consumption of more than 600 million tones (www.foostat.fao.org). Current agro-market demands fruits with larger volume and of higher nutritional value (Meyer and Purugganan, 2013). In response to these demands, the breeder's community is bound to develop new improved varieties to meet the market demands that must take into consideration new climatic conditions, in order to achieve sustainable and environmental friendly breeding programs.

The objectives were:

To achieve the overall goal, I will conduct the following tasks listed in order of development:

- (i) extract total mRNA,
 - (ii) conduct RNA-seq,
 - (iii) establishment of a new assay to identify new cultivars adapted to water deficit,
 - (iv) bioinformatics work and
 - (v) differential expression to identify relevant candidate genomic regions controlling abiotic stress.
- The project is designed as a synergic and inter-disciplinary collaboration that is feasible to achieve in the time planned, and it is also expected to trigger further collaborations and exchange of post-doc and PhD students between both institutions.

2. Were the objectives of the fellowship achieved?

The establishment of the assay and their greenhouse treatments were conducted. Total RNA has been extracted and it remains to conduct the transcriptome analysis (RNAseq) to identify candidate genes for water deficit.

3. What were the major achievements of the fellowship? (up to three)

The successful establishment of potentially interesting cultivars

The assay of the water deficit treatments

The extraction of total RNA to conduct RNAseq analysis.

4. Will there be any follow-up work?

There is a publication envisaged based on the RNAseq analysis. The plan is to start transcriptomic analysis as soon as the RNA sequencing data is sent from the sequencing company. This task I will still conduct back in my own department at the Faculty of Forestry, SLU, Sweden. And the results will be reported in a peer-reviewed journal. This is expected to be submitted by the end of 2020. This means that the collaboration between IVIA and SLU that started with my Fellowship will turn into a long-term collaboration between both institutions. And we expect also a possible exchange of students in the future. We do not a priori expect any patent, but it is possible.

5. How might the results of your research project be important for helping develop regional, national or international agro-food, fisheries or forestry policies and, or practices, or be beneficial for society?

Testing and identification of new cultivars is considered a very important activity in agriculture. New cultivars are expected to maintain, even increase, production in the context of the new climatic conditions, and mitigate the negative effects of biotic and abiotic stresses that our national agricultures are encountering. We expect our work to contribute to provide new

resilient cultivars of high quality to secure the leadership of Valencia in the sector of fruit exportation of high quality.

6. How was this research relevant to:

- The objectives of the CRP?

In the context of managing the risks in a connected world, my Fellowship has strengthened the scientific knowledge in my research area by providing new biological (cultivars) material that will help our agricultures (our main stakeholders) to respond to the new climatic risks associated to the rapidly changing conditions.

- The CRP research theme? Theme 2 Managing risks in a connected world.

Our deliverable is expected to have a real impact on the capacity of our agricultures to maintain their competitiveness in the food sector. We also expect to develop genomic information (RNAseq) necessary to implement the new sequencing technologies to select new cultivars utilizing genomic information, genomic selection.

7. Satisfaction

- Did your fellowship conform to your expectations?

My main goal was to achieve knowledge and establish a collaboration in a field of research that interest me as researcher.

- Will the OECD Co-operative Research Programme fellowship increase directly or indirectly your career opportunities? Please specify.

Definitely, I have already been invited to be co applicant in a EU project related to the topic of my Fellowship.

- Did you encounter any practical problems?

No

- Please suggest any improvements in the Fellowship Programme.

Probably to connect via social media all the Fellowships of a given year, to exchange information, help each other, share our experiences and extend our contacts/network beyond our host institution.

8. Advertising the Co-operative Research Programme

- How did you learn about the Co-operative Research Programme

A colleague told me.

- What would you suggest to make it more “visible”?

Be in all social medias that matter. Twitter is probably the most relevant in the context of science. Also be in the research forums that matter. News in the webpages that are relevant. YouTube channel, videos/interviews of some of your Fellowships. Outsourcing.

- Are there any issues you would like to record?

No, I just want to say that this is a great initiative and I hope you gain even more visibility.