

I

R

IRTA[®]

**ACTIVITY
REPORT
2020**

**WE
SHARE
OUR
SCIENCE
TO FEED
THE
FUTURE**

T

A



Publication
IRTA

Direction and content
IRTA Communication

Art direction
marcmontala.com

Photographs
IRTA, Unsplash,
AdobeStock
and Creative Commons

IRTA
Torre Marimon

08140 Caldes de Montbui
Barcelona
(+34) 934 674 040
www.irta.cat



ACTIVITY REPORT 2020

Abridged version

Message from the managing director

Organization chart

Human resources

Economic activity

Scientific and technical production

Technology transfer and communication

Highlighted research projects

Our centres

Strategic Plan

2020 at IRTA in five news items

Message from the managing director

“Agriculture doesn’t stop... nor does IRTA”. That sentence was the slogan for our Fruit Farming Day, and it is a fine encapsulation of the spirit our Institute and staff have shown throughout 2020, a year in which the COVID-19 pandemic has disrupted our lives in numerous ways.

It has been a year full of difficulties and uncertainty, but IRTA has come through it successfully. We have looked after our staff’s health, with zero cases of contagion occurring on our premises; we have made working conditions as flexible as possible to allow for work-life balance; and we have managed to carry out the vast majority of the activities we had planned. All that is down to the commitment of everyone who works for IRTA, and I want to thank them once again for their effort and dedication.

Among the activities the pandemic has affected most are our knowledge transfer activities, which we have had to adapt to a virtual format. I know how much hard work has gone into making that change of format in so little time, but endeavour and perseverance have once again borne fruit: not only have most of our planned activities gone ahead, but there has also been a substantial increase in the number of participating sector professionals. Despite the virtual format having been well received, we hope to go back to working on a face-to-face basis as soon as possible.

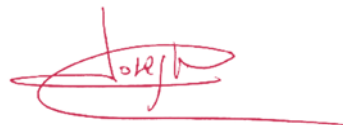
One outstanding aspect of 2020 is the effort made to quicken the transition to the next generation, with IRTA having taken on new research staff, extended its programme for researchers in training, and begun to promote R&D&T staff again. We have also worked to speed up the process of developing new products and technologies stemming from our research activity and bringing them to the market, including 11 new varieties of plant species, technology for improving irrigation management (Irridesk), an artificial intelligence platform for predicting harmful algal blooms in the sea (Invasmart), and a system for improving in vitro plant production (Greenray).

Also of particular note is the work our colleagues at CReSA have undertaken with the aim of developing a vaccine and antiviral drugs to combat SARS-CoV-2, bringing us a great deal of media coverage in the process.

Another highly noteworthy aspect is the incorporation of the Mas Badia centre in La Tallada d’Empordà into IRTA. A centre that has always been a model in the counties of Girona, its work revolves around plants, including areas as important as extensive crops, fruit farming, post-harvest handling, and irrigation and fertilization management. It was previously one of IRTA’s partner centres, but has been fully integrated into our organizational structure in 2020.

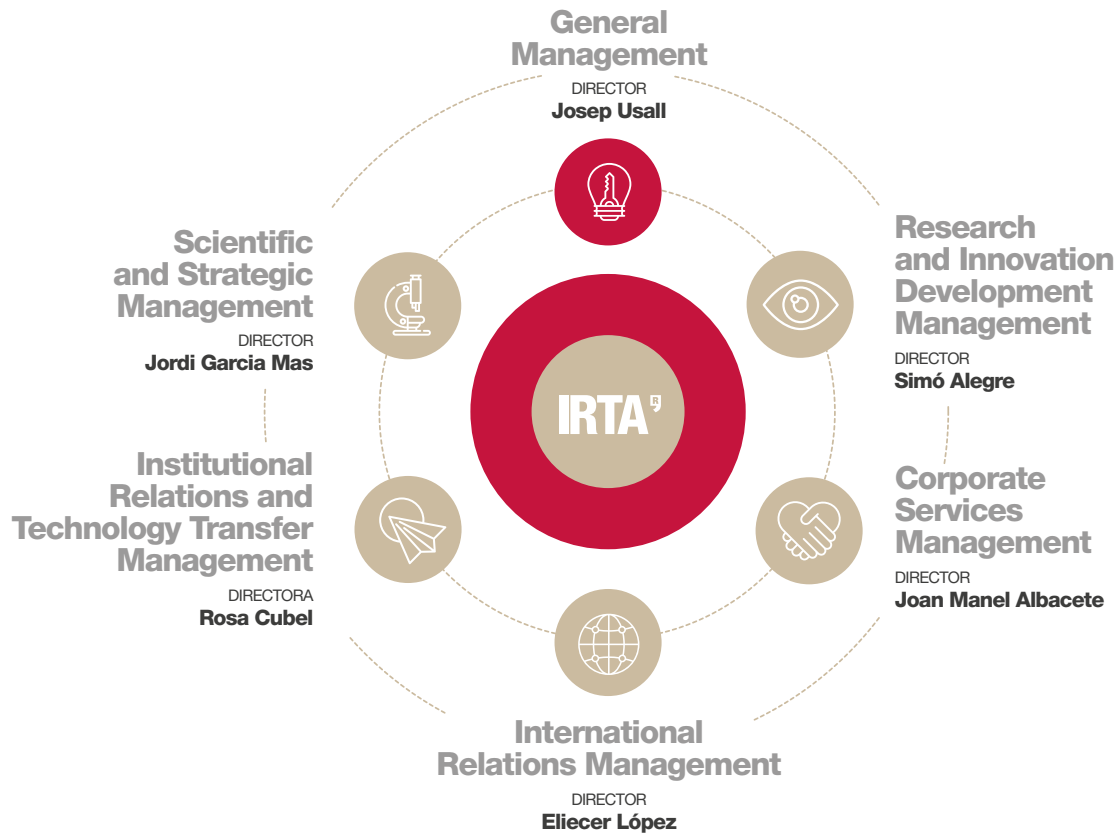
Additionally, 2020 has seen the launch of an ambitious investment plan and the beginning of work in two new facilities in our centres, namely a cooking lab in Mas Bové and an irrigation improvement centre in Mas Badia. A biocontainment farm has been built at the Pig Control and Evaluation Centre in Monells, and equipment including a mobile tomography unit and a high-resolution liquid chromatography system has been purchased. We hope to be able to continue making such investments in the coming years, to get us right back on track after the setbacks of the financial crisis.

Lastly, and despite the uncertainty we still face, we are beginning to see signs of hope that mass vaccination will allow us to get back to normal. I have no doubt that, given the people who are part of IRTA and the clear support of the companies and institutions we collaborate with, we will be able to go on working “non-stop”, to carry on helping our agrifood sector to provide safe, healthy food in a sustainable way.



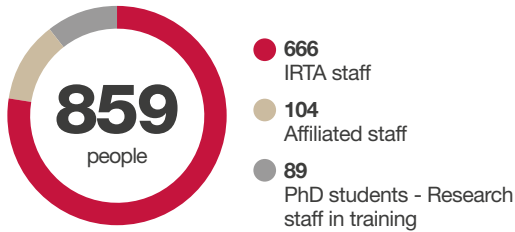
Josep Usall i Rodié
Managing director, IRTA

Organization chart

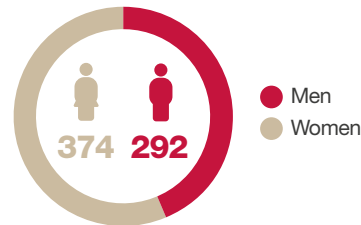


Human resources

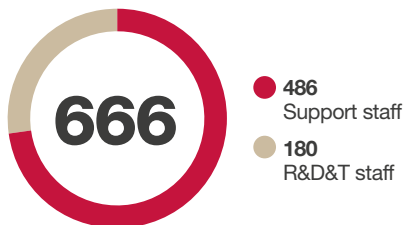
IRTA and affiliated staff



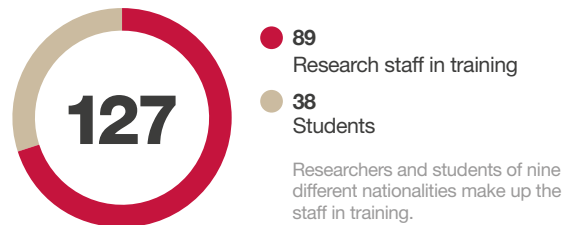
Gender of IRTA staff



Scale



Training



Economic activity

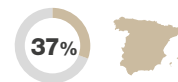
Clients



479
Catalan clients



384
Clients from the rest of Spain



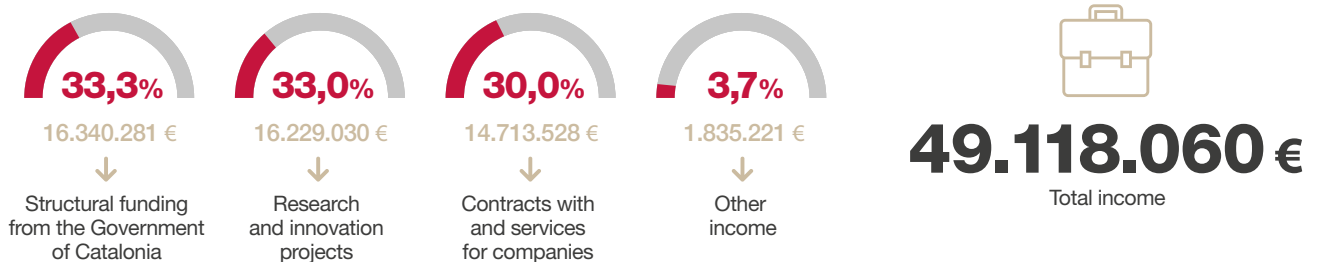
177
International clients



1.589
Contractual activities

Finances

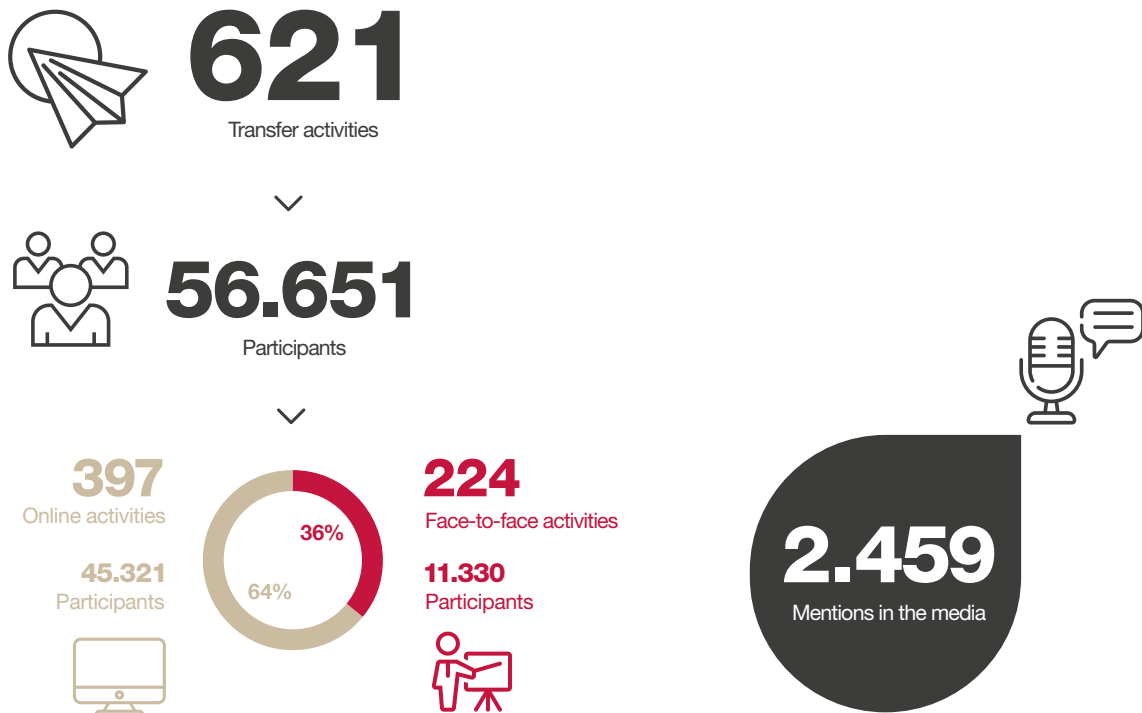
Income



Scientific and technical production



Technology transfer and communication



Highlighted research projects



Animal Production Area

FEED-A-GENE

Improvement in efficiency and environmental impact in pig and rabbit production.

VIVALDI

Prevention and mitigation of bivalve diseases.

EMERGER

Identification of two oyster and noble pen shell pathogens.

ALTERNFEED II

Substitution of fishmeal and fish oil with alternative products and by-products (insect meal, microalgae, and tuna industry by-products).

TUBERCAPRI

Effective vaccination and new diagnostic reagent to combat tuberculosis in goats.

MICRORES

Nasal colonizers for disease prevention in piglets.

EVINFLUPOR

Swine influenza virus evolution associated to vaccination.

BOVI-BS

Improvement in dairy farm biosafety.

EUPIG

Evaluation of 1,250 best practices related to welfare, precision production, health and meat quality in pig production.

M-SAA3 I MMP-9 PROTEINS

Use of the proteins in question in dairy cows' dry period as an alternative to antibiotics.



2 Task forces



3 Demonstration activities



Highlighted research projects



Crop Production Area

MOIST

Improvement to irrigation algorithms through satellite images.

VISCA

An application for smart, integral vineyard management.

RIDECORED

A network of excellence for saving irrigation water.

NEURICE

Six new varieties of salt-tolerant rice.

BITTER ALMOND

Detection using NIR technology.

FRIENDLY FRUIT

A 25% reduction in water, mineral fertilization and herbicides.

BIOREC

New coatings to extend the shelf life of apples and pears.

ESCALPE

Superficial scald in pears depends on the variety.

G.O. PEARS FROM RINCÓN DEL SOTO

Improvements in brown heart prediction and control in Conference pears.

RICE

Resistance to herbicides in weeds.

VITIMPACT

Greenhouse gas emissions in viticulture.

CIPTOOLS

Tools for more sustainable fruit and vegetable production.

NEW PEACH TREE BREEDING STRATEGIES

Marker-assisted introgression and resynthesis.



3 Task forces



16 Demonstration activities



Highlighted research projects



Food Industries Area

ALGAE

New processed meat products enriched with bioactive algae extracts.

FUTURES MARKET

Promotion of seasonal fish with new products for mass catering.



4 Demonstration activities



Sustainability in Agrosystems Area

CIGUASENSING

Biosensors for the detection of ciguatoxins and the microalgae that produce them.

EUROCIGUA-SG3

Ciguatoxins in seafood and the environment to assess the risk of ciguatera in Europe.

FEMP-Fangar

Carrying capacity for bivalve aquaculture in the Fangar Bay.

OPRENAC

Combination of a bioelectrochemical reactor and an anaerobic digester to recover energy and nutrients from liquid manure and other organic waste.

OLCA-Pest

Pesticide evaluation in life cycle analysis studies.

PIONER

Optimization of biogas production, nitrogen elimination, and the recovery of intermediate products from meat-processing and livestock waste.



Our centres

- 8** Experimental farms and sites
- 10** IRTA-owned centres
- 2** Partner centres



NUMBER OF CENTRES

Barcelona	5
Girona	4
Lleida	6
Tarragona	5

20

Locations
in Catalonia

Experimental farms and sites

Valls Experimental Farm

c/Licoristes, 42, 43800 Valls, Tarragona

Gandesa Experimental Site

*Carretera de Gandesa a Vilalba, km. 2
43780 Gandesa, Tarragona*

Les Borges Blanques Experimental Site

*Finca La Pujada, Camí de les Verdunes,
s/n. 25400 Les Borges Blanques, Lleida*

Mollerussa Experimental Site

*Ctra. Mollerussa-Torregrossa Km. 1.5
25230 Mollerussa, Lleida*

Gimenells Experimental Farm

*c/Roques Blanques s/n.
25112 Gimenells, Lleida*

Alcarràs Experimental Site

*Partida Montagut, s/n.
25180 Alcarràs, Lleida*

EVAM: Monells Bovine Station

*Finca Camps i Armet
E-17121 Monells, Girona*

CAP Pig Control and Evaluation Centre

*Veïnat de Sies s/n, E-17121
Km. 1.5. 25230 Mollerussa, Lleida*

IRTA-owned centres

Torre Marimon

*Ctra. C-59, Km. 12,1
08140 Caldes de Montbui, Barcelona*

Monells (buildings A and B)

*Finca Camps i Armet
E-17121 Monells, Girona*

Cabrils

*Ctra. de Cabrils, Km 2
08348 Cabrils, Barcelona*

CRSA. Animal Health

Research Centre
*Edifici CReSA. Campus Universitat
Autònoma de Barcelona.
08193 Bellaterra, Barcelona*

Mas Bové

*Ctra. de Reus - El Morell, Km. 3,8
43120 Constantí, Tarragona*

Sant Carles de la Ràpita

*Ctra. Poble Nou, Km 5,5
43540 Sant Carles de la Ràpita, Tarragona*

Fruitcentre

*Parc Científic i Tecnològic
Agroalimentari de Lleida, 25003 Lleida*

Agrònoms

*Av. Alcalde Rovira i Roure, 191
25198 Lleida*

Amposta

Ctra. de Balada, Km. 1. 43870 Amposta

Mas Badia Agricultural Experimental Station

17134 La Tallada d'Empordà, Girona

Partner centres

CRAG. Centre for Research in Agricultural Genomics

*Campus UAB. Edifici CRAG. Bellaterra.
08193 Cerdanyola del Vallès, Barcelona*

CREDA. Centre for Agro-food Economics and Development

*c/Esteve Terrades, 8
08860 Castelldefels, Barcelona*

2020 → 2023

IRTA's Strategic Plan



IRTA has taken the needs of the production sectors in Catalonia and the recommendations of the most relevant European and international institutions into account to develop its **Strategic Plan 2020-2023**, which revolves around **three strategic scientific goals and nine strategic scientific initiatives**:

1



**Producing
healthy,
quality food**

2



**Implementing
technological
solutions**

3



**Developing
sustainable
food systems**

Strategic scientific initiatives

1 Reducing food loss and waste.



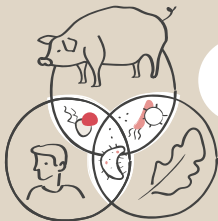
2 Mitigating and adapting to climate change.



3 Increasing protein production.



4 Boosting plant health.



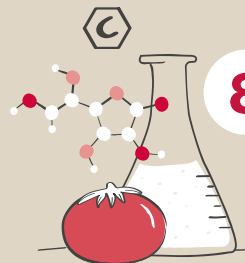
5 Reducing antibiotic use in animal production.



6 Improving food security.



7 Promoting microbiome research.



8 Characterizing new bioactive compounds.



9 Implementing smart agrifood systems.



2020 at IRTA in five news items



► **A key role in the fight against COVID-19.**

Thanks to its previous experience with SARS-CoV and MERS-CoV, and to CReSA's high-level biosafety facilities, IRTA's Animal Health programme has played a key role in research aimed at combating COVID-19 in Spain. Furthermore, the programme's researchers have worked hard to keep society abreast of what they know about the virus and the progress of their research.



► **Mas Badia becomes part of IRTA.**

Mas Badia's full integration into IRTA, after having been part of the Institute's cooperative system as a partner centre since 1987, was ratified in 2020. It is hoped that Mas Badia, where part of the Sustainable Extensive Crops, Sustainable Plant Protection and Fruit Farming programmes' activity is currently carried out, will reinforce its capabilities within IRTA's scientific and operating structure.



► **Our female researchers break down stereotypes about gender in science.**

With 32 female researchers, IRTA provided the "100tífiques" initiative with more participants than any other Catalan centre. Organized by the Catalan Foundation for Research and Innovation (FCRI) and the Barcelona Institute of Science and Technology (BIST), "100tífiques" aims to shine a spotlight on female research talent to mark the International Day of Women and Girls in Science.



► **A new portal to broaden the scope of our transfer activity.**

IRTA's new transfer portal is an online space that connects us directly to the sector and speeds up processes such as consulting documentation and registering for events. Available at the address transferencia.irta.cat, it is a strategic tool for increasing the scope of IRTA's knowledge transfer work.



► **Closer contact between our research and local actors.**

We have consolidated the bodies called Institutional Panels, which comprise local actors from Tarragona, Girona, Lleida and Terres de l'Ebre. Established in 2019, the Panels are intended to enable us to inform the actors in question of our research and to identify their needs and concerns.



IRTA[®]

ACTIVITY REPORT 2020

IRTA^R

IRTA
Torre Marimon
08140 Caldes de Montbui
Barcelona
(+34) 934 674 040
www.irta.cat

 **Generalitat
de Catalunya**

 **Institució
CERCA**
Centres de Recerca
de Catalunya