



Saving

Fruit Quality for Tomorrow

www.tomgem.eu



TomGEM

A holistic multi-actor approach towards the design of new tomato varieties and management practices to improve yield and quality in the face of climate change

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement Number 679796.



About TomGEM

In the light of the forecasted world demographic growth and the global changes in climate, it is becoming a major challenge for society to provide sufficient amounts of fruit of high nutritional and sensory quality. While we are entering a period of increasingly rapid climate change, TomGEM aims to design new strategies to maintain high yields of fruit and vegetables produced at harsh temperature conditions, using the tomato as a reference fleshy fruit crop.

TomGEM considers all developmental processes contributing to yield; including flower initiation, pollen fertility and fruit set and implements trans-disciplinary approaches to investigate the impact of high temperature on these traits. TomGEM applies a multi-actor approach involving tomato producers and breeders to provide new targets and innovative breeding and management strategies to foster breeding of new tomato cultivars with improved yield under suboptimal temperature conditions.

TomGEM pursues the following strategic goals:

- To select superior tomato varieties for traits related to yield stability and fruit set under heat stress conditions.
- To identify genes associated with heat tolerance of fruit yield.
- To set up optimal growing conditions for tomatoes selected for their improved ability to set fruit at elevated temperatures.
- To design innovative breeding and management strategies that provide tomato producers with commercial varieties ensuring high yield at elevated temperatures with no loss of fruit quality, for a broad range of geographic conditions.

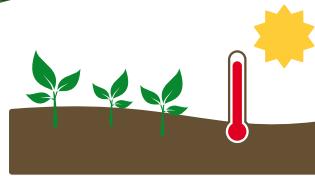


"TomGEM addresses yield stability in high temperature conditions with the aim to produce or yield superior genotypes that are better adapted to high temperature conditions.

TomGEM aims to understand the factors behind high temperature tolerance and addresses the issue of yield stability in adverse environmental conditions such as high temperatures.

TomGEM is unique in a way that it gathers complementary expertise from academic and non-academic partners that contribute and converge their knowledge, resources and methodologies to address this one single question – the question of high yield under high temperature condition."

*Mondher Bouzayen,
TomGEM coordinator*

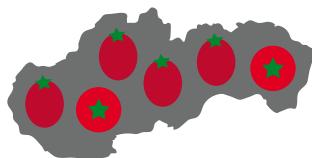


29+ °C

Climate change threatens
global crop production



TomGEM aims to ensure future global food security by tackling the challenge of needing to increase agricultural production due to a rapidly growing population, even in the face of climate change. TomGEM will use tomato as a reference for fleshy fruit crops to provide new strategies towards breeding of heat-tolerant fruits with the aim that results can be transferred to other crops.

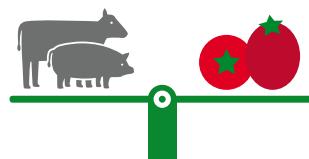


4.8M ha

Area of tomato production
is the same size as Slovakia



TomGEM seeks to deliver the innovation and knowledge necessary to future-proof the industry against environmental stresses such as an increase in ambient temperature. TomGEM is hoping to develop new tomato varieties which, unlike current cultivated varieties, provide both high yield and high quality fruit when grown at high temperatures.

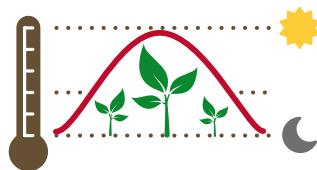


162 MT

Weight of annual tomato production is roughly equal to that of cattle and swine produce combined



TomGEM will select for and breed towards tomato cultivars with desired traits when grown at harsh temperatures from 26-32 °C. To achieve this, TomGEM will implement innovative breeding and management strategies to ensure that the outcomes benefit all user communities including researchers, breeders, tomato producers and consumers.



18-29 °C

Ideal growth temperatures for tomatoes



Europe produced over 20 million tonnes of tomatoes in 2013 however; yields are under threat from climate change. TomGEM will consider all aspects of fruit development to identify variants in genes or gene regions which permit tomato growth at elevated temperatures without affecting yield or quality.

For more information, please visit our website:
www.tomgem.eu

Consortium

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- John Innes Centre, United Kingdom
- Max Planck Gesellschaft zur Förderung der Wissenschaften e.V., Germany
- Royal Holloway and Bedford New College, United Kingdom
- Agencia Estatal Consejo Superior de Investigaciones Científicas, Spain
- Università degli studi di Napoli Federico II, Italy
- The World Vegetable Center (AVRDC), Taiwan
- Universidad de Buenos Aires, Argentina
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- Enza Zaden España S.L., Spain
- Biotecgen, Italy
- Fundación Cajamar Comunidad Valenciana, Spain
- European Research and Project Office GmbH, Germany
- National Taiwan University, Taiwan
- SAS Rougeline, France
- Norfolk Plant Sciences Ltd., United Kingdom



AVRDC
The World Vegetable Center



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