

# Preface

The sustainability of agriculture is being challenged by climate change and rising food demand from a larger and wealthier human population. Humanity faces a global food deficit unless the efficiency and resilience of crop production is improved.

Within the coming decades challenges to international food production will occur like no other time in human history, and a substantial increase in the production of food is essential if we are to continue to feed the growing human population. There is an urgent need to increase crop yield, quality and stability of production, enhancing the resilience of crops to climate variability and increasing the productivity of minor crops to diversify food production.

Improvements in agricultural practice and the increased use of fertilisers and pesticides have increased food production over the last few decades; however it is now considered that further such improvements are limited. The science of genomics offers the greatest potential for crop improvement.

This book explores the impact of climate change on agriculture and our future ability to produce the crops which are the foundation of the human diet. Further chapters address the specific climate change issues and explore the potential for genomics-assisted breeding of improved crops with greater yield and tolerance to the stresses associated with predicted climate change scenarios.

Through the application of genomics technology, it is possible to accelerate the breeding of major crops, bring current orphan crops into accelerated agricultural breeding programs and convert diverse non-crop species into future crops adapted to the changing climate. Through this process we can help secure the food supply for the coming generations.

David Edwards  
Jacqueline Batley

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Edwards, D.; Batley, J. (Eds.)

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