Foreword

When I was asked to prepare a brief preface to this special issue of the journal Advances in Horticultural Sciences, I gladly accepted because I thought that the topic of the recovery and enhancement of indigenous germplasm of a country so far away and so problematic as Afghanistan was fascinating and full of great potential in various fields of agricultural science and beyond.

While I was reading the articles included in this issue, I heard news of a further attack by Isis on the architectural masterpieces of the city of Palmyra, Syria, on 20 January. The facade of the Roman theater and the spectacular Tetrapylon were destroyed, irretrievably. Although there is no clear link between the two events (the recovery of the fruit germplasm of Afghanistan and the destruction of historical monuments) it set me thinking that these two events are actually part of a single negative picture of modern times that man, consciously or not, is perpetrating against the biological, cultural and artistic gifts that our ancestors have been handing down to us for centuries.

The systematic deletion of the vestiges of the past carried out by Isis is not so different from what decades of uninterrupted war have caused to a country like Afghanistan, which for historical and cultural reasons, is one of the most important points of contact and exchange between cultures and the biodiversity of the East, the Middle East, Africa and Europe. A country which through commercial and military exchanges along the Silk Road, has witnessed a merging of genotypes of many species of agricultural interest, as well, of course, of traditions and cultures belonging to people who had never met before.

It is easy to imagine what kind of genetic variability has been able to generate through these exchanges which allowed the spread, throughout the rest of the globe, of fruit species which today are some of the most cultivated worldwide.

In the temperate climates where these crops have since been established, the strong selection imposed by man in favour of genetic or phenotypes traits of production and commercial interest has meant that, over the centuries, the gene pool of these species has been increasingly shrinking. This became particularly acute when specialized vegetative propagation began to be used through grafting techniques in order to obtain almost total uniformity in the reproduced trees and the fixing of those positive characters that are essential from an economic point of view.

However in an area like Afghanistan, these species have survived, as witnessed by the Authors of the articles in this special issue, in an environment in which the technological evolution of agricultural practices has remained almost stationary since the beginning of the last century. In this environment selective processes have taken place that are much closer to the natural processes than to those imposed by man for cultivation purposes.

Given that Afghanistan is a country rich not only in contradictions, but also in geomorphological variability, soil and climate, the strategic importance of the conservation of its biodiversity is clear. This country, which is considered by many as ‘the land of dust’, with extreme climatic conditions, both in terms of drought and flooding, high and low temperatures, and a topography with considerable altimetric changes, has led to an evolutionary process of adaptation to these conditions on the part of both cultivated and non-cultivated species.

These conditions thus suggest the presence of genes that can resist extreme climatic conditions, which may be a key to the future adaptation of fruit tree species grown in temperate climates to the progressive and unstoppable changes that climate changes are causing.

Unfortunately, genetists from around the world have established that the fruit tree species grown in temperate areas no longer have, and maybe have never even had, a gene pool that would lead to improvements in the resistance abiotic stress that has become increasingly frequent.

Hence the vital importance of participatory research programs such as those described in this special issue.

And here again lies the analogy between the destruction of the archaeological sites and the gradual loss of irreplaceable biodiversity that has been handed down for generations and generations: the loss of this heritage permanently eliminates the future possibility of re-establishing a balance between us and our environment and achieving harmony between the people, nature and history of a country.

It is difficult, however, to assume that the preservation of this heritage can be obtained through protective measures aimed merely at conservation, without any organized and responsible participation by the local populations. Just as the statues of the Bamiyan Buddhas and ancient books and statues of the Mosul Museum were not saved from the devastating fury of the Taliban and Isis, so too the fragile Afghan germplasm of the fruit tree species would have little chance of survival if its conservation was confined to collection orchards designed like an open air museum but subjected to some nefarious purpose in a country where the emergency of war, combined with the food and economic emergency, leaves little room for investments in an unproductive genetic heritage that cannot actually be exploited by the local people.

The papers in this special issue thus represent an effective model of approach to the problem which, in my opinion, is the only way to reach such a high objective - the protection of biodiversity threatened by genetic erosion. A fundamental part of this approach is also the participation of local people who can then gain a possible means of livelihood and income, providing that they are properly trained and supported both technically and culturally.

This is an enormously difficult process, most importantly due to the need to recover all that knowledge that enabled the older generation to pass on, until a few decades ago, the cultivation and planting techniques of suitable plants for the particular geographical area in question. The gradual abandoning of agricultural practices for food in order to concentrate on the almost universal production of opium poppies has led to the disappearance of several generations of farmers and the almost irretrievable loss of know-how in agriculture. Introducing new and effective cultivation and propagation techniques for fruit species can play a vital role in the reconstruction of an agricultural micro-entrepreneurship, which is both self-sufficient and motivated to succeed.

The challenge for researchers who are attempting this enterprise is very great. We can only hope that their efforts will be rewarded by the expected results so that they can guarantee for tomorrow the survival of our agricultural production if we can keep that genetic heritage that will represent the basis for future breeding programs.

For now we can only wish the greatest success to the researchers in this volume who, with great personal sacrifice, have started working on the challenge with so much enthusiasm and so much hard work.

Good luck and thank you!

Rossano Massai