

BREEDING POTENTIALS OF LENTIL (*LENS CULINARIS* MEDIK.) FOR FOOD AND NUTRITION SECURITY IN THE FACE OF CLIMATE CHANGE

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Lentil (*Lens culinaris* Medik.) is the most ancient cultivated legume, with very interesting characteristics. In fact, not only it is a drought-enduring plant, a very useful character for a growing hot and dry future, but it has also several important nutrients: protein (about 25-30 %), minerals, vitamins, phytochemicals and fibers. In addition, it has a faster cooking time compared to other crops, so it can be very important for those regions who have a low availability of cooking fuel. Lentil is cultivated worldwide, but its production is not homogeneously distributed: only five countries (Canada, Turkey, USA, Australia and India) are responsible for more than three fourth of the total world's lentil production. It appears that today the lentil cultivation (and the legume sector in general) is suitable for further growth and technical innovation, for example in the meat-like plant-based food sector, that has a growing demand. Regarding the Italian situation, in this country lentil was a very cultivated crop until the beginning of the 20th century, but now its production has dramatically decreased and now is mostly based on local varieties grown in a few areas. For this reason, it is very important to find and select new genotypes that can grow well in different environments due to the climate changes. In this study, two field experiments were performed in Metaponto (Basilicata, Southern Italy) in 2016 and 2017, using 324 different lentil genotypes from different countries and genebanks around the world. Morpho-agronomic and phenological traits related to adaptation were assessed in order to

identify stable and high-yielding genotypes. A photothermal model was also used to predict the days to flowering in new environments. The obtained data can be used in future breeding programs to obtain new cultivars and to expand their cultivation and their production in a changing environment.