

ANCIENT VARIETIES OF MOUNTAIN MAIZE: INHERITANCE AND CHARACTERISTICS OF THE POINTED TRAIT

LANDONI M.*, SANGIORGIO S.**, COLOMBO F.**, GIUPPONI L.***, GHIDOLI M.**,
CASSANI E.**, PILU R.**

*) Department of Biosciences, Università degli Studi di Milano, Via Celoria 26, 20133 Milan, Italy

**) Department of Agricultural and Environmental Sciences–Production Landscape, Agroenergy, Università degli Studi di Milano, Via Celoria 2, 20133 Milan, Italy

***) Centre of Applied Studies for the Sustainable Management and Protection of Mountain Areas – CRC Ge.S.Di.Mont., Università degli Studi di Milano, Via Morino 8, 25048 Edolo, Brescia, Italy

maize, landraces, pointed maize, mountain environment

Genetic resources have undergone heavy losses due to the processes of domestication and selection carried out by man since the beginning of agriculture. The last century has been characterized by a strong loss of biodiversity and about three quarters of living beings around the world (plants, animals and microorganisms) used for nutrition and food production have disappeared. Hence, the conservation and promotion of agrobiodiversity has been a crucial topic in the last decades. In the case of maize, the introduction of mechanized agricultural practices after the Second World War and the use productive hybrids, led to a gradual disappearance of local varieties. However 13 landraces are still cultivated in Lombardy region and among them some are traditionally cultivated in mountain area (indicatively up to 1200 m of altitude). These mountain varieties are often characterized by the presence of the pointed shape of the seeds (i.e. ‘‘Nero Spinoso’’, ‘‘Rostrato Rosso di Rovetta’’, ‘‘Spinato di Gandino’’, and ‘‘Scagliolo di Carenno’’) and red/dark blue pigments (i.e. ‘‘Nero Spinoso’’, ‘‘Rostrato Rosso di Rovetta’’). The pointed shape of the seeds is an ancient trait of maize-ancestor, in fact the wild maize had pointed kernels (Mangelsdorf and Reeves 1959). However, this character negatively affects the yield, not allowing to optimally "fill" the ear. Despite this

problem, these varieties have been selected by farmers most likely because they were prone to cultivation at high altitude compared to varieties with the classic spherical/parallelepiped seed shape. In this work we studied different Italian varieties of pointed maize in order to assess the genetic bases of the “pointed” character and to try to explain the reasons for this adaptation to the mountain environment.