



Is the etaghas cultivation system in the Tadrart Acacus a snapshot of the dawn of agriculture in the Sahara?

Andrea Zerboni (1), Isabella Massamba N'Siala (2), Anna Maria Mercuri (2), Savino di Lernia (3,4)

(1) Università degli Studi di Milano, Dipartimento di Scienze della Terra "A. Desio", Milano, Italy (andrea.zerboni@unimi.it), (2) Laboratorio di Palinologia e Paleobotanica, Dipartimento di Scienze della Vita, Università di Modena e Reggio Emilia, Italy, (3) Dipartimento di Scienze dell'Antichità, Sapienza Università di Roma, Italy, (4) School of Geography, Archaeology and Environmental Studies, University of the Witwatersrand, South Africa

Rainfall in the hyperarid Tadrart Acacus massif (SW Libya, Central Sahara) is unpredictable, but occasionally it may originate ephemeral ponds standing for several weeks. A recent geoethnoarchaeological investigation between the Tuareg living in the region disclosed the importance of temporary ponds, being at the basis of an unexpected subsistence strategy and landuse. In fact, ponds, locally called etaghas, become the place of a traditional form of rain-fed agriculture. Evidence for agriculture and more in general of human exploitation of the etaghas are widespread in the Sahara, and geoarchaeological and archaeological indicators suggest a prolonged use of these areas. The etaghas landscape is complex and consists of the cultivation areas *sensu stricto*, functional areas for threshing the crop yield, and dwelling areas for temporary occupation. Field properties of test trenches opened within the limits of cultivated patches and micromorphology of thin sections highlight that soil management for agriculture (ploughing) is present up to 1 m depth, thus suggesting that is a long-lasting activity. Radiocarbon dating of some evidence supports the antiquity of the cultivation of the etaghas at least up to early historical times (III cent. CE). The geoarchaeological survey of the etaghas discovered an articulated cultural landscape: archaeological material, mostly pottery, dating back to the Final Pastoral Neolithic phase and a rich assemblage of rock art. The etaghas are well-defined areas whose physiographic features make rain-fed agriculture possible, and allow people living in the Tadrart Acacus massif to obtain directly, today as in the past, yields. Geoarchaeological evidence, radiocarbon dating, and the local complex archaeological landscape suggest that this subsistence practice dates back at least to end of first millennium BCE. In a cultural landscape dominated by the oasis/desert vs. agriculture/pastoralism dichotomy, this kind of landuse offers new perspective in the interpretation of the Pastoral Neolithic exploitation of the central Sahara. The correlation of the etaghas system with the Final Pastoral Neolithic period, a phase marked by a progressive reduction of rainfall and water resources, shed new light on the origin of agriculture in the Sahara.