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## Agrobiodiversity in Mountain Oases of Northern Oman

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### Abstract

Little is known about agrobiodiversity in the complex mountain oasis systems of northern Oman. Therefore, a survey was conducted to assess the crop diversity of three mountain oases in the al-Hajar range using a GIS-based field survey and farmer interviews. While arid conditions prevail throughout the mountain range, the different elevations of Balad Seet (950–1020 m asl), Maqta (930–1180 m a.s.l.) and Al Jabal al Akhdar (1750–1930 m a.s.l.) provide markedly differing agro-climatic conditions. Overall, 107 different crop species were identified belonging to 39 families. Diversity was highest among fruits (33 spp.), followed by vegetables (24 spp.). However, the number of species varied significantly between sites. Fruit species diversity and homogeneity of distribution of individual fruit species was highest at Balad Seet and lowest at Maqta as indicated by respective Shannon indices of 1.00 and 0.39 and evenness values of 32 % and 16 %. Several relict crops were identified, supporting oral reports of past cultivation and providing evidence of genetic erosion. Some species, such as the temperate fruits of Al Jabal al Akhdar, were exclusively found at the coolest site, while others only occurred at the hotter locations. Overall greatest species similarity was found between Balad Seet and Al Jabal al Akhdar as indicated by a Sørensen coefficient of similarity of 67 %. At all oases a multilayered vegetation structure dominated with a canopy, an understory and a ground layer. Greatest species richness was recorded in the lowest stratum. Remote Omani oases are also an important refuge for indigenous wild plant species, such as *Epipactis veratrifolia* Boiss. & Hohen. ex Boiss. Several individuals of this endangered orchid were found flowering in an isolated part of the oasis Maqta. The study shows a location-specific but surprisingly diverse mosaic of crops in Omani mountain oases. To document the agrobiodiversity of Oman, assessments in more of the numerous Omani mountain oases are needed. Furthermore, follow-up visits to Balad Seet, Maqta and Al Jabal al Akhdar will be critical to document the transformation processes in these oases and to determine the pace of genetic erosion.

**Keywords:** Agrobiodiversity, Agroforestry systems, arabian peninsula, arabic ethnobotany, cultivated flora, multicropping systems