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## The Contribution of the Underutilised Species in the Walnut-Fruit Forests to the Local Livelihoods in Kyrgyzstan

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### Abstract

The walnut-fruit forests in Kyrgyzstan constitute the world's largest wild stands of walnut (*Juglans regia* L.) and are considered among the global conservation hotspots. Previous studies have investigated two complementary pathways of their sustainable use: conservation of the forest resources and at the same time securing the well-being of the local populations who depend on these forests. Walnuts offer the major income source for local peasants, whereas other less utilised forest species in this area still has a significant potential for human nutrition and local livelihoods, the generation of local incomes, and sustainable commercialisation. However, very few studies to date investigated how such resources are currently used and how their benefits are allocated to the forest users.

This study aims to identify which factors influence the collection, utilising and processing of these underutilised forest products; which species particularly contribute to local livelihoods; how the benefits of utilising these species are distributed among the local population; and which pathways might ensure better and more equitable access to and use of these plant resources. A household survey and in-depth interviews were conducted in Kyzyl-Unkur village in the walnut forests (n= 102). Statistical inference methods were applied to delineate the different social strata and track down interrelations among the observed variables. Financial and economic valuation tools were used to establish profitability indicators.

The results show that walnut and wild apple collection is highly commercialised and practiced by the 86% of the respondents. And a small share of the interviewed households (14%) collected other types of non-timber forest products (such as wild berries, mushrooms, and medical herbs). Linear regression results showed that the farmers who are part of the cooperatives tend to collect higher amounts of such underutilised products. Although the livestock products are the main alternative income source in the years with low walnut/apple yields, the collection of other species like wild berries, mushrooms, and medical herbs also have a high potential as an alternative income source. To realise this potential better marketing approaches and further improvements of the existing value chains are required (e.g. reduction of middlemen who lower the prices). The advantage of cooperatives (e.g. better access to technology, knowledge, and skills) is another important factor which is needed to be further developed.

**Keywords:** Bioeconomy, Central Asia, food security, forest-based rural development, Kyrgyzstan, underutilised species