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## Utilizing the Nutritional Potential and Secondary Plant Compounds of Neglected Fruit Trees and Other Plant Species of the Walnut-Fruit Forests in Kyrgyzstan

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### Abstract

Forests make important contributions to safeguarding agricultural production, food security and nutrition of rural and urban populations. The walnut-fruit forests in Kyrgyzstan constitute a unique resource in this regard. Simultaneously, they are of global importance as a biodiversity hotspot. However, current patterns of forest management are unsustainable, large parts of the forest are overaged and benefits derived from these forests are unequally distributed among local populations. Walnut (*Juglans regia* L.) kernels have traditionally been used for human diets and constitute an economically important product of these forests. Although the walnut value chain in Kyrgyzstan is of significant economic importance, the level of domestic processing is low and locally manufactured walnut products are of low quality. The SUSWALFOOD project (funding code 01DK17016) aims at contributing to the development of nutritious food from neglected and underutilised plant species of the Kyrgyz Walnut forests, thereby improving local food security, promoting sustainable forest management, and increasing local incomes.

Initial analyses have investigated timber growth of walnut trees and quality parameters of respective walnuts from various parts of the forest. Regarding quality parameters, nut dimensions, walnut weight, kernel weight, and rupture force were determined resulting in a classification of the investigated trees. Results show that most trees are old and may therefore be anticipated to display declining walnut yields, underlining the need for forest rejuvenation. Timber and walnut quality varied greatly across the study area. These results will facilitate the selection of superior trees for forest regeneration. Further work in this project aims to analyse the nutritional composition and secondary plant compounds of other selected plant species of the walnut forests and their potential use in new food products; further investigate the morphology, diversity, and plant-soil interaction of these species to determine their biological productivity and to support sustainable management and conservation efforts; and finally examine the socioeconomic and gender-specific impacts of traditional and contemporary utilisation including market chains and cost-benefit assessments at household level.

**Keywords:** Bioeconomy, Central Asia, food security, forest-based rural development, fruit tree, nutrition, value chain