## **TYPOLOGICAL CHARACTERISATION OF SMALLHOLDER SILVOPASTORAL** FARMS IN THE WALNUT-FRUIT FOREST IN KYRGYZSTAN

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NTRODUCTION Kyrgyz walnut and fruit forests are unique ecosystems and are vital for local farm households. Excessive collection of non-timber products (NTFPs) and overgrazing negatively affect forest regeneration, biodiversity, and local livelihood sustainability [1]. To prevent unsustainable use of forests, the government designated local forests as protected areas. This policy disregarded the importance of forests for local farmers, so forests remain under pressure [2]. Previous studies reported diversification of income sources through livestock and off-farm activities to mitigate fluctuations in NTFP income [3;4]; some described household income sources and differentiated farm-households using discriminant analysis [5;6]. Studies classifying silvopastoral farm-households using more sophisticated approaches are lacking. Thus, our study aims to classify silvopastoral farm typologies based on a set of attributes related to farmers' resource capacities that enable well-targeted interventions specific to particular farm types.

## Study regions in Jalal-Abad province, Kyrgyzstan



Three villages located within or close proximity to protected areas in south-western Tien-Shan mountains of Kyrgyzstan were selected.

 We interviewed 220 randomly selected farms engaged in collection of NTFPs, grazing practices in forests and off-farm activities.

• Multivariate analysis: Principal component analysis (PCA) and cluster analysis (K-means), were employed to generate farm typology; the analysis of variance (ANOVA) was used to compare differences among classification variables.

Socioeconomic, production and geographic variables used as characterisation criteria

Three different types of silvopastoral farming systems were generated based on distinct set of variables



The typology of farms allowed us (i) to understand the characteristics and various livelihood strategies within each cluster, as well as (ii) reveal development barriers, sustainability level and policy intervention needs.



Value added processing of NTFPs

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Improvement of forage Improvements of off-farm supply and livestock grazing activities, e.g. tourism

37%

18%

13%

Research was financially supported by the Critical Ecosystem Partnership Fund (CEPF, CEPF-110679), Central Asian Faculty Development Programme of the University of Central Asia (CAFDP UCA) and the Internal Grant Agency of the Faculty of Tropical AgriSciences of the Czech University of Life Sciences Prague (IGA FTZ, 20223104).

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