Tropentag, September 18-21, 2016, Vienna, Austria

"Solidarity in a competing world — fair use of resources"

Irrigated Crop Production in a Floodplain River Oasis of the Mongolian Altay Mountains

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Abstract

In the Mongolian Altay Mountains, the transformation of traditional transhumance systems to sedentary ones was driven by the promise of job opportunities and benefits of social services. During this process, new cropping opportunities played a subordinated role. However in recent years, numerous efforts to reduce the dependence of Mongolia on vegetable imports from China and as part of herders' risk minimisation strategy, irrigated crop and hay production is gaining importance, notwithstanding the limited water availability. This study aimed to quantify water use for irrigated crop and hay production in the river oasis of Bulgan sum center in Western Mongolia.

In the framework of the IFAD-funded project WATERCOPE (grant I-R-1284), a total of 98 semi-structured questionnaires were used to assess water management and discharge, remote sensing was applied to determine the extent of agriculturally used areas and, a participatory rural appraisal, facilitated the estimation of irrigation water use across the river oasis.

During the 4-months growing season, on a total irrigated agricultural area of 7.69 km^2, hay was grown on 71 % of the area and potatoes as a staple food on 3 %. Miscellaneous fruit trees (15 %), sea buckthorn (6 %), vegetables (2 %), melons (2 %), and cereals (1 %) played a minor, but economically important role in these systems. Average plot sizes were 3.3 ha for hay and 0.27 ha for crops. With only 23 % of the harvest being sold, all cropping systems were subsistence-oriented. On average, all fields were flood irrigated 13 times per growing season and the irrigation water used per unit land ranged from 292 (hay) to 2763 (vegetable) m3 ha^{-1} $year^{-1}$, leading to water consumption between 1.64 (cereals) to 0.18 (melons) m^3 kg^{-1} fresh matter.

The low water use efficiency and the increasing competition for limited water resources calls for crop- and season-specific irrigation management strategies.

Keywords: Central Asia, flood irrigation, land use map, PRA, water use efficiency

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