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An Initiative of the Federal Ministry of Education and Research
CLIENT II
International Partnerships for Sustainable Innovations

KendyrTEX – Recultivation of saline arable areas in Central Asia with adapted non-food crops (kendyr) as well as textile added value as an alternative to cotton

CLIENT II – International Partnerships for Sustainable Innovation

KendyrTEX aims to use kendyr to demonstrate a sustainable, textile alternative to cotton with a high relevance for the Central Asia region. Kendyr is a fibre plant that can be grown productively on saline soils and requires significantly less water than cotton – and is thus predestined for viable use on degraded and/or marginal agricultural areas, without competing with food production.

Water scarcity and salinisation: Central challenges for agriculture in Central Asia

Since the 1950s, Central Asia has been one of the world's key cotton-producing regions. However, cotton production has contributed significantly to the scarcity of water resources in the region and is also responsible for the secondary salinisation of large agricultural areas. In light of decreasing and more highly seasonal water supplies – a consequence of climate change – paired with the extensive degradation of agricultural space, the Central Asian acreage for cotton has decreased by more than half since 2007, with a continuous downward trend. Governments in the region have recognised the problem and support the search for alternative ways of managing land to cultivate crops on degraded arable areas as well as for raw materials that are more environmentally friendly and require less resources for the regional industry.

Drip irrigation provides a targeted external water supply that saves a maximum of resources until the plant's roots gain access to ground water.

Perspectives: Kendyr as a viable alternative to cotton

Kendyr (Apocynum venetum L.) belongs to the Apocynaceae family (dogbanes) and is naturally found in Central Asia; the bark of its stems can be used to obtain textile bast fibres. Scientific approaches to its cultivation originated in the former Soviet Union and were suppressed due to the strong focus on cotton. Today, kendyr is only used for commercial purposes in parts of China, where smallest quantities gathered in the wild are processed manually. The fact that this plant can grow productively on heavily saline soils and exploit ground water at a depth of up to 4 metres makes this a promising culture for the textile markets of the future.

The approach: Systematic and holistic examination of cultivation, harvest and processing

The project therefore focuses on producing a fibre quality that is similar to that of cotton and can be processed on existing, local cotton textile machines as a mixing partner. In KendyrTEX, a consortium comprising a total of 13 German and Central Asian partners in the fields of agriculture, sustainable use/landscape ecology, textile technology, textile marketing and sustainability balancing closely cooperates to transform the wild plant kendyr into an arable crop with an industrial nature that can be used in innovative textile and technical applications

by means of manual processing technology. To do so, the consortium will first develop a form of cultivation that is appropriate for the climate and location and at the same time is as productive and quality-oriented as possible.

A second step will then focus on modern and effective harvesting and processing methods to obtain fibres in a manner that both conserves resources and is environmentally friendly. The holistic project approach comprises ecosystem-related aspects of cultivation and agricultural technology, textile-technological processing as well as product development and marketing.

In experiments conducted in greenhouses and on open land, the team systematically examines the production and quality of biomass under varying cultivation conditions and at various growth stages.

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