



Tree planting lines with parallel irrigation ditches (MSDPS Khorog)

Tree nurseries to test tree species adapted to local climate ()

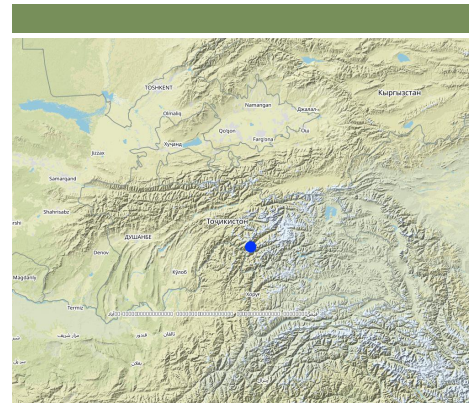
Tree nurseries are established to test and identify varieties of tree species that are tolerant to climate change in the region.

In 1995-96 the first tree nursery was established in the Vanj valley with support from the Mountain Societies Development Support Programme (MSDSP) of the Aga Khan Foundation. During Soviet times there were no tree nurseries in this region and seedlings had to be brought in from outside. Only the Pamir Biological Institute (PBI) was able to obtain seedlings for research purposes. A nursery of about 0.1 ha was established by one farmer on his own land. Tree species grown in the nursery include apple, peach, apricot, walnut, cherry and pear.

Purpose of the Technology: The main goal of the project was to make varieties of tree species adapted to different climatic conditions in GBAO locally available. The seedlings are used for other MSDSP projects, such as orchards for soil stabilisation, and are also purchased by private land users for their own land. In addition, the land user was taught how to establish a business by selling seedlings to other land users. There is a strong need for quality tree seedlings in the whole region and even people from as far away as Ishkhashim (7 hour journey by car) travel to Vanj valley to purchase seedlings from this nursery. The economic benefit for the land user is very high as during one year he can make more than 18,000 TJS (4000 USD) of profit from selling seedlings while the investments in fertilisers are comparably small.

Establishment / maintenance activities and inputs: The steps necessary for the establishment of a tree nursery are the following: (1) a suitable plot of flat land is chosen by the farmer, (2) the plot is fenced with dead branches to protect it from roaming animals, (3) in March, the farmer prepares several wooden boxes filled with humid soil in which he distributes 10 kg of seeds of different tree species and varieties. Those boxes have to be irrigated for a month while the seeds are germinating, (4) in April, the nursery plot is ploughed along the contour using animal traction and 1 ton of organic manure, 20 kg of phosphor and 2.5 kg of nitrogen is mixed with the soil, (5) seedlings are planted linearly along the contour with small irrigation ditches running parallel to the planting lines. These ditches were automatically established through the ploughing process, (6) two more times during the first season another 3 kg of nitrogen are applied. In the second year the grafting process is started and in the third year the farmer starts selling the seedlings. The farmer therefore splits up the nursery plot in three parts so that he can always have newly planted seedlings at the same time with second-year seedlings for grafting and third-year seedlings for selling

Natural / human environment: The technology was adopted by two other farmers from the village who had successfully applied to MSDSP for financial support for seeds and fertilisers. Many other farmers from neighbouring villages are interested. The bridge that is currently being built to allow for more trade between Afghanistan and Tajikistan might open further market opportunities for the land user. Furthermore this type of experience is being widely replicated in other districts and supported by MSDSP.



: Vanj, Tajikistan,

	:
• 71.4934, 38.3896	
2 (10)	: (approx. < 0.1
	?:
	: 10-50
	(> 50)
✓ /	



Overview of the tree nursery with dead fence in the background (MSDSP Khorog)

<input type="checkbox"/>			apricot, plum, stone fruits (brazil nuts, pistachio, walnuts, almonds, etc.),
<input type="checkbox"/>			
<input checked="" type="checkbox"/>			
<input type="checkbox"/>			
<input type="checkbox"/>		<input checked="" type="checkbox"/>	

<input checked="" type="checkbox"/>			- Wg:
<input type="checkbox"/>			- Bc:
<input type="checkbox"/>			

<input checked="" type="checkbox"/>	SLM		SLM	- V1:
<input type="checkbox"/>				- M1:

• The most determinate factors affecting the costs are for labour, although in the documented example, labour was provided voluntarily by the family of the land user. Costs for labour are estimates for a situation in which labour had to be paid in Tajikistan.
 • Somoni () 1 USD = 4.5
 • Somoni 4.50

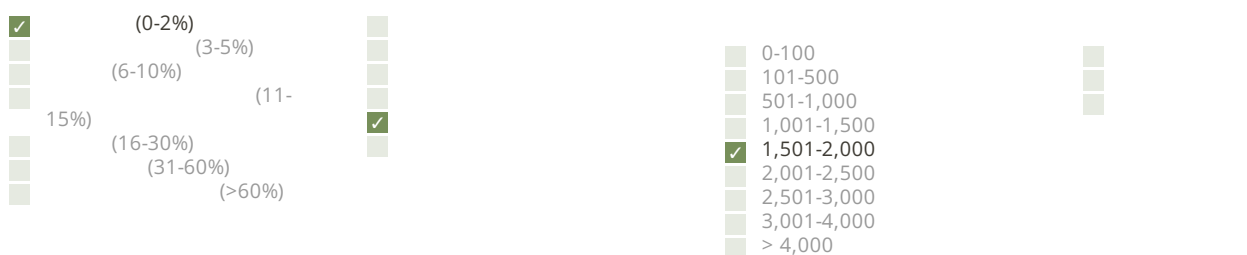
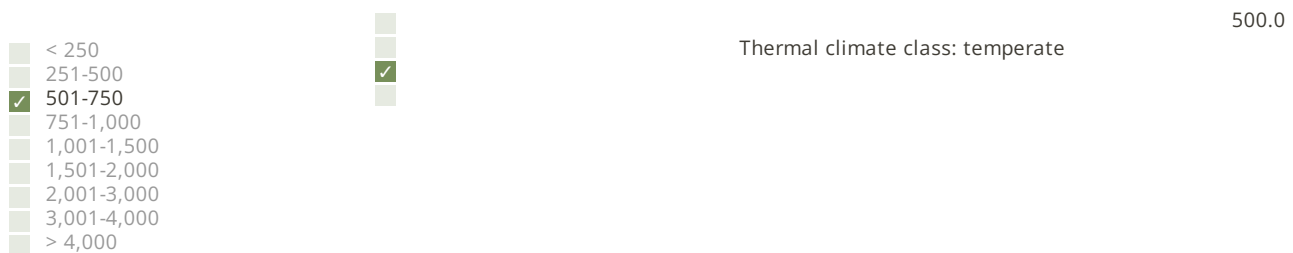
1. Select a place with enough water and good soil fertility on flat land for establishment of nursery (/ : None)
2. Fencing with dead branches (/ : None)

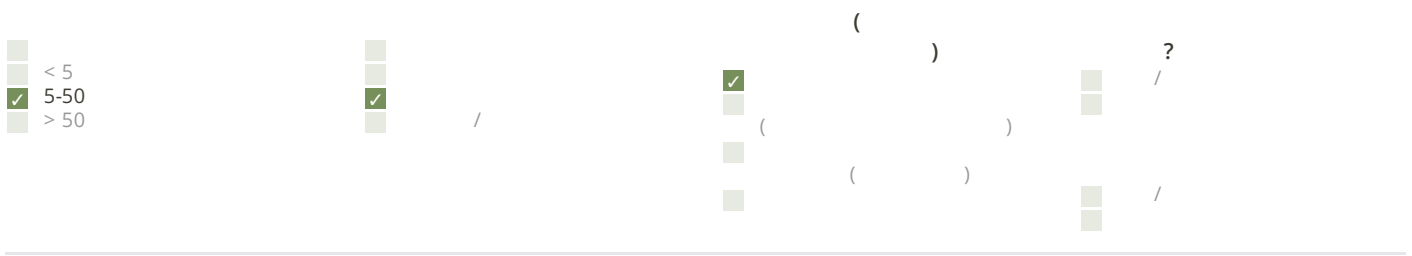
3. Ploughing and distribution of fertilisers (/ : March-April)
4. Plant seeds in box with humid soil and irrigate (/ : March)
5. After one month transfer seedlings to planting lines (/ : March-April)

			(Somoni)	(Somoni)	%
Fencing with dead branches	Persons/day	80,0	20,0	1600,0	100,0
Ploughing and distribution of fertilisers	Persons/day	1,0	50,0	50,0	100,0
Plant seeds in box with humid soil and irrigate	Persons/day	1,0	20,0	20,0	100,0
Transfer seedlings to planting lines	Persons/day	28,0	20,0	560,0	100,0
Seeds	kg	10,0	5,0	50,0	100,0
Fertilizer	kg	30,0	3,0	90,0	
				2'370.0	
				526.67	

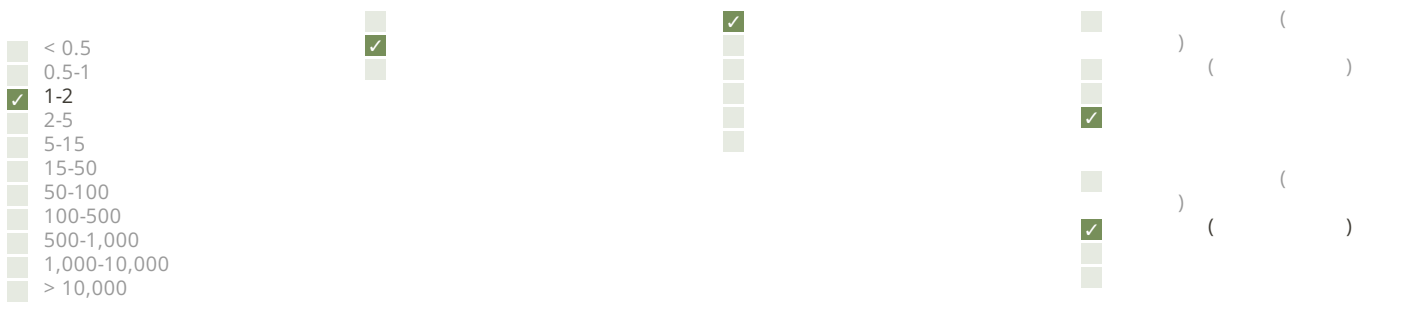
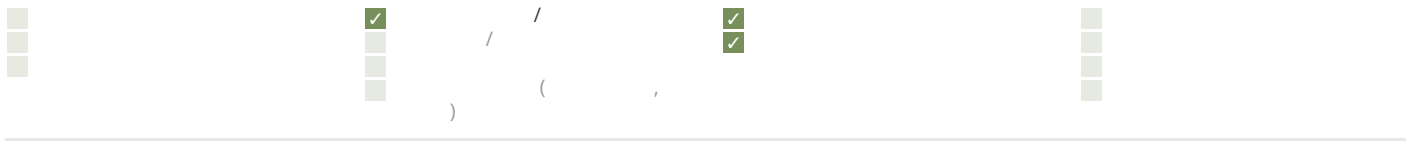
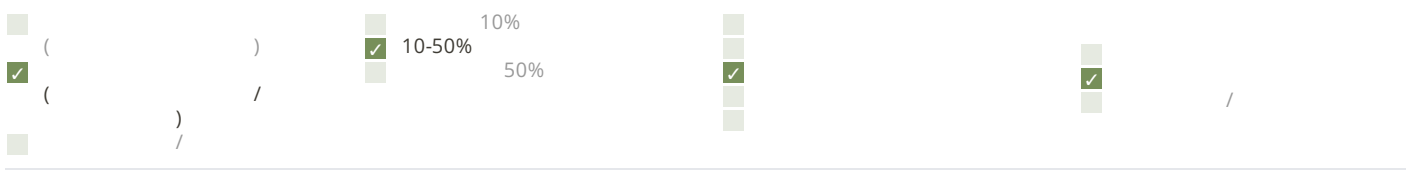
1. Weeding (/ : during first year)
2. Apply nitrogen fertiliser twice more during the growing season (/ : during the growing season)
3. Grafting (/ : second year)
4. (/ : None)
5. (/ : None)

			(Somoni)	(Somoni)	%
Apply nitrogen fertiliser	Persons/day	1,0	20,0	20,0	100,0
Weeding	Persons/day	28,0	20,0	560,0	100,0
Grafting	Persons/day	28,0	20,0	560,0	100,0
Fertilizer	kg	6,0	3,0	18,0	
				1'158.0	
				257.33	





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Nursery established on cropland



The economic benefit for the land user is very high as during one year he can make more than 18,000 TJS (4000 USD) of profit from selling seedlings while the investments in fertilisers are comparably small.



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Availability of fruits

		More fruits provide a more balanced diet with more vitamins
		Aesthetic value of trees
SLM /		
Livelihood and human well-being	reduced improved	Higher income from selling the tree seedlings, about 3,000 USD per year, allowing people to provide better education for their children and better access to healthcare

		Indirect benefit, occurring where the trees grown in tree nursery will be planted later
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Hazard towards adverse events	increased decreased	Indirect benefit, occurring where the trees grown in tree nursery will be planted later

Increased income and benefit start after three years when seedlings can be sold.

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1-10%
 11-50%
 > 50%

0-10%
 11-50%
 51-90%
 91-100%

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- The technology is very important to the whole of the GBAO region as nurseries were not available during Soviet times and all tree seedlings were brought from outside

How can they be sustained / enhanced? Improved access for farmers of interesting tree varieties that they can reproduce in their nurseries

- Creation of business opportunities.

How can they be sustained / enhanced? Experience sharing between farmers from outside GBAO

- Through the spreading of this technology there will be more seedlings available to all interested households

How can they be sustained / enhanced? Establishment of farmer field schools to disseminate the positive experiences of this technology and to increase the number of nurseries

- Varieties of trees that are adapted to local climate can be more easily obtained

How can they be sustained / enhanced? Access to other new varieties should be improved

- It is quite a complicated process that requires some expertise; the farmer needs to know about planting technologies, grafting and market opportunities etc. Farmer to farmer dissemination of knowledge could be facilitated through the establishment of farmer field schools.

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: 12

2011

: 2

2021

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https://qcat.wocat.net/km/wocat/technologies/view/technologies_1453/

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- CDE Centre for Development and Environment (CDE Centre for Development and Environment) -
- Kyrgyzstan Mountain Societies Development Support Programme, Aga Khan Development Network (MSDSP KG) -
- Pilot Program for Climate Resilience, Tajikistan (WB / PPCR)

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