



Grazing cow in between the unfenced apple orchard (Malgorzata Conder)

Current agroforestry of an apple orchard with wheat cropping (塔吉克斯坦)

描述

Agroforestry of an old apple orchard with wheat cropping

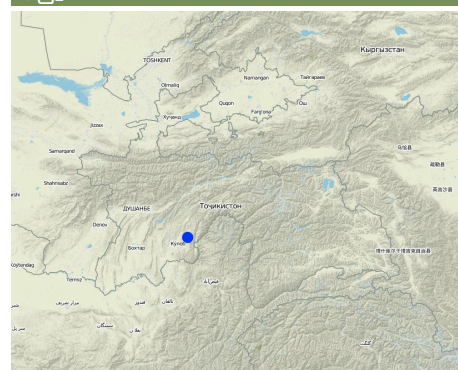
The farmer grows red, yellow and white apples in his orchard of 3.75 ha. Wheat is growing in the slightly pronounced terraces and recently some vines were planted this year. The rain fed orchard lies in the low part of the middle zone and has a slight slope. The absence of control and fence results in broken branches and trampled parts in the plot. The farmer is sharing the property with his four brothers, who inherited the property from their father in 1993 or 1994. The orchard was established during Soviet time in 1988. The government paid for the material and the farmer's family did the labour. The government paid them for that input by crop yield. In addition to the orchard the farmer sowed wheat between the rows several years ago which adds up to a hectare of wheat crop in total. In the current year (2012), the workload and the yield have been very small. As there was heavy rainfall in spring, the farmer did not see the need to loose soil around the trees. The already old fruit trees gave low yield and, because of a hail storm, apples were destroyed.

Purpose of the Technology: Initially the government planned to manage land and make it more profitable by establishing orchards. Due to that intention the farmer's family had work, subsistent crop and cash crops. Today the main source of income is the remittances from the sons who work in Russia. The farmer works part time as a taxi driver. The orchard lost its importance of main income.

Establishment / maintenance activities and inputs: At the time of the establishment of the fruit trees, the Soviet government paid for the seedlings and tractor fuel. Labour was done by the farmer, his brothers and their parents. The whole family worked for two years to build the orchard because they only had the possibility to work in the evenings and on weekends. Nowadays it is still a part time job for the farmer. Maintenance activities consist of ploughing, occasional soil loosening around the trees, pruning and harvesting apples and wheat. The wheat is cut by hand, which is very hard work. Because of heavy rainfalls last spring no soil was loosened. There is nobody to protect the orchard from grazing livestock.

Natural / human environment: The orchard lies on a foothill in the middle zone, close to the settlements of the valley. The apples trees are growing in rows on small terraces built by ploughing for years. Down- and upwards there are also orchards growing, all delimited laterally by the riverbed and a road. On one side of the plot a gully is developing rapidly. All of the neighbouring orchards seem to have a lack of maintenance and control. The orchards lying above but not far away from the settlements are accessible by car and tractor.

地图



地点: Muminabad, Khatlon, Tajikistan, 塔吉克斯坦

分析的技术场所数量:

选定地点的地理参考

• 70.01562, 38.03145

技术传播: 均匀地分布在一个区域 (approx. < 0.1 平方公里)

在永久保护区? :

实施日期: 10-50年前

介绍类型

☐ 土地使 ☐ 创 ☐
☐ 作为传 ☐ ☐ >50 年分 ☐
☐ 在实 / ☐ ☐ ☐
☒ 外 ☐ 干



Old and abandoned apricot orchard (Malgorzata Conder)

技术 分

主要目的

- ✓ 改 产
- ✓ 减少、 、恢复土地化
- 保护态
- 合其他技 保护下域 区域
- 保持/提 多 性
- 低 害
- 应 候变化 天 及其影响
- 减 候变化及其影响
- 创 影响
- 创 会影响

土地利用

同一土地单元内 合使 土地农业



农田

- 一年一作: 小 季
- 乔 与 、其他 、 子、
- 年 : 1季 数



牧场



森林/林地

供水

- ✓ 养
- 合
- 充分

土地退化相关的目的

- 土地化
- 减少土地化
- 修复/恢复严 化 土地
- 应土地化
- 不

解决的退化问题



土壤水蚀 - Wg 冲 侵 , Wo 场外劣化效应



化学性土壤退化 - Cn 力下 和 含 下



物理性土壤退化 - Pc 压实



生物性退化 - Bc 减少

SLM组

- 农业 学

SLM措施



农艺措施 - A1 和土壤 层



植物措施 - V1 乔 和 层

技术 图

技术规范

技 建 与 护 动、投入和

投入和成本的计算

- 成 为
- 成 使 **Somoni** 币
- 换 为1 元 4.83 Somoni
- 劳 平 均 1240 成

影响成本的最重要因素

Labour affects the cost the most, secondly the seedlings (which were subsidised).

技术建立活动

1. Buying, transporting and planting trees (5 TJS and 20 min for plantin per tree) (once, spring, in 1988)

技术建立的投入和成本

对投入进行具体说明	单位	数量	单位成本 (Somoni)	每项投入的总成本 (Somoni)	土地使用者承担的成本%
劳动力					
Buying, transporting and planting tree	person days	50.0	12.422	621.1	100.0
设备					
Machine use	Days	1.0	16.6	16.6	
植物材料					
Seedlings	Seedlings	1200.0	1.03516666	1242.2	
技术建立所需总成本				1'879.9	
技 建 总 成 元				389.21	

技术维护活动

1. Plowing, 6 hours, 1 person (since 1988)
2. Sowing, 3 hours, 1 person (once a year)
3. Cutting wheat manually by, 1 week (7h/day) 6 pers (once a year, autumn)
4. Soil loosening (it was not done in 2012) (once a year, spring)
5. Pruning (it was not done in 2012) (every tree once in 3 years)
6. Harvesting apples (1000) (once a year, autumn)

技术维护的投入和成本

对投入进行具体说明	单位	数量	单位成本 (Somoni)	每项投入的总成本 (Somoni)	土地使用者承担的成本%
劳动力					
Plowing	Person days	0.75	12.4	9.3	100.0
Sowing	Person days	0.375	12.4	4.65	100.0
Cutting wheat manually	Person days	36.75	12.4	455.7	100.0
Soil loosening	Trees	1000.0	0.1941	194.1	100.0
设备					
Petrol	liters	40.0	1.1375	45.5	100.0
Machine use	Hours	3.0	6.9	20.7	100.0
植物材料					
Seeds	kg	200.0	0.414	82.8	100.0
其它					
Pruning	Trees	400.0	0.711	284.4	100.0
Harvesting apples	Apples	1000.0	0.7453	745.3	100.0
技术维护所需总成本				1'842.45	
技 护 总 成 元				381.46	

境

年平均降雨量

- < 250
- 251-500
- 501-750
- 751-1,000
- ☒ 1,001-1,500
- 1,501-2,000
- 2,001-3,000
- 3,001-4,000
- > 4,000

农业气候带

-
- ☒ 半
- 半干
- 干

关于气候的规范

Totally 800 mm: 700mm in winter-spring, July-Sept dry season
Thermal climate class: temperate, LPG from end of March until September

<input type="checkbox"/>	平	0-2%
<input type="checkbox"/>		3-5%
<input type="checkbox"/>	平	6-10%
<input checked="" type="checkbox"/>	坡	11-15%
<input type="checkbox"/>	崎	16-30%
<input type="checkbox"/>	峭	31-60%
<input type="checkbox"/>	常	峭

☐ 平原

☐ 山

☐ 山坡

☐ 山地斜坡

☒ 坡

☐ 底

- ☐ 0-100 m a.s.l.
- ☐ 101-500 m a.s.l.
- ☐ 501-1,000 m a.s.l.
- ☒ **1,001-1,500 m a.s.l.**
- ☐ 1,501-2,000 m a.s.l.
- ☐ 2,001-2,500 m a.s.l.
- ☐ 2,501-3,000 m a.s.l.
- ☐ 3,001-4,000 m a.s.l.
- ☐ > 4,000 m a.s.l.

- ☒ 凸形情况
- ☐ 凹形情况
- ☐ 不相关

<input type="checkbox"/>	常	0-20厘	<input type="checkbox"/>
<input checked="" type="checkbox"/>		21-50厘	<input type="checkbox"/>
<input type="checkbox"/>	中	瘦	80厘
<input type="checkbox"/>		81-120厘	<input type="checkbox"/>
<input type="checkbox"/>	常	> 120厘	<input type="checkbox"/>

<input type="checkbox"/>	中	壤土、	土
<input checked="" type="checkbox"/>	中	壤土、	土
<input checked="" type="checkbox"/>	中	壤土、	土

中 壤土、 土

高 $\geq 3\%$
 中 $1-3\%$
 低 $<1\%$

上

☐ 好
☐ 中
☒ 匱乏/

<input type="checkbox"/>	好	<input type="checkbox"/>	<input type="checkbox"/>				
<input type="checkbox"/>	不	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	仅供农业使	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	不可						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	参	<input type="checkbox"/>			

洪水发

☐ 中
☒ 低

中
低

商业/市场

- ☐ 低于全 收入10%
- ☐ 收入 10-50%
- ☒ > 收入 50%

☒ 平均 ☐ 平

☒ 手工作业

定 半

☒ 个人/家庭
☐ 团体/ ☐ 区
☐ 合作 ☐
☐ 员工 ☐ 公司、政府 ☐

☐ 女人
☒ 人

■ 儿童
 ■ 青年人
 ■ 中年人
 ■ 老年人

☐ < 0.5 公頃

☐ 0.5-1 公頃

☐ 1-2 公頃

☒ 2-5公頃

☐ 5-15公頃

☐ 15-50公頃

☐ 50-100公頃

☐ 100-500公頃

☐ 500-1,000公頃

☐ 1,000-10,000公頃

☐ > 10,000公頃

<input checked="" type="checkbox"/>	小	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	中	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	大	<input type="checkbox"/>	<input type="checkbox"/>

☐ 州
☐ 公司
☐ 区 庄
☐ 团体
☐ 个人 命名
☒ 个人 命名

入

个人

用水权

入

个人

健康
教
技
就
市
例
如
农
和
交
卫
务

0	0	0	✓	0	好
0	0	0	✓	0	好
0	0	✓	0	0	好
0	0	✓	0	0	好
0	0	0	✓	0	好
0	0	✓	0	0	好
0	0	0	✓	0	好
0	0	0	✓	0	好
0	0	✓	0	0	好

社会经济影响

增加

middle-term increase however possibility of lower harvest
due to lack of maintenance

农业收入



not on short-term, low harvest if maintenance is done poorly.

工作



Less mainetnance work

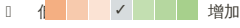
社会文化影响

产品安全



low harvest, but it is not the only source of income

生态影响



Difficult to compare established orchard with szenario without orchard

地径



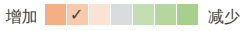
土壤分



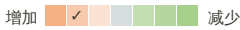
土壤层



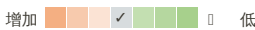
土壤密封



土壤压实



土壤/地下C



场外影响

下 不希



冲击力 按土壤、 、 地划



分

成效分

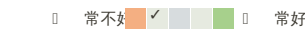
与技术建立成本相比的效益

与技术维护成本相比的效益

气候变化

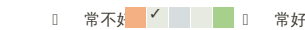
渐变气候

年增加



气候有关的极端情况（灾害）

局地



局地



干



和 于

其他气候相关的后果

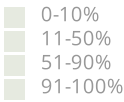


和应

采用该技术的地区内土地使用者的百分比



在所有采用这种技术的人当中，有多少人在没有获得物质奖励的情况下采用了这种技术？



最近是否对该技术进行了修改以适应不断变化的条件？



什么样的变化条件？



和吸取教

长处: 土地使用者的观点

- Increase of productivity of the land by establishing an orchard.

How can they be sustained / enhanced? Give more power and knowledge to farmers to raise responsibility for the crops.

长处: 编制者或其他关键资源人员的观点

弱点/缺点/风险: 土地使用者的观点如何克服

- Old trees. Plant new ones.

弱点/缺点/风险: 编制者或其他关键资源人员的观点如何克服

- Orchard is not well maintained (sporadical soil loosening, pruning, control). Knowledge transfer with e.g. demonstration of well

- Land management is right if maintenance and technical assistance are warranted.
- How can they be sustained / enhanced? Support of establishment and recurrent activities is important.

maintained orchards and round tables to share farming experiences.

- None Support should not only focus on the establishment phase (by providing funds) but also in a long-term providing cultivation knowledge.

参考文献

编制者

Malgorzata Conder

Editors

审查者

Fabian Ottiger
Alexandra Gavilano

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资源人

Malgorzata Conder - SLM专业人员

WOCAT数据库中的完整描述

https://qcat.wocat.net/zh/wocat/technologies/view/technologies_1172/

链接的SLM数据

不

文件编制者

- CDE Centre for Development and Environment (CDE Centre for Development and Environment) - 士

- 不

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