The photo shows the irrigation pipe feed to the wool bed. (Sa'dy Odinashoev (Muminabad, Tajikistan))

# A woollen water retention bed installed under the roots of a tree irrigated by a pipe feed. (塔吉克斯坦)

## 描

**The use of sheep's wool placed below the roots of fruit trees, to retain the water fed from a surface pipe.**

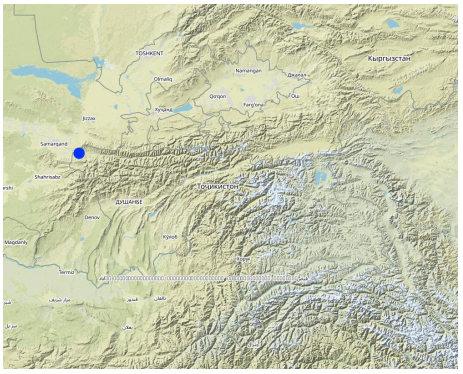
A bed of wool is placed within the hole before a fruit sapling is planted. The wool is fed water via a plastic pipe, which is used to saturate the wool with irrigated water. This provides a prolonged source of moisture for the trees which subsequently helps the tree survive intense dry periods and improves fruit yields.
This technology could also be applied using hay or pressed sawdust as an alternative to the wool to store the water.

Purpose of the Technology: The purpose was to implement a sustainable cost effective and easy irrigation process that will help increase fruit production in the Pejikant region of Tajikistan during the long hot dry summer periods. The process utilises readily locally available natural materials that are environmentally friendly.

Establishment / maintenance activities and inputs: A 1m deep hole is prepared to plant the tree inside. Placed at the foot of the hole is layer of natural wool, approximately 10kg, and a plastic pipe is installed running from the wool layer to the above the surface. On top of the wool a bed of organic compost and/or high quality soil is placed to assist the growth and the sapling is planted in this. The sapling is then watered through the pipe. It is estimated that 10kg of wool will retain around 8 litres of water.

Natural / human environment: This region has low levels of annual precipitation and poor soil quality. Therefore, the land users are reliant on devising ways to improve the soil quality and irrigation practices to increase the amount of land that can be cultivated. With an increasing population and a heavy relaince on the land to support the people, there is a strong desire to bring into production land that in its current state is unproductive.

## 地




**地点:** Penjakent, Toshmunor, Tajikistan, Sughd, 塔吉克斯坦

**分析的技术场所数量:**

**选定地点的地理参考**
- 67.571, 39.4781

**技术传播:** 均匀地分布在一个区域 (approx. < 0.1 平 干 10 公 )

**在永久保护区？:**

**实施日期:** 不到10年前

**介绍类型**
- [x] 土地使 创
- [ ] 作为传 ≥50 年分
- [ ] 在实 /
- [ ] 外 干

Photo shows the orchard which is planted the same way. (Sa'dy Odinashoev (Muminabad, Tajikistan))

## 技 分

### 主要目的

- [x] 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

**农田**

- 乔 与
  年 : 2季 数

**森林/林地**产品和 务 和坚

### 供水

- [ ] 养
- [ ] 合
- [ ] 充分

### 土地退化相关的目的

- [ ] 土地 化
- [x] 减少土地 化
- [x] 修复/恢复严 化 土地
- [ ] 应土地 化
- [ ] 不

### 解决的退化问题

**土壤水蚀** - Wt 土/地 失 侵

**土壤风蚀** - Et 土 失

**生物性退化** - Bc Bq 减少 减少

**水质恶化** - Ha 干 化

### SLM组

- 包括供 、排

### SLM措施

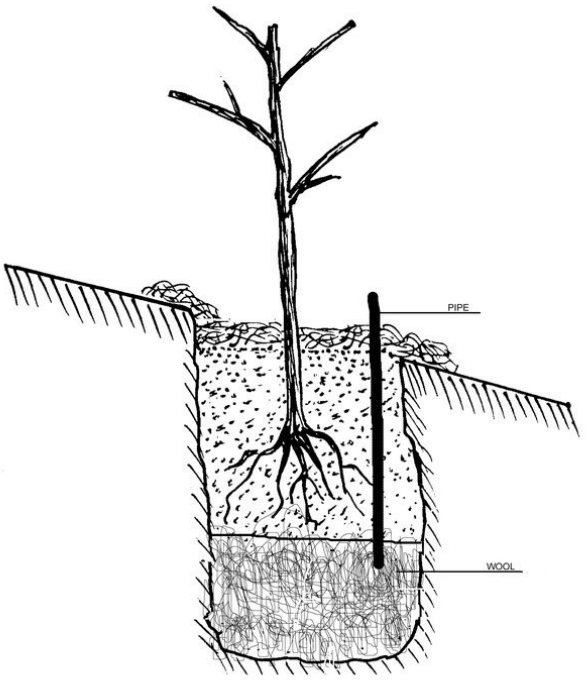
**农艺措施** - A2 /土壤 力

**植物措施** - V1 乔 和 层

## 技 图

### 技术规范

None




Author: Sa'dy Odinashoev, Muminabad, Tajikistan

## 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 □ 元无 4.7 Somoni
- □ □ 劳工□ □ □ 平均工□ 成□ □ 不□ □

**影响成本的最重要因素**

In this situation, the wool is free to the farmers as they obtain it from their own sheep. The labour is provided free of charge by the farmers themselves.

**技术建立活动**

1. A 1m deep hole is prepared to plant the tree inside. (□ /□ □ spring)
2. Placing approximately 10kg of wool at the foot of the hole (□ /□ □ spring)
3. installing of plastic pipe from the wool layer to the above surface (□ /□ □ spring)
4. On top of the wool a bed of organic compost and/or high quality soil is placed to assist the growth (□ /□ □ spring)

**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** | | | | | |
| Digging hole | Persons/day | 0.1 | 20.0 | 2.0 | 100.0 |
| **施工材料** | | | | | |
| Plastic pipe | meter | 1.0 | 4.0 | 4.0 | 100.0 |
| **技术建立所需总成本** | | | | **6.0** | |

**技术维护活动**

n.a.

## □ □ □ 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**

Thermal climate class: temperate

**斜坡**

- □ □ 平□0-2%□
- ☑ □ □ 3-5%□
- ☑ 平□ □ 6-10%□
- □ □ 坡□11-15%□
- □ 崎岖□ 16-30%□
- □ □ 峭□31-60%□

**地形**

- □ □ 原□平原
- □ 山□
- □ 山坡
- ☑ 山地斜坡
- ☑ □ 坡
- □ □ 底

**海拔**

- □ 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.

**.....应用的技术**

- □ 凸形情况
- □ 凹□ 情况
- □ 不□ 关

- [ ] 常 峰0%

- [ ] 2,501-3,000 m a.s.l.
- [ ] 3,001-4,000 m a.s.l.
- [ ] > 4,000 m a.s.l.

### 土壤深度
- [x] 常 0-20厘
- [ ] 21-50厘
- [ ] 中 度 50-80厘
- [ ] 81-120厘
- [ ] 常 > 120厘

### 土壤质地（表土）
- [x] 中 壤土、 土

### 土壤质地（地表以下>20厘米）
- [ ] 中 壤土、 土

### 表土有机质含量
- [ ] 3%
- [ ] 中 1-3%
- [x] 低 <1%

### 地下水位
- [ ] 上
- [ ] < 5
- [ ] 5-50
- [x] > 50

### 地表水的可用性
- [ ]
- [ ] 好
- [ ] 中
- [x] 匮乏/

### 水质（未处理）
- [x] 好
- [ ] 不 处
- [ ] 仅供农业使
- [ ] 不可
- [ ] 参

### 盐度是个问题吗？
- [ ]
- [ ] 否

### 洪水发生
- [ ]
- [ ] 否

### 物种多样性
- [ ]
- [ ] 中
- [x] 低

### 栖息地多样性
- [ ]
- [ ] 中
- [ ] 低

## 应 技 土地使 征

### 市场定位
- [x]
- [ ] 合 商业
- [ ] 商业/市场

### 非农收入
- [ ] 低于全 收入10%
- [ ] 收入 10-50%
- [x] > 收入 50%

### 相对财富水平
- [ ] 常
- [x]
- [ ] 平均 平
- [ ] 丰富
- [ ] 常丰富

### 机械化水平
- [ ] 手工作业
- [ ] 力 引
- [ ] /化 动

### 定栖或游牧
- [ ] 定
- [ ] 半
- [ ]

### 个人或集体
- [x] 个人/家庭
- [ ] 团体/ 区
- [ ] 合作
- [ ] 员工 公司、政府

### 性别
- [ ] 女人
- [x] 人

### 年龄
- [ ] 儿
- [ ] 年人
- [ ] 中年人
- [ ] 年人

### 每户使用面积
- [x] < 0.5 公
- [ ] 0.5-1 公
- [ ] 1-2 公
- [ ] 2-5公
- [ ] 5-15公
- [ ] 15-50公
- [ ] 50-100公
- [ ] 100-500公
- [ ] 500-1,000公
- [ ] 1,000-10,000公
- [ ] > 10,000公

### 规模
- [x] 小
- [ ] 中
- [ ] 大

### 土地所有权
- [x] 州
- [ ] 公司
- [ ] 区 庄
- [ ] 团体
- [ ] 个人 命名
- [ ] 个人 命名

### 土地使用权
- [ ] 入
- [ ] 区
- [x]
- [ ] 个人

### 用水权
- [ ] 入
- [ ] 区
- [x]
- [ ] 个人

### 进入服务和基础设施的通道

| | | |
|---|---|---|
| 健康 | ✓ | 好 |
| 教 | ✓ | 好 |
| 技 援助 | ✓ | 好 |
| 就业 例如 农 | ✓ | 好 |
| 市场 | ✓ | 好 |
| | ✓ | 好 |
| 和交 | ✓ | 好 |
| 和卫 | ✓ | 好 |
| 务 | ✓ | 好 |

## 影响

### 社会经济影响

| | | |
|---|---|---|
| 作 产 | ✓ | 增加 |
| 产 | ✓ | 增加 |
| 产故 | ✓ | 增加 低 |
| 产区域 使 中 土地 | ✓ | 增加 |
| 可 性 | ✓ | 增加 |
| 农业收入 | ✓ | 增加 |
| 工作 | ✓ | 增加 低 |

### 社会文化影响

| | | |
|---|---|---|
| 品安全 | ✓ | 减少 改 |

健康 况 恶化 改
SLM/土地 化
Livelihood and human well-being 减少 改

reduced improved

It has helped improve the fruit harvests on land that was becoming increasingly degraded and would in the future be unsuitable for farming practices.

**生态影响**

减少 改
增加 低
增加 低
增加
减少 改

**场外影响**

## 成 效 分

**与技术建立成本相比的效益**

回报 常 常
回报 常 常

**与技术维护成本相比的效益**

回报 常 常
回报 常 常

The impacts can be seen within the first growing season.

## 候变化

**渐变气候**

年 度增加 常不好 常好

**气候有关的极端情况（灾害）**

局地 常不好 常好
局地 常不好 常好
干 常不好 常好

## 和 应

**采用该技术的地区内土地使用者的百分比**

- 单例/实
- 1-10%
- 11-50%
- > 50%

**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?**

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

**户数和/或覆盖面积**

NA

**最近是否对该技术进行了修改以适应不断变化的条件？**

- 
- 否

**什么样的变化条件？**

- 候变化 候
- 不断变化 市场
- 劳动力可 性 例如 于

## 和吸取 教

**长处: 土地使用者的观点**

- It improves the fruit harvest.
- It is easy to buy the wool.

  How can they be sustained / enhanced? Wool could be made available to other orchards.
- It is cheap and easy to implement.

**长处: 编制者或其他关键资源人员的观点**

- It reduces the number of times the trees need to be irrigated.

  How can they be sustained / enhanced? The technology is so easy to implement, the information should be dispersed to other farmers.
- It improves the soil moisture content of the orchards.

**弱点/缺点/风险: 土地使用者的观点如何克服**

**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**

- It still reliant on some water being available at crucial times of the year. Piped irrigation to the land plot

- The technology could be applied in very dry, desert conditions

  How can they be sustained / enhanced? It could be used in the more dry arid areas of the country.
- It increases the length of the planting season, as it holds the water in the ground for longer.

  How can they be sustained / enhanced? To implement the technology across a wider area.
- It can be applied to older, established trees, not just seedlings.

  How can they be sustained / enhanced? Educate the farmers about these methods.

## 参 文

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**WOCAT数据库中的完整描述**
https://qcat.wocat.net/zh/wocat/technologies/view/technologies_1508/

**链接的SLM数据**
不

**文件编制者**

- 不
- Pilot Program for Climate Resilience, Tajikistan (WB / PPCR)