

## Small Farm Reservoir (SFR) Philippines - Tabon

**The Small Farm Reservoir is an earth dam structure used to trap harvest and store rainfall and water runoff.**

The small farm reservoir (SFR) is a small water impounding earth dam structure to collect rainfall and runoff, designed for use in a single farm, and typically has an area of about 300-2,000 square meters. The embankment height above ground level is less than 4 meters. It can be easily constructed with a bulldozer or manual labor. Irrigation is done with PVC siphon pipes or pumps. SFR is used in rainfed-growing areas to provide supplemental irrigation to a wet season crop and partial irrigation to a dry season crop. Aside from irrigation and aquaculture, water in the reservoir could also be used for small scale livestock watering, wallowing areas for animals, e.g. ducks and picnic ground.

**left:** Small Farm Reservoir (SFR) perspective view (Photo: Bureau of Soils & Water Mgt.)

Region: Pangasinan, Nueva Ecija, Tarlac, Isabela, Bulacan, Ilocos Norte  
Technology area: 8884 km<sup>2</sup>

Conservation measure: structural  
Stage of intervention: prevention of land degradation

Origin: Developed externally / introduced through project, recent (<10 years ago)

Land use type:

Cropland: Annual cropping

Climate: subhumid, tropics

WOCAT database reference:

T\_PHI005en

Related approach:

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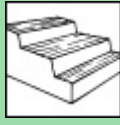
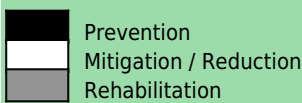
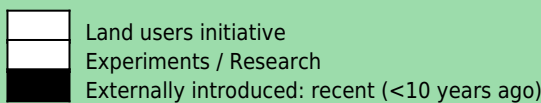
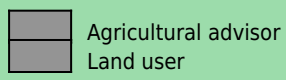
Date: 2000-08-30

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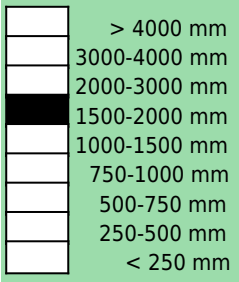
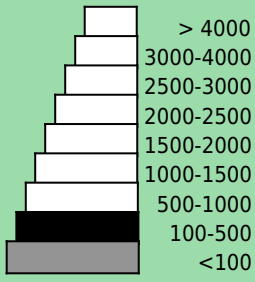
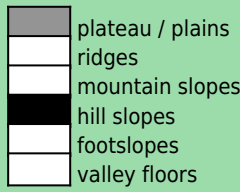

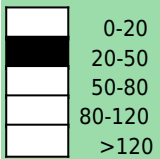
# Classification

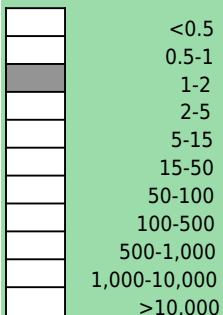
## Land use problems:

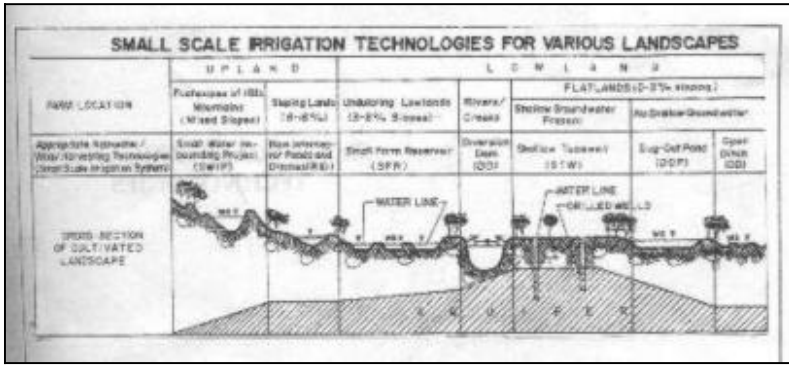
- Very low yield of any crop due to inadequate moisture to sustain crop growth. (expert's point of view)  
 Unpredictable weather condition or occurrence of extreme climatic condition (La Nina or El Nino) constrained yield improvement. (land user's point of view)

<b>Land use</b>  Annual cropping	<b>Climate</b>  subhumid	<b>Degradation</b>	<b>Conservation measure</b>  Structural: Bench terraces (slope of terrace bed <6%)
<b>Stage of intervention</b> 	<b>Origin</b> 	<b>Level of technical knowledge</b> 	
<b>Main causes of land degradation:</b>			
<b>Main technical functions:</b> <ul style="list-style-type: none"> <li>- control of dispersed runoff: retain / trap</li> <li>- control of concentrated runoff: retain / trap</li> <li>- water harvesting / increase water supply</li> </ul>		<b>Secondary technical functions:</b>	

## Environment

<b>Natural Environment</b>	<b>Average annual rainfall (mm)</b> 	<b>Altitude (m a.s.l.)</b> 	<b>Landform</b> 	<b>Slope (%)</b> 
<b>Soil depth (cm)</b> 	<b>Growing season(s):</b> 180 days(May - Oct), 120 days(Nov - Feb) <b>Soil texture:</b> medium (loam) <b>Topsoil organic matter:</b> low (<1%) <b>Soil drainage/infiltration:</b> good		<b>Soil water storage capacity:</b> medium	

<b>Human Environment</b>	<b>Cropland per household (ha)</b> 	<b>Population density:</b> 10-50 persons/km2 <b>Land ownership:</b> individual, titled <b>Land use rights:</b> individual <b>Relative level of wealth:</b> average, which represents 50% of the land users; 40% of the total area is owned by average land users	<b>Importance of off-farm income:</b> 10-50% of all income: <b>Access to service and infrastructure:</b> <b>Market orientation:</b> mixed (subsistence and commercial) <b>Mechanization:</b> animal traction <b>Livestock grazing on cropland:</b>
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**Technical drawing**

Uses of Small Farm Reservoir (SFR) system (Bureau of Soils & Water Manage)

**Implementation activities, inputs and costs**

**Establishment activities**

- 2. Layouting/staking
- 1. Cleaning
- 4. Basal fertilization
- 5. Planting
- 3. Rotovating or plowing
- 3. Embankment construction
- 3. Scapping the top soil
- 2. Orienting the bulldozer operator on one technique of embankment and clearing the staked-out area
- 1. Site Investigation, Examination of soil profile

**Maintenance/recurrent activities**

- 2. Minimum tillage
- 1. Irrigation
- 3. Planting
- 3. Irrigation
- 1. Weeding
- 2. Fertilization
- 1. Canal maintenance
- 2. Watershed protection and maintenance

**Remarks:**

The availability of bulldozers in the site and access roads adds substantially to the cost.

**Assessment**

**Impacts of the Technology**

**Production and socio-economic benefits**

- +++ increased crop yield
- +++ fish production
- ++ increased wood production

**Production and socio-economic disadvantages**

- ++ loss of land

**Socio-cultural benefits**

- +++ community institution strengthening
- +++ improved conservation / erosion knowledge

**Socio-cultural disadvantages**

**Ecological benefits**

- ++ increased soil moisture
- ++ improved soil cover
- ++ increase in soil fertility
- ++ biodiversity enhancement

**Ecological disadvantages**

**Off-site benefits**

- ++ increased ground water recharge
- + reduced downstream flooding

**Off-site disadvantages**

**Contribution to human well-being / livelihoods**

## Benefits /costs according to land user

### Benefits compared with costs

**Establishment**

**Maintenance / recurrent**

### short-term:

not specified

not specified

### long-term:

not specified

not specified

**Acceptance / adoption:**

## Concluding statements

### Strengths and → how to sustain/improve

individual farmers can own one or a number SFR, big areas of rainfed lowland areas are available during the dry season, SFR has multiple purposes as irrigation supplement, fish production, and recreation → Availability of credit for farmers, availability of updated technologies for crop production sited in their localities, local government support to market of farm produce

### Weaknesses and → how to overcome



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