

Solar-Powered Irrigation System (SPIS)
SPIS Web based App for Smallholder Farmers
On-site Data Collection, if no Internet connection is available

Introduction

The new Web-App allows **Farmers, Advisors, and Financial Institutions** to calculate in a simple and quick way the surface of the solar panels and the dimension of the pump needed to irrigate crops.

Farm Data Input for SPIS Design

Please provide accurate data to ensure optimal system performance. The data is required for the design of a SPIS using GIZ Web Application: app.spis-toolbox.org

Farm Information

- Farm name/Project:
- Farmer name:

General Information:

- Geolocation:
 - Location name:
 - Region:
 - Country:
 - Latitude: (South/North)
 - Longitude: (West/East)
- Area/Unit
 - Area unit: (Acres or Hectares)
 - Total surface to be irrigated:
- Irrigation Layout
 - Estimated water source yield (give high number for surface water source)
 - Irrigation layout: (Direct Feed or Tank System)

Weather Information:

- Temperature: (If no data at hand, use Internet when available, e.g. (World Meteorological Organisation) <https://worldweather.wmo.int>
 - Month with the highest temperature:
 - Average temperature in this month:
- Irradiation: (use <https://globalsolaratlas.info> when Internet is available)

Water Requirements:

- Crops:
 - Crop name:
 - Surface share of this crop:
 - Plant spacing (normal or double):
 - Irrigation method: (surface, sprinkler, pivot, microspinkler, drip, microspray)
- Livestock:
 - Livestock name:
 - Household:
 - Water consumption: (total in liters/day)

Pump Sizing Tank System:

- General:
 - Solar system losses: (25 or 50%)
 - Static head: (vertical height between water level to tank inlet)
- Pipeline: (between water source and tank)
 - Pipeline diameter unit: (Inches or mm)
 - Pipeline diameter:
 - Pipeline length:

Irrigation Design (for tank system)

- General:
 - Tank elevation (pressure in m): (tank outlet to irrigation head)
 - Pipeline diameter unit:
- Pipeline:
 - Irrigation Head (pipeline between tank and the irrigation head)
 - Pipeline length:
 - Pipeline diameter:
 - Main Feeder (total)
 - Pipeline length:
 - Pipeline diameter:
 - Lateral Feeder (total)
 - Pipeline length:
 - Pipeline diameter:
- Fittings:
 - Number of elbows:
 - Number of gate valves:
 - Number of tees:
 - Number of reducers:
 - Number of check valves:
- Pressure Requirements:
 - Irrigation method: (surface, sprinkler, pivot, microspinkler, drip, microspray)
 - Pressure requirements (will be shown in the App)

Pump Sizing Direct Feed:

- General:
 - Solar system losses: (25 or 50%)
 - Static head: (vertical height between water level to pump inlet)
- Pipeline:
 - Irrigation Head (pipeline between pump and the irrigation head)
 - Pipeline length:
 - Pipeline diameter:
 - Main Feeder (total)
 - Pipeline length:
 - Pipeline diameter:
 - Lateral Feeder (total)
 - Pipeline length:
 - Pipeline diameter:
- Fittings:
 - Number of elbows:
 - Number of gate valves:
 - Number of tees:
 - Number of reducers:

- Number of check valves:
- Pressure Requirements:
 - Irrigation method: (surface, sprinkler, pivot, microspinkler, drip, microspray)
 - Pressure requirements (will be shown in the App)