

# SMART SPRAYER

The Smart Sprayer is an irrigation technology that combines a mechanical sprinkler system with the digital irrigation advisory tool Cromptal. It has been developed specifically for smallholder farmers. The sprayer has been developed to deliver uniform irrigation under low-pressure conditions. The fully mechanical rotating system operates solely on water pressure, enabling farmers to irrigate effectively without the need for pumps, motors, or external energy sources. The system is designed to reduce farmers' workload by simplifying irrigation practices. Combined with Cromptal the aim is to use water more efficiently.



## FEATURES

- Suitable for small plots
- No pumps or electricity required
- Uniform water distribution
- Easy to assemble and move

## TECHNICAL SPECIFICATIONS

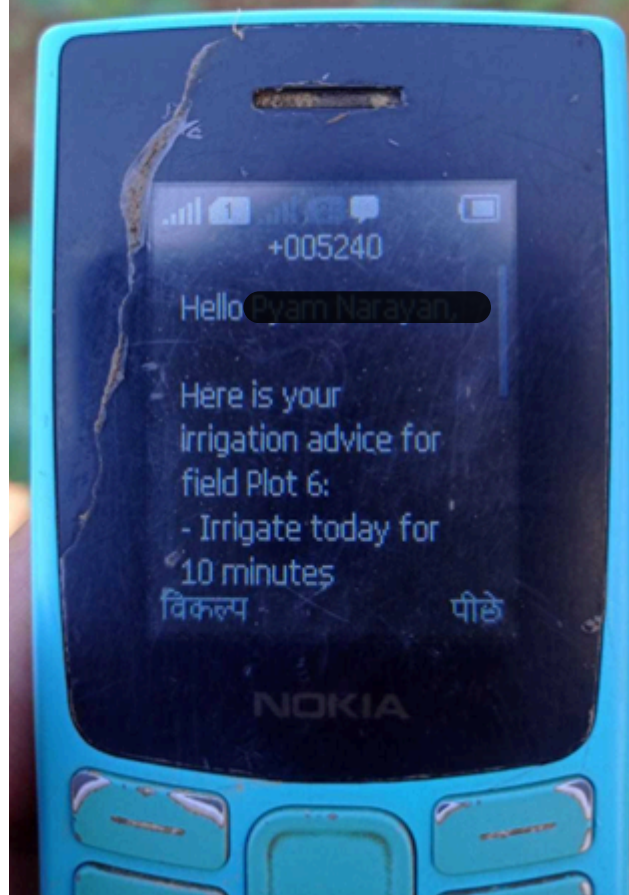
- Sprayer diameter: 10.90 m
- Irrigated area: Approximately 93 m<sup>2</sup>
- Flow rate (all holes open): 700–1000 L/h
- Flow rate (half of the holes closed): 450–700 L/h



# SMART SPRAYER

## GENERAL INFORMATION

The Smart Sprayer operates effectively in areas with low water pressure and functions as a rotating sprinkler irrigation system. The holes in the outer two sections of the arms are oriented horizontally, allowing the sprayer to rotate solely through water pressure. As a result, the system operates fully mechanically and does not require pumps, motors, or external energy sources. Its lightweight and simple design allows the sprayer to be easily moved between fields and operated by a single person. To increase durability and long-term use the structure is designed in such a way that components can be repaired or replaced without specialised tools. CROPTIMAL is a digital advisory tool that calculates crop water requirements based on remote sensing data, crop growth stages, and crop specifications. By integrating this information with the flow rate of the sprayer, it determines the number of minutes that irrigation should be applied. Farmers receive daily text messages with irrigation advice.



# ASSEMBLY

## STEP 1: SETTING UP THE BASE

- Place the aluminum tripod (1.1) on a stable, level surface.
- Position the cylindrical disc (1.2) on top of the tripod.

## STEP 2 – INSTALLING THE CENTRAL VERTICAL TUBE

- Insert the vertical tube (2.1) into the center of the tripod.
- Slide the black plastic sleeve with the built-in spirit (2.2) level over the vertical tube.
- Slide the water inlet (2.3) on the bottom of the vertical tube.
- Insert the additional support pole (2.4) into the ground to stabilize the vertical tube inside the tripod.

## STEP 3 – CONNECTING THE WATER SUPPLY

- Insert the water supply tube (3.1) into the lower black plastic component.
- Attach the filter (3.2) to the water supply tube using the hose adapter (3.3) to filter incoming water.

## STEP 4 – MOUNTING THE GREEN VERTICAL TUBE

- Push the small plexiglass tube (4.2) into the green vertical tube (4.1), if this is difficult use a rotating and pushing motion.
- Attach the wires (4.3) to the top of the green vertical tube. These wires will later on support the sprayer arms.
- Slide the tube green vertical tube (4.1) over the central vertical tube (2.1).

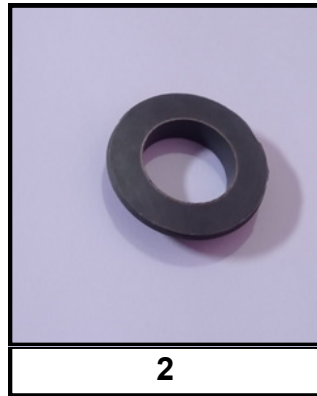
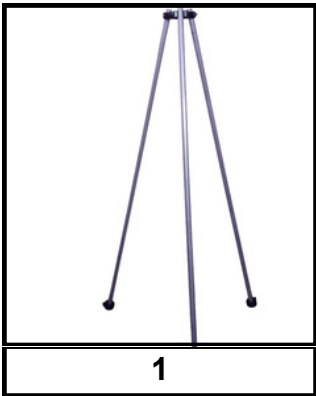
## STEP 5 – ASSEMBLING AND ATTACHING THE SPRAY ARMS

- Attach the sections of the sprayer arms (5.1/2/3) to both sides of the green vertical tube (4.1). First the first sections, then the second and then the third. Place a white foam ring (5.4) between each arm section before connecting them to prevent leakage.
- Attach the wire (4.3) that is connected to the green vertical tube to the third section of the arm.
- Make sure the holes of the first arm face upwards and on the second and third arm horizontally

# COMPONENTS LIST- SMART SPRAYER

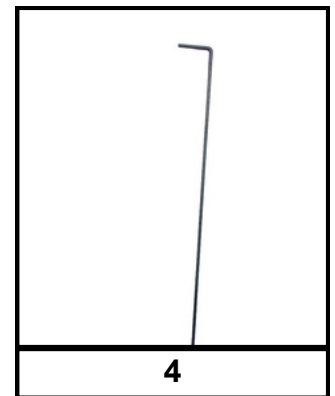
## 1 BASE AND SUPPORT

1. Aluminum tripod
2. Cylindrical top disc (mounted on top of the tripod)



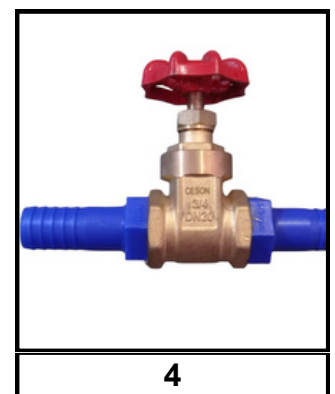
## 2 CENTRAL STRUCTURE

1. Central vertical tube
2. Black plastic sleeve with built-in spirit level
3. Lower black plastic fixing ring
4. ground support pole



## 3 WATER SUPPLY SYSTEM

1. Water supply tube
2. Water filter
3. Threaded hose adapter (20 mm)
4. Water valve



## 4 ROTATING FRAME

1. Green vertical tube
2. Plexiglass tube
3. Support wire for spray arms



1



2



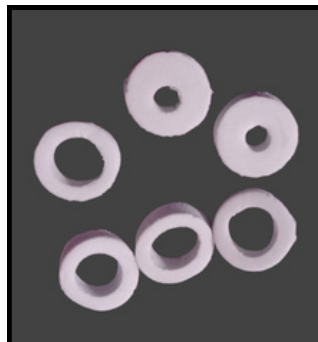
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## 5 SPRAYER ARMS

1. Spray arm section 1 (largest diameter and with upward-facing holes)
2. Spray arm section 2 (middle diameter with horizontally oriented holes)
3. Spray arm section 3 (smallest diameter with horizontally oriented holes)
4. White foam sealing rings (between spray arm sections)



1/2/3



4

## 6 OPTIONAL COMPONENTS

1. tube closing rings






1

# USERS EXPERIENCES

In October 2025, field testing of the Smart Sprayer was initiated on nine pilot farms in Syangja district (Gandaki province), Nepal. This section presents the experiences and observations of some of those farmers.






-  Field size: 256 m<sup>2</sup>
-  Crop: cauliflower
-  Water flow: 765 L/h




“With this system I save a lot of time compared to sprinkler irrigation or irrigation with the hose. Also it disturbs the soil and plants less compared to sprinkler irrigation. However, the main advantage is covering more area with less water.”



“Before I used to irrigate using open canals, now with the Smart Sprayer I use my water more efficiently. I use less water and the water is distributed better.”

-  Field size: 253 m<sup>2</sup>
-  Crop: cabbage
-  Water flow: 631 L/h



-  Field size: 500 m<sup>2</sup>
-  Crop: cauliflower
-  Water flow: 498 L/h

“This system saves a lot of time, I do not need to wait anymore or move around with pipes, sticks and sprinkler irrigation. Once it is installed, I can let it run and even turn it off from my house.”