

## Contacts

+39 0490991301  
info@finapptech.com  
www.finapptech.com

## Finapp S.r.l

Via del Commercio, 27  
35036 Montegrotto Terme PD - Italy



Soil moisture measurement to increase agricultural productivity.

## What?

A CRNS (cosmic ray) probe was installed to monitor the soil moisture of a plot on a farm that has been in the tobacco business for over 20 years.

The comparison was done on one sector of the field, on an adjacent sector the same monitoring was done with a TDR sector.

## How?

The CRNS method relates the count of neutrons from cosmic rays striking the soil, with the water content of the soil.

Knowing soil moisture is one of the pillars on which to build an appropriate irrigation strategy.

## Why?

The purpose of this installation is to provide irrigation **support to optimise tobacco growth**.

The monitoring started in 2021 and continued continued in 2022.

Finapp provides a real data representative of soil moisture:

**Large-scale:** over 5 hectares, a radius of about 125 metres

**In depth:** approximately 30-50 cm inside the ground

**In real time**

**Not affected by pipes, poles, sheeting structures, cables, plants**

**The result is the gravimetric average** (kg water/kg soil)

With a single probe

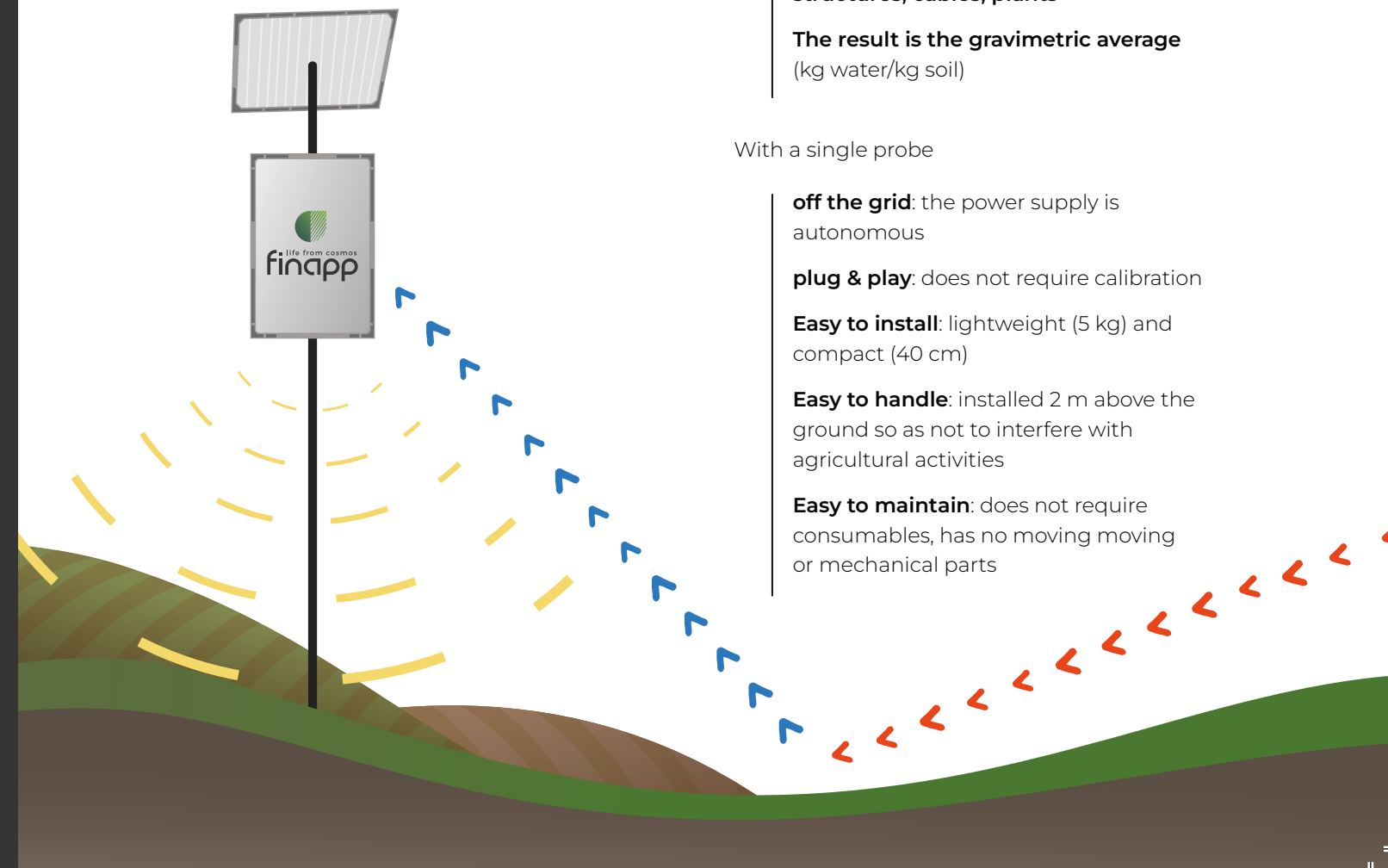
**off the grid:** the power supply is autonomous

**plug & play:** does not require calibration

**Easy to install:** lightweight (5 kg) and compact (40 cm)




**Easy to handle:** installed 2 m above the ground so as not to interfere with agricultural activities

**Easy to maintain:** does not require consumables, has no moving moving or mechanical parts



# Information obtained

In the graph:

-  Soil moisture (blu line)
-  Precipitation (blu bars)
-  Irrigation (light blue bars) during the 2022 season.




# Benefits

Knowing the soil moisture on a large scale makes it possible to have a representative value of the entire plot and to overcome the limitations of point probes especially in the case of local soil irregularities and, equally important, is to know the soil moisture at depth, where water is made available to the roots of plants.

In the 2021 season, the farm in question compared tobacco data from 5 irrigated hectares with Finapp data and harvest data from 5 irrigated hectares with artificial intelligence based on weather data measured and provided by a weather station weather station and on soil moisture data measured by a point TDR probe.

It turns out that the 5 hectares irrigated and monitored through the finapp sensor have consistently improved their efficiency.

	<b>Yield</b>	<b>Quality*</b>
	+20%	+10%

\*Understood as the average selling price of tobacco.

- 1 | A **20% higher yield** compared to hectares irrigated with IA models (second method).  
\* The value is calculated by weighing the tobacco at the time harvest in the field and then post-drying.
- 2 | Product **quality improved by 10%** compared to that harvested in fields cultivated with AI.  
\* Weighed by PMI

