

Can soil moisture sensors support smart irrigation decision making in mountain terrace agriculture?



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INTRODUCTION

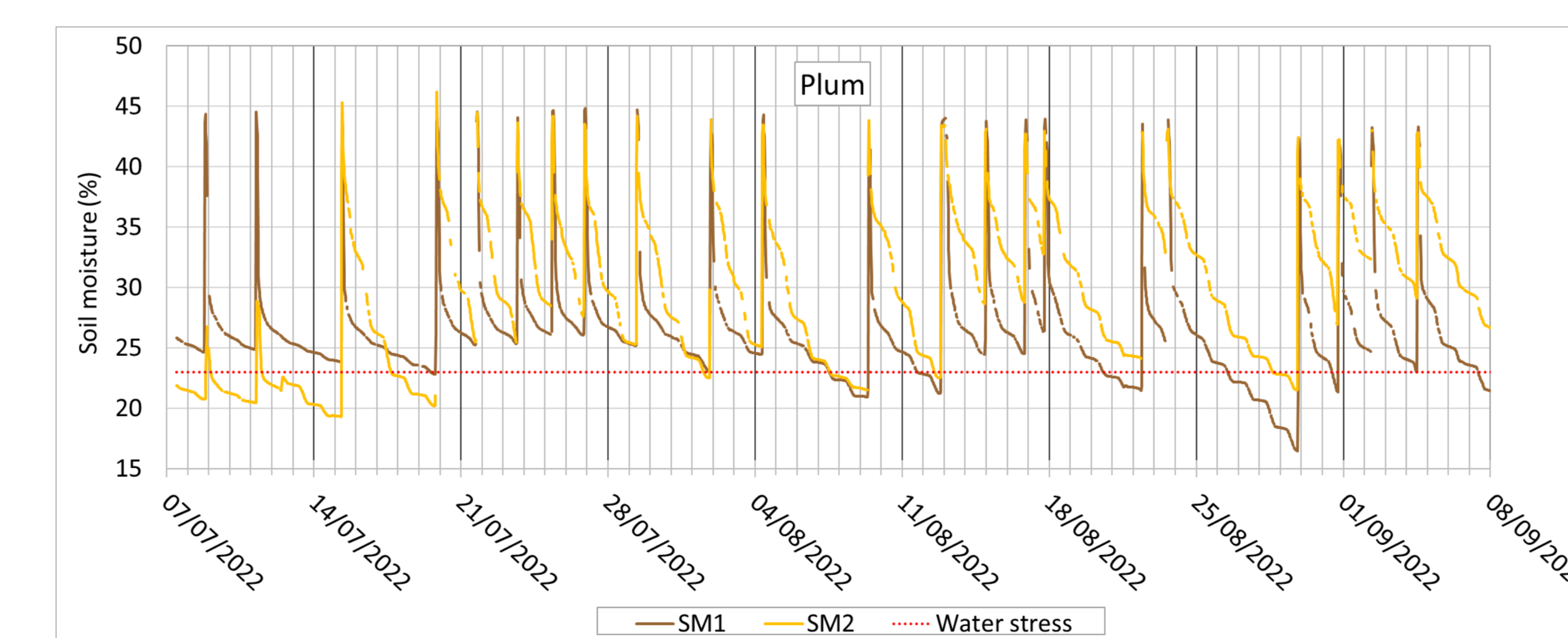
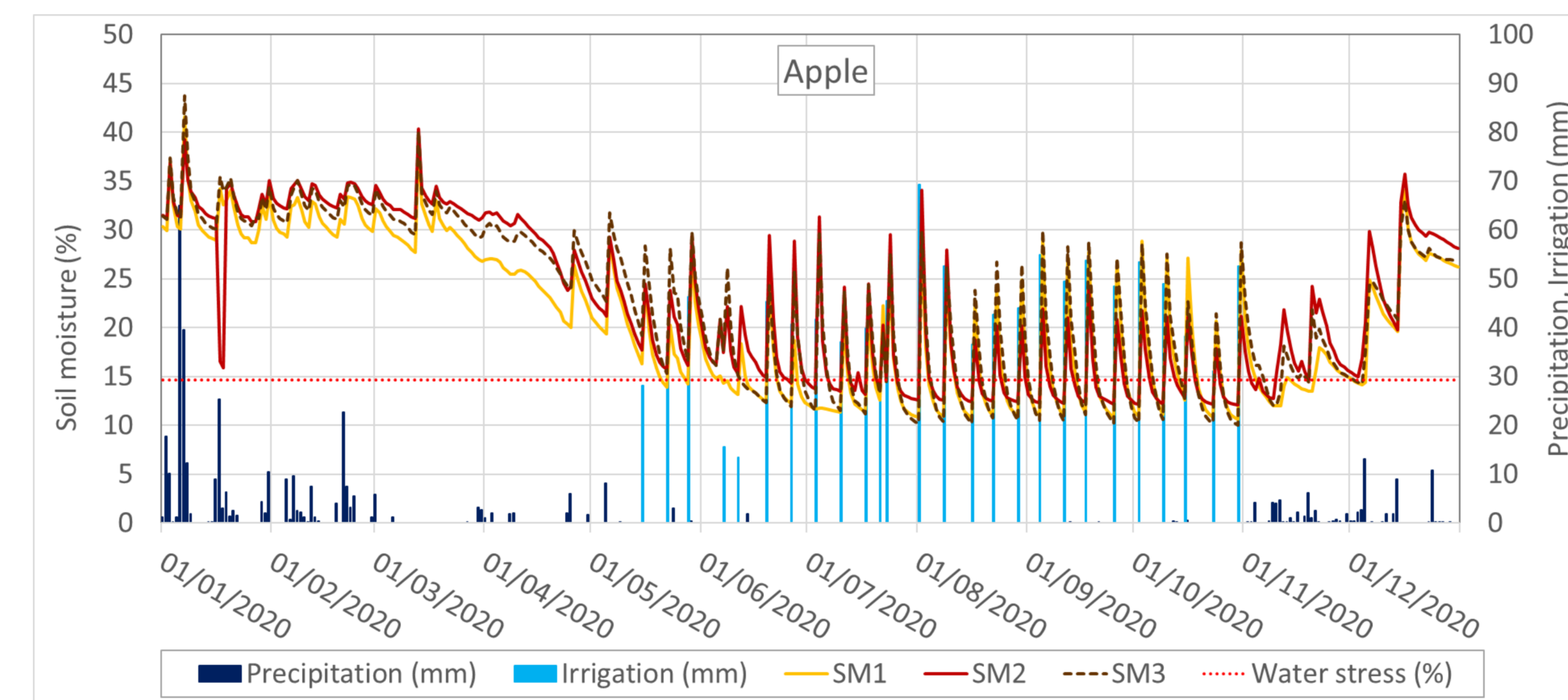
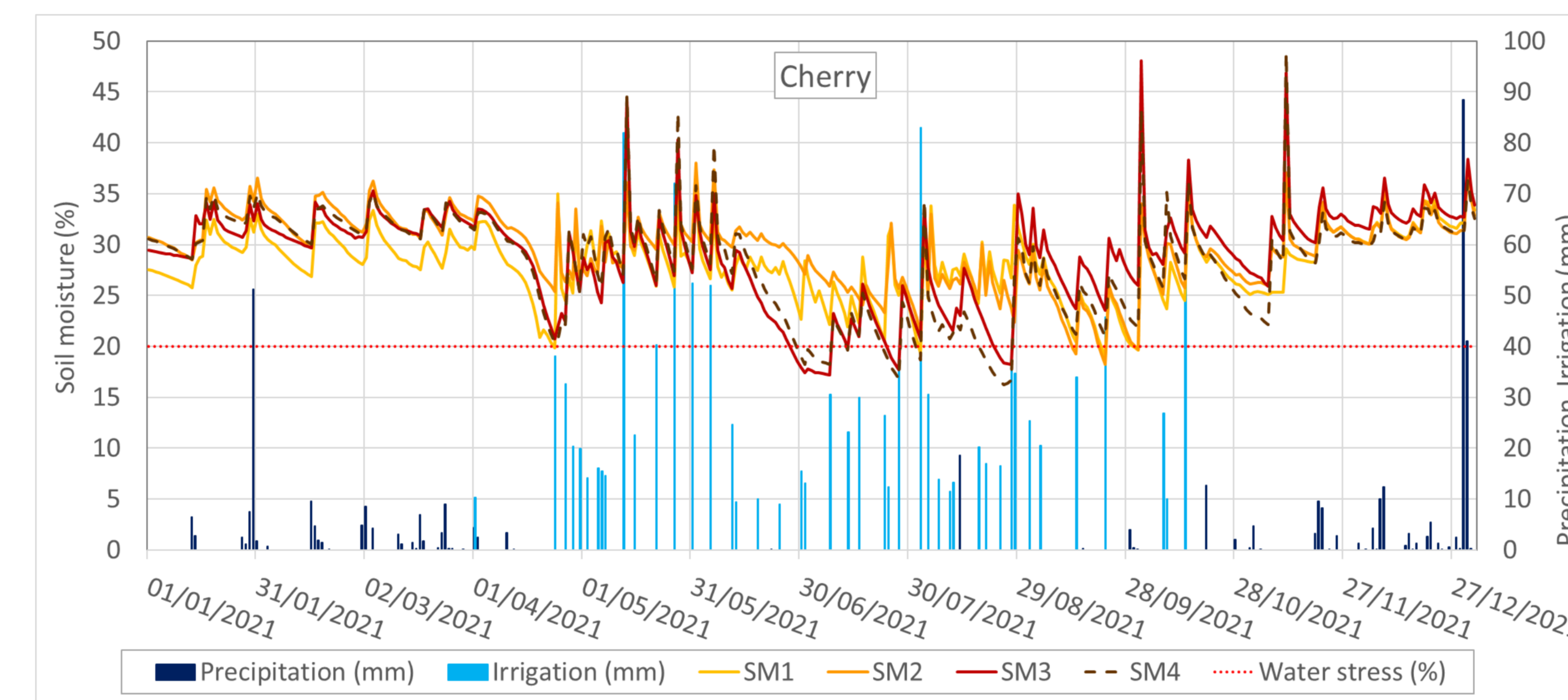
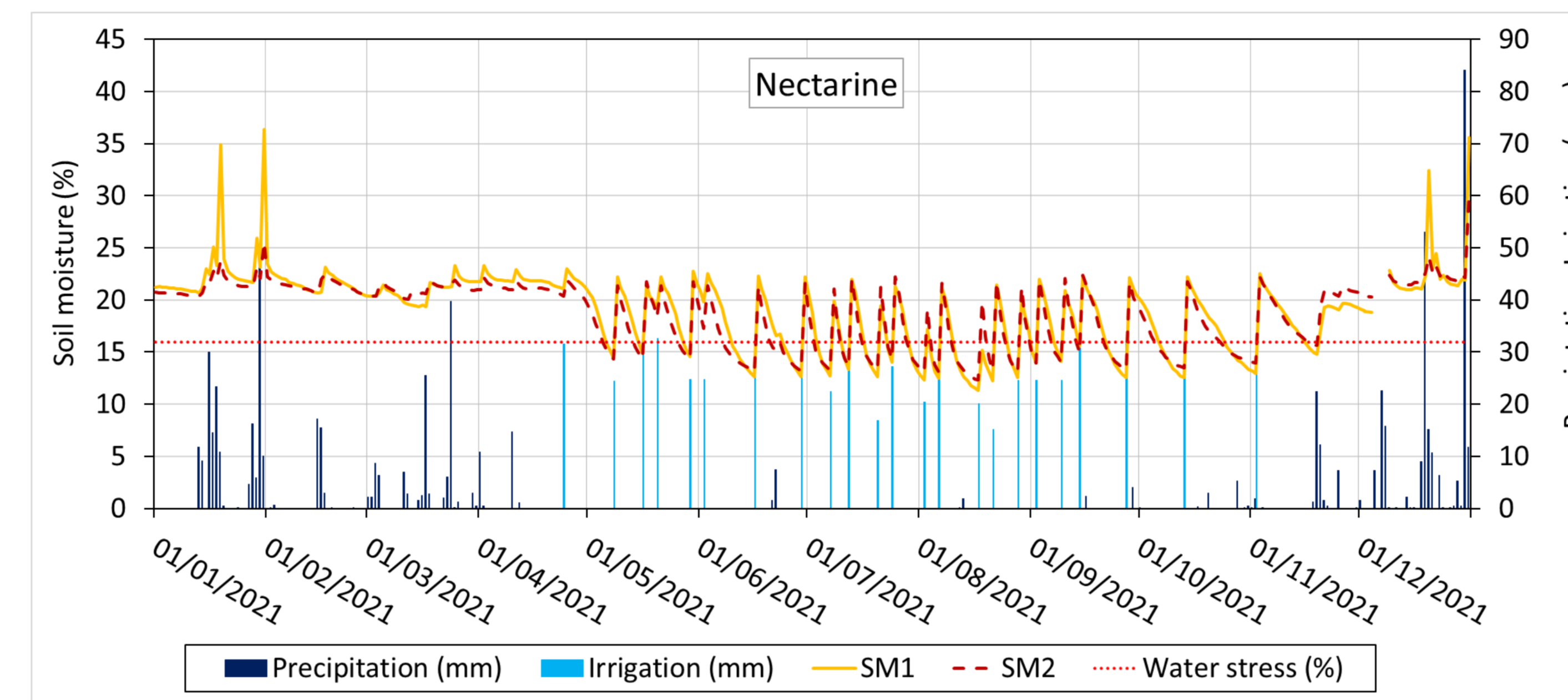
- Mountain terraces support climate-friendly agricultural production environments in hot Mediterranean regions.
- Traditional dry-stone terraces have often highly variable, stony soils, with non-uniform plant spacing and canopy cover.
- This variability constraints the use of sensor-based smart-farming technologies.
- The objectives are to assess differences in observed soil moisture between sensors and to develop guidelines for irrigation scheduling support.



Location of mountain terraces with soil moisture and meteorological sensors for irrigation scheduling of with nectarine, plum, apple and cherry in Troodos Mountains of Cyprus.

RESULTS

- Soil moisture was observed with Truebner SMT100 or Decagon/METER Group 5TM sensors, recorded hourly and transmitted to the data server.
- Rootzone soil moisture was observed with different sensor configurations in four terrace fields: 2 – 4 locations and 2 – 7 depths (profiles).
- The highest soil moisture heterogeneities were observed in the cherry field..
- A maximum soil moisture differences of 170 mm between two profiles (3 sensors each) was observed after irrigation.
- The average soil moisture of four profiles (12 sensors total) showed expected water balance behaviour.
- Changes in the location of the drippers or micro-sprinklers affect the observations.



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