

## Frost Protection

*Overhead irrigation system has been used successfully to protect crops during radiation frosts\*.*

*The emitters create a thin layer of water above the canopy.*

*The water freezes and the latent heat (80 calories per 1 gram of water that freezes), released during the freezing process of the water protect the crop by keeping its temperature above freezing.*



*Frost protection in vineyards (Portugal)*

*\* Radiation frost (hoar frost) occurs on clear nights with little or no wind when the outgoing radiation is excessive and the air temperature is not necessarily at the freezing point.*

## Technical Specifications

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- **High uniformity is a must in order to distribute the water evenly on the protected area.**
  - *CU above 84%, DU above 75% are recommended.*
- **The required rain ratio varies between 2-4 mm/h.**
  - *Although in lower temperature rain ratio should be higher.*
- **Speed of revolution is proportional to the rain ratio - The lower the rain ratio is, the higher the speed of revolution should be.**
  - *The emitter should complete a full revolution in less than 60 seconds, (a full revolution in 30 - 40 seconds is ideal for low flow rate emitters).*
- **The system should be operated when the temperature drops below +2°C - 0°C (the plant tissue liquid freezes at a lower temp. than water).**

**Shutting the irrigation system during frost may cause serious damage to the trees.**

## Applicable Products

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**Tavlit offers a full range of emitters ideal for frost protection, combining high uniformity, low to medium flow rates, large wetting diameter, and high revolution speed, operating on low pressure- which enables to save energy and operate large areas simultaneously**



**Model 861 in overhead installation**

- **Models [861](#), [841](#), [831](#) & [801](#) minisprinklers can be used for overhead frost protection using long P.V.C tubes.**
- **An irrigation system with [4462](#), [4444](#), [4442](#) sprayers can be used for protection of deciduous trees like apples due to the narrow canopy.**
- **An irrigation system with [920](#), and [961](#) sprinklers can be used for overhead frost protection using larger spacing.**