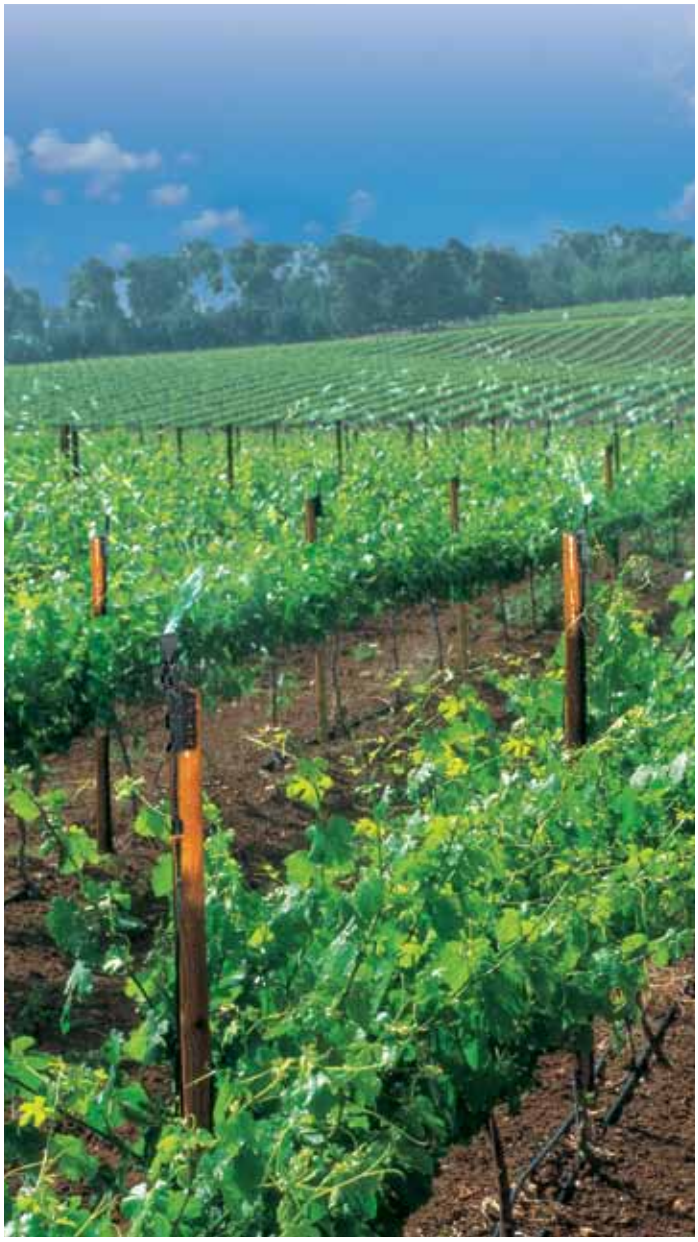
NAANDANJAIN
Irrigation

FLIPPER

The most economical frost protection for vineyards

STRUCTURE AND FEATURES

- Spreads water in a very long and narrow strip, targeting the vine rows only
- Saves up to 70% of water compared to conventional overhead systems
- Large droplets minimize the cooling effect when starting the system
- Safe operation under frost conditions
- Optional flow regulator for hilly terrain or long rows
- Low installation and pumping costs
- Dry pathways reduce waterlogging and facilitate access for workers and equipment soon after operation



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COMPONENTS

Flipper

Optional protecting box

Stabilizer

Flow Regulators

25 l/h | 35 l/h | 43 l/h

TECHNICAL DATA

- Recommended working pressure: 2.0-3.0 bar
- Flow rate: 25-45 l/h
- Filtration requirements: 130 microns (120 mesh)

TIPS FOR INSTALATION & OPERATION

- Ensure that the water stream is in line with the vine rows.
- Anchor the Flipper firmly to the post.
- Start the system before the critical damaging temperature is reached.
- To decide on a suitable start-up temperature, consider the dew points (see chart below).
- Stop the system only when the outside temperature is constant above 1°C.

PERFORMANCE TABLE

Nozzle color	Flipper color	Flow rate (l/h) (at 2 bar)	Maximal recommended spacing (m) between flippers**
Black	Black	25*	6.0
Violet	Black	35*	7.0
Brown	Brown	43*	9.0

* For regulated unit: 2.5-4.0 bar
** When Flippers mounted 1.0 m above the target

AMOUNT OF WATER (m^3/ha/hr) REQUIRED BY FLIPPER FROST PROTECTION SYSTEM* AND WATER SAVING COMPARED TO CONVENTIONAL 40 m^3/ha/hr SYSTEM

Nozzle color	Vineyard with 3.0 m row spacing	% of water saving	Vineyard with 2.5 m row spacing	% of water saving
Black	14.0	65	16.0	58
Violet	16.6	58	20.0	50
Brown	16.0	60	19.0	52

* When Flippers are at maximal spacing, at 2 bar pressure

RECOMMENDED START-UP TEMPERATURES FOR FROST PROTECTION AT VARIOUS DEW POINTS

Dew point temp. (°C)	-9.5	-9.0	-8.5	-8.0	-7.5	-6.5	-6.0	-5.5	-5.0	-4.5	-4.0	-3.5	-3.0	-2.0	-1.5
Start-up temp. (°C)	+4.0	+4.0	+3.5	+3.5	+3.0	+3.0	+3.0	+2.0	+2.0	+1.5	+1.5	+1.0	+1.0	+0.5	+0.5

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