

International Patent Pending

A Single System for Controlling Temperature, Humidity & Pests

Automated Cooling, Humidification & Pest Control System

CoolPescon®

- **One machine with three functions** of cooling, humidification and pest control
- Will not wet equipment
- Uses Semi-Dry Fog®*



Cooling and humidification mode



Pest control mode

*Uses fine fog that evenly distributes droplets between a non-wetting size of 10 and 30 um.



“The Fog Engineers”
H. IKEUCHI & CO., LTD.

What is CoolPescon®?

CoolPescon® is a innovative plant cultivation system that will automatically cool, humidify, and spray pesticide inside a greenhouse.

Semi-Dry Fog® evaporates completely and evenly!

Maximum cooling effect

-7 °C

Cuts costs by automating pest control!

Zero labor cost

Maximum pesticide costs reduced to

1/3 or less

Contributes to increases in steady yield!

By controlling temperature and humidity deficit

Promotes photosynthesis

Automatically switches between two modes of operation.
Perform three functions of cooling, humidification and pest control with a single system.



Cooling and humidification mode

This operation mode automatically cools and humidifies the greenhouse using very fine particles of Semi-Dry Fog®.

- Improves growth in summer time!
- Enhances the efficiency of photosynthesis by controlling the temperature and humidity!
- Makes year-round cultivation much easier!
- Reduces labor in summer heat!



Pest control mode

This operation mode automatically sprays pesticide at a preset time.

- Reduces the time and labor required for pest control!
- Significantly reduces pesticide consumption!
- Prevents health hazards by automatic unmanned pest control!
- Makes preventive pest control simple!

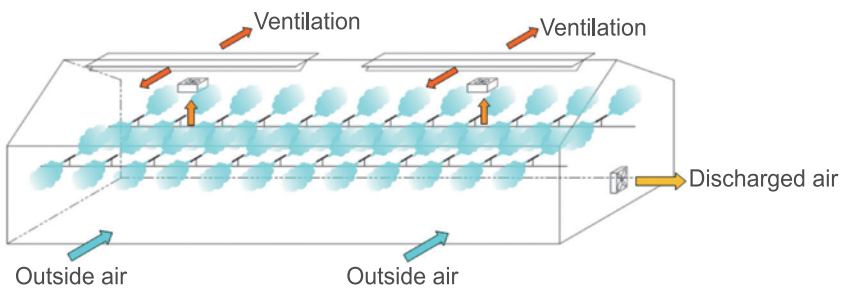
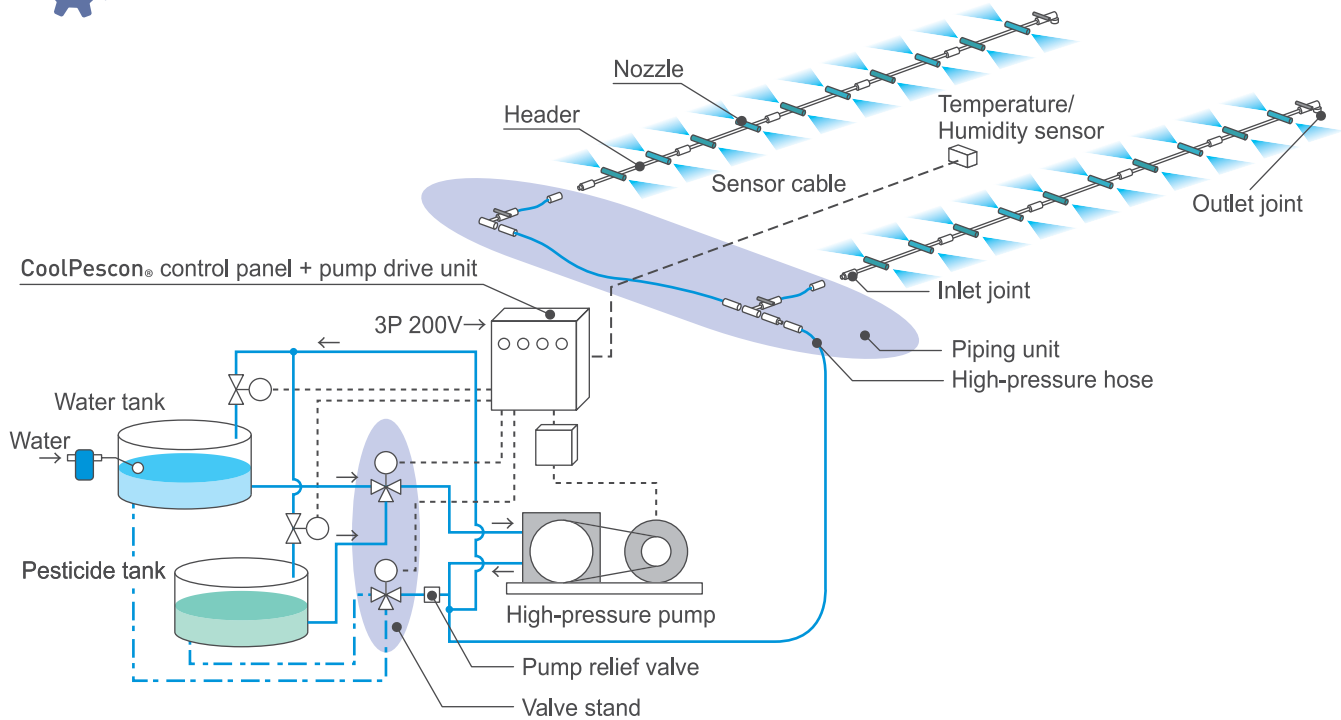


Security with automatic cleaning (flushing)

The piping system is automatically cleaned after spraying pesticide. This prevents residual pesticides from mixing with other modes.



System Configuration



The cooling and humidification mode of the CoolPescon® works best when accompanied with proper ventilation.

Header



Unique nozzle with a low chance of clogging



Stainless steel header or plastic header

Ancillary Equipment



High-pressure pump



Control panel



Temperature/Humidity sensor



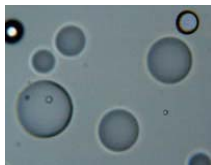
Automatic cooling and humidification using Semi-Dry Fog®



Features Semi-Dry Fog®

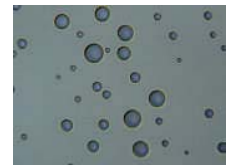
Using Semi-Dry Fog®, a fog finer (average particle diameter of 10 to 30 μm) than that of conventional fog coolers, cooling is performed efficiently without wetting plants and equipment.

Conventional fog cooler



Large fog particles on leaves do not evaporate completely and develop into droplets of water, making them more difficult to evaporate. This also makes the ground wet.

CoolPescon®



Although fine particles of water adhere to leaves and trichomes on growth points, they quickly evaporate, producing the cooling and humidification effects. The ground does not become wet.



Operation Easy to use

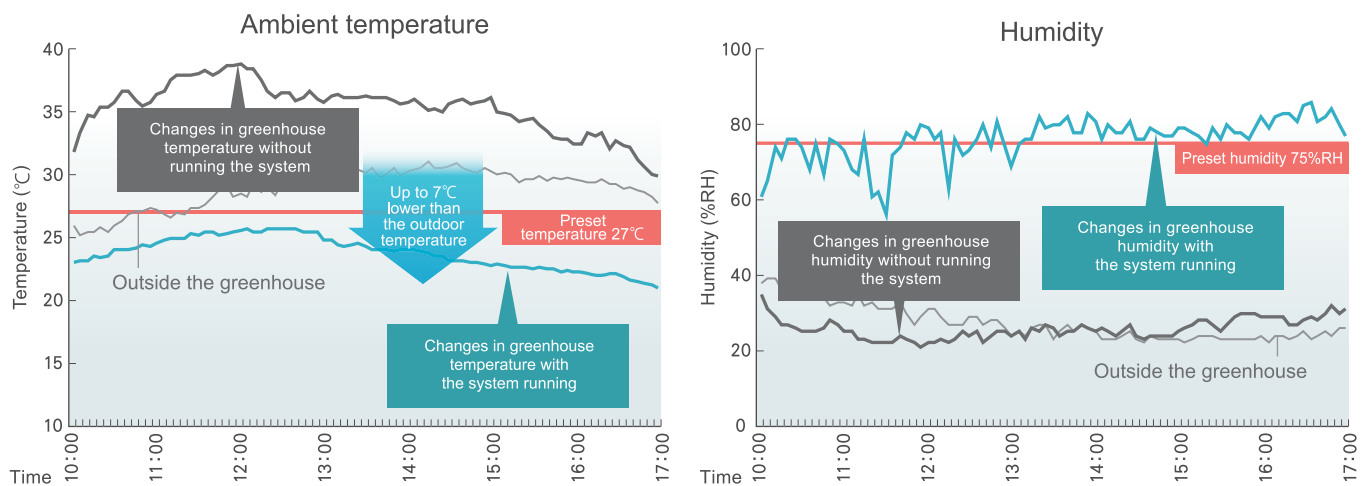
The system can be used easily by filling the water tank and setting the operation time, target temperature and target humidity.



Verification of Effectiveness

Preset temperature and humidity attained

The changes in the greenhouse environment have been recorded with and without the cooling and humidification mode. From the charts for the greenhouse with the cooling and humidification mode enabled, it can be seen that the temperature and humidity set at the start of the operation have been reached.



Measurement conditions	Greenhouse size: 10a (3.3 m eaves height) Measurement date: May 2 Crop: Tomato	Max. temperature (outdoor): 31°C Min. humidity (outdoor): 22%RH	Measurement time: 10:00 to 17:00 Spray volume: 670 liter/h
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❖ Effect ①

The rise in summer temperature has been reduced to improve growth.

❖ Effect ②

The efficiency of photosynthesis has been improved by temperature and humidity control.

❖ Effect ③

Crops that are not fit for year-round cultivation can be cultivated throughout the year.

Effective for increasing steady yield

FAQ

Q. Why doesn't the system make things wet?

A. Because the average size of fog particles produced by CoolPescon® is very small at 10 to 30 μm, the fog evaporates before wetting objects. The heat of evaporation consumed in this process cools down the ambient air.

Q. Will the system clog?

A. Clogging is prevented by a combination of a proprietary nozzle developed by IKEUCHI, the leading nozzle manufacturer in Japan, and a high-precision control method. Therefore, the risk of clogging is significantly and simply reduced by replacing filters regularly.

Q. Is the system effective only in summer?

A. The system comes with a high-precision humidity control feature superior to conventional fog coolers. It is possible to further improve productivity by utilizing the system as a humidity control system in autumn and winter.

Pest Control Mode



The pest control work is more efficient by having the system automatically switch to the pesticide spray operation at night.



Features Three advantages

Prevents health hazards

Because it is possible to spray pesticides at night when nobody is in the greenhouse, there is no concern for workers inhaling pesticides as in the case of manual spraying.

Enables preventive pest control

Automated mode allows pest control without requiring workers to risk breathing toxic fumes, or having to deal with changing out systems to run pesticides.

Reduction of pesticide consumption

With our pest control method of filling the greenhouse with pesticide fog, pesticide consumption can be reduced to **one-third or less*** compared to power spraying.

*Pesticide consumption depends on greenhouse specifications and crop.



Operation Easy to use

The system can be easily used by preparing the pesticide in the tank and setting the time for spraying, etc.



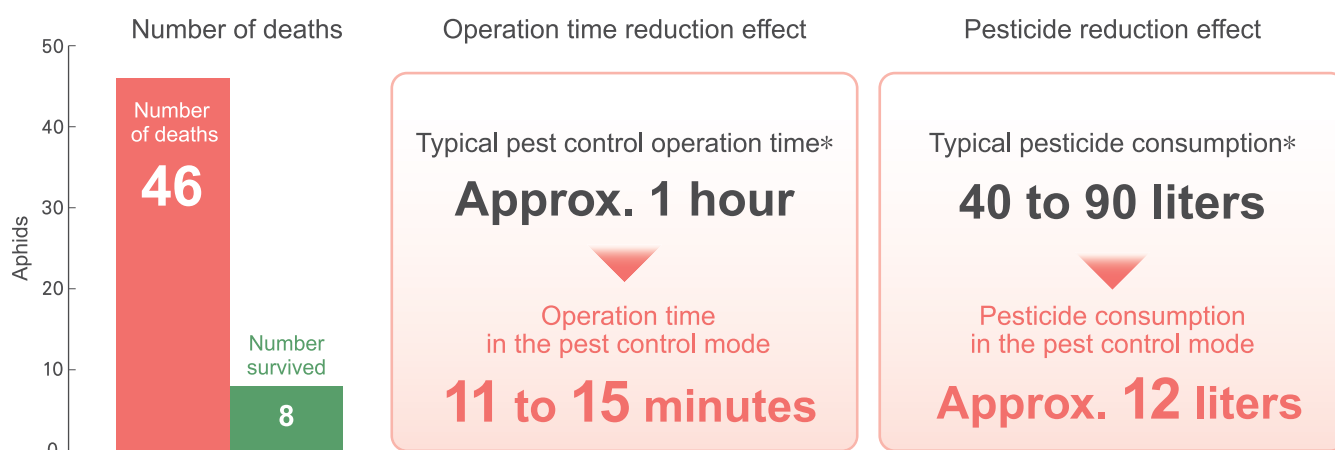
- Use a systemic pesticide.
- For the dilution ratio, follow instructions for the pesticide used.
- Use emulsions and wettable powders, and prevent infiltration of unsolved and solid substances.
- Do not enter the greenhouse while the pest control mode is in effect.



Verification of Effectiveness

Aphid killing effect and pesticide reduction effect

A compound leaf was collected and isolated in a bag after **11 minutes** of operation in the pest control mode. After storing it for two days at room temperature, the number of aphid deaths on the leaf was counted. An excellent pest control effect has been proven with a short spray time and small amount of pesticide.



* Greenhouse size of 3a, with a power sprayer and an operator

Measurement conditions	Greenhouse size: 3a (4.7 m eaves height)	Measurement date: January 20 Crop: Strawberry	Greenhouse temperature at the start of measurement: 31°C Greenhouse humidity at the start of measurement: 22%RH
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- ❖ **Effect ①**
The pest control operation was completed in a very short time.
- ❖ **Effect ②**
Pesticide consumption dropped significantly in comparison with a power sprayer.
- ❖ **Effect ③**
The pest control operation can be performed during non-working hours by setting the timer.

Effective toward enhancing the efficiency of pest control operation

FAQ

Q. Does the pesticide remain in the piping system?

A. Because the piping system is automatically flushed after every pesticide spray operation, there is no possibility that the pesticide remains in the nozzles or piping system. The cooling and humidification mode can be used without any concern, immediately after the pest control mode.

Q. Why do leaves become wet with the “fog that does not wet things”?

A. In the pest control mode, the humidity is controlled to a high level that is not ordinarily possible in the cooling and humidification mode. For this reason, the pesticide attaches to the trichomes on the plant leaves, pests and funguses.

Q. Does equipment get wet?

A. With the precision spray control in a high humidity range, it is not possible for equipment in the greenhouse to be soaked. However, the pesticide may adhere to equipment depending on how it is arranged. If this happens, wipe off the pesticide after spraying.



Controls in Each Mode

Cooling and humidification mode

Temperature & Humidity control

- Spraying operation is performed intermittently within the preset period of time at or above the preset temperature, and at or below the preset humidity.

Humidity deficit control (optional)

- Spraying operation is performed intermittently within the preset period of time at or above the preset temperature and humidity deficit.

Pest control mode

Humidity control

- In order to make the pesticide efficiently adhere to the plants, the pesticide is sprayed under intricate automatic control at night.

Flushing operation before switching the mode

- In switching operation from the pest control mode to the cooling and humidification mode, the piping system is flushed with water to prevent spraying the pesticide in the cooling and humidification mode.

Specifications of the products and contents of this leaflet are subject to change without prior notice for purpose of product improvement.

Please feel free to send any inquiry, request for information or quote on this product to the contacts below.



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