Fog Dragon

MOBILE BIOMASS BOILER
SOLUTION TO COMBAT SPRING FROST IN VINEYARDS AND ORCHARDS

PROTECT YOUR VINES AND ORCHARDS AGAINST FROST

EFFECTIVE IN BOTH WHITE AND BLACK FROST

Warms, dries and insulates - average temperature rise +3°C

ECOLOGICAL

Use of only biofuel (damp hay and straw, wood, etc.) no other energy apart from that of the tractor (no fuel oil, gas, electricity or water)

ECONOMICAL

Extremely low running costs, only a few dozen euros worth of biomass per night and no specific maintenance required

SIMPLE

1 tractor + 1 person = from 3 to 8 hectares of protection

SELF-SUFFICIENT

Not dependent on suppliers of gas, fuel, candles, electricity, etc.

EFFECTIVE IN BOTH WHITE AND BLACK FROST

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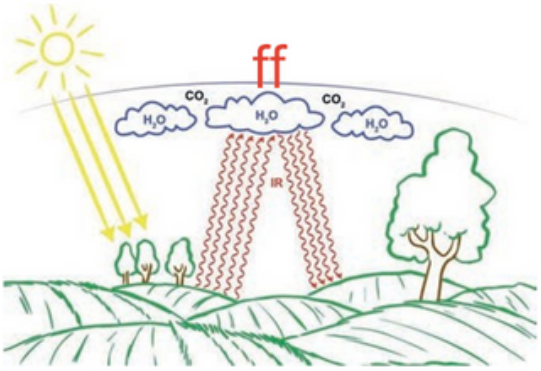
SCIENTIFIC EXPLANATIONS OF OUR FROST PROTECTION SOLUTION

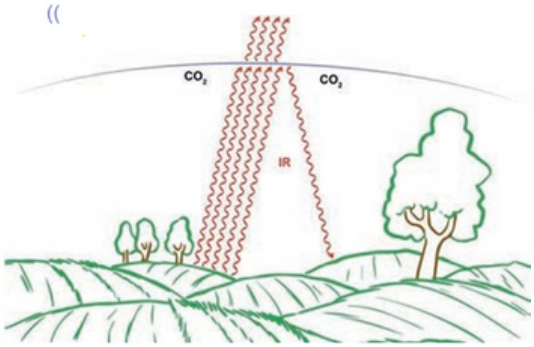
In view of the increasing frequency of spring frosts and their growing impact, both economically and technically, many producers and institutions are looking for protection solutions.
There are several techniques available in the field today.
Our mobile biomass boiler solution is both very old and very innovative.
Here is some scientific information explaining the effectiveness of the Fog Dragon.

To protect ourselves against spring frost, we need to be aware of the phenomenon and the reasons for it. In what follows, we explain the physical and meteorological background to the emergence of spring frost. This will help you understand why the Fog Dragon protects plants effectively.



The atmosphere allows the sun's rays to pass through, sending light and heat towards the Earth. The Earth's surface absorbs this light and heats up. Once heated, it emits heat in the form of invisible infrared rays that carry thermal energy.Certain gases in the atmosphere, such as water vapour (H2O) and carbon dioxide (CO2), absorb these infrared rays and reflect some of them back towards the Earth. This phenomenon, known as the greenhouse effect, keeps the planet warm.

The CO2 present in clouds is responsible for 36 to 70% of the heat reflected back to earth. As a result, there is more heat on cloudy nights than on starry ones. In spring, the heat stored during the day can very quickly escape on clear nights, causing the phenomenon of spring frost. The heat lost during starlit nights (between 2,500 and 3,800 megajoules/hour per hectare) is almost impossible to replace, so everything must be done to avoid this loss.



Our Fog Dragon solution protects crops right from the start. As well as producing a significant amount of heat (through combustion), it surrounds the plants with water vapour and carbon dioxide to protect them. The fog created by the machine spreads evenly and effectively reduces heat loss by taking on the role of a 'cloud'. A single Fog Dragon can protect between 3 and 8 hectares, depending on the intensity of the frost.

The Fog Dragon not only heats the plant, it also dries it out and prevents it from cooling down.

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OPERATION OF THE MOBILE BIOMASS HEATER

The biomass burns inside the boiler's combustion chamber.
A high-pressure pump injects water into the hot flue gas stream.
Hot air is used to combat the cold, while smoke and water vapour reduce heat loss to the ground.
The water vapour increases the specific weight of the combustion gases released to keep this insulating medium close to the surface and spread the calories.
The operating principle is to start combustion when the temperature is close to 0°C.
Then, simply turn the machine on in the vineyard or orchard for the duration of the frost.
The boiler is towed by a tractor, ejecting smoke and heat 15 to 30 metres either side to ensure optimum protection.
It is advisable to return to the starting point every 12 to 20 minutes, depending on the intensity of the frost.



TABLE OF RECOMMENDATIONS FOR USE BASED ON FEEDBACK FROM USERS

ORCHARDS :

TEMPERATURE ° CELSIUS	FROM 0° TO -2°	FROM -3° TO -4°	LESS THAN -5°
SURFACE TO PROTECT	8 Ha	6-8 Ha	4-6 Ha
SPEED	8 kph	7 kph	6 kph
SPREADING WIDTH	30-60 m	30-40 m	30-40 m
FREQUENCY OF PASSAGE	20 min	16 min	12 min

VINES :

TEMPERATURE ° CELSIUS	FROM 0° TO -2°	FROM -3° TO -4°	LESS THAN -5°
SURFACE TO PROTECT	6-7 Ha	4-5 Ha	3-4 Ha
SPEED	8 kph	7 kph	6 kph
SPREADING WIDTH	30-60 m	30-40 m	30-40 m
FREQUENCY OF PASSAGE	20 min	16 min	12 min

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READ THE TESTIMONIALS OF FRUIT AND WINE GROWERS WHO HAVE CHOSEN THE FOG DRAGON ON OUR WEBSITE : WWW.VERTPROTECT.FR

FOG DRAGON VITI 840 FOR VINES >2M AND ORCHARDS

FOG DRAGON VITI 830 FOR VINES >1.70M AND ORCHARDS

FOG DRAGON 1550 FOR VINES >2.50M AND ORCHARDS

Fuels :

- **wood - souchot - piquets (dry for heat production)**
- **hay - straw - green waste (moistened for smoke production)**

TECHNICAL SPECIFICATIONS OF THE MACHINE

	DRAGON VITI 840	FOG DRAGON VITI 830	FOG DRAGON 1550
COMBUSTION CHAMBER DIAMETER	838 mm	838 mm	1550 mm
COMBUSTION CHAMBER LENGTH	1430 mm	1430 mm	1430 mm
WATER TANK VOLUME	310 L	310 L	400 L
TYRE SIZE	10.0/75 – 15.3		15.0/55-17
WIDTH	1450 mm	1270 mm	2050 mm
LENGTH	3500 mm	4000 mm	3400 mm
HEIGHT	1870 mm	1870 mm	2560 mm
WEIGHT	1160 kg	1200 kg	1920 kg
SMOKE OUTLET HEIGHT	1.25 m	0.75 m	1.50 m
POWER REQUIRED	45 hp		
DIAL SHAFT	6-spline PTO shaft 13/8" ~ ø35		
PTO ROTATION	540 rpm		
TURBINE ROTATION SPEED	2160 rpm		
TURBINE AIR FLOW	147 m^3/min		

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