

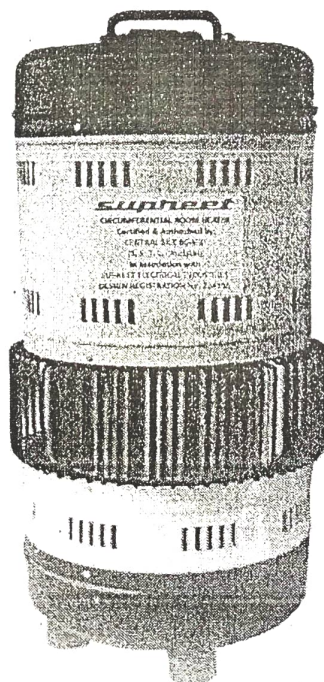
Circumferential Room Heater for Silkworm Rearing

Maintenance of Optimum room temperature during silkworm rearing is essential for successful cocoon crop.

Low temperature affects the growth of silkworms and their qualitative and quantitative characters especially in winter and rainy seasons. Usage of artificial means like electric heaters helps to raise the temperature. The new

Circumferential Room Heater not only scores over the conventional ones because of its special features, but also user-friendly.

Silkworm being poikilo thermic in nature the impact of temperature is more profound on its developmental stages. Extremes of temperature have a substantial negative impact and undermine the various biochemical events vital to the insect. Obviously, low temperatures, below the critical threshold point (20°C), become a cause of serious concern resulting in abnormalities like retardation of growth and development, occurrence of diseases etc., Affecting the qualitative and quantitative characters. During egg production, it delays moth emergence and promotes irregular emergence. Moths become lethargic and mate improperly, affecting the fecundity and fertility significantly.



*Circumferential Room Heater
Design Reg. No. 234195*

It is common to experience low to very low temperatures and sometimes, hostile chill weather during winter and monsoon months when the temperature falls far below the optimum level, it becomes imperative to use additional equipments / improvisations to raise the temperature to the desired level and maintain it constantly. Burnt cinders and electric room heaters are most commonly employed for boosting the temperature. But, the commercially available room heaters have the following inadequacies:

- * They cannot be operated continuously due to simple heating element. The coils, if used for prolonged periods, sag and fuse automatically.
- * Dissipation of heat is unidirectional and hence, not uniform.
- * Either simple steel reflectors or low capacity blowers are used to radiate the heat which often burn motor due to malfunctioning.
- * Inadequate earthing facility, power leakage, prone to shock etc., make the heaters inefficient and call for regular maintenance.

Conventional heaters vs CRH - A Comparison		
Specifications	Conventional Heaters	CRH
Wattage	1 and 2 kw	1 and 2 kw
Heating Coil	Ordinary element	Linear circular
Heat Dissipation	Simple reflectors Or fans	Big circular blower
Motor capacity	Very low cap	1/10 H.P.
Motor Protection	Not available	Fan cooled
Motor Rating	Limited Durations	Heavy duty continuous Rating
Maintenance	Frequent	Minimum
Safety	Power leakages And shock prone	No power leakages totally shock proof

The silkworm seed technology laboratory, Bangalore, realising the need and the inadequacies prevailing in the present heaters, has developed a custom designed electric heater named Circumferential Room Heater (CRH) in collaboration with M/s. Supreet Electrical Industries, Bangalore.

Heater (CRH):

The new CRH has the following distinct features to outsmart the conventional heaters:

2kw and 1 kw wattage: Heating coil provided with capillary thermostat. The Thermostat maintain's automatically the said temperature.

Heat Dissipation: A heavy duty motor of 1/10 HP capacity. Mounted on a separate shaft, makes the circular blower atop the coil, rotate at medium speed and disperse the hot air uniformly in all directions (360°). The same temperature (+0.5°C) is maintained in the entire room

around a radius of 8' to 10'. The heater performs efficiently in a room with 15' L X 15' B X 12' H dimension. However, depending on the temperature requirement, rooms of bigger dimensions should be installed with more numbers of heaters.

The motor is protected adequately by using an air cooler fan and the heater can be operated non-stop without interruption.

On the contrary, the heat dissipation is not uniform in conventional heaters. The temperature variations as high as +5°C. The temperature is very high in the proximity of three to four feet distance, while it reduces gradually with the increase in distance. Further, the heat is emitted in a unidirectional way and hence, the temperature behind the heater remains quite low.

Temperature gain: Time required for maximum temperature gain is just one to two hours depending on the relative humidity (RH). At low RH levels, the gain is faster and higher and vice-versa.

For instance, 60% RH-In one hour the temperature increases from 23°C to 32°C and remains constant throughout, when the RH is 85%, the temperature is attained in about one and a half hour and from 23°C it touches a maximum of 28°C

which is maintained constantly (results obtained when the heater was tested in a room of 20' L X 13.5' B X 12' H dimension)

Body: the body of the CRH is fabricated out of the sheets cold rolled, cold anealed and powder coated, making it rust proof. The unit is available in two attractive colours and is portable. It is 50 cm in height, 25 cm in diameter and weighs about 13 kg. The heater is mounted on rubber cushions.

How to use?

- * The heater is to be connected to a 15 amps 3 pin socket and place in the middle of the room. Keep the doors and windows closed.
- * Switch on the heater and adjust the thermostat knob for required temperature by turning the knob.
- * The heater can run continuously for more than 24 hours with a temperature gain of about 10°C, Depending upon the dimension of the room and ambient conditions.

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