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| **Title:** | Cooling Load Calculation for Optimized Agro Product Preservation in Cold Storage Using Historical Weather Data | | |
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| **Abstract:** |  |
| Environmental control is needed to keep perishable agricultural products like fruits and vegetables fresh. This study investigates a cold storage system that utilizes historical weather data to optimize cooling load calculations. The findings reveal that peak cooling loads occur during the warmer months, particularly in March and April, while minimal fluctuations are observed from December to February. Temperature variations between 22°C and 28°C show a fluctuation of over 5% in certain months, with February exhibiting the highest variation (34%). The system, maintaining an internal temperature of 10°C with optimal humidity (85 95%), has a total capacity of 38.83 m³. The study highlights that 21-year averaged data provides the most consistency, compared to 1-year and 10-year data. The results emphasize the importance of long-term data analysis in optimizing agro product preservation in Bangladesh. | |