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| Seminar Title | : DESIGN AND DEVELOPMENT OF INFRARED-ASSISTED HYBRID GREENHOUSE SOLAR DRYER FOR DRYING OF STRAWBERRIES |
| Speaker | : Shafat Ahmad Khan (Rollno : 919fp5053) |
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| Venue | : CH-306 Department of Food Process Engineering |
| Date and Time | : 25 Sep 2024 (11:30 AM) |
| Abstract | : Strawberries (<i>Fragaria x ananassa</i>) are highly perishable berries, experiencing global post-harvest losses of up to 50 %, which significantly impacts the economy and diminishes their nutritional value. Conventional methods to mitigate these losses, including thermal treatments, refrigeration, irradiation, and fungicides, are under increasing concerns due to their environmental and health impacts, prompting researchers to explore safer alternatives. To overcome these limitations, an innovative Infrared (IR)- assisted Greenhouse Solar Dryer (IRGHD) was designed and developed to reduce the post-harvest losses in horticultural products like strawberries and pears. The IRGHD integrates natural and forced drying modes within a greenhouse, optimizing conditions for moisture evaporation while maintaining product quality. The key features of the dryer include controlled temperature and humidity, a solar tree for energy, and infrared lamps for enhanced heating. The system was evaluated through energy and exergy analyses of dried strawberries and pears, demonstrating effective energy utilization and high performance. The experimental setup, comprising a 3.5×2.5×2.5 m dryer with UV-treated polycarbonate sheets, aims to offer a sustainable and economically viable drying solution for small-scale farmers by improving efficiency and reducing energy consumption. The drying experiments were carried and the drying data was fitted in drying models to study the drying characteristics. |