Synopsis Seminar	
Seminar Title	: Development of Resistant Starch Rich Breakfast Cereal from Kodo millet (Paspalum scrobiculatum) using Dry-heat Process Technology
Speaker	: Abhishek Gaurav (Rollno : 517fp6004)
Supervisor	: Rama Chandra Pradhan
Venue	: CH-113 (Department of Food Process Engineering)
Date and Time	: 19 May 2025 (16.45 hr)
Abstract	: Kodo millet (<i>Paspalum scrobiculatum</i>), a climate-resilient crop rich in iron and low glycemic index, holds immense potential for value-added breakfast cereals. However, its flour has few functional limitations, such as poor flowability, high cohesiveness, and low expansion, hindering its direct use in dry blending and extrusion. Structural degradation during hulling and milling reduces resistant starch (RS) and amylose content, compromising processing and textural quality. This research investigates dry-heat processing as a sustainable, chemical-free method to enhance the functional and structural attributes of Kodo millet for breakfast cereal applications. The study explored two key dry-heat methods: roasting (pan and salt-bed) and convective hot-air oven treatment. Kodo kernels were roasted at 15 and 20% initial moisture contents (IM). Hulled flour underwent dry-heat treatment (DHT)at 130 °C for 2-4 h. Roasting improved starch morphology, producing honeycomb-like structures, increased amylose content (up to 28.62%), and higher RS (up to 14.49%) while reducing hydration properties, compared to native and salt-bed roasted samples. X-ray diffraction revealed a shift from A-type to a mixed A-V polymorph structure, particularly in pan-roasted samples, indicating enhanced crystalline reorganization. Pan roasting at 20% IM (PR20) resulted in flour with superior bowl-life crispiness (0.5 Nmm), reduced water activity (0.467), and favorable texture for ready-to-eat cereals. The dry-heat treated flour using a convective hot-air oven at a higher IM (20%) for a thermal prolongation period of 4 h (DHT20-4h) showed significant enhancement in amylose (28.63%), resistant starch (45.29%), and relative crystallinity (20.62%) compared to untreated flour. Its crystallinity remained A-type, while flour quality was improved for extrusion. The extruded breakfast cereal (BC-PHT) from a mixture of DHT Kodo millet flour with hybrid maize flour (7030) exhibited lower bowl-life crispiness (0.27 Nmm) and more amorphous B-type sites com