

## **Farm Machinery and Equipment-II 3(2+1)**

### **Theory:-**

Introduction to plant protection equipment – sprayers and dusters. Classification of sprayers and sprays. Types of nozzles. Calculations for calibration of sprayers and chemical application rates. Introduction to interculture equipment. Use of weeders – manual and powered. Study of functional requirements of weeders and main components. Familiarization of fertilizer application equipment. Study of harvesting operation – harvesting methods, harvesting terminology. Study of mowers – types, constructional details, working and adjustments. Study of shear type harvesting devices – cutter bar, inertial forces, counter balancing, terminology, cutting pattern. Study of reapers, binders and windrowers – principle of operation and constructional details. Importance of hay conditioning, methods of hay conditioning, and calculation of moisture content of hay. Introduction to threshing systems – manual and mechanical systems. Types of threshing drums and their applications. Types of threshers- tangential and axial, their constructional details and cleaning systems. Study of factors affecting thresher performance. Study of grain combines, combine terminology, classification of grain combines, study of material flow in combines. Computation of combine losses, study of combine troubles and troubleshooting. Study of chaff cutters and capacity calculations. Study of straw combines – working principle and constructional details. Study of root crop diggers – principle of operation, blade adjustment and approach angle, and calculation of material handled. Study of potato and groundnut diggers. Study of Cotton harvesting – Cotton harvesting mechanisms, study of cotton pickers and strippers, functional components. Study of maize harvesting combines. Introduction to vegetables and fruit harvesting equipment and tools.

### **Practical:-**

Familiarization with plant protection and interculture equipment. Study of sprayers, types, functional components. Study of dusters, types and functional components. Calculations for chemical application rates. Study of nozzle types and spread pattern using patternator. Familiarization with manual and powered weeding equipment and identification of functional components. Study of fertilizer application equipment including manure spreaders and fertilizer broadcasters. Study of various types of mowers, reaper, reaper binder. Study of functional components of mowers and reapers. Familiarization with threshing systems, cleaning systems in threshers. Calculations of losses in threshers. Familiarization with functional units of Grain combines and their types. Calculations for grain losses in a combine. Study of root crop diggers and familiarization with the functional units and attachments. Familiarization with the working of cotton and maize harvesters. Familiarization with vegetable and fruit harvesters.

### **Suggested Readings:-**

Kepner RA, Roy Barger & EL Barger. Principles of Farm Machinery.

Smith HP and LH Wilkey. Farm Machinery and Equipment.

Culpin Claude. Farm Machinery.

Srivastava AC. Elements of Farm Machinery.

Lal Radhey and AC Datta. Agricultural Engineering Principles of Farm Machinery