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AENGG-321 Protected Cultivation and Secondary Agriculture 2(1+1)

Theory

Green house technology: Introduction, Types of Green Houses; Climate control in green house, Planning and design of green houses, Design criteria of green house for cooling and heating purposes. Green house equipments, Materials of construction for traditional and low cost green houses. Irrigation systems used in greenhouses Naturally ventilated solar green house, High tech green house, Use of green house in drying. Concept and construction of low tunnels. Use of shade net house in protected cultivation.

Important engineering properties such as physical, thermal dynamic aero & hydrodynamic of cereals, pulses and oil seed. Concepts of cleaning and grading. Drying and dehydration: Moisture measurement, EMC, Drying theory, Various drying methods, Commercial grain dryers (bin dryer, tray dryer, fluidized bed dryer, re-circulatory dryer and solar dryer). Material handling equipment: Conveyer and elevators, their principle, Working and selection.

Practical

Study of different types of green houses based on shape. Measurement of solar radiation, CO₂ level, humidity and temperature inside and outside green house. Determination of drying rate of agricultural products inside green house. Study of green house equipments. Visit to various Post Harvest Laboratories. Determination of moisture content of various grain by oven drying method. Study of spiral, centrifugal and disc separator. Determination of moisture content of various grains by moisture meter. Field visit to seed processing plant and agro processing plant.

Lecture schedule: Theory

S.N.	Topic	No. of lectures
1.	Introduction to green house technology, types of green houses and climate control inside green house.	1
2.	Planning and design of greenhouses.	1
3.	Design criteria of green house for cooling and heating purposes and green house equipments	1
4.	Materials of construction for traditional and low cost green houses	1
5.	Irrigation systems used in green houses	1
6.	Naturally ventilated solar green house, high tech green house	1
7.	Use of green house in drying	1

8	Concept and construction of low tunnels. Use of shade net house in protected cultivation	2
9	Important engineering properties such as physical, thermal dynamic aero & hydrodynamic of cereals, pulses and oilseed	1
10	Concepts of cleaning and grading vibratory and rotary type air cleaner	1
11	Drying and dehydration: Moisture measurement, EMC, drying theory, various drying methods.	1
12	Commercial grain dryers (bin dryer, tray dryer, fluidized bed dryer, recirculatory dryer and solar dryer).	2
13	Material handling equipment: conveyers and elevators, their principle, working and selection.	2

Lecture schedule: Practical

S.N.	Topic	No. of lectures
1.	Study of various shapes of green houses.	1
2.	Measurement of climatic factors inside and outside green houses and study of green house equipments.	1
3.	Construct of low tunnel in vegetable crops.	2
4.	Study of Shade net house and visit to nearby shade net house	2
5.	Drying of agriculture produce in green house	1
6.	Determination of moisture content by oven drying methods.	1
7.	Study of spiral, centrifugal and disc separator.	1
8.	Determination of Moisture content of various grains by moisture meter.	2
9.	Study of mechanical grain dryer- bin dryer, tray dryer, and re-circulatory dryer	2
10.	Visit to seed processing plant	1
11.	Visit to agro processing plants	2

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