

ACADEMIC LEVEL TRAINING PROGRAMMES

A -1	TRAINING PROGRAM ON FARM POWER & MACHINERY FOR DEGREE/ DIPLOMA ENGINEERING STUDENTS	
Duration: 4 weeks	Effective working days : 20	Total Unit : 40

1. Engines & Tractors: 26 units

Different type of power units, agricultural equipments and implements used in agriculture.

- 1.1 Different systems such as fuel, intake, exhaust cooling, lubrication, electrical, hydraulic etc. in tractors.
- 1.2 Horse power, its measurement and requirements for different implements.
- 1.3 Operation and maintenance of engines and tractors. Demonstration of repair and overhauling of same.
- 1.4 Familiarization with technique in testing and evaluation of tractors and other agricultural machinery.
- 1.5 Quality control of tractors and agricultural implements.
- 1.6 Familiarization with the Indian and other standards of the agricultural machines.
- 1.7 Cost economics and break even analysis of a general purpose tractor for custom hire work.
- 1.8 Tips for energy conservation.

2. Agricultural machinery (Theory & Practical): 10 units

Study of adjustments, operation and maintenance of tillage equipment like mould board and disc ploughs, secondary tillage equipments like harrow, cultivator, rotavator, seeding equipment (drills and planters) harvesting equipment such as reapers, binders, thresher, combine etc. Land development operations, laying of field and irrigation channels.

3. Irrigation Equipments: 4 units

- 3.1 Selection criteria, installation, constructional details and repair of centrifugal pumps, jet pumps, submersibles pump.
- 3.2 Orientation with drip & sprinkler irrigation systems.
- 3.3 Energy conservation tips in irrigation system.

A -2	PRACTICAL TRAINING PROGRAM ON FARM POWER AND MACHINERY FOR ITI & 10 + 2 STUDENTS	
Duration: 4 weeks	Effective working days : 20	Total Unit : 40

General: 2 units

- Different makes, types, models and availability of tractors, power tillers and their scope under different farming conditions in India.
- Selection of tractors and implements based on farming condition.
- Study of fuel, oil and lubricants, their handling and storage.

Farm Power: 14 units

- Sources of farm power, status of farm mechanization, and scope of farm engines, power tillers and tractors.
- Importance of safe handling and operation of farm machinery, observation of road signals, traffic rules etc.
- Introduction to makes and models of indigenous tractors, basic mechanism, main units, controls, gauges.
- Pre-starting checks, correct operating techniques and energy saving tips.
- Study of different sub-assemblies of a tractor, function, construction, tips on utilization of various system viz. clutch, transmission, brake & steering, hydraulic etc.
- Demonstration on periodical maintenance of a tractor, repair of tyre and tubes, fitting of cage wheels etc.
- Demonstration on wheel track adjustment, wheel ballasting etc.

Farm Machinery: 12 units

- Power operated implements their constructional features, adjustments, maintenance and operating techniques etc.
- Tillage implements such as mould board and disc plough, sub soiler, disc harrows, cultivators, rotavator of different types. Land shaping equipments and machines. Familiarization and source of availability.
- Dry land farming implements and equipments. Manure and fertilizer spreader, broadcaster, applicators, source of availability.
- Seeding and planting equipments such as seed-cum-fertilizer drills and planter and source of availability.
- Paddy cultivation machinery, transplanter, rotavator, power –tillers.
- Inter-row seeding and other inter-cultivation equipments.
- Vertical conveyor reaper, forage harvesters, potato and groundnut diggers, power threshers, combine harvesters, straw reaper, maize sheller etc
- Chaff cutters, maize shellers, paddy dehusker/huller, sugarcane crusher, cane detrasher, groundnut decorticators, oil seed crop crusher, dryers, etc.

Irrigation: 2 units

- Types of irrigation pumps, principles of operation, constructional details, application and selection criteria.
- Practice on installation of pump, prime mover, fitting of pipes, valves etc. checking for correct operation, maintenance and troubleshooting.
- Familiarization with the sprinkler & drip irrigation system.
- Familiarization with the voltmeter, ammeter, etc. Checking of circuit, diagnosis of burnt out motor, starter setting for direction of rotation of motor, etc.

Plant Protection Equipment: 1 units

- Manual and power operated sprayer and duster including aero-blast sprayer, high clearance sprayers, etc. Practice on dismantling, resetting and assembling of sprayers and dusters, nozzles, cut of devices, changing and resetting of valves etc.
- Instructions for safe operation, off –season storage techniques and source of availability for plant protection equipments.

Alternative sources of farm energy: 1 unit

- Familiarization with bio-gas plant, wind mill and solar energy appliances.

Stationary Engine and Power tiller: 8 units

- Familiarization with the I.C. engine and brief study of various systems viz. air intake, fuel, lubrication and governing systems. Demonstration of engine operation, servicing & maintenance.
- Use of power tiller for intensive farming as a supplemental power unit in farming conditions, where these can be used viz. small, medium and large farms.
- Different types of implements and equipments available for use with power tiller; study and demonstration.
- Importance of periodical maintenance and service.
- Servicing and maintenance of different systems.
- Demonstration of wheel track adjustment, wheel ballasting etc

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