EXTENDED LECTURE OUTLINE

AGR6 311 **Weed Management** **(1+1)**

Lecture 1: Introduction to weeds, weed definition, characteristics of weeds, harmful effects of weeds and economic importance of weeds.

Lecture 2: Classification of weeds, classification based on morphology, life cycle, habitat, origin, association, special features and soil pH with examples.

Lecture 3: Weed ecology and biology, definition, Propagation of weeds by sexual and asexual (vegetative) reproduction, dispersal of weed seeds, dispersal agents – wind, water, animal, man, manures and farm implements. Dispersal of vegetative propagules.

Lecture 4: Crop-weed competition: definition, critical period of crop-weed competition, factors affecting critical period of crop-weed competition, and factors affecting growth and development of weeds, critical period of crop-weed competition of major crops like rice, maize, wheat, jowar, pulses, groundnut, sugarcane, cotton and tobacco.

Lecture 5: Allelopathy: definition, sources of allelochemicals, types of Allelopathy: true allelopathy and functional allelopathy, interactions in allelopathy plant -weed, weed -weed, weed -plant, role of allelopathy in weed management.

Lecture 6: Weed seed bank and weed shift, reasons for weed shift, methods to overcome weed shift problems.

Lecture 7: Weed Management**:** principles of weed management – prevention, eradication and control, methods of weed control - Physical/ mechanical, cultural, biological, and chemical methods, integrated weed management.

Lecture 8: Implements used in weed control: sickles, hoes, rotary weeders, power operated weeders, robotic weed control - scope and importance.

Lecture 9: Herbicides: properties of herbicides, classification of herbicides based on time of application, based on nature, based on method of application. Selectivity - mode and mechanism of action of herbicide.

Lecture 10: Weed management options in organic and natural farming.

Lecture 11: Herbicide formulations: EC, WP, SP, Granules, herbicide mixtures - ready mix and tank mix herbicide. Adjuvants and surfactants.

Lecture 12: Herbicide application-methods: compatibility of herbicides with agrochemicals - application equipment *viz*. sprayers, nozzles, and calibration.

Lecture 13: Integrated Weed Management: Principles and Weed Management in major field (paddy, maize, groundnut, sunflower, cotton and sugarcane) and horticultural crops (Tomato, arecanut, coconut and banana).

Lecture 14: Nano herbicides: Definition. Precision weed management

Lecture 15: Herbicide resistance: Definition, types of resistance – single, multiple resistance. Management of herbicide resistance.

Lecture 16: Aquatic weed management and weed management in cropping systems - parasitic weeds and its management