

<b>UG Courses:</b>		
3 <sup>rd</sup> Semester	Theory	Practical
ACH – 208: Chemistry and Application of Crop Protection Chemicals (1 + 1)	<p>Introduction to crop protecting chemicals: definition, history, classification, toxicity and use pattern of Pesticides in Plant Protection; other uses of pesticides. Nomenclature, chemical structure, formulation type and mode of action of some popular pesticides: (i) Earlier Generation (Endosulfan, Chlorpyrifos, Carbofuran, Cypermethrin, Carbendazim and 2,4-D) and (ii) New Generation (Imidacloprid, Novaluron, Bifenthrin, Fipronil, Hexaconazole and Glyphosate). Introduction to the chemistry (Nomenclature, chemical structure, formulation type and mode of action) and use of some common Acaricides (Ethion, Fenazaquin), Nematicides (Nemagon, Nemacur), Rodenticides (Zinc Phosphide, Warfarin), Molluscicides (Metaldehyde, Methiocarb), Plant Growth Regulators (Alpha-naphthylacetic acid, Chlormequat Chloride) and Post Harvest Chemicals (Thiabendazole, Citric acid). Important Name Reactions used in Pesticide Chemistry: Diel's Alder Reaction, Aldol Condensation, Perkin Reaction, Friedel Crafts' Reaction, Grignard Reaction, Michaelis-Arbuzov and Perkow Reaction.</p>	<p>Identification and familiarizations with the basic apparatus and equipments used in pesticide laboratory; Detection of functional group present in Pesticide Molecule: Phenolic OH, Aldehyde, Ketone, Carboxylic Acid, Primary Aromatic Amine, Ester; Identification of different formulation with toxicological pattern; Estimation of insecticides (Endosulfan, HCH) by hydrolysable chlorine; Estimation of Cu &amp; S present in inorganic fungicides.</p>
4 <sup>th</sup> Semester	Theory	Practical
EC ACH 262: Chemistry of Pesticides (2 + 1)	<p>An Introduction to agrochemicals: their type and role in agriculture, effect of pesticides on environment, soil, human and animal health, merits and demerits of</p>	<p>Sampling of pesticides, Pesticides application technology to study about various pesticides appliances; Calculation of doses</p>

	<p>pesticide uses in agriculture; concept of pesticide residue analyses; management of pesticide residues for sustainable agriculture.</p> <p>Herbicides: major classes, chemical properties and use of some important herbicides; Fate of herbicides in the environment.</p> <p>Fungicides: classification; Inorganic fungicides - characteristics, preparation and use of sulphur and copper, Mode of action- Bordeaux mixture and copper oxychloride; Organic fungicides - Mode of action – Dithiocarbamates - characteristics, preparation and use of Zineb and Maneb. Systemic fungicides: Benomyl, carboxin, oxycarboxin, Metalaxyl, Carbendazim - characteristics and use.</p> <p>Insecticides: introduction and classification; Inorganic and organic insecticides; Organochlorine, Organophosphates, Carbamates, Synthetic pyrethroids, Neonicotinoids, IGRs, Reduced risk insecticides; Fate of insecticides in soil &amp; plant; plant and animal systemic insecticides - their characteristics and uses.</p>	<p>of pesticides to be used; To study and identify various formulations of insecticide available in market; Identification of agro-chemicals using TLC: Preparation of TLC plate, spotting and development, visualization and calculation of <math>R_f</math>; Determination of copper content in copper oxychloride; Determination of thiram content. Determination of ziram content; Determination of alachlor content.</p>
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