



World Skill Development Institute

Bio pesticides Technology

Course Duration – 1 Year.

Bio pesticides are certain types of pesticides derived from such natural materials as animals, plants, bacteria, and certain minerals. Agricultural pesticides, properly used, are essential in supplying the food requirements of the world ever growing population. The use of synthetic pesticides affects the health of human being. The indiscriminate use of pesticides has adversely affected the health of the soil. The residual pesticides in the soil not only affect the soil quality but also the water quality, as they get leached into the ground water. Due to these reasons, role of bio pesticides are very important for sustainable agriculture. The use of bio pesticides for sustainable agriculture is a complex issue that at times is difficult to comprehend and plan. Bio pesticides are usually inherently less toxic than conventional pesticides. They generally affect only the target pest and closely related organisms, in contrast to broad spectrum, conventional pesticides that may affect organisms as different as birds, insects, and mammals. They often are effective in very small quantities and often decompose quickly, thereby resulting in lower exposures and largely avoiding the pollution problems caused by conventional pesticides. Bio pesticides, key components of integrated pest management (IPM) programmes, are receiving much practical attention as a means to reduce the load of synthetic chemical products being used to control plant diseases. In most cropping systems, biological pesticides should not necessarily be viewed as wholesale replacements for chemical control of plant pests and diseases, but rather as a growing category of efficacious supplements that can be used as rotation agents to retard the onset of resistance to chemical pesticides and improve sustainability. In organic cropping systems, bio pesticides can represent valuable tools that further supplement the rich collection of cultural practices that ensure against crop loss to diseases. Some of the examples of bio pesticides are triazino benzimidazol, thiophene sar, pyrazoles, hydroxyacetophenones, benzoylphenylureas, thiadiazolo S triazine etc. It is observed that India occupies a comparatively better position in the arena of bio pesticides; in terms of growth of usage, percentage share of the total pesticide market and also in research publications. The driving forces behind this progress are identified as huge research infrastructure (universities and bio control labs) and favourable public support system/policies.

Subsequently, it delves on strategies to incorporate the promotion of bio pesticides into rural development efforts like recognition of the huge traditional knowledge base and use of bio pesticides developed using indigenous technologies.

Some of the fundamentals of this course are synthesis of triazino benzimidazol as 1 biopesticides, synthesis and pesticidal activities of thiadiazolo S triazine and imidazol, synthesis and antimicrobial activities of pyrazoles, effects of penconazole on plasma membrane, metabolism of diclofop methyl , bleaching herbicides stimulate maize HMGR activity, soil transformation of acetochlor, propanil degrading amidase activity, inhibition of BTX B binding by RH 3421, KDR type resistance in German cockroach etc.

This is the first course of its kind which provides different parameters for manufacturing of bio pesticides. This course will not only be resourceful for new entrepreneurs but will also help the technocrats, research scholars and those who willing to know more about bio pesticides.

SYNTHESIS OF TRIAZINO BENZIMIDAZOL AS 1 BIOPESTICIDES

Antimicrobial Activity, Experimental

STUDIES ON COUMARIN DERIVATIVES

Experimental Procedure

SYNTHESIS AND INSECT GROWTH REGULATING

ACTIVITY OF BENZOYLPHENYLUREAS

Experimental Procedure, Synthesis, Insect Growth Regulating (IGR) Activity against Mosquito Vectors

SYNTHESIS AND PESTICIDAL ACTIVITIES OF

THIADIAZOLO-S-TRIAZINE AND IMIDAZOL

Fungicidal Activity, Bactericidal Activity,

Herbicidal Activity, Experimental

SYNTHESIS AND FUNGICIDAL ACTIVITY OF

THIAZOLIDINE AND 2-ARYL INDOLES

Fungicidal Activity, Experimental

SYNTHESIS AND BIOLOGICAL ACTIVITY OF

BENZOTHAZOLES/BENZOXAZOLES/

BENZIMIDAZOLES/IMIDAZOLIDINES

Biological Activity, Experimental

ANTIMICROBIAL AGENTS

Antifungal Activity, Experimental

SYNTHESIS AND ANTIMICROBIAL ACTIVITIES

OF PYRAZOLES

Biological Testing, Experimental Procedure,

General Procedure

SYNTHESIS AND INSECTICIDAL ACTIVITY OF

NEW SUBSTITUTED HYDROXYACETOPHENONES

Insecticidal Activity, Experimental Procedure

SYNTHESES OF SULFANILYL DERIVATIVES

Biological Activity, Experimental Procedure

QSAR OF FLURIDONE

Materials and Methods, Results and Discussion

INTERFERENCE OF FLURIDONE

Materials and Methods, Results, Discussion

ABSORPTION AND METABOLISM OF

CLOMAZONE

Materials and Methods, Results, Discussion

ANTIDOTE MODE OF ACTION

Materials and Methods, General, [14C] Metazachlor Metabolism Studies, Effect of BAS on Metazachlor Metabolism in Excised Tissues, Effect of BAS on Metazachlor Phytotoxicity at Metabolism in Three Corn Cultivars and Wheat, Mobility of Metazachlor Metabolites, Effect of BAS and Metazachlor on [14C] Metazachlor Absorption, Effect of BAS on GSH Levels and GST Activity, Results and Discussion, Effect of BAS on Metazachlor Metabolism in Excised Tissues, Effect of BAS on Metazachlor Phytotoxicity and Metabolism in Three Corn Cultivars and Wheat, Mobility of Metazachlor Metabolites, Effect of BAS and Metazachlor on [14C]Metazachlor Absorption, Effect of BAS on GSH Levels and GST Activity

DICLOFOP RESISTANCE IN AVENA FATUA

Materials and Methods, Results, Discussion

EFFECTS OF PENCONAZOLE ON PLASMA

MEMBRANE

Materials and Methods, Results and Discussion, Conclusions

MECHANISM OF RESISTANCE TO ABAMECTIN

Materials and Methods, Results, Discussion

QSAR OF m-PHENOXYBENZYL ACRYLATES

Materials and Methods, Results and Discussion

CHLORIMURON ETHYL METABOLISM IN CORN

Materials and Methods, Chemical, Plant Treatment, Extraction of Tissue, Chromatography, Purification of Metabolites for Mass Spectrometry, Mass Spectrometry, Nuclear Magnetic Resonance (NMR) Spectrometry, ^{14}C -Glucosidase Hydrolysis, Results, Uptake and Metabolism of Chlorimuron Ethyl, Detection of Metabolites, Chlorimuron Ethyl, Metabolite, Discussion and Conclusions

SUPEROXIDE DISMUTASE INHIBITION BY

TERTHIENYL

Materials and Methods, Discussion

PARATHION METABOLISM BY SOYBEAN LIPOXYGENASE

Materials and Methods, Results, Discussion

DEPOLARIZATION STUDIES OF PYRETHROIDS

Materials and Methods, Results, Depolarization of the Resting Membrane, Depolarizing Activity in Axonal Membranes, Relationship between Neuroblocking and Excitatory Potencies and Depolarizing Potency, Relationship between the Insecticidal Potency and the Depolarizing Potency, Discussion

RATE OF KNOCKDOWN STUDIES OF

PYRETHROIDS

Materials and Methods, Compounds, Hydrophobicity of Compounds, Knockdown Effect against House Flies, Membrane Potential of the Axon of American Cockroaches, Results, Knockdown Effect at the Earliest Stage and at the Steady State of Intoxication, Rate of Development of Knockdown, Effect of Structural Factors on the Rate of Development of Knockdown, Depolarization of the Axonal Membrane of American Cockroaches, Effect of Structural Factors on the Rate of Depolarization of Cockroach Axonal Membranes, Discussion

PHYSIOLOGICAL ROLE OF ARYL ACYLAMIDASE

Materials and Methods, Results, Discussion

THIOPHENE SAR

Materials and Methods, Results and Discussion, Toxicity of Thiophenes to Mosquito Larvae, Structure-Activity Relationships, Specificity of Thiophene Toxicity, Significance of Hydrophobicity to Phototoxicity

EFFECTS OF CHLOBENTHIAZONE ON AFLATOXIN

BIOSYNTHESIS

Materials and Methods, Results, Discussion

BIOCHEMICAL STUDIES OF ESTERASES

Materials and Methods, Strains, Isoelectric Focusing, Molecular Weight Determination, Semipurification of Esterases, Kinetics, Results, Isoelectric Focusing, Molecular Weight Determination, Partial Purification of Esterases, Kinetic Analysis, Discussion

CYTOCHROME P450 IN *P. ITALICUM*

Materials and Methods, Results, Toxicity Studies, Isolation of Cytochrome P450, Stability of Cytochrome P450 at different PH, Type II Spectra, Displacement Tests, Discussion

PHARMACOKINETICS OF JHE IN INSECTS

Materials and Methods, Results and Discussion

OCTOPAMINERGIC ACTION OF CARBODIIMIDE

METABOLITE OF DIAFENTHIURON

Materials and Methods, Results, Discussion

METABOLISM OF DICLOFOP-METHYL

Materials and Methods, Results and Discussion, Conclusions

HERBICIDAL STEROL BIOSYNTHESIS INHIBITOR

Materials and Methods, Plant Material, Yeast Material, Isolation of Microsomes, [14C] Mevalonate Labeling Studies, Chemicals, Sterol Extraction, Sterol Separation, Analytical HPLC, Identification of Sterols, Cytochrome P450 Spectra, Results, Discussion

ORGANOPHOSPHORUS AND CARBAMATE

RESISTANCE

Methods, Results, Discussion

MODE OF ACTION OF N-PHENYLMIDE

Materials and Methods, Results, Discussion

MODE OF ACTION OF FUNGICIDAL

IMIDAZOLE-1-CARBOXYLATES

Materials and Methods, Fungicides, Antifungal Activity, Sterol Analysis, Binding Study, Results, Fungicidal Activity, Effect of Imidazole-1-Carboxylates on Sterol Biosynthesis, Binding of Imidazole-1-Carboxylates to Cytochrome P450, Discussion

DIAFENTHIURON HAS A NOVEL MODE OF

ACTION

Materials and Methods, Chemicals, Animals, Topical Application and Toxicity Determination, In Vivo Distribution and Metabolites, Tests on Cuticle Formation, Acetylcholinesterase Assay, Ecdysone 20-hydroxylase Assay, Preparation of Mitochondria and Microsomes, Spectroscopy of Liver Cytochrome P450, Mitochondrial Respiration, Isolated Limulus Heart, Isolated Locusta

Thoracic Neuronal Somata, Cockroach Giant Axon, Musca Larval Body Wall Neuromuscular Junction, Results, In Vivo Observations and Toxicity, In Vivo Distribution in Calliphora, Metabolism of Diafenthiuron and Binding to Cytochrome P450, Tests on Inhibition of Cuticle Formation, AChE, and Ecdysone 20-hydroxylase, Inhibition of Mitochondrial Respiration in Vitro, Isolated Limulus Heart, Isolated Locusta Thoracic Neuronal Somata, Cockroach Giant Axon, Musca Larval Body Wall Neuromuscular Junction, Discussion

RESPONSE TO METALDEHYDE IN SNAIL

NEURONES

Materials and Methods, Results, Discussion

BLEACHING HERBICIDES STIMULATE MAIZE

HMGR ACTIVITY

Materials and Methods, Results, Discussion

GLUTATHIONE S-TRANSFERASE AND

DIAMONDBACK MOTH

Materials and Methods, Chemicals, Insects and Bioassays, In Vitro Degradation of some OPs, Inhibition of Acetyl cholinesterase (AChE), Results and Discussion

SOIL TRANSFORMATION OF ACETOCHLOR

Materials and Methods, Results and Discussion

PROPANIL DEGRADING AMIDASE ACTIVITY

Materials and Methods, Results, Discussion

INHIBITION OF BTX-B BINDING BY RH 3421

Materials and Methods, Results, Discussion

KDR-TYPE RESISTANCE IN GERMAN COCKROACH

Materials and Methods, Results and Discussion