

**DEPARTMENT OF AGRICULTURE**  
**SRK UNIVERSITY, BHOPAL**  
**Diploma of Agriculture (Fifth Semester)**

**Semester- wise distribution of courses**

<b>V<sup>th</sup> Semester</b>			
<b>S.NO.</b>	<b>SUBJECT TITLE</b>	<b>CODE</b>	<b>CREDIT</b>
1.	Agriculture Chemistry	DAG-501	3(2+1)
2.	Agrochemical	DAG-502	3 (2+1)
3.	Pests of Crops and Stored Grain and their Management	DAG-503	3 (2+1)
4.	Diseases of Field and Horticultural Crops and their Management	DAG-504	3 (2+1)
5.	Crop Improvement-I (Kharif Crops)	DAG-505	2 (1+1)
6.	Entrepreneurship Development and Business Communication	DAG-506	2 (1+1)
	<b>Total</b>		<b>16(10+6)</b>

**Agriculture chemistry 3(2+1)**

## **Theory**

Soil as the source of plant nutrients, Essential and Beneficial elements, criteria of essentiality, Forms of nutrients in soil, mechanisms of nutrients transport to plants. Functions of N, P, K, S, Ca, Mg, Fe, Zn and measures to overcome of deficiencies and toxicities. Functions of micronutrients and measures to overcome deficiency and toxicities. Factors affecting nutrients availability of other micronutrients to plants. Problem soil- acid, salt affected and calcareous soils, Characteristics, nutrients availabilities. Reclamation-mechanical, chemical and Biological methods.

## **Practical**

Principles of analytical instruments and their calibrations. Estimation of available N, P, K, S, Zn, in soil.

## **Agrochemicals 3 (2+1)**

### **Theory**

An introduction to agrochemicals, their type and role in agriculture, effect on environment, soil, human and animal health, merits and demerits of their uses in agriculture,

management of agrochemicals for sustainable agriculture. Herbicides-Major classes, properties and important herbicides. Fate of herbicides. Fungicides - Classification – Inorganic fungicides - characteristics, preparation and use of sulfur 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. Introduction and classification of insecticides: inorganic and organic insecticides Organochlorine, Organophosphates, Carbamates, Synthetic pyrethroids Neonicotinoids, Biorationals, Insecticide Act and rules, Insecticides banned, withdrawn and restricted use, Fate of insecticides in soil & plant. IGRs Biopesticides, Reduced risk insecticides,Botanicals, plant and animal systemic insecticides their characteristics and uses.Fertilizers and their importance. Nitrogenous fertilizers: Feedstocks and Manufacturing of ammonium sulphate, ammonium nitrate, ammonium chloride, urea. Slow release N-fertilizers. Phosphatic fertilizers: feedstock and manufacturing of single superphosphate. Preparation of bone meal and basic slag. Potassic fertilizers: Natural sources of potash, manufacturing of potassiumchloride, potassium sulphate and potassium nitrate.Mixed and complex fertilizers: Sources and compatibility–preparation of major, secondary and micronutrient mixtures. Complex fertilizers: Manufacturing of ammonium phosphates, nitrophosphates and NPK complexes. Fertilizer control order. Fertilizer logistics and marketing. Plant bio-pesticides for ecological agriculture, Bio-insect repellent.

### **Practical**

Sampling of fertilizers and pesticides. Pesticides application technology to study about various pesticides appliances. Quick tests for identification of common fertilizers. Identification of anion and cation in fertilizer. Calculation of doses of insecticides to be used. To study and identify various formulations of insecticide available in market. Estimation of nitrogen in Urea. Estimation of water soluble P<sub>2</sub>O<sub>5</sub> and citrate soluble P<sub>2</sub>O<sub>5</sub> in single super phosphate. Estimation of potassium in Muriate of Potash/ Sulphate of Potash by flame photometer. Determination of copper content in copper oxychloride. Determination of

sulphur content in sulphur fungicide. Determination of thiram. Determination of ziram content.

## **Pests of Crops and Stored Grains and their Management 3(2+1)**

### **Theory**

General account on nature and type of damage by different arthropods pests. Scientific name, order, family, host range, distribution, biology and bionomics, nature of damage, and management of major pests and scientific name, order, family, host range, distribution, nature of damage and control practice other important arthropod pests of various field crop, vegetable crop, fruit crop, plantation crops, ornamental crops, spices and condiments. Factors affecting losses of stored grain and role of physical, biological, mechanical and chemical factors in deterioration of grain. Insect pests, mites, rodents, birds and microorganisms associated with stored grain and their management. Storage structure and methods of grain storage and fundamental principles of grain store management.

### **Practical**

Identification of different types of damage. Identification and study of life cycle and seasonal history of various insect pests attacking crops and their produce: (a) Field Crops; (b) Vegetable Crops; (c) Fruit Crops; (d) Plantation, gardens, Narcotics, spices & condiments. Identification of insect pests and Mites associated with stored grain. Determination of insect infestation by different methods. Assessment of losses due to insects. Calculations on the doses of insecticides application technique. Fumigation of grain store / godown. Identification of rodents and rodent control operations in godowns. Identification of birds and bird control operations in godowns. Determination of moisture content of grain. Methods of grain sampling under storage condition. Visit to Indian Storage Management and Research Institute, Hapur and Quality Laboratory, Department of Food., Delhi. Visit to nearest FCI godowns.

## **Diseases of Field & Horticultural Crops & their Management 3(2+1)**

### **Theory**

Symptoms, etiology, disease cycle and management of major diseases of following crops:

Field Crops: Rice: blast, brown spot, bacterial blight, sheath blight, false smut, khaira and tungro; Maize: stalk rots, downy mildew, leaf spots; Sorghum: smuts, grain mold and anthracnose, Bajra :downy mildew and ergot; Groundnut: early and late leaf spots, wilt

Soybean: Rhizoctonia blight, bacterial spot, seed and seedling rot and mosaic; Pigeonpea: Phytophthora blight, wilt and sterility mosaic; Finger millet: Blast and leaf spot; black & green gram: Cercospora leaf spot and anthracnose, web blight and yellow mosaic; Castor: Phytophthora blight; Tobacco: black shank, black root rot and mosaic. Horticultural Crops: Guava: wilt and anthracnose; Banana: Panama wilt, bacterial wilt, Sigatoka and bunchy top; Papaya: foot rot, leaf curl and mosaic, Pomegranate: bacterial blight; Cruciferous vegetables: Alternaria leaf spot and black rot; Brinjal: Phomopsis blight and fruit rot and Sclerotinia blight; Tomato: damping off, wilt, early and late blight, buck eye rot and leaf curl and mosaic; Okra: Yellow Vein Mosaic; Beans: anthracnose and bacterial blight; Ginger: soft

rot; Colocasia: Phytophthora blight; Coconut: wilt and bud rot; Tea: blister blight; Coffee: rust

## **Practical**

Identification and histopathological studies of selected diseases of field and horticultural crops covered in theory. Field visit for the diagnosis of field problems. Collection and preservation of plant diseased specimens for Herbarium; Note: Students should submit 50 pressed and well- mounted specimens.

## **Crop Improvement – II (*Rabi*) 2(1+1)**

### **Theory**

Centers of origin, distribution of species, wild relatives in different cereals; pulses; oilseeds; fodder crops and cash crops; vegetable and horticultural crops; Plant genetic resources, its utilization and conservation; study of genetics of qualitative and quantitative characters; Major breeding objectives and procedures including conventional and modern innovative approaches for development of hybrids and varieties for yield, adaptability, stability, abiotic and biotic stress tolerance and quality (physical, chemical, nutritional); Hybrid seed production technology of *rabi* crops. Ideotype concept and climate resilient crop varieties for future.

### **Practical**

Floral biology, emasculation and hybridization techniques in different crop species namely Wheat, Oat, Barley, Chickpea, Lentil, Field pea, Rajma, Horse gram, Rapeseed Mustard, Sunflower, Safflower, Potato, Berseem. Sugarcane, Tomato, Chilli, Onion; Handling of germplasm and segregating populations by different methods like pedigree, bulk and single seed decent methods; Study of field techniques for seed production and hybrid seeds production in *Rabi* crops; Estimation of heterosis, inbreeding depression and heritability; Layout of field experiments; Study of quality characters, study of donor parents for different characters; Visit to seed production plots; Visit to AICRP plots of different field crops.

## **Entrepreneurship Development and Business Communication 2 (1+1)**

### **Theory**

Concept of Entrepreneur, Entrepreneurship Development, Characteristics of entrepreneurs; SWOT Analysis & achievement motivation, Government policy and programs and institutions for entrepreneurship development, Impact of economic reforms on Agribusiness/ Agrienterprises, Entrepreneurial Development Process; Business Leadership Skills; Developing organizational skill (controlling, supervising, problem solving, monitoring & evaluation), Developing Managerial skills, Business Leadership Skills (Communication, direction and motivation Skills), Problem solving skill, Supply chain management and Total quality management, Project Planning Formulation and report preparation; Financing of enterprise, Opportunities for agri- entrepreneurship and rural enterprise.

### **Practical**

Assessing entrepreneurial traits, problem solving skills, managerial skills and achievement motivation, exercise in creativity, time audit through planning, monitoring and supervision, identification and selection of business idea, preparation of business plan and proposal writing, visit to entrepreneurship development institute and entrepreneurs.

DEPARTMENT OF A GRICULTURE  
SRK UNIVERSITY, BHOPAL (M.P.)

PROGRAMME STRUCTURE  
ACADMIC SESSION: 2019-20

**Diploma Agriculture fifth Semester**  
Subject Wise Distribution of marks and corresponding Credit  
Semester -V<sup>th</sup>

S.N.	Course code	Credit of the course	Name of the course	Internal Assessment		Assignment Marks	End Semester exams		Practical exams		Total marks
				Max. Marks	Min. Marks		Max. Marks	Min. Marks	Max. Marks	Min. Marks	
1	DAG-501	3(2+1)	Agriculture Chemistry	30	15	-	50	25	20	10	100
2	DAG-502	3(2+1)	Agrochemical	30	15	-	50	25	20	10	100
3	DAG-503	3 (2+1)	Pests of Crops and Stored Grain and their Management	30	15	-	50	25	20	10	100
4	DAG-504	3 (2+1)	Diseases of Field and Horticultural Crops and their Management -I	30	15	-	50	25	20	10	100
5	DAG-505	2 (1+1)	Crop Improvement-I (Kharif Crops)	30	15	-	50	25	20	10	100
6	DAG-506	2 (1+1)	Entrepreneurship Development and Business Communication	30	15	-	50	25	20	10	100
			<b>Minimum Marks</b>	-	<b>90</b>	-	-	<b>150</b>	-	<b>60</b>	<b>300</b>
<b>Total</b>		<b>16 (10+6)</b>	<b>Maximum Marks</b>	<b>180</b>	-		<b>300</b>	-	<b>120</b>	-	<b>600</b>



