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AGRON-111

Fundamentals of Agronomy

4(3+1)

Theory

Agronomy and its scope, seeds and sowing, tillage and tith, crop density and geometry, Crop nutrition, manures and fertilizers, nutrient use efficiency, water resources, soil plant water relationship, crop water requirement, water use efficiency, irrigation-scheduling criteria and methods, quality of irrigation water, water logging.

Weeds- importance, classification, crop weed competition, concepts of weed management-principles and methods, herbicides- classification, selectivity and resistance, allelopathy.

Growth and development of crops, factors affecting growth and development, plant ideotypes, crop rotation and its principles, adaptation and distribution of crops, crop management technologies in problematic areas, harvesting and threshing of crops.

Practical

Identification of crops, seeds, fertilizers, pesticides and tillage implements, Effect of sowing depth on germination and seedling vigour, Identification of weeds in crops, Methods of herbicide and fertilizer application, Study of yield contributing characters and yield estimation, Seed germination and viability test, Numerical exercises on fertilizer requirement, plant population, herbicides and water requirement, Use of tillage implements-reversible plough, one way plough, harrow, leveler, seed drill, Study of soil moisture measuring devices, Measurement of field capacity, bulk density and infiltration rate, Measurement of irrigation water.

Lecture schedule: Theory

S.N.	Topic	No. of lectures
1.	Agriculture-definition and importance of agriculture	1
2.	Agronomy-meaning and scope of Agronomy	1
3.	Types of seeds, dormancy of seeds	1
4.	Viability of seeds, seed treatment	1
5.	Sowing-methods, depth, plant density	1
6.	Nursery bed and transplanting	1

7.	Crop density and geometry	1
8.	Optimum plant population	1
9.	Tillage-definition and types of tillage including minimum and no tillage.	1
10.	Tilth-definition and characteristics of good tilth.	1
11.	Crop nutrition-essential nutrients-classification	1
12.	Nutrient mobility in plants, Factors affecting nutrient availability	1
13.	Functions and deficiency symptoms of primary nutrients	1
14.	Manures –types, nutrient content ,	1
15.	Green manures, compost	1
16.	Fertilizers , INM	1
17.	Nutrient use efficiency	1
18.	Irrigation : definition and objectives	1
19.	Water resources and irrigation development in India and Rajasthan.	1
20.	Soil moisture constants and theories of soil water availability	1
21.	Crop water requirement and factors affecting it	1
22.	Scheduling of irrigation: meaning and different approaches for scheduling irrigation in field crops.	1
23.	Surface methods of irrigation ; border , furrow , check basin and basin methods	1
24.	Sprinkler and drip methods; their layout, adaptability , advantages and limitations.	1
25.	Irrigation efficiency ; different terms used and their importance.	1
26.	Water use efficiency -factors affecting and agronomic techniques to boost WUE	1
27.	Irrigation water quality- different criteria and limits used, effect of poor quality water on plant growth .	1
28.	Management practices for efficient use of poor quality waters including conjunctive use of water.	1
29.	Agricultural drainage- definition, benefits and different methods of drainage.	1
30.	Growth and development of crops,	1
31.	factors affecting growth and development,	1
32.	Plant ideotypes,	1
33.	Crop rotation and its principles,	1
34.	Adaptation and distribution of crops,.	1
35.	Crop management technologies in problematic areas,	1
36.	Harvesting and threshing of crops	1
37.	Weeds – definition , harmful and beneficial effects and classification	1
38.	Ecology of weeds	1
39.	Weed - reproduction and seed dissemination	1
40.	Crop-weed competition-concept and allelopathy	1
41.	Concepts of weed prevention, eradication and weed control	1
42.	Physical and cultural methods of weed control	1

43	Chemical and biological methods of weed control	1
44	Integrated weed management - An introduction	1
45	Introduction to herbicides, advantages and limitations of herbicides usages	1
46	Classification of herbicides	1
47	Herbicidal selectivity and resistance	1
48	Allelopathy	1

Lecturer schedule: Practical

10	Herbicides requirement calculations and water requirement	1
11	Use of tillage implements-reversible plough, one way plough, harrow, leveler, seed drill,	1
12	Study of soil moisture measuring devices	1
13	Measurement of field capacity	1
14	Determination of bulk density	1
15	Determination of infiltration rate	1
16	Measurement of irrigation water	1
S.No	Topic	No. of lectures
1	Identification of crops, seeds, fertilizers,	1
2	Common Pesticides in agriculture	1
3	Study of agro-climatic zones of India and Rajasthan	1
4	Identification of weeds in crops	1
5	Methods of herbicide and fertilizer application,	1
6	Study of yield contributing characters and yield estimation,	1
7	Seed germination and viability test	1
8	Numerical exercises on fertilizer requirement of crops	1
9	Plant geometry and plant population of various crops	1

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References:

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3. Balasubramaniyan, P. and Palaniappan, S.P.2016. Principles and Practices of Agronomy (2nd edition), Agrobios (India), Jodhpur
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