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Agron-323 Rainfed Agriculture and Watershed Management 2(1+1) Theory

Rainfed agriculture: Introduction, types, History of rainfed agriculture and watershed in India; Problems and prospects of rainfed agriculture in India ; Soil and climatic conditions prevalent in rainfed areas; Soil and water conservation techniques, Drought: types, effect of water deficit on physio- morphological characteristics of the plants, Crop adaptation and mitigation to drought; Water harvesting: importance, its techniques, Efficient utilization of water through soil and crop management practices, Management of crops in rainfed areas, Contingent crop planning for aberrant weather conditions, Concept, objective, principles and components of watershed management, factors affecting watershed management.

Practical

Studies on climate classification, studies on rainfall pattern in rainfed areas of the country and pattern of onset and withdrawal of monsoons. Studies on cropping pattern of different rainfed areas in the country and demarcation of rainfed area on map of India. Interpretation of meteorological data and scheduling of supplemental irrigation on the basis of evapotranspiration demand of crops. Critical analysis of rainfall and possible drought period in the country, effective rainfall and its calculation. Studies on cultural practices for mitigating moisture stress. Characterization and delineation of model watershed. Field demonstration on soil & moisture conservation measures. Field demonstration on construction of water harvesting structures. Visit to rainfed research station/watershed.

Lecture schedule: Theory

S.N.	Topic	No. of lectures
1.	Rainfed agriculture- definition, history and its importance in India with particular to references Rajasthan	1
2.	Problems of dryland agriculture related to climate, soil, technological and socio economic conditions	1
3.	Soil and water conservation techniques,	1
4.	Drought: types,	1
5.	effect of water deficit on physio- morphological characteristics of the plants,	1
6.	Use of antitranspirants-their kind, mode of action and effect on crop yield.	1
7.	Crop adaptation and mitigation to drought;	1

8.	Water harvesting: importance, its techniques,	1
9.	Efficient utilization of water through soil and crop management practices,	1
10.	Water harvesting techniques in dry farming areas	1
11.	Watershed management- concept, definition, objectives and principles	1
12.	Integrated watershed management for drylands	1
13.	A study of model watershed area	1
14.	Management of crops in rainfed areas,	1
15.	Contingent crop planning for aberrant weather conditions,	1
16.	Alternate cropping and land use strategies for dryland agriculture	1

Lecture schedule: Practical

S.N.	Topic	No. of lectures
1.	Studies on climate classification,	1
2.	studies on rainfall pattern in rainfed areas of the country and pattern of onset and withdrawal of monsoons.	1
3.	Studies on cropping pattern of different rainfed areas in the country and demarcation of rainfed area on map of India.	1
4.	Interpretation of meteorological data and scheduling of supplemental irrigation on the basis of evapo-transpiration demand of crops.	1
5.	Critical analysis of rainfall and estimation of moisture index and aridity index and possible drought period in the country	1
6.	Field demonstration on construction of water harvesting structures	1
7.	effective rainfall and its calculation.	1
8.	Studies on cultural practices for mitigating moisture stress.	1
9.	Spray of antitranspirants on dryland crops and their effect on crops	1
10.	Characterization and delineation of model watershed	1
11.	Field demonstration on soil & moisture conservation measures	1
12.	Crops and cropping systems for drylands	1
13.	Acquiring skill in tillage methods for <i>in-situ</i> moisture conservation	1
14.	Mulching and its effects on soil moisture conservation	1
15.	Seed soaking, seed treatment with chemicals for sowing in dryland areas	1
16.	Visit to rainfed research station/watershed.	1

References:

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4. Dhruva Narayan, V.V. Singh, P.P., Bhardwaj, S.P., U. Sharma, Sikha, A.K., Vital, K.P.R. and Das, S.K. 1987. Watershed Management for Drought Mitigation, ICAR, New Delhi.

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6. Singh, P.K. 2000. Watershed Management (Design & Practices), e-media Publication, Udaipur, India.
7. Singh, R.P. 1995, Sustainable Development of Dryland Agriculture in India. Scientific Publishers, Jodhpur.
8. Singh, S.S., 1993, Crop Management Under Irrigated and Rainfed Conditions, Kalyani Publishers, New Delhi.

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