Ch. Charan Singh University, Meerut
M.Sc. (Ag.) Syllabus for all Subjects

I-Semester

J1004

Course -

M.M. : 100

Fundamentals of Bio-statistics and Computer Applications (J-104)

Teaching Hours : 50

1. **Processing of data :**

Introduction to Statistics, Classification and tabulation of statistical data, frequency distribution, diagrammatic and graphical representation of data-bars, circles, rectangles, histogram, frequency polygon, frequency curve and cumulative frequency curves. 05

2. **Measures of Central Tendency and Dispersion:**

Mean, median, mode, quartiles and calculation of median, mode and quartiles by graphs; range , quartile deviation, mean deviation, standard deviation, variance, coefficient of variation and standard error of mean. 10

3. **Probability and Distribution :**

Random experiment, events-exhuastive, mutually exclusive, equally likely, independent and favourable; definition of probability (with simple exercises), law of addition and law of multiplication of probability (with simple exercises), random variable – discrete and continuous, definitions of Biomial, Poison and Normal distributions and simple properties of the above distributions (without derivation). 10

4. **Correlation and Regression :**

Bivariate data, bivariate frequency distribution, simple correlation, Karl pearson's correlation coefficient, rank correlation, Spearman's rank correlation coefficient, linear regression, regression regression coefficients and their relation with correlation.

12.07.10

...10

coefficient, multiple regression, multiple and partial correlation coefficients (for three variables only). 14

5. Computer Application :

Introduction to Computer : Definition, History, generation of development, characteristics of computers , benefits and application of computers.

Organisation of Computer- Hardware : Inputs devices, output devices, CPU, storage unit, Software : Types of software, application of software, system software, utility software, general purpose software.

Binary number system and its conversion, Introduction to statistical packages (Excel, SPSS, SYSTAT, Sigma stat). 10

(Note: Calculators may be used in theory paper).

Suggested Readings:

1. Gomez. A.G. and Gomez, A A (1994). Statistical Procedures for Agricultural Research, 2/e. John Willey and Sons, New York

2. Hashmad A. Reza. (1988). Statistical Methods for Agricultural Sciences. Timber Press, Portland, Oregan, USA.

3. Snedecor, G.W. and Cocharan, W.G. (1980). Statistical Methods, 7/e. Iowa State University Press, Ames, Iowa.

4. Sinha P.K. Fundamentals of Computers, BPB Publication, Delhi.

5. Panse, V.C. and Sukhatme, P.V. (1967). Statistical Methods for Agricultural Workers.ICAR, New Delhi.

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12.07.2010

Sem - I
Course - I

3

J-1005

Modern concept of crop production

Crop growth in relation to environment,
Concepte of potential yield and its realisation.
Modern concepts in tillage : zero, or minimum,
Conservation tillage etc.
Optimisation of plant population and planting geom
in relation to soil fertility, ~~solar~~
Mitscherlich, Baule and Inverse-yield nitrogen
laws.
Biotic and abiotic stresses.
Concept of Ideal plant type
Crop modelling for maximizing ~~crop~~ yield
Crop response production function :
Crop rotation and cropping scheme.
Cropping and farming system for sustainable agricul
Crop production under protective agriculture, Precision
agriculture
Crop and growth analysis in relation yield maximi

(Convener)
23-07-2010

Sem :
Course -

Kharif crops

(J-1006)

Origin, history, distribution, adaptation, classi; morphology, Phenology, physiology, Varietal improvement and production technology of rice, maize, Sorghum millets, Pigeonpea, mungbean, urdbean, groundnut Soybean, Cotton, Jute, Sunhemp,

Quality Components and industrial uses of the main and by product and their post harvest handling for marketing.

Smt
Secretary
23-07-2010

Dy. Dir/R

Clerk.

5

Managment of Problim Soils ✓

Sie Cour

(1007)

Origin, natur, properties and distribution of salini sodic, calcarious, acid and watir logged soils. Plo response to soil reaction, nutrint imbalance in problim soils; extint of damage to crop. Crop tolirance to solity, sodicidy, acidity and watir logging. Riclamation of problim soils; Role of soil amindments and soil drainage; Agronomic practices in relation to problim soils; wasti land diminsions, causes, risk and practices of managimi managing thi eroded and ravine lands; Soil requiring thi unusual managiment - organic, acid sulphate, sandy, forist, rangelands and disturbed soils.

(Convener)
23-07-2010

Ch. Charan Singh University, Meerut
M.Sc. (Ag.) Syllabus for all Subjects

II - Semester
(J-2004)

Course -

M.M. : 100

Statistical Methods in Agriculture (J-204)

Teaching Hours : 50

1. **Theory of Sampling :**
Concept of sampling, sampling Vs complete enumeration, simple random sampling, stratified sampling, systematic sampling, cluster sampling and multi-stage sampling (methods, advantages and disadvantages only). 5

2. **Testing of Hypothesis :**
Null and alternative hypothesis, two types of error, level of significance, power of the test; one tailed and two tailed tests. 3

3. **Test of Significance :**
Z and t-tests for testing equality of two means, chi-square test for testing goodness of fit, independence of attributes (contingency table) with Yates correction and testing for the variance of population, F-test for testing the equality of two variances and homogeneity of means (analysis of variance). 15

4. **Analysis of Variance :**
Analysis of variance with one way and two way classification (one observation percell). 05

5. **Design of Experiments :**
Basic principles of design of experiments, uniformity trials, shape and size of the plots and blocks, completely randomized, randomized block and Latin square designs and their analysis, Missing plot technique in R.B.D., simple factorial experiments of the 2^2 and 2^3,

C.C.S University Meerut

Syllabus - M.

2007

Course — Rabi crops.

origin, history distribution, adaptation, class, cation, morphology, Phenology Physiology, varietal improvement and production Technology of wh Barley, Chickpea, Lentil, Pea, Rapseed & musta Sunflower, Safflower, linseed, Sugarcane, Sugarbe Potato, tobacco and other important regional crops of the area; Quality component and industrial use of the main and by products and their post-harvest handling for Marketing

Convener
23-07-2010

Practical (IInd - Sem.)
J-605

→ Measurement of soil moisture using tensiometer, pressure plate and membrane,
→ Making of soil moisture characteristic curve
→ water flow measurment by using different devices.
→ Determining soil profile moisture deficit and irrigation requirements
→ Computation of water requirement of crops using modified Penman formula
→ Determination of Infiltration rates and hydraulic Conductivity.
→ Measurement of water flux under saturated and unsaturated conditions
→ Determination of soil pH, organic C, total N, available N, P, K & S in soils, " total N, P, K & S plants;
→ Interpretation of interaction effect and computation of economic and yield optima. Rapid plant tissue tes
→ Seed bed preparation for rabi crops, ~~sowing methods~~
→ Selection and Treatment of seeds,
→ Estimation of seed rate, fertilizer requirement.
→ Identification and control of weeds
→ Study of various crops grown on research farm and adjoining farmers field, Observations on plant growth and yield characteristics, yield estimation, Judging of maturity and determination of harvesting stage and estimation of cost of cultivation.

In charge
Convener

confounding in factorial experiments, split-plot experiments (Layout only).

22

(Note : The statistical tables and calculators may be used in theory paper).

Suggested Readings:

1. Chakraborti, M.C. (1962). Mathematics of Design and Analysis of Experiments. Asia Publishing House, Bombay

2. Chandel, S.R.S. A Hand Book of Agricultural Statistics. Achal Prakashan Mandir, Kanpur

3. Cocharan, W.G. and Cox, D.R. (1987). Experimental Designs. John Willey and Sons, New York.

4. Gomez. A.G. and Gomez. A A (1994). Statistical Procedures for Agricultural Research, 2e. John Wiley and Sons, New York

5. Murthy, M.N. (1977). Sampling Theory and Methods. Statistical Publishing Society, Calcutta.

6. Panse, V.C. and Sukhatme. P.V. (1967). Statistical Methods for Agricultural Workers, ICAR, New Delhi.

Convener 23-07-2010

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Course - J2006 ✓ Course

Soil fertility management and fertilizer use:

Soil fertility and productivity - Soil composition in relation to crop production organic and inor constituents, essential plant nutorients, deficiency and toxicity symptoms of major and micronutri and remedial measures, transformation and dy ~~ems of major~~ dynamics of major plant nutrie Kinds of fertilizers - straight, compl and bulk blended methods of fertilizer applic crop response to nuteriuts fertilizer use efficien agronomy chemical and Physiological methods of increa fertilizer use efficiency, nutrients interaction. fertilizer application in cropping systems direct, residual and cumulative effects integrated plant nutrients supply systems organic manures, compost, green manures, vermi-compost, bio fertilizers, crop residue and inorganic fertilizers, sustainable agriculture and soil fertility, fertilizers and environment, fertilizer use in problem soil, soil moistu nutrients interactions.

(Convener)
23-07-2010

11

Course

Title :- Principles and practices of water management

Water and its role in plants; Water resources of India; Major irrigation projects and extent of area and crops irrigated in India; Soil Water movement and water availability, uptake, transport and transpiration in plants; Soil water plant relationship; plant response to water stress; scheduling, depth; Methods of irrigation, micro irrigation system; fertigation. Management of water in controlled environments and poly-houses; Water use efficiency; Water management of crops and cropping systems; Soil, plant and meteorological factors determining water needs of crops; Crop plant adoption to moisture stress Condition; Quality of irrigation water; Effect of saline water and soil salinity on plant water retention and management of crops; Excess soil water plant growth; Water management in problem soils; Drainage requirement of crops and methods of field drainage, their layout and spacing, drainage coefficient and irrigability of lands.

(Convener)
23-07-2016

Course - 8

Syllabus - M.

12

Course

J-2007

Rabi crops.

Origin, history distribution, adaptation, classification Morphology, Phenology Physiology, varietal improvement and production Technology of Wheat Barley, Chickpea, Lentil, Pea, Rapseed & mustard, Sunflower, Safflower, linseed, Sugarcane, Sugarbeet Potato, tobacco and other important regional crops of the area; Quality component and industrial use of the main and by products and their post-harvest handling for marketing

(Convener)
23-07-2010

Syllabus M.Sc (Ag) Agronomy

Semester III

Course – J3005

Principles and practices of weed management

Classification and characteristics of weeds ; special weed problems including aquatic and parasitic weeds. ecology and physiology of major weeds; ecophysiology of crop weed competition including allelopathy; weed indices ; Principal and method of weed control, concept of integrated weed management; weed control through bioherbicides, mycoherbicides and allelochemicals ; Herbicide classification; mode and mechanism of action of herbicides ; herbicide selectivity. Persistence of herlricides in soils and Plants herbicide mixtures, adjuvants and safeners : degradation of herblcides in soil and plants ; effect of herbicides in relation to environment; herbicide resistance in weeds and crops : weed management in major crops and cropping systems; weed shifts in cropping systems ; control of weeds in non-cropped situations.

Role of genetically modified (GM) crop in weed management

Practical

Identifcatoin of important weeds of different of different crops ; preparation of a weed herbarium; weed survey in crops and cropping systems ; crop –weed competition studies ; preparation of spray solutions of herbicides for high and low – volume sprayers ; use of various types of spray pumps and nozzles and calculation of swath width ; economics of weed control ;

Suggested readings

Aldlrich, R.J and Kramer , R.J 1997. Principles in weed Management . Panama pub. New Delhi .

Ashton , F.M . and Crafts, A.S. 1981. Mode of action herbicides ,2nd Edition . Wileyinter science , pp.524.

Gupta, O.P. 2000. Wed Management – Principles and practies . Academic . India Pub. Pp.269.

Jimdahl . R.L . 1999 . Fundamentals of Weed Science. 2nd Edition . Academic Press . New York .pp, 556.

Mandal ,R.C. 1990. Weed, Weedicides and Weed Control – Principals and Practices . Agro – Botanical Pub. Bikaner.

Rao , V.S . 2000 Principales of Weed Science . Oxford and IBH .Pub. New Delhi pp. 555

Subramanian, S, Ali, A.M. and Kumar. R.J 1997. All About Weed Control, Kalya. Pub. New Delhi .pp. 315.

Dr. N.T.Yaduraju , (ICAR) Weed Mangements .

Dr. (A.K.Singh (I.A.R.I))

Dr. Navneet Kumar

Dr V.K.Goswami

18-10-11

Dr. D.V. Singh (convenor)

(Dr. Jaibir Tomar)

Sem- III Course

Agronomy of fodder, forage, Medicinal and Aromatic Crops

~~Fodder and forage crops~~

J 3006

Adaptation , distribution , varietal improvement , Agrotechniques and quality aspects including anti – quality factors of important fodder crops like teosinte , maize, Sorghum bajra, guar, cowpea, oats, barley, berseem, lucerne and clovers; year round fodder production and managements, preservation and utilization of forage and pasture crops ; principles and methods of hay and silage making ; chemical and biochemical changes ,nutrient losses and factors affecting quality of hay and silage ; use of physical and chemical enrichments and biological methods for improving nutrition value of poor quality fodder ,Economics of forage cultivation.

Medicinal and aromatic crops

Importance of medicinal and aromatic plants in human health, national economy and related industries ; classification of medicinal and aromatic plants according to botanical , characteristics and uses ; climate and soil requirements ; cultural practices ; yield and important constituents of medicinal and aromatic plants (Isabgol, citronella, palmarosa Rauwolfia , poppy, nux vomica, mentha, basil, geranium etc.)

Pracitical

Exercises on farm operations in raising fodder crops ; exercises on canopy measurement , yield and quality estimation, viz . crude protein , lignin , silica cellulose etc. of various fodder and forage crops and antiquality components like HCN in sorghum and such factors in other crops ; hay and silage making and economics of their preparation.

Indentification of crops based on morphological and seed characteristics ; raising of herbarium of M&A plants ; quality characters in medicinal and aromatic plants ; methods of analysis of some essential oils and other chemicals of importance in M&A plants.

Suggested Readings

Wheeler , W.A. 1950. Forage and Pasture Crops . D. Van Nostrand Company Inc. New York .

Whiteman, P.C 1980 Tropical pastures . Oxford University Press, Oxford

Narayanan, T.R. and Dobadghao , P.M. 1972. Forage Crops of India , ICAR, New Delhi .

Singh.P. and Srivatava , A.K. 1990. Forage production Technology , IGFRI , Jhansi.

Handa , S.S. 1984. Cultivation and Utilization of Aromatic Plants , RRL , CSIR, Jammu.

Handa , S.S. 1984. Cultivation and Utilization of Medicinal Plants , RRL, CSIR, Jammu.

Hussain, A. 1993. Medicinal Plants and their Cultivation , CIMAP, Lucknow.

Hussain ,A. 1994 Essential Oil Plants and their cultivation, CIMAP, Lucknow.

Dr. Navneet Kumar

V.K. Gosawami

18-10-11 (convenor)

(Dr. Jaibir Tomar)

15

III Course J 3007

Soil conservation and watershed managements

Soil erosion – definition, nature and extent of erosion ; types of erosion , factors affecting erosion ; soil conservation – definition and its importance in Indian agriculture methods of soil conservation – agronomic measures, contour cultivation , strip cropping, cover crops , vegetative barrier ,improved dry farming practices ; mechanical measures – bunding , gully control, bench terracing ; role of grasses and pastures in soil conservations ; wind breaks and shelter belts ; watershed managements- definition, objective, concepts, approach, components, steps in implementation of watershed ; development of cropping system for wartershed areas ; alternate land use systems ; agro forestry , ley farming ; *Jhum* management basic concepts , socio- ethnic aspects , rehabilitation of abandoned *Jhum* lands and measures to prevent soil erosion.

Practical

Computation of average rainfall data by different methods .

Study of different types of erosion ; field studies of different soil conservation measures ; runoff and soil loss measurement; due to water and wind ;identification of different grasses and trees for soil conservation ; visit to ,demonstration and training centre particularly Dehradun.

Suggested Readings

Arakeri , H.R. and Roy, D. 1984. Principles of Soil Conservation and Water Management Oxford and IBH Publishing Co, New Delhi .

Datta , S.K. 1986 . Soil Conservation and Land Management . International Book Distributors , Dehradun, India ,

Dhruvanarayana , V.V. 1993. Soil and water Conservation Research in India . ICAR , New Delhi . .

Ghumare ,N.K. 1962. Studies on behaviour of Contour Bunds , Soil and Water Conservation in India . 10:27-32.

Gurmel Singh, C. Rambabu and Subhas Chendra . 1981. soil loss prediction research in India , CSWCRFTI , Dehradun , India.

Gurmel Singh, C,Venkataraman , G, Sastry , B, and Joshi , P 1990. Manual of Soil and Water Conservation Practices , Oxford and IBH Publishing Co. New Delhi.

Murthy , V.V. N . 1995 Land and Water Management Engineering. Kalyani Publishers, Ludhinana. India .

Rama Roa , M.S.V. 1962 Soil Conservation in India, ICAR, New Delhi.

Reddy, S.R. 1999. Principles of Agronomy . Kalyani Publishers , New Delhi , pp . 458.

Sakara Reddi , G. H. and Sithapathi Rao, C. 1967. A Manual , on Soil Cinservation , Department of Agriculture , Governments of AP, Hyderabad , India.

Tripathi , R.P. and Singh, H.P. 1993. Soil Erosion and Conservation. Willey Eastern Limited, New Delhi.

Soil couservation reseach in India Published by ICAR .

Member
Dr. NAVNEET KUMAR

V.K. Goswami

10-10-11
(Convenor)

(Dr. Jaibir Tomar)

Sem - III Course J30008

Organic farming

Impact of high technology agriculture on crop production and environment. Alternate agriculture / Sustainable agriculture . status of organic farming in India. Organic farming – concept and definition its relevance to India and global agriculture as well as future prospects. Components of organic farming system research – crop and soil management, organic residues , organic manures , earth worms, vermicompost , green manure and on farm waste recycling, Non – chemical weed mgt, biofarming Domestic and industrial waste recycling, energy use, food quality etc. Ecological agriculture – concept definition and objectives, Ecological farming system – Integrated intensive farming system (IIFS), Low input sustaintable agriculture (LISA) .Soil organic matter – source , composition and energy of organic matter, decomposition of organic compounds, C-cycle , humus , influece of organic matter on soil properties as well as higher plants, corbon / nitrogen ratio and its significmce. Organic Soils – classification , physical and chemical characteristics and their management. Organic farming us Traditional farming.

Practical

Aerobic and anaerobic methods of making compost, making of vermin compost , Identification and nursery raising of important agroforestry trees and for shalter belts ; Efficient use of biofertilizers – technique of treating legume seeds with Rhizobium cultures , use of Azotobacter . Azospirullum and PSB cultures in field ; Visit to organic farm ; Quality standards . inspection , certification and labeling and accretion procedures for farm produce from organic farms.

Suggested Readings

Ananthakrishnan , T.N (editor) 1992. Emerging trends in Biological centre phytophagous insects . Oxford & IBH , New Delhi p.225.

Gaur , A.C. 1982. A Manual of Rural Composting . FAO/ UNDP Reginal Project Documents , FAO .Rome.pp. 102.

Lampin,N. 1990. Organic farming . Farming Press Books, Ipswitch , U.K.

Palaniappan , S.P. and Anandurai, K. 1999 . Organic Farming- Theory and practical Scientific Pub., Jodhpur , pp.257.

Reddy , M.V. (editor) 1995. Soil Organism and Litter decomposition in the Tropics. Oxford & IBH, New Delhi. Pp.274.

Singh, SP(editor) 1994. Technology for Production of Natural Enemies, Project Directorate of Biological Control, Bangalore , pp 220.

Trivedi, R.N. 1993. A Text Book of Environmental Sciences, Anmol Pub, New Delhi, pp.410.

Navneet Kumar

Dr. V.K. Gothwal

18-10-11 (convenor)

(Dr. Jaibilomar)

Veeresh, G.K., Shisvashanka, K.and Suiglachar , M.A. 1997. Organic Farming and Sustainable Agriculture, Association for Promotion of Organic Farming, Bangalore.

Venkata Rao, B.V. 1995. Small Farmer Focussed Inergrated rural development : Socioeconomic environment and legal perspective : Pub.3, Parisaraprajna Parishtana ,

Bangalore , pp. 12.

WHO 1990. Public Health Impact of Pesticides used in Agriculture, WHO, Paris.

Woomer, P.L. and Swift ,M.J. 1994. The Biological Management of Tropical Soil Fertility, T.S:B.F & Wiley.

Dr. Navneet Kumar

Dr. V.K Goswami

Dr. Jaibir Tomar

18-10-11
convenor

Syllabus w.e.f. on Semester System 2010-11

COURSES OF IV SEMESTER AT M.SC (AG) LEVEL IN AGRONOMY SUBJECT ARE AS FOLLOWS

1. Dry land Agronomy. J4005
2. Agro – forestry and sustainable agriculture J4006
3. Crop Ecology and Geography J-4007
4. Seed Production Agronomy. J4008

Page No. 01 to 05

(Convener)
Dr. D.V. Singh

SEMESTER – IV

DRY – LAND AGRONOMY

J 40025

M.M. 100

Definition, concept, characteristics of drylands and rain-fed farming; significance an dimension of dryland farming in Indian agriculture; constraints limiting crop production in dryland areas; characterization of environment from water availability; types of droughts; adaptation of crop plants to droughts; drought management strategies; predation of appropriate crop plants for dryland areas; mid-season corrections for aberrant weather conditions; water-harvesting concepts, techniques and practices; use of mulches, kinds, effectiveness and their economics; antitranspriants; soil and crop management techniques, tillage, seeding, fertilizer use, crop and varietal choice; concept of watershed management and its application in India.

PRACTICAL:

Rainfall probility analysis for crop planning; measurement of soil and water losses; in situ soil moisture conservation practices; mulches, including live mulches for minimizing evaporation losses; measures to manage prolonges drought during crop season; dry seeding practices due to delayed monsoon rains; visit to a dryland research centre; study of on-going watershed management programmes and agroforestry systems. Measurement of infiltration rate and percolation rate.

Dr Dev. Singh
HOD Agronomy
GMV Rampur Mau
(Convener)

Greek MCQs

20

SUGGESTED READINGS:

Gupts, U.S. (Edited) 1995. Production and improvements of crops for Drylands. Oxford and IBH Publishing Company Pvt. Ltd. New Delhi.

Jodha, N.S. Technology Options and Economic plicy for Dryland Agriculture. Concept Publishing Co. New Delhi.

Kanitkar. N.U. 1944. Dry Farming in India, ICAR, New Delhi.

Katyal, J.C. and Farringtion, J, 1995. Reasearch for Rainfed Farming, CRIDA, Hyderabad.

Ramaswamy, P.1982. Dry farming teachnology in India. Agricode Publishing Academy, New Delhi.

Singh, R.P. 1988. Improved Agronomic Practices for Dryland Crops, CRIDA, Hyderabad.

Singh, S.D. 1998, Arid Land Irrigation and Ecological Management. Scientific, Pub., Jodhpur.

Singh, S.D. Water Harvesting in Desert. Manak Publications, New Delhi.

Sem - IV

(3)

AGRO-FORESTRY AND SUSTAINABLE AGRICULTURE

(14006)

M.M. 80 100

Definiation, concept, scope; historical perspective, agroforestry systems agrisiliviculture, slivipasture, agri-silvipature, agri-horticulture, aqua-silviculture; alley cropping and energy plantation; agroforestry systems for forage and fuel wood production, resource conservation; improvement of degraded lands' biological diversity and sustainable agriculture and environmental protection; associative influence in relation to above-ground and underground interferences; aliolopathy in various agroforestry systems0direct and indirect effect; efficient agroforestry design/models for different agroclimatic conditions; tree-crop-snimal relationship; food=fodder-fuel systems; Productivity and sustainability; alternate land use systems through agroforestory; social acceptability and economic viability; agroforestry intervations with multipurpose tree species; mutritive value of tree leaf, economics of AF systems.

PRACTICAL :

Identification of various tree species and their planting methodology and techniques, study of litter fall and biomass deposits, organic matter and nutrient conservation; poloroding and defoliation, coppicing; light and temperature measurements; visit to a institute related to agroforestry.

SUGGESTED READINGS:

Hedge., H.G., Relwani, L.L. and Kelkar, V.D. (ed.) 1989. Promotion of Fodder of Fuelwood Trees. BAIF Development Research Foundation, Pune.

Jha, L.K. and Sen-Sarma, P.K. 1997. A Manual of Forestry Extension Education. APH Publishing Corp. New Delhi.

Nair, P.K.R. 1993. An Introduction to Agroforestry. Kluwer, Netherlands.

Pathak, P.S. and Roy M.M. 1994. Agroforetry Systems for Degraded Lands. Oxford & IBH Publishing, New Delhi.

Tejwani, K.G. 1994. Agroforestry in India, Oxford & IBH Pub., New Delhi.

Sem - IV

CROP ECOLOGY AND GEOGRAPHY

J 4007

M.M. 100

Principles of Crop ecology; Ecosystem concept determinants of productively of ecosystem, Physiological limits of crop yield and variability in relation to ecological optima. Crop adaptation; Climate shift and its ecological implication, Green House effect; Agro ecological and agro-climatic, Regions of India, Geographical distribution of cereals, legumes oilseeds, Fodder and forage and commercial Crops (Sugarcane, Potato and Tobacco). Adverse climatic Factors and crop productivity, Physiological stress in crops, Remote sensing.

PRACTICAL:

Crop distribution in different agroclimatic and agro-ecological zones.

Phenological studies in different crops.

Studies on photo and Thermiperiodism.

Management of weather parameters, recording and interpretation.

Visit to Agromet – observatory and research institutions related to Ecology.

SUGGESTED READINGS:

Agrawal, R.L. 1995 Seed Technology Oxford & IBH pub., New Delhi.

Agrawal, P.K. and Dadlani . M. 1992 Techniques in seed Science & Technology, South Asian Pub. New Delhi .

Dahiya . B.S. and Rai. K.N . 1997 Seed Technology. Kalyani Pub. New Delhi.

Sen. S. and Ghosh, N .1999 . Seed Science & Technology, Kalyani Pub, New Delhi.

Sem - IV

(5)

SEED PRODUCTION AGRONOMY

(J-400B)

M.M. 100

SEED PRODUCTION AGRONOMY

Seed production techniques and agronomical practices for important crops – cereals, pulses, oilseeds, fibre crops and fodder crops.; seed industry in the country and role of various agencies seed morphology seed multiplication chain, seed purity seed health , Dormancy . seed vigour ; Hybrid seed production, seed treatments , seed viability , seed quality , physiology of seed germination ; seed testing for germination and seeding evaluation ; seed certification , processing , grading and storage ; distribution and marketing store grain pests .

PRACTICALS:

Seed quality on the basis of purity and germination; reguing; detasseling and familiarization with seed processing equipments; materials and precautions for seed storage ; comparison of farmer saved seed with certified seed.

SUGGESTED READING:

Ambasht. R.S. 1986 A Text Book of plant ecology. 9th edu. Students friends & Co. Varanasi. India, P. 351.

Kumar, H.D, 1992 Moddern Concepts of Ecology. 7th Edn. , Vikas pub. House Pvt. Ltd. New Delhi. p.377.

Lenka, D. 1998 Climate , Wealther and Crops in India . Kalyani Pub. New Delhi,pp. 481

Misra , K.C. 1989 Manual of Plant Ecology. Third Edn. , Oxford & IBH pub. Co. New Delhi . P 431

Odum , E.P 1975. Ecology, 2nd Oxford & IBH Pub Co. Pvt .Ltd, New Delhi, pp 249.

Sharma, P,D. 1998 Ecology and Environment . Rastogi Pub. Meerut Pp. 660.

Singh, J. and Dhillon, S.S. 1984 Agricultural Geography. Tata Mcgraw Hil Pub. Co. Ltd., New Delhi, pp, 412.

Wilsie, C.P. 1961. Crop Adaotation and Distribution, Eurasia Pub. House (Pvt.) New Delhi, pp. 448.