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

I-Semester ✓

J1504

Course -

M.M. : 100

J1504

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:

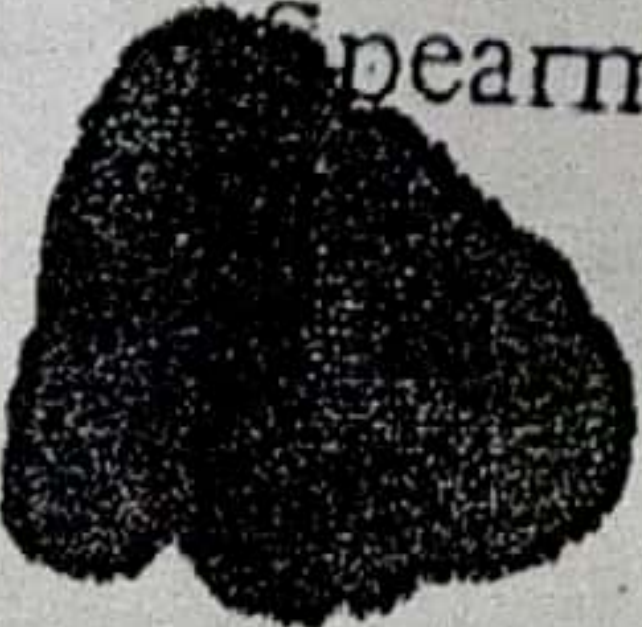
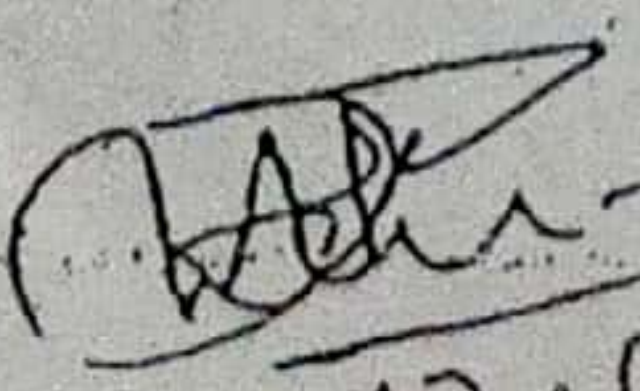
Mean, median, mode, quartiles and calculation of median, mode and quartiles by graphs; range, quartile deviation, mean deviation, standard deviation, variance, coefficient of variation and standard error of mean. 10

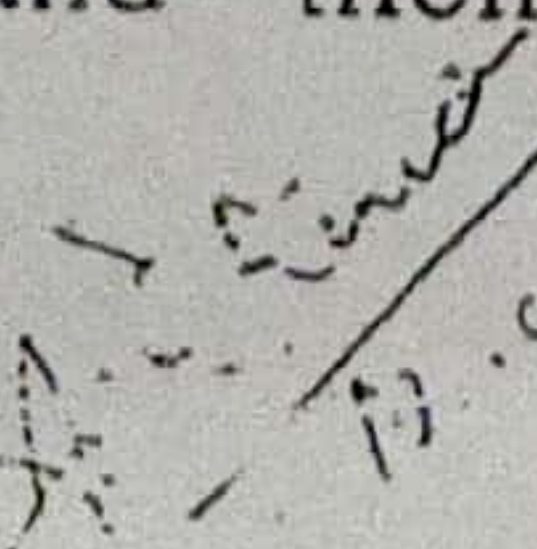
3. Probability and Distribution :

Random experiment, events-exhaustive, 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 Binomial, Poisson 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 coefficients and their relation with correlation.



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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.

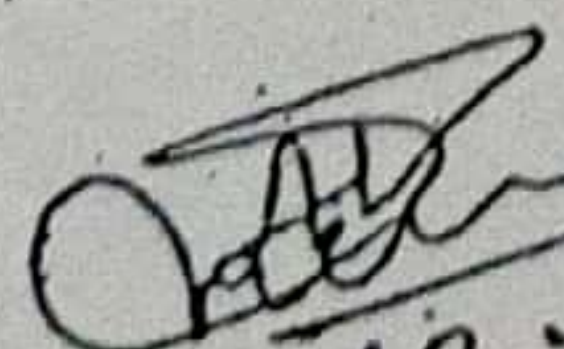
Organisation of Computer- Hardware : Inputs devices, output devices, CPU, storage unit, Software : Types of software, application of software, system software, utility software, general purpose software.

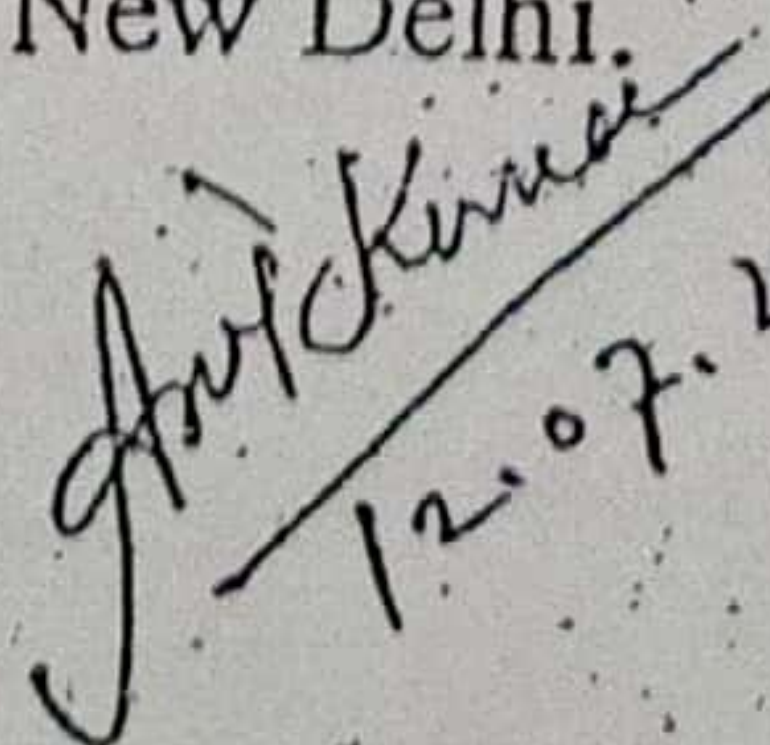
Binary number system and its conversion, Introduction to statistical packages (Excel, SPSS, SYSTAT, Sigma stat). 10

(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, Oregon, USA.
3. Snedecor, G.W. and Cochran, 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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J-1008 ✓
Modern concept of crop production

Crop growth in relation to environment,
Concepts 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, ~~soil~~
Mitscherlich, Baule and Inverse-yield nitrogen
laws.

Biotic and abiotic stresses.

Concept of Ideal plant type
Crop modelling for maximising crop ~~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 maxim

Mr. Ambh
(Convener)
23-07-2010

Mr. D. K. Singh

Shri

Dr. P. K. Singh
Dr. P. K. Singh
Dr. P. K. Singh

Kharif crops

(U-1006)

Sem I
Course -

Origin, history, distribution, adaptation, classification, morphology, Phenology, physiology, Varietal improvement and production technology of rice, maize, Sorghum millets, Pigeon pea, 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.

Dr. Anand
Jeyaraj
23-07-2010

D. Ditya

Dr. Jeyaraj

Suk.

Dr. Jeyaraj

Dr. Jeyaraj

Management of Problem Soils ✓

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(J1007)
Origin, nature, properties and distribution of saline, sodic, calcareous, acid and water logged soils. Plant response to soil reaction, nutrient imbalance in problem soils; extent of damage to crops.

Crop tolerance to salinity, sodicity, acidity and water logging. Reclamation of problem soils; Role of soil amendments and soil drainage; Agronomic practices in relation to problem soils; waste land dimensions, causes, nature and practices of managing the eroded and ravine lands; Soil requiring the unusual management - organic, acid sulphate, sandy, forest, rangelands and disturbed soils.

Mr. Anshu
(Convenor)
23-07-2010
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Dr. Dr. Dr.

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

Course -

II - Semester
(J-2004)

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 per cell). 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 .

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✓ U. S. University Meerut

Syllabus - M.
J 2007

Course - Rabi crops.

origin, history distribution, adaptation, classification, morphology, Phenology Physiology, varietal improvement and production Technology of Wh
Barley, Chick Pea, Lentil, Pea, Rapeseed & mustard
Safflower, Safflower, linseed, Sugar cane, Sugar be
Potato, Tobacco and other important regional crops
of the area; Quality component and industrial
use of the main crops and their post-harvest
handling for marketing

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(Coordinator)
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- Measurement of soil moisture using tensiometer, pressure plate and membrane,
- Making of soil moisture characteristic curve
- water flow measurement 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 in plants;
- Interpretation of interaction effect and computation of economic and yield optima. Rapid plant tissue test
- 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.

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

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(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. Cochran, 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, 2nd ed. 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.

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Soil fertility management and fertilizer use:

Soil fertility and productivity, Soil composition in relation to crop production organic and inorganic constituents, essential plant nutrients, deficiency and toxicity symptoms of major and micronutrients and remedial measures, transformation and dynamics of major dynamics of major plant nutrients

Kinds of fertilizers - straight, complex and bulk blended methods of fertilizer application crop response to nutrients fertilizer use efficiency agronomy, chemical and Physiological, methods of increase fertilizer use efficiency, nutrients interaction, fertilizer application in cropping systems, direct, residual and cumulative effects, integrated plant nutrients supply systems organic manures, compost, green manure, vermi-compost, bio-fertilizers, crop residue and inorganic fertilizers, sustainable agriculture and soil fertility, fertilizers and environment, fertilizer use in problem soil, soil water nutrients interactions.

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23-07-2010

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Course

Course

Title: - Principles and practices of water ~~man~~ management

20015

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 systems, fertigation. Management of water in controlled environments and polyhouses; Water use efficiency; Water management of crops and cropping systems; Soil, plant and meteorological factors determining water needs of crops; Crop plant adaptation to moisture stress condition; Quality of irrigation water; Effect of saline water and ~~the~~ soil salinity on plant water retention and management of crops; Excess soil water plant growth; Water management in problem soils; Drainage requirements of crops and methods of field drainage, their layout and spacing, drainage coefficient and irrigability of lands.

Dr. H.

(Convener)
23-07-2016
H. G.

S. K.

Dr. J. B.
Dr. P. K.
Dr. M. K.

Course

Rabi crops.

J-2007

Origin, history distribution, adaptation, classification
 Morphology, Phenology, Physiology, varietal
 improvement and production Technology of Wheat
 Barley, Chick Pea, lentil, Pea, Rapeseed & mustard,
 Sunflower, Safflower, linseed, Sugar cane, 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

Aravind
 (Convener)
 23-07-2010

D. Ditya

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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 herbicides in soils and Plants herbicide mixtures, adjuvants and safeners : degradation of herbicides 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

Identification 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

Aldrich, 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. Weed Management – Principles and practices . 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 .

(Signature)
Dr. Chaudhary (I.C.H.)

(Signature)

(Signature)
Dr. V.K. Goswami

(Signature) 18-10-11
Dr. D.V. Singh
(convenor)

(Signature)
(Dr. Jaibir Poman)

(Signature)
Dr. Navneet Kumar

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.)

Practical

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.

Identification 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, IGRI, 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. Anurag Kumar

V.K. GOSWAMI

18-10-11
(Convenor)

(Dr. Jaishri Kumar)

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 cousevation reseach in India Published by ICAR .

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V.K. Goswami
10-10-11
(Convenor)

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Dr. Jaibisom

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 sustainable agriculture (LISA) .Soil organic matter – source , composition and energy of organic matter, decomposition of organic compounds, C-cycle , humus , influence of organic matter on soil properties as well as higher plants, carbon / nitrogen ratio and its significance. Organic Soils – classification , physical and chemical characteristics and their management. Organic farming vs Traditional farming.

Practical

Aerobic and anaerobic methods of making compost, making of vermin compost , Identification and nursery raising of important agroforestry trees and for shelter belts ; Efficient use of biofertilizers – technique of treating legume seeds with Rhizobium cultures , use of Azotobacter . Azospirillum 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 control of phytophagous insects . Oxford & IBH , New Delhi p.225.
- Gaur , A.C. 1982. A Manual of Rural Composting . FAO/ UNDP Regional Project Documents , FAO .Rome.pp. 102.
- Lampin,N. 1990. Organic farming . Farming Press Books, Ipswich , 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.

pp.410.

Narinder Kumar

Dr. Singh
18-10-11
(convenor)

(Dr. Jaisitoman)

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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. N. K. Kumar

Dr. V. K. Goswami

Dr. Jaisir Kumar
18-10-11
(convenor)

Dr. N. K. Kumar

Dr. V. K. Goswami

X

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 J4007
4. Seed Production Agronomy. J4008

Pages: 01 to 5

L. Singh
(convener)
(Dr. Gov. Singh)

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SEMESTER - IV
DRY - LAND AGRONOMY

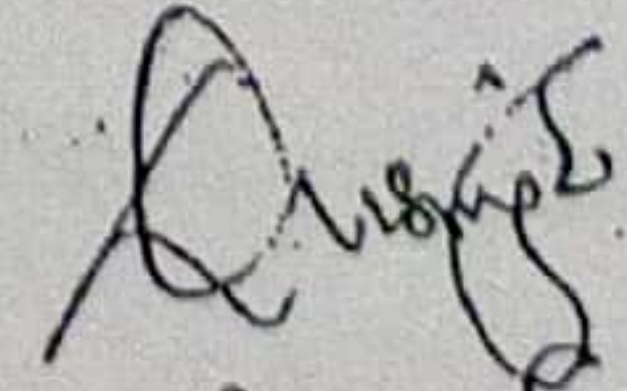
J 4025

M.M. 30/100

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; antitranspirants; soil and crop management techniques, tillage, seeding, fertilizer use, crop and varietal choice; concept of watershed management and its application in India.

PRACTICAL:

Rainfall probability 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 prolonged 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. D. V. Singh
HOD Agronomy
Guru Ramputh Mani
(Censor)

Gruha M.C.R.

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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 Farrington, 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.

Amrith

(2)

Sem - IV

AGRO-FORESTRY AND SUSTAINABLE AGRICULTURE

(34006)

M.M. 20 100

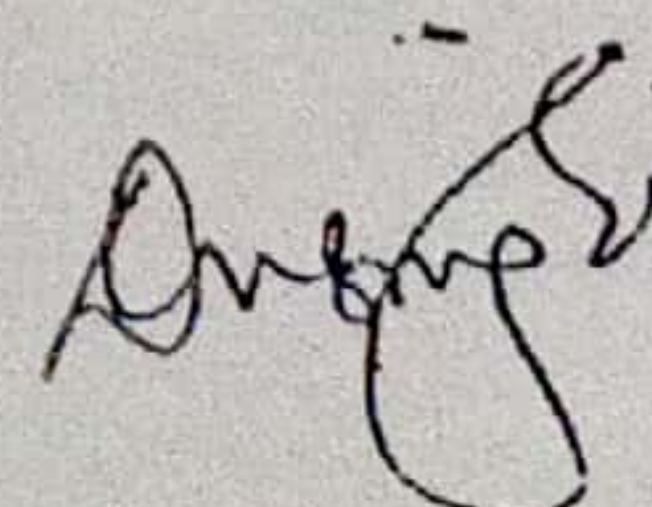
Defination, concept, scope; historical perspective, agroforestry systems agrisilviculture, slivipasture, agri-silvipature, agri-horticulture, aqua-silviculture; alley cropping and energy plantation; agroforestry systems for forage and fuel wood production, resource conservation; improvement of degraded 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-sminal 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; nutritive 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.



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Sem - IV

(41)

CROP ECOLOGY AND GEOGRAPHY

J 4007

M.M. 50 100

Principles of Crop ecology; Ecosystem concept determinants of productivity 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 Thermoperiodism.
- 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.

Ansari

SEED PRODUCTION AGRONOMY

(J-4008)

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 seedling evaluation; seed certification, processing, grading and storage; distribution and marketing store grain pests.

PRACTICALS:

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

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