Senior Certificate Course
on

Agricultural Statistics and Computing
(Online Mode)

(September 02, 2024 – February 14, 2025)

Coordinated By
Training Administration Cell
ICAR-IASRI

Last Date for Receipt of Applications: August 27, 2024
Information to Selected Candidates: August 29, 2024

ICAR- Indian Agricultural Statistics Research Institute
Library Avenue, Pusa, New Delhi
www.iasri.res.in

Introduction

ICAR-IASRI is a premier Institute, established in 1959, mainly responsible for conducting research and imparting education/ training in the field of Agricultural Statistics, Computer Applications and Bioinformatics. There are six divisions in the Institute and the Institute is equipped with the modern facilities that include the *Computing facilities* with latest hardware and software packages along with modern teaching aids, the *e-library* with rich collection of books and journals on Statistics, Computer Science, Bioinformatics and other related disciplines including on-line journals and bibliographic databases.

This course aims to update the analytical skills of the agricultural researchers and to provide them with an opportunity to study and learn statistics and computing along with the use of statistical software for data analysis. The course is practical oriented and more emphasis would be given on interpretation of the results.

Online Mode

The course will be conducted in the online mode.

Number of Participants: 20

Eligibility

Senior Certificate course is organized for employ's of ICAR-Institutes/All Agricultural Universities/State department of Agriculture/Animal Husbandry/Fisheries /Employees of SAARC countries in Agricultural field. Degree in Science/Agriculture or allied fields with working knowledge of Mathematics and handling of Statistical Data. Only those candidates with sufficient knowledge of Statistical Methods and Computer Use may be directly admitted to Module II.

Nomination

Interested personnel fulfilling the eligibility conditions may apply through proper channel and mail the application to Incharge, Training Administration Cell by the due date.

Course Contents

This course would comprise of two independent modules of three months duration each. The course has been structured in a series of lectures and practical session. The course deals with statistical tools and techniques and the use of statistical software packages. The main focus of the course will be on the statistical issues in agricultural research.

Besides laying the focus on concepts and applications, the focus would also be concentrated on analysis of data using statistical packages.

Module I: September 02 – November 29, 2024

Paper-I: Statistical Methods and Official Agricultural Statistics

Statistical Methods

Descriptive Statistics: Compilation of data, Frequency distributions, Scatter diagram, Graphs, Charts, 3-D charts, Use of Computer-Graphic display of data, Measures of Central tendencies and dispersions. Probability and Mathematical Expectation: Postulates of probability, Elementary theorems on probability, Conditional probability, Random variables, Probability function. Concept of random variable and mathematical expectation. Concepts and applications of Binomial, Poisson, Normal distribution, Central Limit Theorem. Concepts of regression and correlation, Method of least squares, Multiple regression and Multiple correlation, Partial regression and Partial correlation. Estimation and Hypothesis testing: Concepts of point estimation and confidence intervals, Hypothesis testing, Simple hypothesis, Composite hypothesis, Tests based on Chi-square, t and F, ANOVA.

Agricultural Statistics

Agricultural and Animal Husbandry Statistics: Scope and conduct of agricultural statistics-Basic and current agricultural statistics-Systems of collection in India and other countries-Methodological aspects of crop estimation and forecasting-improvements affected in Indian Agricultural Statistics in recent years. Census of livestock, Census of Agriculture. Current publications in agricultural and animal husbandry statistics.

Paper-II: Use of Computers in Agricultural Research

Computer Fundamental – Number systems; Functional units of computer, I/O devices, primary and secondary memories. Software – System software and Application software, Introduction to Windows and MS Office. Programming Fundamentals with C++ - Algorithm development, techniques of problem solving, flowcharting, stepwise refinement; Representation of integer, character, real, data types; constants and variables; Arithmetic expressions. Assignment statement, logical expression; Looping and Decision Making Constructs; Arrays; Concepts of Object Oriented Programming, Encapsulation, Inheritance, Polymorphism; Functions; Classes and Objects; String Processing. Networking fundamentals. Internet basics. Concepts of Data Base Management System. Use of SPSS software package for statistical data analysis. SPAR-2 software for statistical data analysis, Online resources of IASRI

Module II: December 02, 2024 – February 14, 2025

Paper-III: Sampling Techniques

Sampling versus complete enumeration, Simple random sampling-Sampling for qualitative and quantitative characters. Systematic sampling. Standard error-Determination of sample size, Stratification and choice of strata-Different methods of allocation-Efficiency of stratification, Cluster sampling (equal and unequal size). Ratio and regression methods of estimation. Two stage sampling (equal and unequal units at both stages). Systematic sampling, Double sampling. Sampling on successive occasions, Non-sampling errors- Planning and organisation of sample surveys. Problems in organizing and conduct of pilot and large scale sample surveys. Details of surveys conducted by the Institute.

Paper-IV: Econometrics and Forecasting Techniques

Econometrics

Introduction and Scope of econometrics. Econometrics models and other specification. Ordinary least squares method of linear regression models and their assumptions. Properties of least squares estimates, test of significance and confidence interval. Maximum likelihood estimation. Concepts of multicollinerity, heteroscedasticity and autocorrelation, Durbin – Watson test, lagged variables, Dummy variables and index numbers.

Forecasting Techniques

Forecast models using weather variables – regression approach; Forecast models using plant characters – between year models, regression approach, within year models, probability models; Agro meteorological models using stress index, water requirement satisfaction index; Time series models; Forewarning of pests and diseases, Forecasting fish production; application of remote sensing techniques in forecasting.

Paper-V: Design of Experiments

Need for designing of experiments – characteristics of a good design. Basic principles – replication, randomisation and local control. Uniformity trials. Shape and size of plots and blocks. Completely randomised design, randomised complete block design. Latin square design. Graeco latin squares. Youden square design. Balanced incomplete block designs. Simple lattice. Analysis of covariance. Missing plot techniques. Cross-over designs. Factorial experiments – symmetrical factorials, Confounding in symmetrical factorial. Concept of asymmetrical factorials. Split and strip plot designs. Response curves and surfaces, standardisation of fertilizer responses. Combination of results of group of experiments. Transformations. Sampling in field experiments.

Paper-VI: Statistical Genetics

Mendel's laws, Linkage, sex-linked and sex-limited inheritance, Multiple alleles, Detection and estimation of linkage. Inheritance of characters showing continuous variation, Multiple factor hypothesis, components of variation, estimation of heritability, response to selection, indirect selection, Progeny row trials and compact family block designs. Use of Discriminant function for selection. Progeny testing and sire evaluation. Elements of population genetics, Hardy-Weinberg law, inbreeding and its effects.

Examination

The candidates will be required to appear in the examination at the end of each module. Those who successfully qualify will be awarded certificates for each module. Those candidates who complete both the modules will be awarded the course certificate

Course Fee

A nominal fee of Rs. 8000/- per participant per module from India, US $ 500 per participant per module from SAARC countries and US $ 1000 per participant per module from other countries. No fee for ICAR employees. Fee is payable at the beginning of each module in the form of online payment with following details: Fees once paid will not be refunded.

Fees can be paid by online Payment Portal of ICAR-IASRI
https://pgiasri.icar.gov.in/payment.aspx
Bank Details for Payment NEFT

Name of Account Holder	: ICAR-Unit-IASRI, New Delhi
Name of Bank	: Canara Bank
Address of Bank	: IASRI, PUSA, New Delhi-12
Account No	: 91421010000017
IFC Code	: CNRB0019142
Nature of Account	: Current Account
MICR Code	: 110015498

All correspondence may be addressed to:

Dr. Alka Arora, Course Coordinator & Incharge
Training Administration Cell, ICAR-IASRI
E-mail: alka.arora@icar.gov.in; tac.iasri@icar.gov.in
Phone: 011-25847284; 9811038150

Application Form for Course on

"Senior Certificate Course (Agricultural Statistics & Computing)"
(September 02, 2024 – February 14, 2025)

1. Module of the Course for which nominated:
2. Full Name (in block letter):
3. Date of Birth:
4. Basic Pay and Scale of Pay:
5. Official Address:_____
6. Telephone No._____
7. Residential Address:_____
   _____
   _____
   Telephone No. (off.): _____ (Res.):_____
   (Mob):_____ Fax No.:_____
   E-mail: _____
8. Educational Qualification:
   Degree: University: Subjects: Year:
9. Total Experience:
   Post Held Organisation: Office From To
10. Have you attended any Course by this Institute previously. If yes give details:
11. Number of Bank Draft and Bank Name

Signature of the Applicant with Date

Recommendations of the forwarding Institute

Signature of the sponsoring Authority with Seal and Date

CERTIFICATE

Certified that the candidate is employed by our Deptt./ organization and on return from the training he will be suitably employed so that his training is best utilized. The candidate would abide by all rules regulations of the Institute.

Signature of the sponsoring Authority with Seal and Date

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5. Official Address:_____

6. Telephone No._____

7. Residential Address:_____

   _____

   _____

   Telephone No. (off.): _____ (Res.):_____ (Mob):_____

   Fax No.:_____

   E-mail: _____
8. Educational Qualification:

   Degree: University: Subjects: Year:

9. Total Experience:

   Post Held Organisation: Office From To

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