IASRI

Indian Agricultural Statistics Research Institute

New Delhi

Courses

1. Early Warning System for Food Security
2. Senior Certificate Course in Agricultural Statistics and Computing
3. Forecasting Techniques in Agriculture
4. Experimental Designs for Agricultural Research
5. Application of Remote Sensing and GIS in Agricultural Surveys
6. Statistical Software Packages in Agriculture
7. Statistical Techniques for Agricultural Research

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Indian Agricultural Statistics Research Institute at New Delhi, India is a premier central institute under the Indian Council of Agricultural Research for research, teaching and training in statistical methodology and computer application in agriculture. It also provides statistical methodology for national agricultural statistics system of the country for generating crop statistics and livestock statistics. Several statistical packages and information systems for agricultural research have been developed by the institute. The institute has achieved international recognition for its high quality research and teaching work in the field of agricultural statistics and computer application.

Post-graduate Education
Besides MSc (Agricultural Statistics), MSc (Computer Application) and PhD (Agricultural Statistics) programme, the Institute is also recognized as a Centre for Advanced Studies in Agricultural Statistics and Computer Applications under the aegis of the United Nations Development Programme (UNDP) during October 1983–March 1992. The Institute continued to be a Centre of Advanced Studies (CAS) in these subject under the aegis of Education Division of ICAR since 1995.

The Institute has grown up as a centre of excellence with adequate infrastructure and facilities to undertake advanced training programmes and to carry out research on various aspects of agricultural statistics and computer application.

1.
Early Warning System for Food Security

The course aims at educating the participants about techniques for estimation of agricultural production and issues involved in food security. The imbalance between demand and supply of food will also be dealt with.

Faculty
A team of scientists working in related areas will comprise the faculty for this course

Course Director	:	Dr Ramasubramaniam V
Duration	:	3 weeks (5-24 June 2009)
Course fee	:	US $ 1,250 per trainee
No. of trainees per course	:	10
Accommodation	:	Will be provided at a very reasonable cost in the Institute's guest house
Eligibility	:	Graduate with adequate knowledge of computers

Course Contents
- **Module 1:** Statistical methods
  Graphical presentation of data; measures of central tendency and dispersion: probability theory; probability distributions; correlation and regression. Concept of testing of hypotheses
- **Module 2:** Sampling techniques
  Concepts of survey sampling: simple random sampling; systematic sampling; varying probability sampling; stratified sampling ratio and regression estimators; cluster sampling; multi-stage sampling
- **Module 3:** Techniques used in studying food security, elementary econometric methods, regression analysis, time series analysis, ARIMA models
- **Module 4:** Forecasting techniques
  Introduction to early warning system for food security; forecasting models; techniques of crop forecasting based on agro-meteorological parameters; crop monitoring/ forecasting using remote sensing data; assessment of demand and supply; monitoring factors affecting the food security-weather, prices, inputs, infrastructure, storage, transportation, public distribution system, stocks, diseases, pests, drought, etc.
- **Module 5:** Data Processing
  Fundamental of computers introduction to MS Windows and MS Office; exposure to statistical packages like SPSS, PCCARP

2.
Senior Certificate Course in Agricultural Statistics and Computing

The course aims at familiarizing the participants with current statistical techniques as well as use of computers and software packages.

Faculty
A team of scientists working in related areas will comprise the faculty for this course.

Course Director	:	Dr V K Bhatia
Duration	:	24 weeks (3 July-30 December 2009) (Module 1: 3 July-30 September 2009) (Module II: 9 October-30 December 2009)
Course fee	:	US $ 2,000 per trainee from SAARC countries US $ 5,000 per trainee from other countries
No. of trainees per course	:	10
Accommodation	:	Will be provided at a very reasonable cost in the Institute's guest house
Eligibility	:	Graduate with adequate knowledge of computers

Course contents
Statistical methods and official agricultural statistics; use of computers in agricultural research; design of experiments; statistical genetics; sampling techniques; econometrics and forecasting techniques.
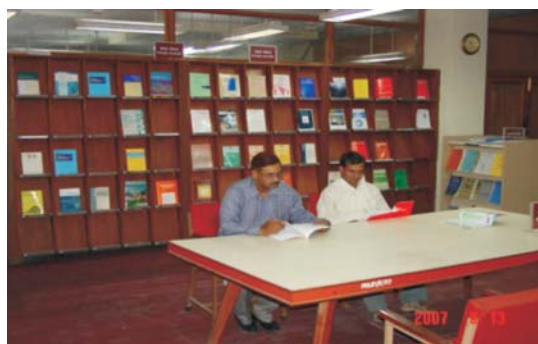
3.
Forecasting Techniques in Agriculture

The course has been developed with short objectives of

- educating the participants on the state of art in forecasting techniques,
- acquainting the participants on latest developments in related fields,
- to identify gaps and needs in the field of forecasting research.

Faculty
A team of scientists working in related areas will comprise the faculty

Course Director	:	Dr Ranjana Agarwal
Duration	:	3 weeks (10 September to 7 October 2009)
Course fee	:	US $ 1,250 per trainee
No. of trainees per course	:	10
Accommodation	:	Will be provided at a very reasonable cost in the Institute's guest house
Eligibility	:	Graduate with adequate knowledge of statistics

Course Contents

- Software packages useful in forecasting techniques; regression analysis, modelling and diagnostics; ridge regression; principal component of regression and discriminant function; planning of surveys/experiments for forecast studies
- Different approaches of forecasting crop yields based on weather, plant characters and remotely sensed data—between/within year models, GMDH procedure, Markov chain, Bayesian and simulation models, Agrometeorological models; Forewarning systems for pests and diseases—models for qualitative and quantitative response variables; Forecasting yield loss due to various factors; Use of non-linear ANN, linear and non-linear time-series models in forecasting agricultural phenomena; forecast models in fisheries; drought monitoring; composite forecasts

4.
Experimental Designs for Agricultural Research

The course aims at exposing the participants to the concepts and usage of designed experiments and use of statistical software packages in research.

Faculty
A team of scientists working in related areas will comprise the faculty

Course Director	:	Dr Rajendra Prasad
Duration	:	3 weeks (3-23 October 2009)
Course fee	:	US $ 1,250 per trainee
No. of trainees per course	:	10
Accommodation	:	Will be provided at a very reasonable cost in the Institute's guest house
Eligibility	:	Graduate with adequate knowledge of computers

Course Contents

- Planning of experiments; principles of design of experiments; Basic experimental designs; missing plot technique, balanced incomplete block designs, partially balanced incomplete block designs, lattice designs, augmented designs, row-column designs, nested designs; Designs for multi-factor experiments including balanced confounded designs, fractional replication, split-plot, strip-plot designs, designs for cropping systems research, inter-cropping experiments, agro-forestry experiments, long-term fertilizer experiments, change-over designs; Contrast analysis; Multiple comparison procedures; Competition effects; Analysis of covariance, etc.; Exposure to software packages like SAS, SPSS and SPBD release 1.0; Statistical Package for factorial experiments (SPFE) 1.0, etc.

5.
Application of Remote Sensing and GIS in Agricultural Surveys

The course aims at
- familiarizing the participants with the basic concepts of remote sensing and GIS and
- acquainting the participants with Use of GIS and Remote Sensing Software Packages
- exposure to application of remote sensing and GIS in agricultural surveys.

Faculty

A team of scientists working in related areas will comprise the faculty for this course.

Course Director	:	Dr Anil Rai
Duration	:	3 weeks (6–25 November 2009)
Course fee	:	US $ 1,250 per trainee
No. of trainees per course	:	10
Accommodation	:	Will be provided at a very reasonable cost in the Institute's guest house
Eligibility	:	Graduate with adequate knowledge of computers

Course Contents

- *Module 1:* Indian agricultural statistics system; sampling methods; use of computers in agricultural surveys; statistical techniques for spatial data analysis; crop forecasting techniques; spatial statistics in GIS
- *Module 2:* Introduction to remote sensing and Indian space program; principles of remote sensing; satellite data reception and image interpretation; remote sensing platforms and sensors; map projection and coordinate system; digital image processing; accuracy assessment in remote sensing; use of spectral indices in agriculture; introduction to ERDAS IMAGINE; data loading and image interpretation and geo-registration; classification and accuracy assessment
- *Module 3:* Introduction to geographic information system; data models in GIS spatial analysis of vector and raster data; spatial interpolation techniques using GIS;

data quality and errors in GIS; introduction to ARCVIEW; creating, editing and manipulating spatial and non-spatial data; querying from spatial and non spatial databases; creating a map layout; introduction to global positioning system and its applications
- *Module 4:* Use of remote sensing for crop yield estimation and crop yield forecasting; crop yield simulation; effect of misclassification on post-stratified estimators of crop yield; application of GIS in agro-forestry; application of GIS in spatial sampling for agricultural surveys; application of GIS and remote sensing in land use statistics

6.
Statistical Software Packages in Agriculture

The course has been developed with short objectives to train the research workers in computer literacy and research data analysis.
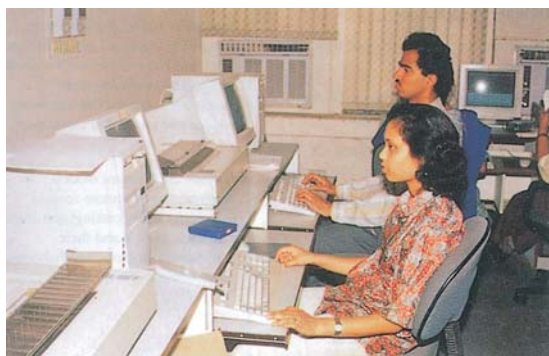
Faculty
A team of scientists working in related areas will comprise the faculty

Course Director	: Dr V K Mahajan
Duration	: 3 weeks (4–23 December 2009)
Course fee	: US $ 1,250 per trainee
No. of trainees per course	: 10
Accommodation	: Will be provided at a very reasonable cost in the Institute's guest house
Eligibility	: Graduate with adequate knowledge of computers

Course Contents
- *Module 1:* Computer fundamentals; Introduction to computers; Windows operating system
- *Module 2:* MS Office: Introduction to MS Office; microsoft word for text processing; microsoft excel for spreadsheet applications; microsoft access for database management; microsoft power point for presentation
- *Module 3:* Statistical packages: Use of statistical packages like SAS; STATISTICA, MINITAB, SPSS, SPAR 2 etc, practicals covering application of these packages for solving real life problems in agricultural research such as analysis of variance, regression analysis and multivariate techniques

7.
Statistical Techniques for Agricultural Research

The course aims at exposing the participants to the concepts and usage of designed experiments and use of statistical software packages in agricultural research.

Faculty
A team of scientists working in related areas will comprise the faculty for this course.

Course Director	: Dr Seema Jaggi
Duration	: 3 weeks (4–23 September 2009)
Course fee	: US $ 1,250 per trainee
No. of trainees per course	: 10
Accommodation	: Accomodation will be provided in the Institute's guest house at a moderate charge
Eligibility	: Graduate with adequate knowledge of statistics and computers

Course Contents
- *Module 1:* Description statistics, probability, random variables, probability distributions, normal distribution, sampling distributions, tests of significance (large sample, X^2, t and F tests), estimation of parameters, regression and correlation, general linear model and analysis of variance, non-parametric tests, diagnostic measures in linear models
- *Module 2:* Sampling techniques: Sample surveys vs complete enumeration; planning and execution of sample surveys, questionnaire designing for socio-economic studies, simple random sampling and sample size dtermination, stratified sampling, systematic sampling, ratio and regression methods of estimation, successive sampling on two occasions, varying probability sampling, cluster sampling and multiple stage sampling, non-sampling errors.
- *Module 3:* Design of Experiments: Planning and designing of experiments, size and shape of plots of blocks, basic experimental designs, missing plot techniques, balanced incomplete block designs, partially balanced incomplete block designs, lattice designs, augmented designs, factorial experiments, concepts of confounding and fractional factorials, split plot designs, Strip plot design, S.P.B.D. Release 1.0, SPFE 1.0, analysis of covariance, designs for multistage experiments, repeated measurement designs, groups of experiments, design of experiments for agro-forestry system