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ABSTRACTS OF PAPERS

1. Influence of Fixed Effects on the Estimates of Heritability by Half-Sib Analysis

S.D. Wahi, Lal Chand and A.R. Rao
Indian Agricultural Statistics Research Institute, New Delhi

The presence of fixed effects in the data leads to underestimation of heritability. The bias in the estimates increases considerably with increase in population heritability. The bias can be reduced by choosing an appropriate family structure for a given sample size i.e. by increasing the number of progenies per sire. The estimates of heritability obtained from data adjusted for significant fixed effects are almost unbiased i.e. bias is zero upto two places of decimal in majority of cases. The standard error of heritability from data without fixed effects and data adjusted for fixed effects are almost equal. The standard error of heritability from data with fixed effects are also underestimated like heritability as it depends on the estimate of heritability itself.

2. Non-Linear Models for Poultry Production in India

Krishan Lal, Rajendra Singh and Shiv Prasad
Indian Veterinary Research Institute, Izatnagar

Linear/non-linear models, viz. linear, quadratic, geometric, exponential, sinusoidal, Hoeri, logistic, Richard and rational models were fitted separately to the data on total production of egg numbers and poultry meat produced in India. For the linear models usual least square technique and for non-linear models Marquardt-Levenberg procedure was used to estimate the parameters. The best model was selected by using the criteria of R^2 and standard error. After having best fit model, projections are made for the years 2000, 2005, 2010, 2015, 2020 AD.

3. Variance Components Estimation from Categorical Data Under One-Way Random Model

B. Singh
Indian Veterinary Research Institute, Izatnagar

The estimators of variance components are obtained from categorical data under one-way random model. The distribution of variance components estimators are derived. The expressions for power function for testing the group variance component, the probability of negative estimates for group variance component and confidence intervals for group and error variance components are also obtained. The approximate expressions for the estimated variance of variance components estimators are worked out for practical applications.

4. A New Lactation Curve Model for Dairy Animals

Shiv Prasad, Ram Karan Singh* and Rajendra Singh
Indian Veterinary Research Institute, Izatnagar

A new lactation curve model $Y_t = at^{b} e-(ct+d/t)$ to describe the lactation performance is proposed. The curve has its maximum at time $t=\frac{\{b+\sqrt{(b^2+4cd)}\}}{2c}$. The fitting of the curve was compared with existing models, namely Sikka, Nelder and Wood models, by using three measures of goodness of fit; Mean residual square, Mean absolute deviation and Akaike information criterion. It is found that the proposed model fits better to the data on weekly total milk yield of cows and buffaloes than the above said models.

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5. A Rule for Selecting the Parameter Alpha in Parametric Measures

Ibne Saud and M.Z. Khan
S.K. University of Agricultural Sciences and Technology-K, Srinagar (J & K)

Using a variety of parametric information measures is bound to make researchers and users uncomfortable since they believe that every problem should have a unique answer while the application even of a single parametric

measure presents a variety of possible answers to the same problem by using different arbitrary values of parameter α, namely $\alpha = 0.5$ or 2 etc. Our endeavour is to devise a notion such that choice of α be unique, scientific and have a role depending on the data of the situation instead of choosing it arbitrarily. An illustration of the approach with regard to the rodent communities trapped from agricultural habitats in a forest block is described.

6. Simultaneous Selection of Genotypes for Yield and Stability in Crop Improvement Trials

A.R. Rao and V.T. Prabhakaran
Indian Agricultural Statistics Research Institute, New Delhi

Use of genotype × environment interaction in crop improvement programmes is an important issue among plant breeders, geneticists and production agronomists when trials are conducted across diverse locations and over years. Assessment of cultivar performance in such trials' is often difficult because of presence of location × year interaction. The purpose of this paper is to propose some new indices for selecting genotypes simultaneously for high yield and stability when the environmental variation is unpredictable. The percentage of high yielders and stable varieties selected using the proposed indices are also discussed in this paper. The developed indices are tested on published data on rice crop as an illustration.

7. Estimation of Returns from a Permanent Plot Experiment with 2-Crop Sequence

V.K. Sharma and Rajinder Kaur
Indian Agricultural Statistics Research Institute, New Delhi

In this paper, a method of estimation of returns from a permanent plot experiment with 2-crop sequence has been proposed. The method has been used to estimate returns over fertilizer cost from a long-term experiment on integrated nutrient supply system on cereal based crop sequences being conducted by the Directorate for Cropping Systems Research, Modipuram on different cropping system research centers.

8. On Designing and Analysis of Experiments Under AICRP on Soil Test Crop Response Correlation

Aloke Lahiri and D.K. Mehta
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In this article, we shall discuss the analytical aspects of an experiment that was conducted at Punjab Agricultural University, Ludhiana in 1997 on wheat crop under the aegis of AICRP on Soil Test Crop Response Correlation. This experiment was conducted by creating fertilizer gradient in four different strips with different levels of recommended fertilizer doses of Nitrogen (N), Phosphorus (P) and Potassium (K). In these strips, the fertilizer doses applied were 0X, 1/2X, 1X and 2X respectively, where X denotes the recommended dose. An exhaust crop was grown in these strips. After the harvest of the exhaust crop, the main STCR experiment was conducted. For this 10 treatments were selected that are a sub set of 60 treatments of a factorial experiment with N (five levels), P (4 levels) and K (3 levels). These 10 treatments are replicated four times in each of the four strips. The data were analyzed using Response Surface Methodology followed by Canonical analysis. The critical value of Nitrogen, Phosphorus and Potassium were found to be 116 kg/ha, 33 kg/ha and 10 kg/ha respectively. An alternative treatment structure has also been suggested for future experimentation.

9. Robustness of Block Designs for Complete Diallel Crosses Against Interchange of a Pair of Crosses

D.K. Panda, Rajender Parsad* and V.K. Sharma*
WTCER, Bhubaneswar

The robustness aspects of block designs for complete diallel crossing plans against interchange of a pair of crosses using connectedness and efficiency criteria have been investigated. The interchanged crosses may have either no line in common or one line in common between them. It has been found that randomized complete block (RCB) designs for complete diallel crosses and binary balanced block designs for complete diallel crosses are robust against interchange of a pair of crosses in two of its blocks. The non-binary balanced block designs obtainable from Family 5 of Das, Dey and Dean (1998) have also been found robust against interchange of a pair of crosses in two of its blocks.

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10. On Higher-Associate Class Partially Balanced Incomplete Block Designs

Cini Varghese, V.K. Sharma and Seema Jaggi
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Higher-associate class partially balanced incomplete block (PBIB) designs are of particular use if the experimenter wants to economize on the use of experimental material. Further, if a balanced incomplete block design or a two-associate class PBIB design does not exist for a required parametric combination, higher-associate class PBIB design gives an alternative if one exists. Here, some higher-associate class association schemes have been defined by extending or modifying some of the existing 2 and 3 associate class association schemes. Some methods of construction of PBIB designs based on these schemes have also been obtained.

11. Non-Proper Block Designs for Balanced Confounded Factorial Experiments

R. Srivastava, Rajender Parsad and V.K. Gupta
Indian Agricultural Statistics Research Institute, New Delhi

The literature on block designs for factorial experiments is generally confined to the block designs with equal block sizes. Various methods of construction of these designs are available with elegant statistical properties like Orthogonal Factorial Structure (OFS) and balance. For details, one may refer to Gupta and Mukerjee (1989). In practical experimental situations, however, one has to sometimes resort to block designs with unequal block sizes. To deal with such situations one requires non-proper block designs with treatments having factorial structure. The research work in the area of non-proper block designs with factorial structure is rather scanty. Srivastava, Parsad and Gupta (2000) introduced Structure Resistant Factorial (SRF) block designs and gave two series of non-proper block designs possessing property A or equivalently having OFS with balance. The above results are restricted to two factors only. In the present investigation, an attempt has been made to show that the concept of SRF block designs can be gainfully employed to obtain non-proper block designs for balanced confounded factorial experiments with more than two factors.

12. Intranet Solutions for Research Organization

Sudeep, R.C. Goyal and P.K. Malhotra
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The present study is an attempt to design and develop software for Interactive Intranet Solutions for Research Organization (IISRO). It may serve as an effective solution for the organizations like ICAR, where all research activities and related information can be pooled at a central place and would be utilized by all research institutions and State Agricultural Universities in India. The algorithm used for the development of IISRO is similar to those of standard dynamic web based solutions. Proper software engineering practices, the standard architecture and design are adopted for the development and implementation of the software. The relational approach and normalization theory has helped in enforcing security and organizational standards. This intranet solution would allow the research organizations to maintain an ace of information at a central location, which can be used by the authorized person in a decentralized fashion. It will allow quick and timely retrieval of information. Since the Intranet can virtually cover the globe and therefore, with such solutions a research organization would have its presence and interaction on the globe.

13. Nested Block Designs for Making Test Treatments-Control Treatment Comparisons

Subrata Kumar Satpati and Rajender Parsad
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A nested block design is a block design with two systems of blocks in which second system of blocks is nested within the first system. The nested block designs, available in literature viz. nested balanced incomplete block (NBIB) designs and nested partially balanced incomplete block (NPBIB) designs, are efficient for the experimental situations where the experimenter is interested in making all possible paired comparisons. However, there do occur experimental situations where the experimenter is interested in comparing several new treatments (called test treatments) with existing practice (called control treatment) with as high a precision as possible. The comparisons among the test treatments are not of much importance. To deal with such type of experimental situations, nested balanced treatment incomplete block (NBTIB) designs have been introduced. Several methods of construction of NBTIB designs have been obtained. A catalogue of the NBTIB designs obtainable from these methods of construction with $v \leq 16$, $r \leq 30$ has also been prepared.

14. Estimation of Wheat Production in 2020

A.K. Gupta, A.K. Mogha and V.K. Jain
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This paper deals with an attempt to estimate the wheat production in 2020 in different wheat growing states and for all India level. The data pertaining to area, production and rainfall are collected from the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India and the data on area under HYV and total nutrients consumption are taken from the Fertilizer Statistics for each state for the period from 1985-86 to 1997-98. The technique of stepwise regression in the linear model $y_k = \alpha + \sum_{j=1}^{n} \beta_i x_{jk} + \in$, ($n = 1, 2, \ldots, 5$) has been used for estimation of wheat production (y_k) in 2020 taking unirrigated area, irrigated area, area under HYV of wheat production, total nutrients consumption and actual rainfall as the explanatory variables with the assumption that linear growth rate will remain continuous in the input variables, the production function has been estimated for all India and different states. The results of the study revealed that area irrigated, total nutrients consumption and area under high yielding varieties have the positive and significant effect on growth rate of wheat production in the country. The inputs taken in the study explained 88.69 per cent variation for all India with a maximum 93.26 per cent for Punjab and minimum 69.27 per cent for Bihar. It is concluded that rainfall has contributed significantly in wheat production in Haryana, Uttar Pradesh, Bihar and Himachal Pradesh. It is also evident from the results that the wheat production at all India level has been estimated as 115.69 million tonnes during 2020 in which Uttar Pradesh will contribute 33.09 per cent production followed by Punjab 21.86 per cent, Haryana 9.47 per cent and Madhya Pradesh 8.44 per cent wheat production to the total production in India.

15. Status of Turmeric Crop in Northern Telangana Zone – A Case Study

K.Venkateswar Rao and Y. Eswara Prasad
Acharya N.G. Ranga Agricultural University, Hyderabad

India is the largest producer, consumer and exporter of turmeric in the world. Andhra Pradesh produces 1,44,000 tonnes of turmeric in an area of 46,300 hectares and occupies first place in respect of area and production. It is estimated that 50% of area under turmeric cultivation of the State was occupied by Northern Telangana Zone itself and contributing 50% of the total production

of the State. Turmeric is an important commercial spice crop in Northern Telangana Zone (Nizamabad, Warangal, Karimnagar and Adilabad) which accounts for fifty per cent area of the State. Nizamabad is major marketing center in Andhra Pradesh with a turnover of more than Rs. 50 crores per year.

The overview of the study reveals that the compound growth rates among the districts, Warangal recorded significant and higher growth rates of area and production of turmeric while among regions/zones, Northern Telangana Zone recorded higher and significant growth rates of the two factors in period II (1986-87 to 1995-96) than in period I (1967-68 to 1985-86). Violent fluctuations were observed in prices and market arrivals.

16. Production Function Analysis Using Bayesian Approach

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Indian Institute of Soil Science, Bhopal

It is now well recognized that the use of Bayesian Approach results more reliable (precise) and efficient parameter estimate. This approach combines the available sample information with additional information. These information are non-sample information namely prior information and loss function. Prior information is information about parameter arising from sources other than the statistical investigation and loss function is quantified form of the knowledge about possible consequences of the decision about the parameters. The approach to statistics which formally uses these non-sample information called Bayesian approach. In literature, it is generally found that the production function analysis uses the classical statistical approach mainly least square method of estimation. In this paper an attempt has been made for estimation of parameters of production function using Bayesian analysis approach. In the agricultural production system mainly we use the Cobb-Douglas production function, therefore for the simplicity we have used general form of Cobb-Douglas production function.

17. Models of Production, Marketing, Gross Returns and Opinion of the Farmers about Production and Marketing of Onion (*Allium Cepa*) in Northern Karnataka

A.S. Kamble, Y.N. Havaldar and S.N. Megeri
University of Agricultural Sciences, Dharwad

An investigation was carried out at University of Agricultural Sciences, Dharwad during 1999 to study the cost of production, marketing and problems

of production and marketing of onion of small, medium and large farmers. The survey was carried out on small, medium and large farmers from Dharwad and Bellary districts. At Dharwad in case of small farmers, the regression coefficient of cost of production was more than one and significant. In case of medium farmers, both the coefficients were found to be significant and the regression coefficient of cost of marketing was more than the regression coefficient of cost of production. However, timely availability of inputs was stated to be the problems of acute nature in production of onion. The storage facilities were adequate for the farmers of all categories in both the districts. The availability of information regarding marketing of onion was reported to be inadequate.

18. Estimation of Contribution on Input Factors on the Milk Yield

Satya Pal, R.M. Sood and A.K. Gupta
Indian Agricultural Statistics Research Institute, New Delhi

India has about 20% of the world's bovine population but its contribution to the milk production is merely 8% which shows the low productivity of milch animals in India. Therefore, it is necessary to lay more and more emphasis on milk production in bovines. This target can be achieved by improved feeding, proper management and health conditions of the animals. The present paper is an attempt to identify those factors responsible for yield of buffalo and also to estimate the contribution of each factor on milk yield by using multiple linear regression technique. The study is based on secondary data collected under the project "Development of suitable methodology to study the effect of housing conditions and other related factors on milk production under village conditions" conducted by Indian Agricultural Statistics Research Institute in Gurgaon district of Haryana. The factors like order of lactation, digestible crude protein, digestible non-nitrogenous nutrients, labour inputs, stall conditions, floor conditions, feeding practices, green feed, dry feed and concentrate etc. responsible for milk yield are taken into account for the multiple linear regression analysis. The results of the study reveals that DCP has positive effect and highly significant to the milk production. The contribution of the DNN on the milk production is negligible. Qualitative characters like stall conditions, floor conditions, feeding practices and housing conditions also contribute significantly in positive direction to the yield of buffalo. The order of lactation has significant negative effect on the milk yield. All the variables taken into account, explain 42.9% of the variation in milk yield with a maximum of 54.4%.

19. Small Area Estimation in Longitudinal Survey

Bhim Singh and B.V.S. Sisodia
N.D. University of Agriculture and Technology, Faizabad

Longitudinal/panel surveys are very common in sampling over interval of times to estimating the net charge or aggregate level of population parameters at given point of time. Small area methods of estimation are developed in longitudinal surveys in the present paper. The Direct, Indirect (Synthetic) and Composite estimator were proposed. It was found that the composite estimator was most efficient among all. The estimators for net change have also been developed based on these estimators. The estimator for net change based on composite estimator revealed a definite trend as compared to that of direct and synthetic estimator. The results are also empirically illustrated with a survey data.

20. A Scenario of Changes in Rice Production System in Eastern Uttar Pradesh

B.V.S. Sisodia, Anupam Singh and V.K. Singh
N.D. University of Agriculture and Technology, Faizabad

Eastern part of Uttar Pradesh, which is popularly known as 'Purvanchal' is most vulnerable region of the State as it has most complex and diverse agro-ecological situation marked by frequent flood and drought. Rice and wheat are major cereal crops of the region. Rice alone covers about 35 per cent of the total gross cropped area of the state. It contributes about 52 per cent of the total rice production in the state. The region has different rice production system, i.e. rainfed lowland, rainfed upland, deep water rice, irrigated rice etc. Every system has its own characteristics in terms of agricultural practices and varietal preferences. Rice research has been a major thrust area of the region, which has made significant contribution in the region. As a result, a lot of changes have taken place in rice production system in the region. The socio-economic dynamics has also played a vital role in making changes in production system. This paper has made an attempt to analyse as to how changes have taken place in rice production system in the region during the last three decades. Emerging issues in rice production system have also been analysed in order to enhance the rice production in the region.

21. Estimation of Varietal Yields and Standards of Pepper

Jagbir Singh and V.K. Jain
Indian Agricultural Statistics Research Institute, New Delhi

The study is based on an IASRI survey conducted during 1991-94 in Karnataka and Maharashtra in order to estimate the pepper yield as well as changes in the yield rates over the years. The estimates of variety wise average yield (kg) of green berries without spike per standard and number of standards of pepper have been obtained for the Kodagu district of Karnataka and Sindhudurg district of Maharashtra by making use of Projective Geometry Approach. Pennur was found to be most popular variety with an average yield of green berries without spike ranging from 3.4 kg to 8.2 kg per standard in the Kodagu district.

22. Agro-Techno Status of Farming Community

Satya Pal, Jagbir Singh and M.S. Narang
Indian Agricultural Statistics Research Institute, New Delhi

Agro-Techno status of the farming community can be judged by observing the factors like socio-economic facilities, education, profession, technical know-how, land position and extent and adoption of modern technology, etc. in a region. The study is confined to the Dibrugarh district of Assam State. The present study is based on the data collected from the randomly selected 60 villages of the district under the project "Sample survey for study of constraints in transfer of new agricultural technology under field conditions" carried out at IASRI during the years 1984-89. The distance of the villages from the district headquarter ranged between 60-66 km. The soil type was alluvial and the soil texture was sandy loam in almost all the villages. The crops grown in the district were rice (autumn), rice (winter), wheat (rabi) and mustard (rabi). The electricity facility was available in 73-85 per cent of the villages in the district. The irrigation facility was available in 5-7 per cent of the villages in the district. All the villages were covered under IRDP in the district.

23. On PSPNR Sampling Scheme for Mean Estimation

D. Shukla and Jayant Dubey
Dr. H.S. Gour University of Sagar, Sagar

This paper presents a new "Post-stratified Partial Non-Response (PSPNR)" sampling scheme found useful to cope with the presence of partial non-response in surveys using post-stratification. An unbiased estimation strategy is proposed and its optimum properties are examined. The cost aspect, under PSPNR, is explored and observed having some limitations regarding solution of equations. An alternative cost strategy is proposed to deal with this which provides cost-optimal choices of required sample-size and optimum allocation of sample fractions. Derived properties and results are numerically supported.

24. On Some Apsects of Proximal Estimators in Repeat Surveys

U.C. Sud, A.K. Srivastava and I.C. Sethi
Indian Agricultural Statistics Research Institute, New Delhi

A number of proximal estimators of finite population mean are obtained by dropping elementary estimators from different parts of the sample to achieve simplicity in developing estimator and their variance in the context of sampling on three occasions. Performance of the proximal estimators are compared vis-à-vis the optimal estimator. The loss in precision of proximal estimator for current occasion is minimal, sometimes less than 1%, when observations pertaining to 1st occasion are dropped. The loss in precision depends on the correlation pattern and the magnitude of correlation.

25. Pooling Procedures for the Life Testing Models Under Asymmetric Loss Function

Rakesh Srivastava
Saurashtra University, Rajkot

The present paper proposes a conditional-guess estimator of scale parameter of a negative exponential distribution under asymmetric loss function with known/unknown guarantee. A class of estimators is proposed. It is shown that these dominate the never pool estimator for certain range of nuisance parameter. Recommendations for the level of significance and the degree of asymmetry have been made.

26. Patterned Constructions of Regular Incomplete Block Designs

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Starting from the incidence matrix of a BIB design, we obtain PBIB design with two or three associate classes following certain patterns for their block structures. These methods may be produced new non-isomorphic for the known PBIB designs.

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27. Growth of Agriculture in Madhya Pradesh

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Madhya Pradesh is the heartland of the country. New boundary of Madhya Pradedsh, after separation of Chhattisgarh, though shrinked, but the agricultural status remained more or less same. Area wise, it is second largest State of the country and population wise, it is the seventh big State. Approximately 49 per cent of geographical area is under cultivation. Agronomically, the State is divided into agro climatic zones. Agriculture is the main stay of states economy and its contribution to State GDP is around 40 per cent. About 73 per cent of the State's workforce depends on agriculture. The cropping pattern of the State is changing. Farmers are now growing high value crops by replacing low value traditional crops. At present, about 53 per cent cropped area is under kharif and about 47 per cent is under rabi. The State has a notable contribution in national production, particularly in oilseeds and pulses. Consumption of agricultural inputs like quality seeds, chemical fertilizers etc. has gone up considerably and registered a growth of about 44 per cent in last 10 years and about 600 per cent in last 20 years. Foodgrain production has gone up by 25 per cent and oilseeds by about 986 per cent with a long term growth rate (30 years) of 2.72 per cent and 2.29 per cent of short term (decinial) growth rate. The productivity of various crops is also increased with almost same growth rate. The index number of overall agricultural production in last 5 years increased by about 32 points with 28 points for foodgrains, 73 points for oilseeds. The State has achieved overall growth rate of 3.06 per cent during first three years of IX Five Year Plan. Last two years of IX Plan were drought years and it is certain that there will be reduction in production and productivity. The targeted growth rate of agricultural production for X Plan is fixed at 4 per cent per annum.

28. Role of Database Management Systems in Agriculture

N.S. Raju, K.N. Singh, K. Alivelu and R.K. Samanta
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In this age of information and cyber society, vast and up to date knowledge base is the key to success of any enterprise or entrepreneurs. Good decisions require proper and sufficient information derived in time from raw facts known as data. Organizations usually prosper when their managers work potentially with large up to date, well-organized and related data and act accordingly for better strategic and administrative planning as well as decision making. These organized and related data make the database. In order to take decisions, perform research and provide necessary information to our clients (mainly farmers and researchers) in time we need quick access to data. The database management systems manage data efficiently and effectively only if they are managed in well-designed database. In order to strengthen the agricultural research, administration and policy making, a large database of information is essential. This paper deals with the basic concepts to design and develop database management systems, its need in agriculture, industry and the database developed for the Institute.

29. Creation of Local Area Network (LAN) and Internet Connectivity through Already Existed System – A Practical Approach

K.N. Singh, Raj Kumar Samanta and N.S. Raju
Indian Institute of Soil Science, Bhopal

In this era of liberalization, speed and Information Technology (IT), the importance of information is ever increasing. Correct information, its global accessibility and fast service are desired objectives. Today, e-mail, e-commerce, e-business and many more services are effectively electronically operational with much popularity replacing their age-old traditional models of operation. Researchers, managers and experts have unanimously recognized the essence and effectiveness of sharing information and knowledge for achieving the desired results of their own work as well as for the development of mankind. Internet and local area network (LAN) not only add power and wings to information but also ease pressure on policy makers, researchers, planners, administrators by providing them an effective platform to retrieve the appropriate information at an appropriate time. Establishing a LAN with switching technology provides better performance and flexibility. It also sets a major challenge as it involves effective utilization of money and expectation of

higher performance, network security. Traditional LAN comprises lots of complex components like repeater, bridge, connector and router. Some of these components bear complexities like installation, maintenance with them. Switch may be used to ease all these LAN establishment complexities in place of routers, local bridges and hubs. In this paper, the topology, use of advance switches and principle of Internet and LAN is discussed in brief and a first hand example of creating LAN and Internet connectivity at IISS, Bhopal is discussed in detail. The connectivity to cyber world at IISS has been given through VSAT of CIAE using under ground Fibre Optics.

30. Internet Information Search : Tools and Techniques

S.B. Lal and S. Ganesan
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Researchers and educationists often experience problems in finding the desired information through Internet. Until recently, surfing was a typical approach for finding information on the web. Surfing is unstructured and serendipitous browsing. Starting with a particular web page, the approach is to follow links from page to page, make educated guesses along the way, hoping sooner or later to arrive at the desired piece of information. A number of new tools have been developed that enable information published on the web to be searched and discovered more effectively. This article focuses on various tools now available for finding information on the web using the approaches such as : browsing through keyword searching using search engines, subject trees and hierarchies. A number of new tools have been developed that enable information published on the web to be searched and retrieved more effectively.

31. On the General Term of Probability of Log-Zero Poisson Distribution with Two Parameters in Simplest Form

Gayatri Vishwakarma and H.L. Sharma
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In this paper, the log-zero poisson distribution with two parameters is developed with the general term P [x = k]; where k = 1, 2, 3 ..., in addition to P [x = 0] separately. Log-zero poisson distribution is often used to describe plant distribution especially when reproduction of the species produces, clusters. In this paper, we modified the k^{th} probability of log-zero poisson distribution in a simplest form. The present formulation is more flexible in that user can make a probability on, any random number except zero, or we can say that for natural

number only. This distribution has number of applications in agricultural research. The aim of the present work is to propose a simplest form of a probability of log-zero poisson distribution with two parameters which gives convenience to users. Usually this distribution is used for countable number of values specially in finding the distribution pattern of the occurrences of insects on any crop.

32. Land Use/Land Cover Statistics and Extent of Floods During 1997-98 for District Rohtak, Haryana Using Remote Sensing Satellite Data

Randhir Singh and D.C. Dahiya
Indian Agricultural Statistics Research Institute, New Delhi

Information on land use is essential for effective management of natural resources. Satellite data provide immense potential for timely information on land use statistics and natural calamities like floods, droughts, pests and diseases etc. Floods have become frequent event in Haryana State. During 1998, there were late heavy monsoon rains and vast areas were flooded. A large area remained under water for long time affecting the wheat crop acreage largely. The present study examines the land use statistics of district Rohtak and extent of area under floods using remote sensing satellite data from IRS 1B – LISS-II for February, 1996 and IRS-1D, LISS-III for February, 1998.