LATE ABSTRACTS OF PAPERS AT 37TH CONFERENCE, ISAS

1. Conditionally Specified Estimator of Variance Component in Analysis of Variance Random effects model.

BY

S.K. KHANDEWAL, V.P. GUPTA AND S.K. SAXENA

Agra College, Agra, University of Rajasthan, Jaipur.

The problem of negative estimators of variance component has been discussed by many authors. It appears that there is still no satifactory solution to the problem. A problem of one way random model has been considered. A generalized non negative estimator of variance component involving preliminary test of significance is proposed. A new conditionally specified test estimator is proposed and studied. Then the optimal level of significance has been derived analytically based on an optimal efficiency criterion. For this, an objective function is formed such that maximization of the function ultimately results in to minimization of average relative risk. The average relative risk is formulated in terms of mean squared error of some times pool estimator, never pool estimator and always pool estimator.

2. A Note on Construction of some Neighbour Designs

BY

G.R. MAKAN AND B.L. MISRA

J.K. Krishi Vishwa Vidhyalaya, Jabalpur (M.P.).

Two results are obtained on balanced incomplete block neighbour designs, when number of treatments is a prime or prime power and two results on partially balanced neighbour designs are also obtained, one when number of treatments are a prime power and second when they are product of two prime powers.

3. A Queueing Problem with two Heterogeneous groups of Channels and Statistically Dependent Departures.

BY

P.S. RANA AND (MISS) SHARDA,

I.A S.R.I., New Delhi, Kurukshetra University.

Steady State behaviour of a discrete time, first come first in limited space queueing situation with two heterogeneous groups of parallel channels is considered. The probabilities of departures between the groups are different and within the groups are equal. The probabilities of departure at two consecutive time marks follow a transition probability matrix. Explicit steady state probabilities for the number of units and mean number of Units in the system are obta ined. Some cases of particular interest are also derived at the end.

4. Forecasting yield of Cotton on the basis of data Collected at the first picking alone.

BY

A.K. SRIVASTAVA, P.C. MEHROTRA AND R.C. GOLA

I.A.S.R.I., New Delhi.

A number of techniques for forecasting the yield of cotton on partial harvest data have been suggested in the past, involving the use of data on biometrical characters for the current year or past years information on the functional relationship between the produce obtained from earlier pickings and total yield on the basis of correlation and regression studies. The techniques based on biometrical data cannot be used on a regular basis for forecasting purposes since they are not only time consuming but also require the use of special measuring instrument and persons trained in the collection of such data. Likewise, the methodology utilising the past years data suffers from the limitation that the regression co-efficients based on the past years may not be realistic or valid for prediction of the overall yield for the current year. A simple and quick approach of predic tion may be to forecast on the basis of first few pickings only. It is observed that the first picking yield multiplied by the expected number of pickings provides a satisfactory estimate of the overall yield. This approach though not very rigorous is simple and could thus be adopted on a regular basis for forecasting purposes. This method has been investigated and its performance studied both over space and time in the present paper.

5. Growth pattern of Pulses and oilseed crops in Punjab.

By

K.K. JAIN, NIRMAL SINGH AND S.K. SINGLA

Punjab Agricultural University, Ludhiana.

An attempt has been made to measure the impact of new farm technology on pulses and oilseeds by dividing period since sixties into three periods, namely, period of stagnation (60-61 to 65-66), period of wheat revolution (66-67 to 70-71) and period of rice revolution (71-72 to 81-82). Compound growth rates for area, production and yield were separately computed for these three periods for selected major crops and then Linear lag model was employed to study the effects of relative price, yield and value productivity on the shift in area for slow growing crops. The study revealed that during period I, though area under paddy, wheat and maize increased significantly, increase in yield was non-significant. Area under all pulses and oil-seeds declined significantly except for Arhar and groundnut during this period. During period II, growth rate of wheat was highest followed by paddy and maize, Growth rate of pulses and oilseeds were non-significant during this period, thus reflecting a stagnant position, affected marginally through random causes. During period III, period of paddy's spectacular growth, among the pulses only arhar showed significant rise in the area and yield, while all other pulses declined like oil-seeds.

Kendal's Coefficient of concordence showed that rabi crops maintained interale position in period I while its interalia position in kharif changed. During period II when wheat revolution, occured change in rank position was more predominant in rabi than kharif whereas during period III period of paddy revolution change was more conspicuous in kharif than rabi. Linear lag model turned out to be uniformly better than log-linear lag model to predict the impact of relative price, yield and value productivity on the shift in area of slow growing during the period under study. The results revealed that impact of these factors were highly significant as the coefficient of determination varied between 63 percent in case of sarson and 95 per cent in case of groundnut.

6. Average yield, Fertilizer use and Constraints in the Adoption of high Yielding varieties of Groundnut

BY

S.K. RAHEJA AND N.K. OHRI

I.A.S.R.I., New Delhi.

For planning of suitable measures to improve the productivity of groundnut, it is important to study the problems and constraints faced by the farmers in the adoption of improved agricultural technology. This aspect was investigated with the help of data collected under the project 'Sample Surveys for methodological investigations into HYV' in 10 selected districts spread over the six states of A.P., Karnataka, Tamil Nadu, Maharashtra, Punjab and U.P.

The improved varieties of groundnut covered almost the entire area under the crop in six districts and between 50 and 70 per cent in the remaining four districts of Dharwar (Karnataka), Aurangabad (Maharashtra) Patiala (Punjab) and Moradabad (U.P.). The main constraints in the adoption of HYV seeds were non-availability of improved seed, lack of irrigation facilities, lack of funds, high cost of fertilisers, unsatisfactory field conditions and unsatisfactory quality of the produce. The coverage of chemical fertilisers and their levels were generally of a low order in all the districts, less than 1/3rd of the area under improved varieties receiving chemical fertilizers in a majority of the districts. The main constraints in the use of chemical fertilizers in all the districts were lack of funds and high cost of fertilisers. Less than 10 per cent of the area under improved varieties was irrigated in a majority of the districts. The main constraints in the use of irrigation were lack of funds, insufficient water and irregular power supply. Use of plant protection chemicals was rarely reported in all the districts. The main constraints in the use of plant protection chemicals were lack of funds, high cost of chemicals, lack of knowledge in the use of chemicals, non-avialiability of sprayers and dusters and supply not available in time.

7. Use of Geometric Mean in Partitioning the Increase in Production—A Study of Sugarcane Crop'

BY

B.K. GUPTA AND S.D. BOKIL

Indian Society of Agricultural Statistics, New Delhi

The increase in production of any crop in a particular area can be expressed as due to increase in area, increase in yield and

their interaction. However, if instead of individual years the analysis is done for arithmetic means of periods such as triennia the approach does not work. On the other hand, it is more meaningful to make such study with reference to periods rather than individual years as such averaging reduces the effects of random variation. To get over the difficulty such a study was carried out on sugarcane by taking Geometric means for the two periods compared and the approach is found to provide a satisfactory solution of the problem. For this study data on sugarcane for the triennia 1967-70 and 1979-82 were utilized.

8. Impact of Cotton Monopoly Procurement Programme on Area, Production and Yield—A Study of Marathwada Region (Maharashtra)

BY

P.R. WAGHMARE AND D.D. SHINDE

Marathwada Agricultural University, Parbhani

The cotton monopoly procurement programme commenced in the Maharashtra state from the year 1972-73 to ensure the farmers a guaranted price of purchase. The programme was restarted from 1974-75 with a gap of one year. To measure the impact of cotton monopoly the erstwhile five districts of Marathwada region viz. Aurangabad, Parbhani, Bhir, Nanded, Osmanabad, the aggregate Marathwada region and the Maharashtra state in aggregate were studied, for the period of 1964-65 to 1980-81. The multiple regression analysis with two dummy variables were utilized to know the shift in intercept and to know the shift in slope of the line of regression.

The results showed that the area, shift was significant during the monopoly procurement years for all the districts in the region, and the state. The rate of increase in area during the monopoly period was significantly higher than pre monopoly period. Even though, the shift in production and yield was not significant at 5 per cent level of significance in most of the districts, region and the state, the positive and higher slope in monopoly procurement years warrant the direction of substantial change. Thus, the monopoly purchase of cotton definitely helped the farmers to increase the area of the crop.

9. Profitability of Fertiliser on Groundnut

BY

N.K. OHRI AND S.K. RAHEJA

I.A.S.R.I., New Delhi

Groundnut is the most important oil seed crop in India. However, the average yield of groundnut has almost remained stagnant in the past few years. Fertilizer use is perhaps one of the quickest means of raising the yield level. The farmer would use fertiliser only if it brings remunerative returns not only to compensate him for the cost of material and labour but also for the risk of crop damage/failure arising from abarrent weather, pest and disease attack and other natural calamities. Economics of fertiliser use based on average response (additional yield) would not be relevant in this context, since 50 per cent of the farmers would get a return less than the average yield. The proper approach would be to study the distribution of the responses to a given level of nutrient and determine the proportion of farmers for whom the response is uneconomic. The effect of change in the cost of fertilizers or the price of the produce or both can also be studied with the help of cumulative frequency distribution of the response. These aspects were studied with the help of data obtained from cultivator's field trials under the All India Coordinated Agronomic Research Project of the ICAR.

The results showed that while the average responses of groundnut to moderate doses of N and P were remunerative, their profitability was rather poor for a substantial proportion of farmers. In fact, some farmers suffered a loss by fertiliser use in so far as the value of additional produce was less than the cost of fertiliser.

10. Ratio Method of Estimation Using the Transformed Auxiliary Variable

BY

GULAB SINGH

Planning Commission, New Delhi

The knowledge of auxiliary variable is often utilised in estimating the population parameter of interest more precisely. When a suitable auxiliary variable, negatively correlated with the variable under study is available, Srivenkataramana (1980) has

suggested a new ratio type of estimator (t)

$$t=\frac{\bar{y}}{\bar{x}^*}X$$

where $\bar{x}^*$ is a transformed variable defined as

$$x_i^* = \frac{NX-nx_i}{N-n}$$

and

$$\bar{x}^*=\frac{1}{n}\sum_{i\in s} x_i^*$$

(all the symbols have their usual meanings).

In this article following Midzunu (1952) a simple procedure is presented which makes the estimator t unbiased. The efficiency of t is compared with the estimator based on SRSWOR scheme upto the order of $O(1/n^2)$. Patel & Dharmadhikari (1978) have considered the admissibility of Midzunu estimator in the class of linear unbiased estimator of finite population total. The admissibility of t has been considered under Midzunu scheme following Patel & Dharmadhikari (1978).

11. A Stochastic Model of F.M.D. in Small Population

BY

RAJENDRA SINGH AND S.K. NEGI

I.V.R.I., Izatnagar (U.P.)

This model is developed on the line of Soper (1927) theory of epidemics to estimate the contact rate (rate of spread of disease) of those diseases in which the rate of spread is high in a small population. An estimate of the contact rate can be obtained from each time period and a single contact rate for the entire epidemic can also be obtained by "method of maximum likelihood". This model can be used successfully to estimate the rate of spread of F.M.D. in organised farms.