BOOK REVIEW

Statistics for Agricultural Sciences
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The author has painstakingly written this book on the subject of statistics to cater to the needs of students who pursue their tertiary education in agricultural and allied sciences with supposedly having not much mathematical background during their schooling. This third edition of his work has some additions with respect to few portions on Econometrics and also a flavour of using SPSS software for data analysis as an added feature. The whole book has 21 chapters in all written under five major parts. While the chapter on Experimental Designs runs into over 120 pages out of the total 460 pages, some chapters are very small.

The first chapter gives an introduction to the subject of statistics. However, it would have been better if its usefulness in the field of agricultural sciences could also have been touched upon by means of bringing in few practical situations. The second chapter on collection of data and related portion dwells on the topic on expected lines. The recent elicitation of information and data via electronic mode of communication could have given a different dimension to the treatment. The third chapter on frequency distribution includes pictorial and graphical representation of data as well which usually can be seen along with classification and tabulation chapters in other books. The figures of multiple bar diagram and Pie diagram got shifted by one subsection even though fortunately they appear on pages that face such subsections. A noteworthy inclusion in this chapter is the discussion on Lorenz curve which brings novelty to the book followed by an illustration on fitting the same which is commendable. The fourth chapter on measures of location is dealt with in a routine way when discussion on situations under which, say, geometric and harmonic means, are more suitable could have enriched its content. The section on 'Sample' under the fifth chapter on measures of dispersion is misplaced or it could have been titled as Standard error. The sixth chapter on moments, skewness and kurtosis is written in a simple manner, with perhaps a minor typo in the relationship between the coefficient of skewness β_1 and its γ_1 counterpart. The numerical figures appearing in the whole book could have been right justified throughout for proper vertical alignment of decimals and unit places.

The chapter on Probability is written in a lucid manner which also includes some portion of binomial distribution which rightfully should belong to the chapter that follows. The chapter on binomial and Poisson distributions also includes practical exercises on their fitting to data. The ninth chapter on Normal distribution starts with a mathematical angle of relating binomial to normal distribution which may appeal to those who have more of a statistical bent of mind but may baffle many an intended reader. Here again fitting of a normal distribution has been included which completes the practical aspect in this series of fitting of distributions. The chapter on tests of hypotheses is written well but the insertions with regard to SPSS data analysis suffers from readability. The chapter on Chi-square distribution has some new topics such as Dandekar's method of correction of continuity (in addition to Yates' method) in case of 2x2 contingency table and also a subsection on Chi-square for testing linkage between genes. Having said that, the treatment of SPSS again in this chapter has been given as a lengthy procedure while there exist many easy way of doing the same thing via SPSS itself, say, for Chi-square test for a 2x2 table of association between two attributes. Twelfth chapter on correlation and regression is written in a good manner but for testing significance of correlation the author has started with Fisher's Z transformation by considering the situation

when the population correlation coefficient is not zero. Later, under rank correlation, the usual t statistic expression could be seen. This way of writing departs from the usual practice.

In the chapter on Multiple regression and correlation, the solving of normal equations by matrix method may be beyond the level of the intended students, rather a short cut method could have been given. The next chapter on D^2 statistic and discriminant functions again should have been a part of the multivariate statistical methods in Chapter 20 and its discussion as a separate chapter here is surprising. Here again the mention of 'pivotal condensation method' etc. for computing D^2 statistic should be a wee bit tough for the students with not so good mathematical background. Chapter 15 on Probit analysis is praiseworthy with both biological and economic data used for explaining its utility. The chapter on Experimental designs is an elaborate one which apart from including the common designs like CRD, RBD and LSD also deals with much special type of designs like split-split designs, Lattice designs and cross over designs. The explanation on interaction effect by means of diagrams stands apart. The estimation of mixed models using Henderson's method also finds its place under this chapter which may be quite useful to understand it better. The inclusion of path coefficient analysis inside the experimental designs chapter may not sometimes be seen by the reader even though a worked out example is given.

The chapter on Sampling is also exhaustive and the author has tried to tabulate the expressions of estimates of sample mean/ total etc. and their population counterparts. A section on tolerance in testing of seeds is given under this chapter of sampling which again seems to be out of place. Under the chapter on Economic statistics, the topics ranging from elements of time series analysis, index numbers, fitting of growth curves are given. While the effort made is appreciable, in this era, direct fitting of non-linear growth curves is warranted rather than suggesting linearization by logarithmic transformation before fitting them which are at the most approximations if not inappropriate. The chapters on Non-parametric statistics and multivariate statistical methods that follow are rich in numerical examples in the field of agriculture and hence may directly strike a chord with the student audience for which this book has been written. The last chapter on Econometrics (newly added in this edition) contains material with more mathematical rigour which could have been toned down for easy comprehension by the expected readers.

Overall, the book has been written in a comprehensive manner with a well meaning intention of usefulness to the students. It is hoped that the book brought out will serve as an excellent source of knowledge to the students and also will help them in applying appropriate statistical techniques to their agriculture related real life data sets. I congratulate the author for bringing out this valuable book for the benefit of students and researchers in agricultural and allied sciences.