

# Preface

A growth curve is an empirical model of the evolution of a quantity over time. Growth curve models (GCM) in longitudinal studies are widely used in many disciplines besides biology, particularly in statistics, population studies, economics, biological sciences, statistical quality control, environment, sociology, nano-biotechnology, fluid mechanics and for quantities such as population size, body height, biomass, and fungal growth. An important precursor of the GCM is the classical GCM considered by S N Roy and R. Potthoff in early 1960s and C R Rao about the same time. That leads to the development of repeated measurement designs, longitudinal models, and related evolutionary models in epidemiology and bioinformatics. Even the Chaos theory comes under such models. It has important applications in psychometry and psychiatry. The evolutionary models are also akin to GCM. Growth and nutrition of Indian children has not improved much in spite of India's economic prosperity.

This conference proceeding presents some ideas about the research works on GCM that is going on by the scientists of Indian Statistical Institute in different branches of science. The genesis of this work started several years back when the editor and his colleagues conducted growth experiments in the agricultural firm at Indian Statistical Institute, Giridih, Jharkhand; a tribal area. At that time Editor took academic & administrative responsibility of ISI Giridih as Coordinator on the third tier in a three-tier administrative system. Continued research for several years on plant growth posed some theoretical and applied problems that are recorded in this proceeding. We also thought it will be a nice idea if the researchers working in GCM had an opportunity to exchange ideas about their field of interest. To this end, a workshop was organized in the year 2011 that was followed by a national conference on GCM in the year 2012 at Giridih. Another workshop on GCM was conducted at ISI Giridih during 21-22 March, 2013. We invited some well-known researchers to contribute to this conference proceeding and further invited the participants of the conference to submit more than one paper, if possible for the proceedings. All the papers were peer reviewed. The result is the compilation of 15 papers in different

branches of science in this proceeding. The endeavor will be considered successful if this can give some idea about solving theoretical and practical problems in this broad area of GCM to which many researchers are interested in.

December 2012

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Advances in Growth Curve Models

Topics from the Indian Statistical Institute

Dasgupta, R. (Ed.)

2013, XIII, 270 p. 147 illus., 73 illus. in color., Hardcover

ISBN: 978-1-4614-6861-5