haps he could dwell on issues brought forth in this review.

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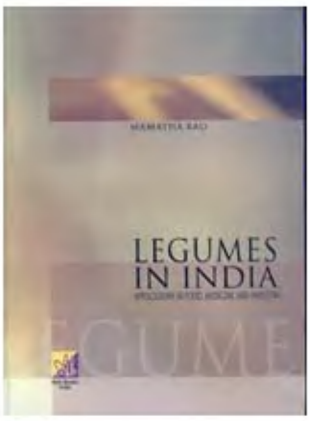

Legumes in India: Applications in Food, Medicine and Industry. Mamatha Rao. Ane Books India, 4821, Parwana Bhawan, 1st Floor, 24 Ansari Road, Darya Ganj, New Delhi 110 002. 2008. 705 pp. Price: Rs 3995.

Legumes are very important group of plants, particularly in the tropics and subtropics. They play a significant role in human nutrition and medicine. Besides, they are of various industrial and other uses, such as sources of tannins, dyes, forarge and fodder, green manures, timber, fibres, beverages and oils.

There are about 179 genera and 11,152 species of legumes recorded from India. The enormous potential of these plants offer in terms of various uses listed above is comprehensively put together by the author. Primarily, the contents of the book are presented in two parts: Part I gives a detailed account of the bioresource potential of legumes in India covering a wide range of topics, viz. economic potential, nutritional significance, anti-nutritional factors, particularly in edible legumes and the presence of chemical constituents which play a major role in the industry. Part II comprises information profiles of 45 species of the Caesalpiniaceae, 198 species of the Fabaceae and 46 species of the Mimosaceae. Various details from valid botanical names to common English names to Indian vernacular names; their geographical and botanical distribution; phytochemistry, edibility and toxicology and so on. Of particular significance are their uses in alternative systems of medicine (*Ayurveda*, *Siddha*, *Unani* and Homoeopathy).

A few observations about the text material which need to be mentioned are as follows: Some of the material is not relevant to the main theme of the book. One example which needs specific mention is: Food right for human blood groups. There are too many tables and also lengthy. One of the tables covers 27 pages. Another table has too much data. The editing is poor, and language, construction of sentences at a number of place leaves much to be desired. Such elaborate details about 'system of nomenclature' are not necessary. The lot of Indian work on various aspects of legume nutrition and biochemistry has escaped the attention of the author.

The contents of the book serve three purposes. First, it provides basic information on different aspects of legumes, particularly the various constituents. Secondly, it points out the gaps in knowledge thus laying the foundation for the identification of the areas of study of which provide a vast potential, especially for molecular biologists and biotechnologists to improve nutritional quality of various legumes in view of the presence of anti-nutritional factors and toxicants. This is important as legumes serve as a source of good quality protein not only for human beings but animals as well. Thirdly, of interest is the compilation of medicinal uses of legumes in the alternative systems of medicine. This knowledge will not only be of use to the practitioners in these areas, but also to the pharmaceutical industry, serving as a storehouse to launch studies to identify the principles, verify the claims, work out the bio-safety aspects and conduct clinical studies in order to develop drugs which can alleviate the suffering of human beings.

Overall, the book is an excellent compilation of diverse information. It would be useful to administrators, policy makers and conservationists, besides students, teachers and researchers in botany, environmental and economic botany, biochemistry, pharmaceutical sciences, agricultural sciences and biotechnology.

The author, needs to be congratulated for the excellent job done. In fact, this book clearly points out as to how little work has been done so far and much needs to be done.

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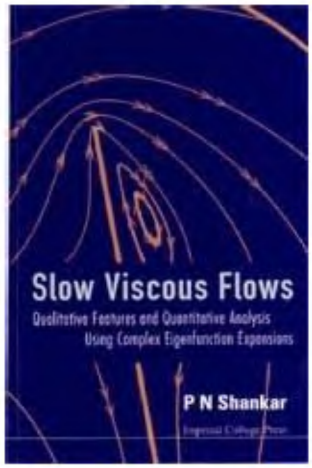

Slow Viscous Flows: Qualitative Features and Quantitative Analysis Using Complex Eigenfunction Expansions. P. N. Shankar. Imperial College Press, 57 Shelter Street, Convert Garden, London WC 2H 9HE, UK. 2007. 563 pp. Price: US$ 58.00.

The title of the book describes, very clearly and concisely its, contents. The subject matter is restricted to viscous flows in the limit of zero Reynolds number,

where the convective effects are neglected. In this case, the Navier–Stokes equations are linear in the velocity and pressure fields, and this linearity is used to advantage in formulating solutions for specified boundary conditions. Unsteady (time-dependent) flows are dealt with for the specific cases where the nonlinear inertial term in the momentum equation can be neglected. The method of solutions for all the problems is accomplished using the separation of variables technique, and the solutions are expressed as linear combinations of the Laplace or biharmonic equations in different co-ordinate systems.

After a brief introduction of the equations and boundary conditions in section 1, section 2 is devoted to the planar steady flows. The author is known for his work on corner eddies in driven cavity and other internal flows, and his expertise is evident in the treatment of corner eddies using complex eigenfunction expansions. The section on embedding complex geometries is an interesting one, since this is not commonly used. Here, the objective is to determine solutions subject to boundary conditions in a complex geometry, for example, an ellipse or a hemisphere. The eigenfunctions themselves are defined on a simple geometry, such as a rectangle which superscribes the complex geometry. After this, the coefficients in the eigenfunction expansion are obtained by minimizing the square of the error on the boundaries of the complex geometry. The author discusses in detail, the advantages and limits of this technique, and describes how one should check the accuracy of solutions obtained. The one aspect that is not discussed is how the accuracy of this technique would compare with other techniques, such as the boundary integral technique, for comparable computation times.

Section 3 deals with three-dimensional flows, and section 4, with two chapters by R. Kidambi, treats unsteady flows in the situations where the nonlinear term in the momentum equation can be neglected. The separation of variables technique and the eigenfunction expansions are common to both two- and three-dimensions. In these, the differential equations (or the biharmonic equation for the stream function) are written in the respective coordinate systems, and then the separation of variable techniques is used to obtain ordinary differential equations in each coordinate. An alternative method is to solve the Green's function formulation, where the solutions for point sources are obtained, and these are superposed to obtain the complete solutions which satisfy the appropriate boundary conditions. The latter technique is commonly used in electrodynamics, as also in the solutions of viscous flows, and the reader would benefit by seeing the connection between the two.

The last section is on external flows. While bodies with complex geometries are treated in this section, and flow solutions are obtained, this is limited to the solution for just one object. Due to this, the solutions have limited applications. Complex objects like aerofoils are rarely encountered in the low Reynolds number regime, and most flows at low Reynolds number are of viscous suspensions, where there are multiple interacting bodies.

In summary, the book provides a comprehensive overview of the subject matter it sets out to describe, which is eigenfuntion expansions for both complex geometries in both two- and three-dimensions, mostly in internal flows. This is a valuable reference book for those working in the area of viscous flows. However, this would have to be supplemented by other books which deal with other techniques, such as the Green's function and boundary-integral technique.

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