

# **Impact of Science on the Economics of Tea Industry**

3<sup>rd</sup> International Conference on  
Global Advances in Tea Science  
Held at Kolkata November 20-22, 2003

## **PART IV TEA RESEARCH INFORMATION NETWORK**

### **Technical Session 7**

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#### **Opening remarks by Session Chairman Dr. N.K. Jain**

My claim to chair this session today has its origins in the recommendations of the 1996 conference for starting an International Journal of Tea Science to provide tea research information from all over the world to the readers of the journal. Today we shall discuss what can we do to widen our information network so that information can be gathered from wherever scientific research in tea takes place and is put together either on the Internet or in print. The ISTS will take the responsibility of publishing the hard copy. The best advice about placing the information on Internet will come from Dr. Baker. As a matter of fact, he was to chair this session today but because he is making his presentation, I sneaked in as the Chairman of this session on Informatics.

The session on informatics has four speakers – Dr. Peter Baker from CABI, Dr. Zhu Yong xing who is the Editor of Chinese Journal of Tea Science, Mr. Anindya Basu of M/S Accenture who are setting up India Tea Portal for the Tea Board and Dr. S. Kodomari, who is Curator of Kanaya Museum in Japan. The speakers cover what appear to be diverse fields of activity but are linked in the Informatics network on tea research, which we shall see by the end of the session.

**Technical Session 7  
Informatics  
Chairman N.K. Jain**

**Chapter 31**

**TOWARDS A TEA INFORMATION COMMUNITY**

**Peter S. Baker\***

*Dr. Baker received his Ph.D. from London University in the field of Insect Physiology. He has worked in Mexico on control of fruit flies, Trinidad and Tobago on Biological Control of insects and weeds, Colombia on coffee pests. Now Dr. Baker is the Coordinator for Centre for Applied Bioscience International (CABI) Coffee Programme.*



**THE THREE WORLDS PARADOX**

We love to classify things, perhaps because it is comforting to try to create order where none is apparent. One of the most basic divisions is of the world itself. We used to use the term 'The Third World' though this has fallen out of favour. Indeed the collapse of communism and the rise of the global market have made this term less appropriate.

Vorley (2002) however, has suggested that rural economies themselves can now be classified into three worlds:

**Rural World 1 – Globally Competitive**

These farmers are a part of consolidated supply chains. They are agri-businessmen who have access to capital and loans to finance large-scale operations that have high inputs and outputs and are being increasingly mechanised. They make heavy demands on environmental resources, especially water. In some countries they receive subsidies, sometimes disguised, which they lever through political patronage.

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**Rural World 2 – The Shrinking Middle**

These are middle class landowners, often with long family traditions in farming who are well known in their locality. They may produce high volumes but more often of lower quality produce. They are undercapitalised and have tended to diversify into other trades to spread risk rather than to intensify and market their produce in new ways to new customers. Their fathers and grandfathers had much more political power than they now have themselves.

**Rural World 3 – Fragile Livelihoods**

Subsistence farmers, often selling their labour to large estates, they are unskilled, uneducated and dependent on family labour for most farm work. They are not involved in global food or fibre production systems.

Much of the *Rural World 2* description applies not just to developing world farmers but increasingly to industrialized countries as well. Many farmers in developed countries are undercapitalised, have no political power and do other work off the farm, or non-traditional activities such as tourism. Many of these might find that they

have more in common with family farmers in a developing country than with an agribusiness enterprise just across the valley.

Whereas previously we might have looked for geopolitical ways of understanding agricultural development, now we look at production systems and power relationships in a purely commercial environment. All three worlds may now be found in a community near you or me.

### **THE PARADOX OF POWER**

A whole academic discipline has built up around the study of commodity chains (i.e. the various steps between the farmer and the consumer), which looks especially at the balance of power along the chain. In the case of coffee for instance, it has been convincingly shown that this has changed over the last 20 years (Talbot 1997). Previously about half the profits from coffee stayed within the producer country, divided among farmer, trader, exporter and government.

However, this has now shifted so that about 80% of total profits accrue outside the producer country. Ultimately this means more profits for shareholders of major coffee companies, the majority of whom are a small number of pensions plan providers.

This leads to an unfortunate paradox: power has shifted to people who know little or nothing about the ultimate source of that power or the long-term consequences of its neglect. This engenders the uncomfortable feeling that there is really no one in charge looking out for the long-term best interests of the rural environment and the people who live there. Indeed the guiding principle of the prevailing ideology is that it is the invisible hand of the market that controls the destiny of any commodity.

### **THE FREE MARKET PARADOX**

Formerly, interventionist government policies in many states controlled market prices and provided

extension services to maintain the quantity and quality of the product that the market traditionally expected the country to provide. The new globalised free-market system has swept away supports and in theory a greater proportion of the wholesale price should return to farmers, who will thus be able to afford the various services that will spring up to supply their needs.

In reality this has been very slow to happen, though new market opportunities have emerged. These are particularly evident for coffee and some now are also happening for tea. Thus we have increasing interest in fair trade, organic certification, environmental labels (especially for coffee) as well as more and more 'relationship' trading. Traders are moving into farm management activities, financed by buyers who are looking for a particular service, e.g. a traceable certification for a retailer looking to promote clean and ethical products.

If we add to this shifting and progressively competitive commercial situation, the reality of increasing environmental strains, due to intensive farming and climate change, it seems legitimate to assert that there are serious shortcomings in the level of knowledge and information available to a wide range of rural stakeholders. Simply, the needs of the rural sector are not being handled in a coordinated or proactive manner.

Hence there is a free-market paradox: the global market depends on a free flow of information and knowledge but the system itself seems incapable of providing this freely<sup>1</sup>. High quality information and knowledge are limited to a few that can afford it and this self-limits the universality of true free trade.

### **THE PUBLIC FUNDING PARADOX**

Donor funding for agricultural development has

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<sup>1</sup> Although the Internet is becoming increasingly available at low cost, information there is dispersed and its value difficult to assess since no universal standard of quality control applies.

declined steadily since the 1960's, and is only now starting to rise again, from a much-reduced level.

Belatedly, donor efforts are being redirected to more knowledge-intensive rural development projects, but these are finding difficulties because of the lack of existing extension infrastructure. Now-a-days rural support is more likely to be fragmented between under-funded government agencies and a broad range of NGOs, financed by relatively short-term donor efforts.

Current development projects recognise the importance of transforming the rural sector of developing countries so that they become part of the global trade system and compete for market share on quality. However, to do this requires an increased investment in re-skilling and research, which was previously underpinned by the system swept away by free market policies.

Hence we have a paradox that tax funds have to remedy a problem caused at least partly by an ideology that has disdained public funding.

### **THE INFORMATION PARADOX**

The amount of scientific information is growing fast, as are the ways to communicate it. As the amount increases though, it becomes more difficult to keep up with this new information, leading to increasing specialisation. Many scientists have a very narrow view of their discipline and a poor idea of how it relates to broader topics. This leads to a problem of knowledge dissemination since few are given a specific remit to do this.

Historically, knowledge was built through universities and research institutions that had the time and resources to synthesise information and teach it as a discipline. Instead, modern degree courses look more piecemeal as students take a large number of modular courses. Few tertiary level teachers have the time or inclination to go into the field to understand grass-roots problems and then

feed this back into their course work. Consequently, few new graduates have a full mental tool-kit to take to the field and indeed the career opportunities for developing this are increasingly rare.

All this leads to our final paradox: we are drowning in information but starved of knowledge.

### **FINDING A WAY FORWARD**

From the above it follows that:

- Agriculture and trade practices have profoundly changed over the last decade or two.
- The various players of the commodity chain in producer countries have been poorly informed about these changes.
- Most farmers are entirely unaware of these changes and tend to blame local stakeholders or other producer countries.
- Alternative production strategies, new market opportunities and diversification options are not well disseminated or understood.
- New requirements for trade, including legislation, certification, quality etc. are unknown to many farmers.
- Although farmers often have intimate knowledge about aspects of their environment, they are poorly placed to adopt new environmentally sustainable measures.

To be frank, it means that all of us, policy makers, decision makers, traders, retailers and international institutes, have badly failed the farmers that are the foundation of the agricultural sector. We have to do better.

In the first instance farmers must be helped to become more self-sufficient. They must be supplied with the correct technical and market information. They need access to market contacts and the means to learn new techniques.

Unless massive new funds become available, much of the information provision will have to be digitally

based and the continued reduction in capital costs for computer and Internet services will mean that commercial companies should be increasingly interested in supplying rural areas with these facilities.

For this reason, CABI has developed the Compendium concept, which provides a very wide range of information, specially written by experts in the field and compiled in electronic form into both CD ROM and Internet versions. It is rather different from a standard website, because the information is written specifically for the project and is much easier to search and download specific portions. It aims to apply a powerful multimedia technology to the collection, management and presentation of the global array of knowledge about a commodity, from production to consumption in order to provide a comprehensive knowledge base answering the expressed needs of user groups along the entire commodity chain.

Principal users will include:

- Farmer groups / co-operatives and extension workers
- Those working in the trade (processing, export, import)
- Researchers, teachers and students
- Policymakers, regulatory staff, quarantine officers
- Retailers / cafés, trade associations
- "Allied services" (bankers, financiers etc)
- Consumers / enthusiasts, public awareness campaigners
- International organisations, regional organisations/networks
- Non-governmental organisations (NGOs)
- Donors and development assistance agencies

The breadth and depth of information are an important consideration in the design of the Compendium. There should be a broad spread of information, tailored to different user groups so that

those groups can access information at different levels. The Compendium should act as a reference repository, covering the whole commodity chain. It could be a training tool that enables people to gain knowledge 'outside their area' from a 'pool of knowledge' (of varying depths).

Previous Compendia projects have involved hundreds of experts from around the world. The Compendium will contain the following information components.

- Text
- Maps (of producer countries, climate, soil, ecozones etc.)
- Photo collections
- Data on growing, processing, pest control, trade, etc.
- Soft-linking (highlighting and clicking on a word of interest leads to information or a definition)
- Glossary
- Reviews of basic technologies
- Decision-making tools - e.g. diagnosis
- Full-text knowledge reviews (datasheets)
- Statistical information (with facilities to display data as charts, graphs etc)
- Economic impact information
- Country information
- Personal and corporate notepad facilities
- Dynamic taxonomic hierarchy
- Identification keys
- Library of documents
- Bibliographic database
- CABI research abstracts back to 1972
- Training materials (across all coverage)
- Simulations and models (e.g. production costs, pest outbreaks, global warming effects etc.)
- Links to relevant websites

Such an approach is not by itself enough to solve farmers' problems but it can serve as a focus of attention around which to build a service-based approach for farmers. This would include training events and approaches to specific companies

to sponsor training events and community projects.

Such ideas are not new. In 1914 the US businessman Julius Rosenwald gave \$ 1000 grants to the first 100 counties to hire County Extension Agents, helping the US Department of Agriculture launch a programme that still shapes rural America today. This was enlightened self-interest since prosperous farmers were more likely to buy the products that his company, Sears, Roebuck & Co., offered through mail order. His company paid for agriculture-oriented schooling for poor rural boys and financed information provision (Seymour, 1918); his was the most successful retail company of its day.

We need to provide new ways to get new information to farmers and ways to ensure that they can access it and learn from it. We need to look for innovative ways to encourage private companies to contribute, in the spirit of enlightened self-interest. Many developing countries now have an empowered entrepreneurial class that we as scientists and development specialists must engage to help provide the means to support farming communities come to terms with the modern world. Farmers need to realise that they are part of a world community and that many people in other countries experience the same problems and think in ways very similar to themselves.

### SUMMARY

The world is changing fast, from commercial, political, environmental and other perspectives.

Power along the commodity chain has shifted and in some ways has diminished, those who have the power are not well informed of the problems up country.

Farmers are expected to produce top quality products to ever-higher environmental standards but without the level of support of previous years.

At the same time the number of niches for higher value products have proliferated.

Hence farmers are expected to do more with fewer resources than previously. As things stand, we will not go back to the controlled markets of the past and hence we need to look for innovative ways to help farmers.

Funding is likely to remain scarce so that ways need to be developed to empower farmers and train them.

An important first step is to provide accessible information, both to farmers directly and to the hard-pressed extension services and NGOs that support them.

If a comprehensive and easily accessible information platform can be created, it can be built upon to supply a wide range of requirements to farming communities.

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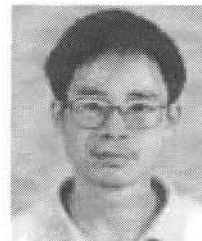


## Chapter 32

## SURVEY ON TEA SCIENCE IN CHINA BASED ON THE STATISTICAL ANALYSIS OF LITERATURES

ZHU Yong-xing\*

*Chairman invited Prof. Zhu Yong-xing with the remark that I got in touch with Prof. Zhu Yong-xing when he was looking for a website of ISTS registered five years ago that didn't exist. He has been the Executive Editor of the Journal of Tea Science for last 7 years. He has a lot of information collected and has agreed to give us overview of the statistical overview on information on which Chinese science is proceeding, for example during the last two years we found that about 50 percent of the research publications are in the area of tea and health as different from a decade ago, when 90 percent work related to research on Agronomy, crop production. This is a remarkable change that has taken place. Prof. Zhu who will give us the survey data of the information published in China about how many thousand journals existing in China on tea and the kind of work they are handling.*



### ABSTRACT

More than 20000 literatures on tea science were searched and collected from all possible accessible sources in China, using the most advanced technologies on network, information and database. A database application system with index tools on tea literatures was developed, which included patent literatures, newspaper articles and journal papers concerning tea science. With this database application system the Chinese tea literatures published in journals were statistically analyzed. The results showed that there were 21206 tea literatures published in the last decade or so in 2073 publishing media and concerned 9132 authors (the first author) belonging to 6697 institutions. The developing trend on the amount of literature, the authors, the author affiliated institutions and the journals that published these literatures was statistically analyzed and discussed.

Keywords: China; tea science; literature; database

As one of the cradle land of tea plant (*Camellia sinensis*), China has a long history on tea utilization. The earliest literal record about utilization of tea in the world was in "Shennong ages" about 5000 years ago<sup>[1]</sup>; while the earliest tea monograph was by Luyu "Chajing"<sup>[2]</sup> in Tang dynasty period about 3000 years ago. With the progresses of science and technology in modern time, more and more new knowledge and innovations about tea have been accumulated. Today, as a new professional knowledge system, tea science has been newly accepted as a university major in China. In order to build a solid base for this subject, it is an impendent task facing us to collect, coordinate and analyze tea literatures that are separated in thousands of journals. It is also a substructure for building a perfect knowledge system on tea science.

There are 8889 journals in China. Tea science is a multi-concerning subject, and the amount of tea literatures is huge published in thousands of journals. It is impossible to collect all the literatures

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from so many journals in traditional way. Therefore, with the rapid development of information technology, computer technology and construction of Chinese national knowledge infrastructure, it is now time to collect, coordinate and analyze the tea literature from all possible access resources. In this paper the Chinese tea literatures of last decade were collected and statistically analyzed, and accordingly the overall situation of tea science development in China is discussed. In meantime some important information about tea science in China is also introduced.

## COLLECTION OF TEA LITERATURES

### Sources of Tea Literature

Tea science is a multi-concerning subject. It is possible that tea literature appears in any kind of journals, so we enlarged our searching scope to all of 8889 journals. The main access of the collection included:

- 1) China Journal Web affiliated in CNKI digital library, in which there are more than 6000 journals
- 2) Digital Journal Grope of Wanfang Digital Co. Ltd, in which most core academic journals are included
- 3) Chinese Journal Database of Science and Technology affiliating to Southern West Information Center of Ministry of Science and Technology
- 4) Some big libraries in Hangzhou, such as Zhejiang Library, Library of Zhejiang Information Research Institute, Library of Zhejiang University, and the literature collections on tea science made by Tea Research Institute and Chinese Academy of Agricultural Sciences
- 5) Other resources, including mainly the literature data offered by or exchanged to other experts and scientists

According to our experience, it could be estimated that above resources covered 90% of total amounts

of tea literatures in China. Many methods were used to collect tea literatures in above accesses, including searching in internet by aids of index tools, indexing on CD room and copying the literatures to collect database; we also input literatures to our database through computer keyboard. As a result more than 20000 tea literatures were collected.

### Coordination of Collected Tea Literatures

To deal with huge quantity of information, the best way was using method of building computer database. In these days the access database program possesses great power in dealing with analysis and utilization of literature information. In this application our processing steps were as follows.

- 1) Formation of a database with access program for all collected literatures
- 2) Reconstruction of database through reforming the field items of database and transition of data, so as to make all data in uniformity
- 3) Deleting all overlapping literatures by using index function of database and manually check method
- 4) Filtering and separating the non-tea literatures that contained tea-meaning words in their titles or key words such as *Ku Ding Cha* (*Ilexkudincha* C. J. Tseng), weight-losing tea, An Cha Jian, etc.

Data obtained thus in the final database were unique and of uniform format. In order to facilitate the statistical calculation several assistant field items were added to the database, and finally we separated the eligible data to restructure an access database. The data in this database is directly used for following statistical calculation.

## SURVEY ON TEA LITERATURES IN CHINA

### General Situation and Annual Distribution of Tea Literatures

In total 21206 literatures were collected which were published in 2073 periodicals in last decade. Among these 9514 literatures belonged to academic papers

(mainly original research reports, academic thesis, summaries on tea science, etc., usually containing key words and abstract) and 11692 belonged to non-academic papers (mainly those of technical guidance, science & technology, news reports, tea culture and history, and some comments on tea science & technology). The concerned major subjects of tea literatures now have been enlarged to more than 15 fields as follows: culture, genetics & breeding, processing, mechanism, plant protection, biochemistry & physiology, medicine, foodstuff & feedstuff, economics, culture & history, biology, information, agricultural engineering, literature & art, comprehensive utilization of tea etc., and for many subjects the concepts and research fields were also obviously enlarged.

Using the most stable and accordant data samples the distribution of China tea literature amounts in the last 10 years was conducted. The results (Table 1) showed that in this decade the amount of published tea literatures rose rapidly, from 457 articles in 1993 to 1567 articles in 2002 (average increasing ratio 14.67%). For academic literatures the increase was more rapid, from 184 articles in 1993 to 775 articles in 2002 (average increasing ratio 17.32%). It should be noted that the highest amount of tea literatures appeared in 2000, and in 2001 there were decreasing trends (Table 1).

**Table 1. Annual distribution of tea literature amounts**

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total literatures	455	1065	1207	1296	1923	1903	1911	2891	2283	1864
Academic literatures	183	273	370	427	636	801	804	858	755	856
Academic /Total	0.40	0.26	0.31	0.33	0.33	0.42	0.42	0.30	0.33	0.46

### Authors of Tea Literatures

In all collected literatures there were 20132 articles having signed authors. The total number of authors in these articles was 36649 persons/times, 1.82 for

each paper in average. Among these there are 9132 different persons as the first author in each individual paper; each first author wrote 2.17 papers in average. Out of the total, Chen Zongmao had written the most amounts of tea literature among all tea literature authors in China, followed by Zhao Hetao, Qian Shilin, Lv Weixin, etc. When calculating by academic literatures, there were 9390 papers with signed authors, the total amount of first author was 5022, 1.87 articles for each first author in average. The authors who wrote the most amounts of academic papers individually are Liang Yuerong, Cao Jin, Chen Zongmao, etc.

There are 80 persons who wrote more than 10 academic papers individually. Although these persons formed only 1.6% of the total authors, they published academic papers as much as 13.13% of the total literatures (Table 2). These authors should be listed in the core name list of Chinese tea literatures.

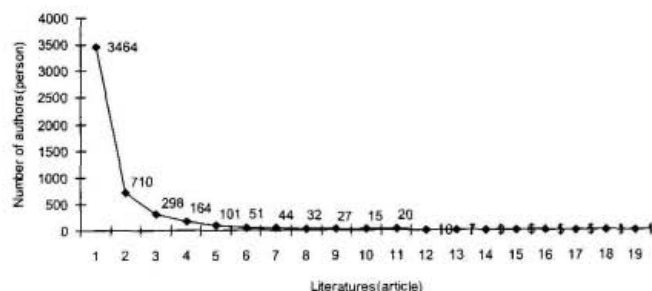
**Table 2. Frequency distribution of literatures written by each author**

Range of literature amounts (articles)	>30	30-26	25-21	20-16	15-11	10-6	5-1	Total
Number of authors (persons)	2	2	9	15	52	160	4681	5022
Literatures published (articles)	76	56	205	266	652	1189	6946	9390
Rate of literatures (%)	0.81	0.60	2.18	2.83	6.94	12.66	73.97	100

Calculation on frequency distribution of literature amounts written by each author was conducted and the relation between literature amounts written by each author and the correlative amounts of authors was analyzed (Fig. 1). Results showed that the most authors wrote only 1-2 papers individually, and the amounts of first author decreased sharply as the

increasing of article amounts written by individual first author. The relation shows a minus index type distribution.

**Fig. 1. Distribution of literature amount written by individual author**



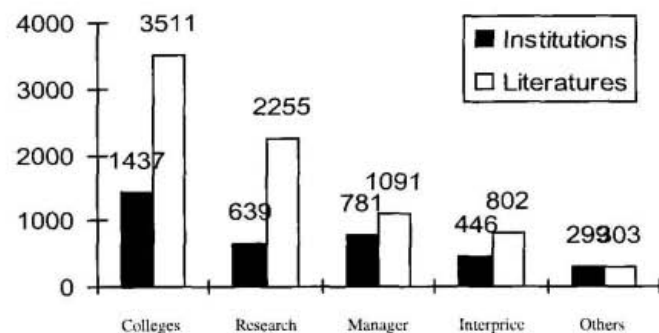
**Institutes Concerning Tea Literature**

15616 literatures had signed institutes, and the following analysis on institutes was based on these literatures. Calculation results showed that there are 6697 institutes concerning to the writing of tea literatures in last 10 years. Among these the important ones are: Tea Research Institute, Chinese Academy of Agricultural Sciences (673 articles); Zhejiang (Agricultural) University (649 articles); Anhui Agricultural University (575 articles); Hunan Agricultural University (356 articles); Tea Research Institute, Fujian Academy of Agricultural Sciences (331 articles); Tea Research Institute, Anhui Academy of Agricultural Sciences (305 articles); and Tea Research Institute of Hunan Province (274 articles). There are 16 institutes who wrote more than 100 articles of tea literature. They are the main producer of tea literatures in China. They contributed much to tea science and technology of China.

When compared with academic literatures, which have more close relationship to the development of tea science, the situation was somewhat different to above findings. There were 7962 academic articles having signed institutes that

numbered 3602. The institutes whose number of tea literatures are on top of the list are: Zhejiang (Agricultural) University (469 articles); Tea Research Institute, Chinese Academy of Agricultural Sciences (372 articles); Anhui Agricultural University (353 articles); Hunan Agricultural University (282 articles); Tea Research Institute of Hunan Province (189 articles); Tea Research Institute, Anhui Academy of Agricultural Sciences (162 articles); Tea Research Institute, Fujian Academy of Agricultural Sciences (149 articles); and Tea Research Institute of Guizhou Province (123 articles). These institutes should be considered as the key power for the development of tea science.

**Fig. 2. Contribution of different kinds of institutions to the research literatures on tea**



Based on the academic literatures, the institutes to which the first author was affiliated were classified. The result showed that the university institutes possessed the maximum amount of tea literatures; there are 1437 such university institutes that published 3511 articles. This was followed by the research institutes (there are 639 research institutes with 2255 published articles), and then the technical managements (there are 781 such institutes with 1091 published articles). Besides 802 articles were written by 446 other type of institutes, such as tea farms, tea processing factory, etc. Contribution of different kinds of institutes towards published literature in shown in Fig. 2.

### Journals Concerning to Tea Literatures

Tea science is an extensive science subject and tea literatures appear in many kinds of periodicals. The tea journals that we are familiar with contain only a small number of total tea literatures. Statistical calculation showed that 21206 tea literatures were published in 2073 journals; among these there were 9514 academic literatures published in 1419 journals. The results of the frequency distribution of tea literatures in journals are shown in Table 3.

As shown in Table 3, for the total amounts of literatures the concerned journals are comparative concentrated. The most important 22 journals, which formed only 1.06% of the total number of journals, published 12454 tea articles that amounted to 58.72% of the total tea literatures. The situation is different for the academic tea literatures; it showed two characteristics of both concentration and decentralization. One side is that the most important 15 journals published 4124 tea papers that formed 43.35% of the total amount of academic tea literatures. On the other side there are also 1307 journals, which take 90.6% of the total journal amounts, published only 30.51% of total academic tea literatures.

Among all tea concerning journals, CHINA TEA is listed on the top place for its highest quantity of

publishing tea articles, and JOURNAL OF TEA SCIENCE is considered as the most important journal on tea science for its publishing academic tea literatures with highest quantity, most systematically, and promptly responding to new innovations on tea science. The following journals published more tea literatures and should be the preferred collection journals for tea information concerned institutes: CHINA TEA, AGRICULTURAL ARCHAEOLOGY, TEA BULLETIN, FUJIAN TEA, TEA, JOURNAL OF TEA SCIENCE, TEA COMMUNICATION, MULBERRY AND TEA COMMUNICATION, JOURNAL OF TEA MACHINERY etc. Special attention should be paid that most of tea literatures are published in non-tea titled journals and some of these having contributed more to tea science.

According to above statistical calculation following conclusions about periodicals can be made:

- 1) The journal types of professional tea journals, medicine journals, foodstuff journals and some university journals on agricultural science are the main sources of tea literatures
- 2) Some professional tea journals contribute very little to tea science, although they published many tea literatures
- 3) Some journals of medicine and foodstuff contribute much to tea science although they published only a little of tea literatures.

**Table 3. Distributing frequency of tea literatures in journals**

Range of articles	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	>100	Total
Journal amounts	1333	53	21	3	5	7	2	2	1	1	16	1443
	1931	92	38	11	10	8	3	0	4	3	22	2073
Rate of journal (%)	92.38	3.67	1.46	0.21	0.35	0.49	0.14	0.14	0.07	0.07	1.11	100
	93.15	4.43	1.83	0.53	0.48	0.39	0.14	0.00	0.19	0.14	1.06	100
Literature amounts	3011	779	487	112	224	377	136	152	85	100	4051	9514
	4523	1262	933	373	448	435	198	0	345	287	12402	21206
Rate of literature (%)	31.65	8.19	5.12	1.18	2.35	3.96	1.43	1.60	0.89	1.05	42.58	100
	21.33	5.95	4.40	1.76	2.11	2.05	0.93	0.00	1.63	1.35	58.48	100

Note: The upper data in each cell of the table are the calculated results of academic literature, and the lower data are those of total literature.

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#### Remarks from the Chair

Prof. Zhu here told us that there were some 2000 journals in China which publish tea science papers of one sort or another and most of this is completely lost, including I suspect, even to a lot of Chinese readers due to sheer volume and problems of logistics. I shall discuss with this subject at length at the end of the session. However, I would like to share information with you about the paradigm shift in the focus of tea research. About 30 years ago, field research was the main focus of attention where most of the tea scientists were engaged. Some institutes took up machinery and manufacture. Later, economics was added a new branch of study. Recent analysis shows that almost 50% of the resources in tea research are dedicated to pharmaceutical and health research. This paradigm shift is led by China and Japan. We would like to learn from the experience of Prof Zhu, whether they have monitored this shift in resource allocation and the benefits thereof.

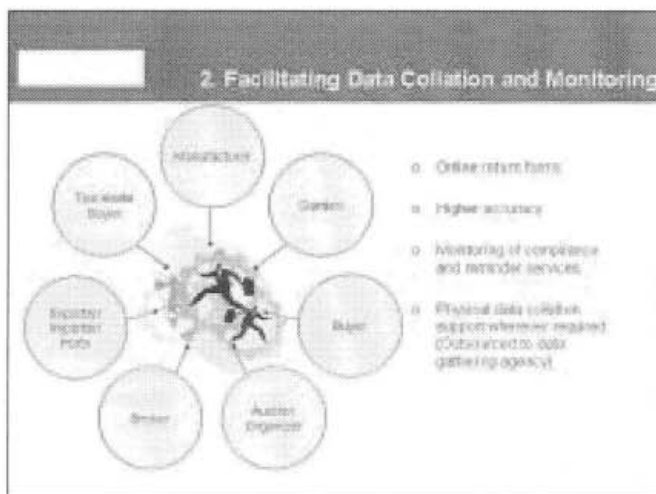
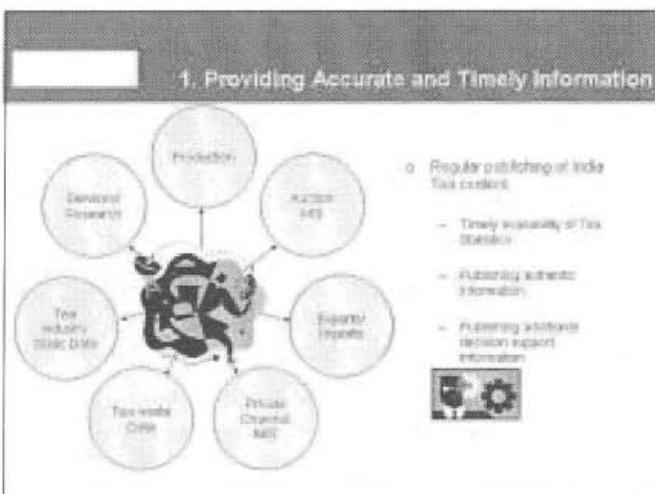
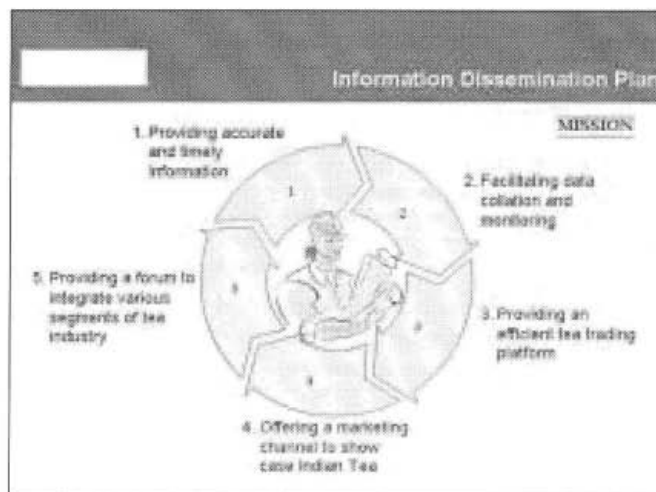


Chapter 33

INDIATEAPORTAL.COM

Anindya Basu\*

Accenture Company Ltd. (Consultants to Tea Board)



**Note: It is deeply regretted that Mr. Basu failed to submit full manuscript till the time of sending this for printing - Editors**

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### 3. Providing an Efficient Tea Trading Platform

1. Product Features
2. Dealer Catalogue
3. Decision support system for buyers and brokers
4. Electronic Bidding
5. Faster generation of "delivery orders" and "contracts"
6. Instantaneous MIS generation from auction data

### 4. Offering Marketing Channel for Indian Tea

1. Publishing Indian tea producer content
2. Offering mechanism to publish private catalogue for tea manufacturers
3. Publishing support services information for India Tea
  - Tea Distribution
  - Sales and Distribution
  - Certification Process
4. Offering "Hotdesk"

### 5. Integrating Indian Tea Industry

1. Bringing together communities with shared interest – India Tea
  - Providing interaction tools to the industry participants
  - Offering to use "regulator" to resolve Tea
2. Providing valuable content for Tea Industry
  - Research findings
  - Tea related news
  - Government related
  - Market research report

### What Is a Portal?

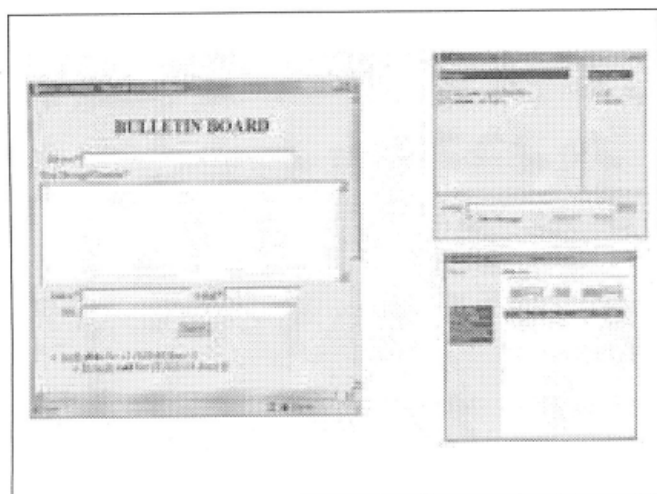
- Where people connect - India Tea Producers, Exporters, Buyers, Regulators etc.
- Single window to facilitate Content, Interaction, and Transaction with existing flows
- Knowledge Creation & Classification: Newsletters, Journals, and Information & Publications
- Services - Bidding, Hardware and infrastructure services, Service catalogues, etc.
- Forum:
  - News and
  - Alerts
  - Change Monitoring

### Tea Portal Architecture

### Building Tea Portal: Components

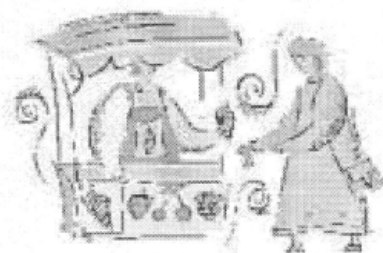
1. Application Software
2. Centralized Hardware
3. Internet Hosting & Content Management Services
4. Auction Center Infrastructure
5. Data Collection Call

Lot No.	Auction No.	Auction Name	Grade Name	Weight	Lot Size	Highest Bid	Bidder's Name	Bidding Price
001	1201	...	...	...	...	...	...	...
002	1202	...	...	...	...	...	...	...



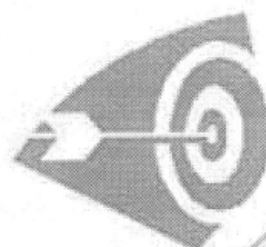
### VSAT Kiosk Locations

- o Coonoor
- o Guwahati
- o Jorhat
- o Kolkata
- o Kottayam
- o Palampur
- o Siliguri
- o Agartala



## In Summary : The Tea Portal Vision 2004-05

- o All industry participants working through a "singular world class technology platform"
- o All tea related content published via *Tea Portal*
  - Accessing information becomes a question of minutes/ hours, not days and months
- o All auction centers are on a singular standardized electronic platform, supported by the portal
- o Small growers get ready access to reliable information
  - Access portal via "access kiosks"



o Product  
o Sa  
o ne  
o ng  
o y e.g.  
o tea

**Potential of becoming the largest commercial portal in the country**



### Introduction of Dr. S. Kodomari by Session Chairman N.K. Jain

I invite Dr. Kodomari, as the last speaker of the day. There is a tale to his metamorphosis from a scientist to museum curator. When I met Dr. Kodomari many-many years ago in 1990 during sabbatical to Japan, he was a very well known, deeply committed scientist to biological control of tea pests at Shizuoka Experimental Station, which he headed later. One day I received a letter informing me that he has started looking after a museum, which surprised me immensely as I thought museums have nothing to do with scientific information except marginally and that museum keepers are trained in that career from a very young age and are not high caliber scientists. Evidently I was grossly misinformed.

I found similar transformation in another person Dr. I Ming Juan who was the Director of Taiwan Experimental Station. He is now building a museum in China. This tells us volumes about the perceived role of museum in science communication in China and Japan.

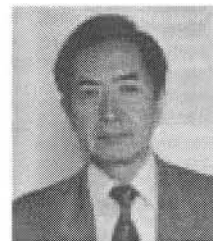
When I invited Dr. Kodomari for this presentation, some people, like me ignorant of the importance of museums, asked if we are going to discuss a museum and fun fare (tamasha) in this conference? I replied that we are going to know about museum as a source of tea information, of tea research information primarily to the public at large, and to the consumers at large. So, Ladies & Gentlemen, this is why we invited Dr. Kodomari, He has some difficulty in expressing himself in fluent English, due to which he took four months to accept my invitation for this paper. On your behalf, I welcome Dr. Kodomari to make his presentation on the role of museums in science information.

## Chapter 34

# ROLE OF TEA MUSEUM IN TEA CULTURE AND INDUSTRY

### Shigeri Kodomari\*

*Dr. Shigeri Kodomari was born on March 1, 1940. He graduated from Faculty of Agriculture at Gifu University in 1962, after which he carried on studies on Tea pest Control at Shizuoka Tea Experiment Station. He was Director of Shizuoka Tea Experiment Station from 1995-98. He became Curator of Kanaya Tea Museum in 1998, which he still holds.*



### ABSTRACT

Tea museums play many important roles. Collecting, recording, saving and exhibiting the historic facts about tea are some of the basic roles, besides providing facilities for sightseeing tour on tea. Visitors have knowledge about tea through exhibitions. Also, tea museum should be the intellectual base and offer latest and useful

information to consumers, farmers, dealers, researchers and others. Therefore, we carry out lectures, seminars and international symposia. We have exchanged information with China National Tea Museum, Famen Temple Museum and TenFu Tea Museum in China, PinRin Tea Museum in Taiwan and various other organizations. Popularization of PC has made exchange of information with others very easy. Therefore, coping with the Internet and database

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E Mail <kodomari@mrg.biglobe.ne.jp>

is important, and so also the proper management of museums.

### **DEFINITION OF A MUSEUM**

There are many museums in the world and each has its own details of foundation, purpose, scale and social roles. ICOM defines museum as "A nonprofit building where important cultural, historical, or scientific objects are kept and shown to the public in order to make studies, education, amusements and promoting social development."

### **VARIETY OF TEA AND CORRESPONDENCE TO A MUSEUM**

The culture of tea has very old historical tradition and its worldwide extent. Therefore, there are so many fields connected with tea: as plant, economical farm products, functional foods, and those involved in the arts and mind environment that has produced national character. Still more, only tea has countless utility values and allied industries, but other foods have not such valuable peculiarity. As to the peculiarity of tea, it is very difficult to make a role for tea according to the definition, "a museum", and especially to the point of scale. Recently, it has become very important to manage museum for user-centered systems. I think that a museum must provide our customers with useful information in this IT age.

### **"NEW TEA MUSEUM" KANAYA, SHIZUOKA, JAPAN**

Kanaya Tea Museum was opened in 1998 in Shizuoka Prefecture where 50% of all Japanese tea is produced. This tea museum presents history of Japanese tea culture and its industries. We can enjoy tea tasting from all over the world and understand a variety of tea drinks. Furthermore, we can experience traditional tea ceremony in an

old style (17<sup>th</sup> century) tearoom and a special garden. Also it is very important to deal with tea businesses, such as tea farm, tea merchant or tea researcher. We do cultural exchanges with the China National Tea Museum, Famen Temple Museum and TenFu Tea Museum in China, PinRin Tea Museum in Taiwan, etc. aggressively. We also deal with business groups and research institutes in China, Korea, Turkey, India and Sri Lanka. We also hold international tea competition, international tea seminar, qualifying examination for Chinese tea instructor etc. The museum is a cultural institution and, since its purpose is not for profit making, its activities become numerous.

### **MUSEUM MANAGEMENT - ITS IMPORTANCE**

The basic role of a museum is to keep the interest of people alive and keep them informed about the historical facts. People who are interested in tea should be able to visit museums easily. Museums also contribute towards progress of new tea industries within the country and abroad. Such goals, where the main aim is not to seek profit, make the evaluation process difficult. However, commercial strategies even with limited funds remain the same for great effect. At our museum the goal is to give satisfaction to visitors, enrich citizens' lives through tea and make a contribution to tea industries. We manage all this through help of our talented people, artifacts and information presented effectively.

### **MUSEUMS AND INFORMATION LINKAGE**

Visitors expect the museums to collect all relevant information like a treasury, and provide it quickly with no bounds when required. IT society makes it necessary for more people to cover many expenses to compile, store and disseminate information. An important subject in the future is how to categorize information business for museum management.

### **Concluding Remarks of Session Chairman Dr. N.K. Jain**

Thank you Dr. Kodomari. We learnt a lot about the role that museums can play in informing the lay public about the tea industry and take it out of isolation. Today when the tea industry complains that they are in dire straits, nobody believes them. The museums can help create a favorable climate for the tea industry. Let us hope that a tea museum can be set up someday by the powers that be.

This session has been a very informative session. I shall try to summarize the four presentations, in the background of extracurricular discussions with some delegates held after the sessions during the last two days, eliciting the main points at some length:

Commonwealth Agricultural Bureau (CABI) publishes a lot of abstracts on soils, fertilizer, plant breeding and crops like wheat etc. but for some reason not on tea. We hope that with the help of Dr. Baker, we shall be able to launch a website on tea alone to put together all the information on tea which is spread out over 10 different abstracts published by the CABI. As you know now, about 50 percent of the total research on tea is published in China in Chinese and about 20 percent is published in Japan in Japanese, both of which are not accessible to many other readers of the outside world. We discussed with the representatives from China and Japan the possibility of putting together in one place all the body of the scientific data, which is extremely dispersed.

Prof. Zhu here told us that there were something like 2000 journals which publish tea science papers in China and most of this is completely lost, including I suspect a lot of Chinese readers. Since CABI has offices in both India and China even in Kenya and Sri Lanka (which are the two other major tea producing countries), it might be possible to put all the information together — at least titles of papers and abstracts in two or three languages that be hosted initially, at least as a start.

I anticipate two major problems. One is the collection of data from source, for which we have prepared a scheme of Link Institutions where we shall invite major tea research institutes to send abstracts of all their publications at least once a year for reporting. The second problem I perceive is the quality of abstracts received. Once you have received these abstracts as data it is very abstract and needs 'somebody to turn it into from information to what we call knowledge. That is where you really need money at both these junctures to bring about progress. However, it would be very-very encouraging if we could at least collaborate at ground level to start the information network and then go to the donors. Then we can show them what we are doing and get them to provide us with some money to a more complicated but fully operative informatics project.

We had proposed that if our friends from China and Japan would collaborate with us in this area we would like to put selected pieces of this information, either full abstracts or titles somewhere, host it on the internet or publish in hard copy. Hard copy can be carried in the *International Journal of Tea science*. For the internet Dr. Baker will have to play a very significant role in getting CABI involved in it and put out tea abstracts on the internet.

The one idea which has emerged from the presentation of Mr. Basu on India Tea Portal, is that the Tea Research Information System, comprising of data collection, collation and hosting on the internet

can be internationalized and grow out of the national confines. It can be a model for Dr. Baker and ISTS to discuss with Mr. Basu when we are ready to implement our network on informatics.

Dr. Kodomari brought to sharp focus the need to establish tea museums as an instrument of keeping the public informed of the profound change in the tea industry I hope that one day the Council of Science Museums and the Tea Board can draw upon the expertise of experts like Dr. Kodomari and Dr. I. Ming Juan to set up science museum/s, maybe in Tocklai or UPASI research institutes or even in Delhi where un-informed policy decisions on the fate of the tea industry are taken. These museums can inform those practicing tea industry about the latest developments in cultivation and processing of tea industry. How many of our younger generation know that the first consignment of tea to UK, which established the supremacy of Assam tea was made from the "wild" plants grown by the tribal chiefs, that a member of the family of Guru Rabindra Nath Thakur surveyed the areas that now grow tea in the Dooars; that tea was once rolled by hands, as is still done for high grade Longjin in China; that stone rollers of the 19<sup>th</sup> century can still be located in tea estates and brought to the museum as the fossil remains of the tea industry. How many policy makers understand the social responsibility of providing rations and housing to the tea garden laborers or the travails of the tea industry which groans under the unprecedented cost-price squeeze but still have to see their tea replaced by cheap imports. The public is not fully conscious of the travails of the tea planter and the tea laborers due to closure of tea gardens in the wake of the cost-price squeeze and how this best agro-asset of India is facing extinction. This happens primarily because of the lack of information of the decision makers about the ground reality. I repeat my hope that some day the Tea Board will deem it necessary to establish a sophisticated tea museum.

