Editorial IJTS 7(3&4)

The smallholder tea grower is a farmer who operates a micro sized tea plantation, averaging 0.4 hectares in Assam, Kenya and Sri Lanka, although by definition in India the small tea holding must be less than 10 hectares: it may be of any size in Sri Lanka as long it is operated by a private farmer but is subject to the ceiling limit of 50 acres (20 hectares). The small grower, as he is often called, is short on resources but not on resourcefulness.

The intellectuals opine that in the arable farming sector "The smallholder growers were generally dismissed because they were not organised, not part of the business as we knew it. What got missed was the fact that these smallholders are large employment generators. More importantly, they are more capable of coping with uncertainty; their costs are lower and they adapt quickly to changes. They are more resilient. The future is here," (*"Our smaller future" Editorial in "Down to Earth" March 2009*). This definition is equally applicable to Smallholder tea growers whose welfare is relegated to the backburner because the state machinery is occupied with the large tea estates and their employees.

This special issue of the International Journal of Tea Science is devoted exclusively to small tea growers in different parts of the world. The first three chapters report on the origin and status of small holder growers in India, Kenya and Sri Lanka. A brain teaser is inserted after chapter 2 because it was too short even for a short note, and certainly, much shorter than a chapter. The note dwells upon the possibility of tea plantations earning carbon credits for sequestering carbon dioxide which causes climate change. A Government initiated project to introduce tea to improve the socioeconomic conditions of small farmers in Uttarakhand India is discussed in detail in chapter 4. In Chapter 9, short note 9A reports the birth/launch by a private company, of a small holder tea growing project in Bangladesh, which has a big potential to provide employment on land that was not otherwise productive. However, when the smallholder grower begins to earn from a small plot of tea, the tax collectors pounce upon him for "their pound of flesh" Shylock style. In chapter 9 short note 9B reports the imposition of tea leaf cess by Government of Assam which illustrates this attitude of treating the efficient small growers as the milch cow, even if it kills the fledgling enterprise. The long term implications of the overload of taxes on a still-floundering small tea grower scheme, are discussed in this note, which also suggests alternatives for improving the organisation and operation of smallholders to benefit both the state and the small farmer on a sustainable basis.

The small holder tea growers have very special needs in terms of their technology requirements and R&D support. Chapter 5 reports a new approach to a cropping system with fruits and spices to enhance smallholders' income. Chapter 6 discusses the ways of meeting the training needs of this sector. Chapter 7 details biological control of tea pests on small farms where the owners adopt organic farming system because they can ill afford purchased farm inputs. The greatest problem with the small scale tea grower is the very small volume of harvested (highly perishable) leaf per holding which must be sold at exploitative prices to the neighboring large tea estates or Bought Leaf Factories, unless there is a cooperative factory to process tea leaves produced by the members. Chapter 8 details the research results in developing a computer controlled quality tea processing system that can handle as little as 50 kilo tea leaf per day and offers the possibility of enhancing the capacity of this integrated unit to a full size factory for processing tea leaf from a 500 acre area under tea production.

Some of the issues on which this special issue failed to provide information, are:

(i) Financial constraints faced by the small holder growers.
(ii) Socio economic aspects of the system of small holder tea growers.
(iii) Women empowerment in families who take to tea growing on their plots.

(iv) Plant nutrition for small holder organic tea growers
(v) Irrigation for small holder tea growers.
(vi) Drainage on small tea holding.
(vii) Bought leaf factories in private and co-oprative sector and their operation.
(viii) Tea eco tourism

The editors hope to find qualified authors with requisite experience on these topics to correct these deficiencies in the proposed ISTS book 4(For details with Pl. refer xv of the Initial pages), a more comprehensive treatise on the subject of small growers, when it is published in due course of time.

The following text reproduces the summaries of the chapters on various aspects of smallholder tea growers, which are included in this issue:

Chapter 1: Role of small tea plantations in Indian tea industry by Motial

The paper briefly reviews the present status including the evolution of small tea growers in India, over a period of time. It also details the manpower requirements for the new plantations, lists the constraints in their working, states their contribution to the industry and ponders over other economic aspects of smallholder growers. A working model has been suggested for sustaining a factory for around 250 ha. of plantation by involving small growers.

Chapter 2: Kenya Tea Development Agency Limited by Mbadi and Owuor

The KTDA was formed in 1964 to take over the functions of the Special Crops Development Authority (SCDA), which had been set in 1960 to promote tea growing by indigenous Kenyans (Africans). KTDA achieved tremendous growth, raising tea productivity in 1964 to 2000A.D. from 148.9 kg made tea (mt) ha^{-1} $year^{-1}$ to 2100 kg mt ha^{-1} $year^{-1}$; area under smallholder farmers from 4,700 ha to 91,000 ha; number of growers from 19,000 to 450,00 and tea factories from 2 to 45. KTDA was privatised to Kenya Tea Development Agency Limited (KTDA Ltd) in the year 2000.
The core business of KTDA (and KTDA Ltd) aimed at helping smallholder tea farmers to manage tea growing and processing activities, marketing and selling the black tea produced and providing support services to promote smallholder tea business. KTDA Ltd is now a major producer of black tea and is probably the single largest small grower tea producer in any one country.

Brain Teaser: How Green is Tea by Krishna:

Tea is more efficient than rubber or forest plantations in removing CO_2 from the atmosphere and help in reducing climate change. The calculations show that 1 hectare of tea plantations sequesters CO_2 @ 54.6 to 69.36 t/ ha/yr. A case is made out for recognition of tea for receiving carbon credits for this CO_2 sequestering activity. Further Tea carries a carbon footprint of 6 kg for every kilo of tea exported to the UK. Academically oriented researchers should pay attention to this means of adding to the earnings from the tea plantations.

Chapter 3:The Tea Small Holder Sector In Sri Lanka **by Sivepalan and Nalini**

Tea small holdings in Sri Lanka originated from about the first decade of the twentieth century, and developed slowly as subsistence farming families within the vicinity of commercial plantations. These peasants cultivated tea in small parcels of land, managed by the family members themselves, with very basic inputs. The green leaf harvested by these peasants was

monopolized by various intermediaries in the supply chain, from leaf collection from growers to transport to processing factories. Consequently, the net income to the grower continued to be very meager. Land reform policies and land re-settlement schemes of the early 1970s, resulted in a significant growth of tea small holdings within the different tea growing districts of the country. As per the first Census of 1983 there were 159,865 tea holdings, accounting for a land area of 75,769 ha, with an average size of 0.47 ha per holding. Despite such expansion, the sector continued to perform poorly due to the inadequacies of technical support and poor facilities for leaf collection and transport to the processing factories, with a significant number of these farming peasants yet hovering around poverty line. With the intervention of the government to set up the Tea Small Holdings Development Authority (TSHDA) in 1975 and the follow-up financial assistance from international lending institutions from about the late 1980s, this sector has since improved significantly and evolved to attain the present status of an important player in the country's economy. With a current extent in production of 110,236 ha, yielding an average of 1,853 kg/ha, the total production of tea by the tea smallholders in 2004 was 204.6 million kg, which is 66 percent of total country production of 308.1 m. kg.

Chapter 4: Small grower tea plantations in Uttarakhand, India by Tamang

The Uttarakhand Tea development project was launched in 1993 to re-introduce tea in this region which was the first area in India to introduce tea plantations during the early 19th century. The original tea plantation flourished well till they were abandoned in the beginning of the 20th century due to socio-economic factors. In this project, 485 farmers have been assisted till date to plant 573 hectares of tea during 2008-09, that utilised 3,58,000 mandays, for which Rs 29 million(US$600,000) was paid as wages. Apart from generating employment in these hilly tracts on the land that was lying idle, quality tea comparable to Darjeeling, was produced. A very small quantity of white tea made by special technique on order from Korea, fetched a record price of $800 per kg. The tea plantations on otherwise unused land, are environmentally friendly and are likely to become economically self sustaining in due course of time, turning the small scale tea enterprise into an engine of economic growth of the individual grower, the family involved and the community as a whole.

Chapter 5: Tea intercropping models with fruit crops and spices to enhance income for small growers by Ghosh et al.

Fruits crops *viz*. sapota, guava, amla and non fruits crops siris and sandal wood, were grown as shade trees in 5 intercropping models with tea, while black pepper and turmeric were incorporated as companion crops. The data during the years 2002-2007 on yield and gross income showed compatibility of tea with intercropped fruits and spices. Guava, sapota and black pepper have shown promise of generating income faster than amla . The additional gross income generated by these cropping models ranged from 54% to 115% over the income from tea alone. For small tea growers in India these crop models could be useful for generation of higher income and employment.

Chapter 6: Training of smallholder tea growers by Baruah & Hazarika

Small scale cultivation of tea in the Eastern India has started rather late. From a few enterprising cultivators in the early eighties, the sector has achieved a stupendous growth and at present there are about 100,000 small growers in the region contributing 30% to the total production of Assam. Limited scientific knowledge is an impediment faced by the small growers for

achieving sustainable tea productivity. The growers need to be trained in all aspects of tea culture to improve their production of quality leaf. Training must also be imparted to these farmers on judicious use of pesticides keeping in mind the application of MRL issues. Smallholder training provided by the Tea Research Association through STGAC is effective but has been able to cover only 20% of the growers, leaving a big gap in meeting the training needs of the smallholder growers in this region. Suggestions have been mooted in designing new/additional mechanisms to meet the training requirements of smallholder tea growers.

Chapter 7: Biointensive integrated tea pest management in Northeast India for small growersby Gurusubramanian et.al.

This paper provides the rationale for Biointensive Integrated Pest Management (BIPM), outlines the concepts and tools of biointensive IPM. It suggests steps and provides information for implementing IPM for management of various pests affecting tea in North east India. It is directed especially to small holder tea growers who practice organic agriculture and can not afford purchased off-farm inputs like pesticides.

Chapter 8: Quality Tea Processing for Small Growers and Instrumentation by Pawan Kapur

Small tea growers have a specific requirement of processing low volumes of green tea leaf and yet achieving reasonable quality of the end-product while remaining competitive in the global market. Due to small tea growing areas, it becomes economically unviable for small tea growers to go with conventional tea processing machineries to perform withering, rolling, fermentation and drying operations. This usually forces them to sell leaf to larger tea gardens, often depriving them of a good price. The bought leaf factories too find difficulty in achieving consistency in the quality of made tea due to heterogeneous leaf, which is sourced from various small tea growers. Viewed in the larger context, the industry loses at both the ends. This paper highlights the innovative design of environmentally controlled manufacturing machine having integrated processing units for withering, rolling/CTC, fermentation and drying operations. Due to its modular design, one can scale it up or down as per specific leaf processing requirements. The paper also describes advanced sensing techniques and instrumentation based thereupon, for monitoring of key parameters of green leaf/made tea which are applicable to both small and large tea growers. Such instruments are useful in assessing the quality at various stages of tea manufacture.

Chapter 9: Short notes
9.1. Smallholder tea for Poverty Alleviation by Monjur Hossain

Tetulia Tea Company Limited(TTCL) introduced the concept of " Tea for Poverty Alleviation " in 2000 AD in Panchagarh, Bangladesh where the only means of income from the land was to sell stones excavated from the ecologically fragile area but the acidic loamy soils were suitable for growing tea. The smallholder tea growers' project directly addressed the multiple problems of the poor farmers. The objectives of the Project were to create a dependable employment opportunity, encourage micro-entrepreneurs, create a sound financial base for marginal/ poor farmers in the rural areas, optimise commercial utilization of fallow land in an ecologically sustainable manner, increase the tea production to cope with the fast increasing domestic consumption and finally, to help the national/government programme for poverty alleviation.

In the TTCL model of “My Land my Garden” the farmers are not labourers. In fact they are small entrepreneurs: as such they have a sense of belonging - resulting higher productivity. This short

note reports on the birth and growth of this landmark project and examines the economics of growing tea versus food crop paddy in typical case studies of smallholder tea growers.

Chapter 9.2: SHYLOCK SEEKS HIS POUND OF FLESH: It May Bleed Them to Death.
(News item on green leaf cess on small tea growers.)

"The silent economic revolution by small tea gardens across Assam has helped tackle rural unemployment apart from using land in an environmentally friendly manner. Instead of a reward for putting the otherwise unproductive land to good use, the small tea growers have been asked to pay green leaf cess @ 20 paise(US$0.004) per kilo of leaf, which amounts to Rs. 650/ per bigha(US$100/ha) per annum", says a news item in The Indian Express of April 8, 2009,

"There are 65000 first generation small tea gardens across Assam, which support more than 300,000 families.They Employ 2,78,000 laborers and 10,000 clerical staff. The green leaf produced by these small holder growers is processed by some 210 bought leaf factories, which produce 130 million kilo tea which accounts for 25% total production of the State of Assam. The small tea growers have now been asked to pay the green leaf cess in addition to a land cess of Rs. 22 per bigha(US$3.30/ha) and a fine of Rs. 200 per bigha(US$30/ha) if they put under tea the Government fallow land."

Will this levy suffocate a green technology and kill the proverbial goose that lays the golden eggs of rural prosperity and improved environmental health? Global experience shows that if the State could organise these small growers on the pattern of KTDA (refer to chapter 2 in this special issue) or TSHDA in Srilanka (refer chapter 3 in this issue) or closer home in Uttarakhand Tea Development Board (refer chapter 4 in this issue) or Kangra Tea Cooperatives, with technical support, processing and marketing facilities, the growers will earn more income and fetch the state more revenue.

Tea Science Abstract Section of this issue is voluminous. With 550 abstracts, the number is the largest ever in any one of the 17 issues published during the last seven years of our publication. For easy selection and access of an abstract, all the titles and their serial numbers have been listed under classified titles on pages 79-104. After choosing the title of the abstract required, the detailed abstract can be referred in the next section under Detailed abstracts.
Author index for all the abstracts which appeared in the two issues of this volume published during 2008, is given at the end. Hope it will allow the reader to refer to publications on a subject or by an author .

The inordinate delay in publishing this issue of IJTS is deeply regretted. As the members of the International Society of Tea Science (ISTS) were informed in the "Swan Song: a brief History of ISTS" published on page v-vii in the IJTS vol. 7(1&2) 2008, henceforth the publication of the International Journal of Tea Science (IJTS) will be handled by Prof. Zeno Apostolides from Pretoria South Africa, jointly with Dr. Yukihiko Hara of Japan. Due to the delay in completing the formalities of transfer of the ISTS functions, this last issue of IJTS Volume 7 came to be published by the present establishment which caused this inordinate delay in this special issue.The new organisation (registered in Pretoria as International Society of Tea Science) will start publishing the IJTS effective 2009 Volume 8. The members are invited to help the new team to take the journal to new heights of performance. I hasten to add that the publication of the proposed ISTS books 4 to7 will continue to be the responsibility of the undersigned. With this last special issue of the IJTS, I now take leave of the readers of IJTS, after 7 years of working together. Good bye!

New Delhi April 17, 2009

N.K. Jain

Editor, IJTS